EXHIBIT KM-1

Curriculum Vitae

Kevin M. Murphy

March 2020

Business Address:

The University of Chicago
Booth School of Business
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Current Positions

July 2005-Present: George J. Stigler Distinguished Service Professor of Economics, Department of Economics and Booth School of Business, The University of Chicago

Faculty Research Associate, National Bureau of Economic Research

Co-Director, Health and Human Capital Program, Health Economics Initiative, Becker Friedman Institute

Education

University of California, Los Angeles, A.B., Economics, 1981

The University of Chicago, Ph.D., 1986

Thesis Topic: *Specialization and Human Capital*

Previous Research and Academic Positions

2002-2005: George J. Stigler Professor of Economics, Department of Economics and Booth School of Business, The University of Chicago

1993 – 2002: George Pratt Shultz Professor of Business Economics and Industrial Relations, The University of Chicago

1989 – 1993: Professor of Business Economics and Industrial Relations, The University of Chicago

1988 – 1989: Associate Professor of Business Economics and Industrial Relations, The University of Chicago

1986 – 1988: Assistant Professor of Business Economics and Industrial Relations, The University of Chicago

1983 – 1986: Lecturer, Booth School of Business, The University of Chicago

1982 – 1983: Teaching Associate, Department of Economics, The University of Chicago

1979 – 1981: Research Assistant, Unicon Research Corporation, Santa Monica, California

Honors and Awards

2008: John von Neumann Lecture Award, Rajk College, Corvinus University, Budapest

2007: Kenneth J. Arrow Award (with Robert H. Topel)

October 2005: Garfield Research Prize (with Robert H. Topel)

September 2005: MacArthur Foundation Fellow

1998: Elected to the American Academy of Arts & Sciences

1997: John Bates Clark Medalist

1993: Fellow of The Econometric Society

1989 – 1991: Sloan Foundation Fellowship, The University of Chicago

1983 – 1984: Earhart Foundation Fellowship, The University of Chicago

1981 – 1983: Fellowship, Friedman Fund, The University of Chicago

1980 – 1981: Phi Beta Kappa, University of California, Los Angeles

1980 – 1981: Earhart Foundation Fellowship, University of California, Los Angeles

1979 – 1981: Department Scholar, Department of Economics, University of California, Los Angeles

Publications

Books

Social Economics: Market Behavior in a Social Environment with Gary S. Becker, Cambridge, MA: Harvard University Press (2000).

Measuring the Gains from Medical Research: An Economic Approach, edited volume with Robert H. Topel, Chicago: The University of Chicago Press (2003).

Chicago Price Theory, by Sonia Jaffe, Robert Minton, Casey B. Mulligan, and Kevin M. Murphy, Princeton University Press (2019).

Chapters in Books

"Income and Wealth in America," with Emmanuel Saez, in Inequality and Economic Policy, ed. Tom Church, Christopher Miller, John B. Taylor, Stanford, CA: Hoover Press (2015)

Articles

"Government Regulation of Cigarette Health Information," with Benjamin Klein and Lynne Schneider, 24 *Journal of Law and Economics* 575 (1981).

"Estimation and Inference in Two-Step Econometric Models," with Robert H. Topel, 3 *Journal of Business and Economic Statistics* 370 (1985).

"Unemployment, Risk, and Earnings: Testing for Equalizing Wage Differences in the Labor Market," with Robert H. Topel, in Unemployment and the Structure of Labor Markets, pp. 103-139, ed. Kevin Lang and Jonathan S. Leonard. London: Basil Blackwell (1987).

"The Evolution of Unemployment in the United States: 1968-1985," with Robert H. Topel, in NBER Macroeconomics Annual, pp. 11-58, ed. Stanley Fischer. Cambridge, MA: MIT Press (1987).

"Cohort Size and Earnings in the United States," with Mark Plant and Finis Welch, in Economics of Changing Age Distributions in Developed Countries, pp. 39-58, ed. Ronald D. Lee, W. Brian Arthur, and Gerry Rodgers. Oxford: Clarendon Press (1988).

"The Family and the State," with Gary S. Becker, 31 *Journal of Law and Economics* 1 (1988).

"A Theory of Rational Addiction," with Gary S. Becker, 96 *Journal of Political Economy* 675 (1988).

"Vertical Restraints and Contract Enforcement," with Benjamin Klein, 31 *Journal of Law and Economics* 265 (1988).

"Income Distribution, Market Size, and Industrialization," with Andrei Shleifer and Robert W. Vishny, 104 *Quarterly Journal of Economics* 537 (1989).

"Wage Premiums for College Graduates: Recent Growth and Possible Explanations," with Finis Welch, 18 *Educational Researcher* 17 (1989).

"Industrialization and the Big Push," with Andrei Shleifer and Robert W. Vishny, 97 *Journal of Political Economy* 1003 (1989).

"Building Blocks of Market Clearing Business Cycle Models," with Andrei Shleifer and Robert W. Vishny, in NBER Macroeconomic Annual, pp. 247-87, ed. Olivier Jean Blanchard and Stanley Fischer. Cambridge, MA: MIT Press (1989).

"Efficiency Wages Reconsidered: Theory and Evidence," with Robert H. Topel, in Advances in the Theory and Measurement of Unemployment, pp. 204-240. ed. Yoram Weiss and Gideon Fishelson. London: Macmillan (1990).

"Empirical Age-Earnings Profiles," with Finis Welch, 8 *Journal of Labor Economics* 202 (1990).

"Human Capital, Fertility, and Economic Growth," with Gary S. Becker and Robert F. Tamura, 98 *Journal of Political Economy*, S12 (1990).

"Accounting for the Slowdown in Black-White Wage Convergence," with Chinhui Juhn and Brooks Pierce, in Workers and Their Wages: Changing Patterns in the United States, pp. 107-143, ed. Marvin Kosters. Washington, D.C.: American Enterprise Institute (1991).

"The Role of International Trade in Wage Differentials," with Finis Welch, in Workers and Their Wages: Changing Patterns in the United States, pp. 39- 69, ed. Marvin Kosters. Washington, D.C.: American Enterprise Institute (1991).

"Why Has the Natural Rate of Unemployment Increased over Time?" with Robert H. Topel and Chinhui Juhn, 2 *Brookings Papers on Economic Activity* 75 (1991).

"The Allocation of Talent: Implications for Growth," with Andrei Shleifer and Robert W. Vishny, 106 *Quarterly Journal of Economics* 503 (1991).

"Rational Addiction and the Effect of Price on Consumption," with Gary S. Becker and Michael Grossman, 81 *American Economic Review* 237 (1991).

"Wages of College Graduates," in The Economics of American Higher Education, pp. 121-40, ed. William E. Becker and Darrell R. Lewis. Boston: Kluwer Academic Publishers (1992).

"Changes in Relative Wages, 1963-1987: Supply and Demand Factors," with Lawrence F. Katz, 107 *Quarterly Journal of Economics* 35 (1992).

"The Structure of Wages," with Finis Welch, 107 *Quarterly Journal of Economics* 285 (1992).

"The Transition to a Market Economy: Pitfalls of Partial Planning Reform," with Andrei Shleifer and Robert W. Vishny, 107 *Quarterly Journal of Economics* 889 (1992).

"The Division of Labor, Coordination Costs, and Knowledge," with Gary S. Becker, 107 *Quarterly Journal of Economics* 1137 (1992).

"Industrial Change and the Rising Importance of Skill" with Finis Welch, in Uneven Tides: Rising Inequality in America, pp. 101-132, ed. Peter Gottschalk and Sheldon Danziger. New York: Russell Sage Foundation Publications (1993).

"Wage Inequality and the Rise in Returns to Skill," with Chinhui Juhn and Brooks Pierce, 101 *Journal of Political Economy* 410 (1993).

"Occupational Change and the Demand for Skill, 1940-1990," with Finis Welch, 83 *American Economic Review* 122 (1993).

"Inequality and Relative Wages," with Finis Welch, 83 *American Economic Review* 104 (1993).

"Why Is Rent-Seeking So Costly to Growth?" with Andrei Shleifer and Robert W. Vishny, 83 *American Economic Review* 409 (1993).

"A Simple Theory of Advertising as a Good or Bad," with Gary S. Becker, 108 *Quarterly Journal of Economics* 941 (1993).

"Relative Wages and Skill Demand, 1940-1990," with Chinhui Juhn, in Labor Markets, Employment Policy, and Job Creation, pp. 343-60, ed. Lewis C. Solmon and Alec R. Levenson. The Milken Institute Series in Economics and Education. Boulder, CO: Westview Press (1994).

"Cattle Cycles," with Sherwin Rosen and Jose A. Scheinkman, 102 *Journal of Political Economy* 468 (1994).

"An Empirical Analysis of Cigarette Addiction," with Gary S. Becker and Michael Grossman, 84 *American Economic Review* 396 (1994).

"Inequality in Labor Market Outcomes: Contrasting the 1980s and Earlier Decades," with Chinhui Juhn, 1 *Economic Policy Review* 26 (1995).

"Employment and the 1990-91 Minimum Wage Hike," with Donald R. Deere and Finis Welch, 85 *American Economic Review* 232 (1995).

"Examining the Evidence on Minimum Wages and Employment," with Donald R. Deere and Finis Welch, in The Effects of the Minimum Wage on Employment, pp. 26-54, ed. Marvin H. Kosters. Washington, D.C.: The AEI Press (1996).

"Social Status, Education, and Growth," with Chaim Fershtman and Yoram Weiss, 104 *Journal of Political Economy* 108 (1996).

"Wage Inequality and Family Labor Supply," with Chinhui Juhn, 15 *Journal of Labor Economics* 72 (1997).

"Quality and Trade," with Andrei Shleifer, 53 *Journal of Development Economics* 1 (1997).

"Vertical Integration as a Self-Enforcing Contractual Arrangement," with Benjamin Klein, 87 *American Economic Review* 415 (1997).

"Unemployment and Nonemployment," with Robert H. Topel, 87 *American Economic Review* 295 (1997).

"Wages, Skills, and Technology in the United States and Canada," with W. Craig Riddell and Paul M. Romen, in General Purpose Technologies and Economic Growth, pp. 283-309, ed. Elhanan Helpman. Cambridge, MA: M.I.T. Press (1998).

"Perspectives on the Social Security Crisis and Proposed Solutions," with Finis Welch, 88 *American Economic Review* 142 (1998).

"Population and Economic Growth," with Gary S. Becker and Edward Glaeser, 89 *American Economic Review* 145 (1999).

"A Competitive Perspective on Internet Explorer," with Steven J. Davis, 90 *American Economic Review* 184 (2000).

"Industrial Change and the Demand for Skill," with Finis Welch, in The Causes and Consequences of Increasing Inequality, pp. 263-84, ed. Finis Welch. Volume II in the Bush School Series in the Economics of Public Policy. Chicago: The University of Chicago Press (2001).

"Wage Differentials in the 1990s: Is the Glass Half Full or Half Empty?" with Finis Welch, in The Causes and Consequences of Increasing Inequality, pp. 341-64, ed. Finis Welch. Volume II in the Bush School Series in the Economics of Public Policy. Chicago: The University of Chicago Press (2001).

"Economic Perspectives on Software Design: PC Operating Systems and Platforms," with Steven J. Davis and Jack MacCrisken, in Microsoft, Antitrust, and the New Economy: Selected Essays, pp. 361-420, ed. Davis S. Evans. Boston, MA: Kluwer (2001).

"Current Unemployment, Historically Contemplated," with Robert H. Topel and Chinhui Juhn, 1 *Brookings Papers on Economic Activity* 79 (2002).

"The Economics of Copyright 'Fair Use' in A Networked World," with Andres Lerner and Benjamin Klein, 92 *American Economic Review* 205 (2002).

"The Economic Value of Medical Research," with Robert H. Topel, in Measuring the Gains from Medical Research: An Economic Approach, pp. 41-73, ed. Robert H. Topel and Kevin M. Murphy. Chicago: The University of Chicago Press (2003).

"School Performance and the Youth Labor Market," with Sam Peltzman, 22 *Journal of Labor Economics* 299 (2003).

"Entrepreneurial ability and market selection in an infant industry: evidence from the Japanese cotton spinning industry," with Atsushi Ohyama and Serguey Braguinsky, 7 *Review of Economic Dynamics* 354 (2004).

"Entry, Pricing, and Product Design in an Initially Monopolized Market," with Steven J. Davis and Robert H. Topel, 112 *Journal of Political Economy* S188 (2004).

"Diminishing Returns: The Costs and Benefits of Increased Longevity," with Robert H. Topel, 46 *Perspectives in Biology and Medicine* S108 (2004).

"Persuasion in Politics," with Andrei Shleifer, 94 *American Economic Review* 435 (May 2004).

"Black-White Differences in the Economic Value of Improving Health," with Robert H. Topel, 48 *Perspectives in Biology and Medicine* S176 (2005).

"The Equilibrium Distribution of Income and the Market for Status," with Gary S. Becker and Iván Werning, 113 *Journal of Political Economy* 282 (2005).

"The Market for Illegal Goods: The Case of Drugs," with Gary S. Becker and Michael Grossman, 114 *Journal of Political Economy* 38 (2006).

"Competition in Two-Sided Markets: The Antitrust Economics of Payment Card Interchange Fees," with Benjamin Klein, Kevin Green, and Lacey Place, 73 *Antitrust Law Journal* 571 (2006).

"The Value of Health and Longevity," with Robert H. Topel, 114 *Journal of Political Economy* 871 (2006).

"Social Value and the Speed of Innovation," with Robert H. Topel, 97 *American Economic Review* 433 (2007).

"Education and Consumption: The Effects of Education in the Household Compared to the Marketplace," with Gary S. Becker, 1 *The Journal of Human Capital* 9 (Winter 2007).

"Why Does Human Capital Need a Journal?" with Isaac Ehrlich, 1 The Journal of Human Capital 1 (Winter 2007).

"Critical Loss Analysis in the Whole Foods Case," with Robert H. Topel, 3 (2) GCP Magazine (March 2008).

"Exclusive Dealing Intensifies Competition for Distribution," with Benjamin Klein, 75 Antitrust Law Journal (October 2008).

"Fertility Decline, the Baby Boom and Economic Growth," with Curtis Simon and Robert Tamura, 2 The Journal of Human Capital 3 (Fall 2008).

"The Market for College Graduates and the Worldwide Boom in Higher Education of Women," with Gary S. Becker and William H. J. Hubbard, 100 American Economic Review: Papers & Proceedings 229 (May 2010).

"Explaining the Worldwide Boom in Higher Education of Women," with Gary S. Becker and William H. J. Hubbard," 4 Journal of Human Capital No. 3 (2010).

"How Exclusivity is Used to Intensify Competition for Distribution-Reply to Zenger," with Benjamin Klein, 77 Antitrust Law Journal No. 2 (2011).

"Achieving Maximum Long-Run Growth," *Federal Reserve Bank of Kansas City Proceedings of the Annual Jackson Hole Conference 2011*.

"On the Economics of Climate Policy," with Gary. S. Becker and Robert. H. Topel, 10 *B.E. Journal of Economic Analysis and Policy* No. 2 (2011).

"Measuring Crack Cocaine and its Impact," with Roland G. Fryer, Jr., Paul S. Heaton, and Steven D. Levitt, 51 *Economic Inquiry* No. 3 (July 2013).

"Some Basic Economics of National Security," with Robert H. Topel, 103 *American Economic Review* No. 3 (2013).

"Activating *Actavis*: A More Complete Story," with Barry C. Harris, Robert D. Willig, and Matthew B. Wright, 28 *Antitrust* No. 2 (Spring 2014).

"Competitive Discounts and Antitrust Policy," with Edward A. Snyder and Robert H. Topel, Chapter 5 of *The Oxford Handbook of International Antitrust Economics*, Volume 2 (2014).

"Gary Becker as Teacher," 105 *American Economic Review* No. 5 (2015).

"Black and White Fertility, Differential Baby Booms: The Value of Equal Education Opportunity," with Robert Tamura and Curtis Simon, 82 *Journal of Demographic Economics*, Issue 1 (2016).

"Human Capital Investment, Inequality, and Economic Growth," with Robert H. Topel, 34 *Journal of Labor Economics,* No. S2/Part 2 (2016).

"A Theory of Intergenerational Mobility," with Gary S. Becker, Scott Duke Kominers, and Jörg L. Spenkuch, *Journal of Political Economy 126*, no. S1 (October 2018): S7-S25.

"Gary Becker Remembered," with James J. Heckman and Edward P. Lazear, J*ournal of Political Economy 126*, no. S1 (October 2018): S1-S6.

Sample of "The Power of the Economic Approach: Unpublished Manuscripts of Gary S. Becker," Edited by Julio J. Elías, Casey B. Mulligan, and Kevin M. Murphy, University of Chicago Press (Forthcoming). Journal of Human Capital 2019 13:2, 140-141.

Selected Working Papers

"Gauging the Economic Impact of September 11th," with Gary S. Becker, Unpublished Working Paper (October 2001).

"War In Iraq Versus Containment: Weighing the Costs," with Steven J. Davis and Robert H. Topel, NBER Working Paper No.12092 (March 2006).

"The Interaction of Growth in Population and Income," with Gary S. Becker, Unpublished Working Paper (2006).

"Persuasion and Indoctrination," with Gary Becker (2007).

"The Value of Life Near Its End and Terminal Care," with Gary S. Becker and Tomas Philipson (2007).

"On the Economics of Climate Policy," with Gary S. Becker and Robert H. Topel, Working Paper No. 234 (January 2010, Revised September 2010).

"The Manipulation of Children's Preferences, Old Age Support, and Investment in Children's Human Capital," with Gary S. Becker and Jörg L. Spenkuch, Unpublished Working Paper (February 2012).

"The Collective Licensing of Music Performance Rights: Market Power, Competition and Direct Licensing" (March 2013).

"Activating *Actavis* with A More Complete Model," with Michael G. Baumann, John P. Bigelow, Barry C. Harris, Janusz A. Ordover, Robert D. Willig, and Matthew B. Wright, (January 2014).

"A Theory of Bundling Advertisements in Media Markets," with Ignacio Palacios-Huerta, NBER Working Paper No. 229994 (December 2016).

Selected Comments

Comment on "Causes of Changing Earnings Equality" by Robert Z. Lawrence. Federal Reserve Bank of Kansas City (1998).

"Comment: Asking the Right Questions in the Medicare Reform Debate," Medicare Reform: Issues and Answers, pp. 175-81, ed. Andrew J. Rettenmaier and Thomas R. Saving. Chicago: The University of Chicago Press (2000).

Comment on "Social Security and Demographic Uncertainty" by Henning Bohn, in Risk Aspects of Investment-Based Social Security Reform, ed. John Y. Campbell and Martin Feldstein. Chicago: The University of Chicago Press (2001).

Comment on "High Technology Industries and Market Structure" by Hal R. Varian. Federal Reserve Bank of Kansas City (2001).

Popular Press Articles

"The Education Gap Rap," *The American Enterprise* (March-April 1990), pp. 62.

"Rethinking Antitrust," with Gary S. Becker, *Wall Street Journal* (February 26, 2001), A22.

"Prosperity Will Rise Out of the Ashes," with Gary S. Becker, *Wall Street Journal* (October 29, 2001), A22.

"The Economics of NFL Team Ownership," with Robert H. Topel, report prepared at the request of the National Football League Players' Association (January 2009).

Articles About Murphy

"Higher Learning Clearly Means Higher Earning," by Carol Kleiman. *Chicago Tribune*, March 12, 1989, Jobs Section pp. 1. Long article about "The Structure of Wages" with picture of Murphy.

"Why the Middle Class Is Anxious," by Louis S. Richman. *Fortune*, May 21, 1990, pp. 106. Extensive reference to Murphy's work on returns to education.

"Unequal Pay Widespread in U.S.," by Louis Uchitelle, *New York Times,* August 14, 1990, Business Day section pp. 1. Long piece on income inequality.

"One Study's Rags to Riches Is Another's Rut of Poverty," by Sylvia Nasar, *New York Times*, June 17, 1992, Business Section pp. 1. Long piece on the income inequality research.

"Nobels Pile Up for Chicago, but Is the Glory Gone?" by Sylvia Nasar, *New York Times* November 4, 1993, Business Section pp. 1. Long piece on Chicago School of economics. Featured a photo of five of the "brightest stars on the economics faculty" (including Murphy) and a paragraph about Murphy's research.

"This Sin Tax is Win-Win," by Christopher Farrell. *Business Week*, April 11, 1994, pp. 30. Commentary section refers to Murphy, Becker, and Grossman's work on rational addiction.

"Growing inequality and the economics of fragmentation," by David Warsh, *Boston Sunday Globe*, August 21, 1994, pp. A1. Two-page article with picture and biographical details about Murphy and his research; part of a series about "how the new generation replaced the old in economics."

"A Pay Raise's Impact," by Louis Uchitelle. *New York Times*, January 12, 1995, Business Section pp. 1. Article about consequences of proposed increase in the minimum wage. Articles featuring Murphy's comments on the minimum wage appeared in numerous other publications, including the *Chicago Tribune*; in addition, Murphy was interviewed on CNN (January 26, 1995).

"The Undereducated American," *Wall Street Journal*, August 19, 1996, A12. Changes in the rate of returns to education.

"In Honor of Kevin M. Murphy: Winner of the John Bates Clark Medal," by Finis Welch, 14 *Journal of Economic Perspectives* 193 (2000).

Testimony, Reports, and Depositions (Last 4 Years)

Deposition of Kevin M. Murphy, January 5, 2016, in the Matter of ABS Global, Inc. v. Inguran, LLC d/b/a Sexing Technologies and XY, LLC v Genus PLC, The United States District Court for the Western District of Wisconsin. Case No. 14-cv-503.

Supplemental Expert Report of Kevin M. Murphy, January 13, 2016, in the Matter of The Dial Corporation, Henkel Consumer Goods, Inc., H.J. Heinz Company, H.J. Heinz Company, L.P., Foster Poultry Farms, Smithfield Foods, Inc., HP Hood LLC, BEF Foods, Inc. and Spectrum Brands, Inc. v. News Corporation, News America Inc., News America Marketing FSI L.L.C., News America Marketing In-Store Services L.L.C., The United States District Court for the Southern District of New York. Case No. 13-cv-06802 (WHP).

Declaration of Kevin M. Murphy, January 26, 2016, in the Matter of ABS Global, Inc. v. Inguran, LLC d/b/a Sexing Technologies and XY, LLC v Genus PLC, The United States District Court for the Western District of Wisconsin. Case No. 14-cv-503.

Expert Report of Kevin M. Murphy, February 5, 2016, in the Matter of Moldex Metric, Inc. v. 3M Company and 3M Innovative Properties Company, The United States District Court for the District of Minnesota. Case No. 2014-cv-01821 (JNE/FLN).

Confidential Submission on Fractional Licensing to the U.S. Department of Justice in Connection with Modification of the ASCAP Consent Decree, February 12, 2016.

Deposition of Kevin M. Murphy, February 16, 2016, in the Matter of Moldex Metric, Inc. v. 3M Company and 3M Innovative Properties Company, The United States District Court for the District of Minnesota. Case No. 2014-cv-01821 (JNE/FLN).

Verified Statement of Kevin M. Murphy, March 7, 2016, Exhibit II-B-2 to CSXT Reply Evidence, In Re: STB Docket No. NOR 42142.

Expert Report of Kevin M. Murphy, March 8, 2016, in the Matter of ABS Global, Inc. v. Inguran, LLC d/b/a Sexing Technologies and XY, LLC v Genus PLC, The United States District Court for the Western District of Wisconsin. Case No. 14-cv-503.
Expert Report of Kevin M. Murphy, March 9, 2016, in the Matter of Lisa Watson, Wayne Miner, and James Easley, Individually and on Behalf of All Others Similarly Situated v. Philip Morris Companies, Inc. a corporation, and Philip Morris Incorporated, a corporation, in the Circuit Court of Pulaski County, Arkansas. Case No. CV03-4661.

Trial Testimony of Kevin M. Murphy, April 4, 2016, in the Matter of Dayna Craft (Withdrawn), Deborah Larsen, individually and on behalf of all others similarly situated v. Philip Morris USA Inc., a corporation, Missouri Circuit Court for the Twenty-Second Judicial District (City of St. Louis). Case No. 002-00406-02.

Reply Expert Report of Kevin M. Murphy, April 11, 2016, in the Matter of Kleen Products LLC, et al. v. International Paper, et al., The United States District Court for the Northern District of Illinois Eastern Division. Case No. 1:10-cv-05711.

Responsive Damages Report of Kevin M. Murphy, April 12, 2016, in the Matter of ABS Global, Inc. v. Inguran, LLC d/b/a Sexing Technologies and XY, LLC v. Genus PLC, The United States District Court for the Western District of Wisconsin. Case No. 14-cv-503.

Deposition of Kevin M. Murphy, May 2, 2016, in the Matter of ABS Global, Inc. v. Inguran, LLC d/b/a Sexing Technologies and XY, LLC v. Genus PLC, The United States District Court for the Western District of Wisconsin. Case No. 14-cv-503.

Verified Statement of Kevin M. Murphy, July 26, 2016, In Re: STB Docket No. 704 (Sub-No. 1), Review of Commodity, Boxcar, and TOFC/COFC Exemptions.

Expert Report of Kevin M. Murphy, July 29, 2016, In Re Biogen '755 Patent Litigation, The United States District Court for the District of New Jersey. Civil Action No. 10-2734 (CCC/JAD).

Trial Testimony of Kevin M. Murphy, August 3, 2016 and August 12, 2016, in the Matter of ABS Global, Inc. v. Inguran, LLC d/b/a Sexing Technologies and XY, LLC v. Genus PLC, The United States District Court for the Western District of Wisconsin. Case No. 14-cv-503.

Expert Report of Kevin M. Murphy, September 23, 2016, in the Matter of First Impressions Salon, Inc., Roy Mattson, Belle Foods Trust, Bankruptcy Estate of Yarnell's Ice Cream Company, Inc., Piggly Wiggly Midwest LLC and KPH Healthcare Services, Inc., aka Kinney Drugs, Inc. et.al. v. National Milk Producers Federation, Cooperatives Working Together, Dairy Farmers of America, Inc., Land O'Lakes, Inc., Dairylea Cooperative Inc., Agri-Mark, Inc. d/b/a Cabot Creamery Cooperative, Inc., The United States District Court for the Southern District of Illinois. Case No. 3:13-cv-00454-NJR-SCW.

Verified Statement of Kevin M. Murphy, October 26, 2016, In Re: STB Docket EP 711 (Sub-No. 1), Reciprocal Switching.

Expert Report of Kevin M. Murphy, November 21, 2016, in the Matter of Valassis Communications, Inc. v. News America Inc., a/k/a News America Marketing Group, News America Marketing FSI, Inc., a/k/a News America Marketing FSI LLC, and News America Marketing In-Store Services, Inc. a/k/a News America Marketing In-Store

Services, LLC, The United States District Court for the Eastern District of Michigan, Southern Division. Case No. 2-06-cv-10240-AJT-MJH.

Deposition of Kevin M. Murphy, December 2, 2016 and December 3, 2016, In Re Biogen '755 Patent Litigation, The United States District Court for the District of New Jersey. Civil Action No. 10-2734 (CCC/JAD).

Trial Testimony of Kevin M. Murphy, December 7, 2016 and December 8, 2016, in the Matter of US Airways, Inc. v. Sabre Holdings Corp., Sabre, Inc., and Sabre Travel International Ltd., The United States District Court for the Southern District of New York. Case No. 1:11-cv-02725-MGC.

Expert Report of Kevin M. Murphy, February 23, 2017, in the Matter of 1-800 Contacts, Inc., Before the Federal Trade Commission, Office of Administrative Law Judges, United States of America. Docket No. 9372.

Expert Report of Kevin M. Murphy, March 1, 2017, in the Matter of Gene R. Romero, et al. v. Allstate Insurance, et al., The United States District Court for the Eastern District of Pennsylvania. Case No. 01-3894 (consolidated with other matters) (E.D. Pa.).

Deposition of Kevin M. Murphy, March 16, 2017, in the Matter of 1-800 Contacts, Inc., Before the Federal Trade Commission, Office of Administrative Law Judges, United States of America. Docket No. 9372.

Deposition of Kevin M. Murphy, March 27, 2017, in the Matter of Gene R. Romero, et al. v. Allstate Insurance, et al., The United States District Court for the Eastern District of Pennsylvania. Case No. 01-3894 (consolidated with other matters) (E.D. Pa.).

Supplemental Expert Report of Kevin M. Murphy, April 3, 2017, in the Matter of Parallel Networks Licensing, LLC v. Microsoft Corporation, The United States District Court for the District of Delaware. Case No. 13-2073-SLR.

Expert Report of Kevin M. Murphy, April 3, 2017, in the Matter of Optical Disc Drive Products Litigation (Acer America Corp., et al. v. Lite-On Corporation, et al.), The United States District Court for the Northern District of California, San Francisco Division. No. 3:10-md-2143, RS 5:13-cv-04991.

Expert Report of Kevin M. Murphy, April 3, 2017, in the Matter of Optical Disc Drive Products Litigation (Dell Inc. and Dell Products L.P., v. Hitachi, Ltd., et al.), The United States District Court for the Northern District of California, San Francisco Division. No. 3:10-md-2143 RS.

Expert Report of Kevin M. Murphy, April 3, 2017, in the Matter of Optical Disc Drive Products Litigation (Hewlett-Packard Company v. Toshiba Corporation, et al.), The United States District Court for the Northern District of California, San Francisco Division. MDL No. 2143, No. 3:13-cv-05370 RS.

Expert Report of Kevin M. Murphy, April 3, 2017, in the Matter of Optical Disc Drive Products Litigation (Ingram Micro Inc., et al. v. LG Electronics, Inc., et al.), The United States District Court for the Northern District of California, San Francisco Division. No. 3:10-md-2143 RS.

Expert Report of Kevin M. Murphy, April 3, 2017, in the Matter of Optical Disc Drive Products Litigation (All Indirect Purchaser Actions), The United States District Court for the Northern District of California, San Francisco Division. No. 3:10-md-2143 RS.

Expert Report of Kevin M. Murphy, April 3, 2017, in the Matter of Optical Disc Drive Products Litigation (Alfred H. Siegel v. Sony Corporation, et al. and Peter Kravitz v. Sony Corporation, et al.), The United States District Court for the Northern District of California, San Francisco Division. No. 3:10-md-2143 RS.

Deposition of Kevin M. Murphy, April 30, 2017 and May 1, 2017, in the Matter of Optical Disc Drive Products Litigation, The United States District Court for the Northern District of California, San Francisco Division. No. 3:10-md-2143 RS.

Trial Testimony of Kevin M. Murphy, May 10, 2017 and May 11, 2017, in the Matter of 1-800 Contacts, Inc., Before the Federal Trade Commission, Office of Administrative Law Judges, United States of America. Docket No. 9372.

Expert Report of Kevin M. Murphy, July 3, 2017, in the Matter of Blue Cross Blue Shield Antitrust Litigation (MDL No.: 2406), The United States District Court for the Northern District of Alabama Southern Division. Master File No. 2:13-CV-20000-RDP.

Deposition of Kevin M. Murphy, July 22, 2017, in the Matter of Blue Cross Blue Shield Antitrust Litigation (MDL No.: 2406), The United States District Court for the Northern District of Alabama Southern Division. Master File No. 2:13-CV-20000-RDP.

Expert Report of Kevin M. Murphy, August 25, 2017, in the Matter of Gene R. Romero, et al. v. Allstate Insurance, et al., The United States District Court for the Eastern District of Pennsylvania. Case No. 01-3894 (consolidated with other matters) (E.D. Pa.).

Expert Rebuttal Report of Kevin M. Murphy, September 18, 2017, in the Matter of Gene R. Romero, et al. v. Allstate Insurance, et al., The United States District Court for the Eastern District of Pennsylvania. Case No. 01-3894 (consolidated with other matters) (E.D. Pa.).

Expert Report of Kevin M. Murphy, November 3, 2017, in the Matter of Valassis Communications, Inc. v. News Corporation, News America Marketing, a/k/a News America Incorporated, a/k/a News America Marketing Group, a/k/a News America Marketing FSI L.L.C., a/k/a News America Marketing FSI, Inc.; and News America Marketing In-Store Services L.L.C., a/k/a News America Marketing In-Store Services, Inc., The United States District Court for the Southern District of New York. Case No. 1:17-cv-07378-PKC.

Deposition of Kevin M. Murphy, January 17, 2018, in the Matter of Valassis Communications, Inc. v. News Corporation, News America Marketing, a/k/a News America Incorporated, a/k/a News America Marketing Group, a/k/a News America Marketing FSI L.L.C., a/k/a News America Marketing FSI, Inc.; and News America Marketing In-Store Services L.L.C., a/k/a News America Marketing In-Store Services, Inc., The United States District Court for the Southern District of New York. Case No. 1:17-cv-07378-PKC.

Verified Statement of Kevin M. Murphy, January 19, 2018, In Re Biogen '755 Patent Litigation, The United States District Court for the District of New Jersey. Civil Action No. 10-2734 (CCC/JAD).

Trial Testimony of Kevin M. Murphy, February 1, 2018, In Re Biogen '755 Patent Litigation, The United States District Court for the District of New Jersey. Civil Action No. 10-cv-2734 (CCC/JBC).

Expert Report and Testimony of Kevin M. Murphy, February 28, 2018 in the Matter of Washington Metropolitan Area Transit Authority and Amalgamated Transit Union Local 689, Interest Arbitration Under Sections 66(C) Of the WMATA Compact, The United States District Court for the District of Columbia.

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Expert Report of Kevin M. Murphy, July 30, 2018, in the Matter of Daniel Gordon, et al. v. Amadeus IT Group, S.A. et al. The United States District Court for the Southern District of New York. Civ. A. No. 1:15-cv-05457-KPF.

Declaration of Kevin M. Murphy, August 16, 2018, in the Matter of Genentech, Inc., Biogen, Inc., Hoffmann-La Roche Inc., and City of Hope v. Celltrion, Inc., Celltrion Healthcare Co., Ltd., Teva Pharmaceuticals USA, Inc., and Teva Pharmaceuticals International GmbH, The United States District Court for the District of New Jersey. Civ. A. No. 18-cv-00574 (RMB) (KMW).

Expert Report of Kevin M. Murphy, September 21, 2018, in the Matter of Certain Memory Modules and Components Thereof, International Trade Commission, Washington, DC 20436. No. 337-TA-1089.

Reply Declaration of Kevin M. Murphy, September 26, 2018, in the Matter of Genentech, Inc., Biogen, Inc., Hoffmann-La Roche Inc., and City of Hope v. Celltrion, Inc., Celltrion Healthcare Co., Ltd., Teva Pharmaceuticals USA, Inc., and Teva Pharmaceuticals International GmbH, The United States District Court for the District of New Jersey. Civ. A. No. 18-cv-00574 (RMB) (KMW).

Expert Rebuttal Report of Kevin M. Murphy, October 9, 2018, in the Matter of Certain Memory Modules and Components Thereof, International Trade Commission, Washington, DC 20436. No. 337-TA-1089.

Deposition of Kevin M. Murphy, October 29, 2018, in the Matter of Certain Memory Modules and Components Thereof, International Trade Commission, Washington, DC 20436. No. 337-TA-1089.

Confidential Submission to the U.S. Department of Justice, Economic Considerations for Modification and Termination of the ASCAP Consent Decree, October 30, 2018.

Expert Report of Kevin M. Murphy, March 1, 2019, in the Matter of First Impressions Salon, Inc., Roy Mattson, KPH Healthcare Services, Inc., d/b/a Kinney Drugs, Inc. and Piggly Wiggly Midwest, LLC. v. National Milk Producers Federation, Cooperatives Working Together, Dairy Farmers of America, Inc., Land O'Lakes, Inc., Dairylea Cooperative Inc., Agri-Mark, Inc. d/b/a Cabot Creamery Cooperative, Inc., The United States District Court for the Southern District of Illinois. Case No. 3:13-cv-00454-SCW.

Expert Report of Kevin M. Murphy, March 15, 2019, in the Matter of Robert Binz V, Michael Binz, Leslie Clemenson, William Clynes, Andrew Margolick, Gregory Melita, and Nili Sinai-Nathan v. Amadeus IT Group, S.A., Amadeus North America, Inc., Amadeus Americas, Inc., Sabre Corporation f/k/a Holdings Corporation, Sabre Holdings Corporation, Sabre GLBL Inc., Sabre Travel International Limited, Travelport Worldwide Limited, and Travelport LP d/b/a Travelport, The United States District Court for the Southern District of New York. Civ A. No. 1:15-cv-05457-KPF.

Verified Statement of Kevin M. Murphy, April 25, 2019, On Behalf of Union Pacific Railroad Company in NAFCA vs. Union Pacific Railroad Company, Before the Surface Transportation Board. STB Docket No. NOR 42144.

Deposition of Kevin M. Murphy, May 9, 2019, in the Matter of Robert Binz V, Michael Binz, Leslie Clemenson, William Clynes, Andrew Margolick, Gregory Melita, and Nili Sinai-Nathan v. Amadeus IT Group, S.A., Amadeus North America, Inc., Amadeus Americas, Inc., Sabre Corporation f/k/a Holdings Corporation, Sabre Holdings Corporation, Sabre GLBL Inc., Sabre Travel International Limited, Travelport Worldwide Limited, and Travelport LP d/b/a Travelport, The United States District Court for the Southern District of New York. Civ A. No. 1:15-cv-05457-KPF.

Expert Report of Kevin M. Murphy, May 10, 2019, in the Matter of National Prescription Opiate Litigation (MDL No. 2804), The United States District Court for the Northern District of Ohio Eastern Division. Case No. 17-op-5004 and Case No. 18-op-45090. (Corrected and Restated Expert Report filed June 21, 2019).

Expert Report of Kevin M. Murphy, May 10, 2019, In Re Packaged Seafood Products Antitrust Litigation (Associated Wholesale Grocers, Inc. v. Bumble Bee Foods, LLC et al.), In the United States District Court of the Southern District of California. No. 15-md-2670.

Expert Report of Kevin M. Murphy, May 10, 2019, In Re Packaged Seafood Products Antitrust Litigation (W. Lee Flowers & Co., Inc. v. Bumble Bee Foods LLC, et al.), In the United States District Court of the Southern District of California. No. 15-md-2670.

Expert Report of Kevin M. Murphy, May 10, 2019, In Re Packaged Seafood Products Antitrust Litigation (Winn-Dixie Stores, Inc. and Bi-Lo Holding, LLC. v. Bumble Bee Foods, LLC et al.), In the United States District Court of the Southern District of California. No. 15-md-2670.

Expert Addendum Report of Kevin M. Murphy, May 24, 2019, In Re Packaged Seafood Products Antitrust Litigation (Affiliated Foods Midwest Cooperative, Inc. v. Bumble Bee Foods LLC, et al.), In the United States District Court of the Southern District of California. No. 15-md-2670.

Deposition of Kevin M. Murphy, June 6, 2019, in the Matter of National Prescription Opiate Litigation (MDL No. 2804), The United States District Court for the Northern District of Ohio Eastern Division. Case No. 17-op-5004 and Case No. 18-op-45090.

Expert Report of Kevin M. Murphy, June 10, 2019, In Re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation, In the United States District Court for the Eastern District of New York. No. 05-md-1720 (MKB) (JO).

Deposition of Kevin M. Murphy, June 25, 2019, In Re Packaged Seafood Products Antitrust Litigation, In the United States District Court of the Southern District of California. No. 15-md-2670.

Expert Report of Kevin M. Murphy, July 15, 2019, in the Matter of Blue Cross Blue Shield Antitrust Litigation (MDL No.: 2406), The United States District Court for the Northern District of Alabama Southern Division. Master File No. 2:13-CV-20000-RDP.

Submission to the U.S. Department of Justice, Economic Considerations for Modification and Termination of the ASCAP Consent Decree, August 9, 2019.

Expert Report of Kevin M. Murphy, November 15, 2019, In Re Dealer Management Systems Antitrust Litigation, MDL 2817, The United States District Court for the Northern District of Illinois Eastern Division. No. 1:18-CV-00864. (Corrected and Restated Expert Report filed January 15, 2020).

Expert Report of Kevin M. Murphy, December 6, 2019, in the Matter of North American Soccer League, LLC v. United States Soccer Federation, Inc., and Major League Soccer, LLC, In the United States District Court for The Eastern District of New York. No. 1:17-cv-05495-MKB-ST.

Expert Report of Kevin M. Murphy, December 20, 2019, in the Matter of The United States of America v. Sabre Corporation, Sabre GLBL Inc., Farelogix, Inc., and Sandler Capital Partners V, L.P., In the United States District Court for The District of Delaware. No: 1:19-cv-01548-LPS.

Expert Rebuttal Report of Kevin M. Murphy, January 3, 2020, in the Matter of The United States of America v. Sabre Corporation, Sabre GLBL Inc., Farelogix, Inc., and Sandler Capital Partners V, L.P., In the United States District Court for The District of Delaware. No: 1:19-cv-01548-LPS.

Expert Rebuttal Report of Kevin M. Murphy, January 10, 2020, in the Matter of The United States of America v. Novelis Inc. and Aleris Corporation, In the United States District Court for the Northern District of Ohio. No.: 1:19-cv-02033-CAB.

Expert Reply Report of Kevin M. Murphy, January 15, 2020, in the Matter of The United States of America v. Sabre Corporation, Sabre GLBL Inc., Farelogix, Inc., and Sandler Capital Partners V, L.P., In the United States District Court for The District of Delaware. No: 1:19-cv-01548-LPS.

Deposition of Kevin M. Murphy, January 18, 2020, in the Matter of The United States of America v. Sabre Corporation, Sabre GLBL Inc., Farelogix, Inc., and Sandler Capital Partners V, L.P., In the United States District Court for The District of Delaware. No: 1:19-cv-01548-LPS.

Deposition of Kevin M. Murphy, January 21, 2020, and January 22, 2020, In Re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation, In the United States District Court for the Eastern District of New York. No. 05-md-1720 (MKB) (JO).

Deposition of Kevin M. Murphy, January 24, 2020, In Re Dealer Management Systems Antitrust Litigation, MDL 2817, The United States District Court for the Northern District of Illinois Eastern Division. No. 1:18-CV-00864.

Deposition of Kevin M. Murphy, January 27, 2020, in the Matter of The United States of America v. Novelis Inc. and Aleris Corporation, In the United States District Court for the Northern District of Ohio. No.: 1:19-cv-02033-CAB.

Expert Report of Kevin M. Murphy, February 3, 2020, In Re Opioid Litigation, In the Supreme Court of the State of New York County of Suffolk. Index No.:400001/2017, Index No.: 400008/2017, and Index No.: 400016/2018.

Trial Testimony of Kevin M. Murphy, February 3, 2020, in the Matter of The United States of America v. Sabre Corporation, Sabre GLBL Inc., Farelogix, Inc., and Sandler Capital Partners V, L.P., In the United States District Court for The District of Delaware. No: 1:19-cv-01548-LPS.

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Deposition of Kevin M. Murphy, February 19, 2020, In Re Opioid Litigation, In the Supreme Court of the State of New York County of Suffolk. Index No.:400001/2017, Index No.: 400008/2017, and Index No.: 400016/2018.

Arbitration Testimony of Kevin M. Murphy, February 25, 2020, in the Matter of The United States of America v. Novelis Inc. and Aleris Corporation, In the United States District Court for the Northern District of Ohio. No.: 1:19-cv-02033-CAB.

EXHIBIT KM-2

AMERICAN ECONOMIC ASSOCIATION

< John Bates Clark Medal

John Bates Clark Medal

One of the most prestigious and eagerly anticipated AEA awards, the John Bates Clark Medal is awarded annually each April (formerly biennially from 1947-2009) to that American economist under the age of forty who is judged to have made the most significant contribution to economic thought and knowledge. If there is a significant body of joint work, the Clark Medal may be awarded jointly to two recipients. Established as an American prize, it is sufficient that the candidate works in the US at the time of the award and US citizenship is not required.

2020 Clark Medalist Melissa Dell

The Clark medal brings notable professional benefits, and several winners have gone on to become Nobel Laureates.

2020: Melissa Dell

2019: Emi Nakamura

2018: Parag Pathak

2017: Dave Donaldson

2016: Yuliy Sannikov

2015: Roland Fryer

2014: Matthew Gentzkow

2013: Raj Chetty

2012: Amy Finkelstein

2011: Jonathan Levin

2010: Esther Duflo

2009: Emmanuel Saez

2007: Susan C. Athey

2005: Daron Acemoglu

2003: Steven Levitt

2001: Matthew Rabin

1999: Andrei Shleifer

1997: Kevin M. Murphy

1995: David Card

1993: Lawrence H. Summers

1991: Paul R. Krugman

1989: David M. Kreps

1987: Sanford J. Grossman

1985: Jerry A. Hausman

1983: James J. Heckman

1981: A. Michael Spence

1979: Joseph E. Stiglitz

1977: Martin S. Feldstein

1975: Daniel McFadden

1973: Franklin M. Fisher

1971: Dale W. Jorgenson

1969: Marc Leon Nerlove

1967: Gary S. Becker

1965: Zvi Griliches

1963: Hendrik S. Houthakker

1961: Robert M. Solow

1959: Lawrence R. Klein

1957: Kenneth J. Arrow

1955: James Tobin

1953: No Award

1951: Milton Friedman

1949: Kenneth E. Boulding

1947: Paul A. Samuelson

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EXHIBIT KM-3

Redacted – Third Party Designated Confidential Information

EXHIBIT KM-4

- **Request Information (/products-services/request-proposal)**
- **FAQ (/faq)**

About Us

Afilias' specialized technology makes Internet addresses more accessible and useful through a wide range of applications, including Internet domain registry services, Managed DNS and award-winning mobile Web services.

Afilias Successfully Transitions .BZ Domain

"We are pleased to expand our relationship with Afilias to now include an entire suite of reliable and secure registry services for the operation of the .BZ domain," said Juan Carlos Namis, General Manager of University Management Ltd. "Afilias has been an excellent partner and we believe they will bring excellent registry services to the .BZ domain. Further, Afilias has strong relationships with global registrars, and can help them fully capitalize on BZ's potential as a home for businesses on the Web."

Afilias successfully completed the transition of more than 35,000 .BZ domains from UML's existing provider on 26 April 2006 and has assumed responsibilities for all back-office registry services. This includes providing a shared registration system enabling registrars to submit real-time registration requests, a public WHOIS service, and DNS resolution. Afilias will also help .BZ expand its presence in the global domain market, enabling all ICANN-accredited and Afilias-authorized registrars to offer a variety of ccTLD's through a common EPP interface.

"BZ is an excellent addition to Afilias' growing family of domains," said Hal Lubsen, President & CEO of Afilias. "BZ is a domain that signifies business around the world, and Afilias is pleased to be able to provide this domain and its users with world-class technology to suit the needs of the business community for reliable and secure domains upon which they can build their Internet brand."

About .BZ

.BZ is the dedicated country code top-level domain for the country of Belize, a Central American/Caribbean nation. It is an unrestricted domain that is available for anyone to register. .BZ domains are inherently useful for anyone looking to promote their "business" on the Web. The letters "BZ" internationally signify business and therefore make a .BZ address a useful, and affordable solution for individuals, organizations, or other groups to promote their "business" on the Internet.

About University Management Ltd.

UML is a private commercial registry established to manage Belize's ccTLD "dot.BZ". UML also provides other Internet services such as Web hosting, e-mail, co-location servers and IT training. University Management Ltd. is a joint proprietorship between Wind & Sea Ltd. and the University of Belize. For more information please visit **http://www.bz (http://www.bz/)**

About Afilias

Afilias Limited, a leading global provider of domain name registry services, maintains international headquarters in Dublin, Ireland, sales offices in London, England, sales and operational facilities in Toronto, Canada, administrative offices in the U.S. near Philadelphia, PA, and operational offices in New Delhi, India. Afilias provides a full range of registry services leveraging proven technology that is fast, reliable and secure. Afilias provides registry services support to the .ORG gTLD (under contract to Public Interest Registry), the .INFO gTLD, and several country code and sponsored TLDs.

Deutsch (/de/news/2006/05/01/afilias-schlie%C3%9Ft-%C3%BCbernahme-der-bz-domain-erfolgreich-ab)

In the News

- Device usage stats for Ireland, iOS rules, Windows Phone fairs badly (http://irelandstechnologyblog.com/home/device-usage-stats-for-ireland-ios-rules-windows-phone-fairs-badly/)
- Afilias confirms public availability for .BET domains (http://www.igamingbusiness.com/news/afilias-confirms-public-availability-bet-domains)

more (/ar/news/media-coverage)

About Afilias (/ar/about-us)
Products & Services (/ar/products-services)
Careers (/ar/node/2121)
Directors of the Company (/ar/biographies/directors-company)
Management (/ar/biographies/executive-officers)
Policies (/ar/node/2936)
Sustainability (/ar/node/2146)
Domain Name Registry Services (/ar/global-registry-services)
gTLDs (/ar/global-registry-services/gtlds)
ccTLDs (/ar/global-registry-services/ctlds)
IDN e-mail (/ar/idnemail)
ZoneHawk (/ar/node/4086)
New Top Level Domains (/ar/global-registry-services/new-tlds)
Afilias' New Domains (/ar/node/3061)
dotBrand Services (/ar/dotbrand)
Managed Registry Services (/ar/node/2461)
Mobile & Web Services (/ar/mobile/deviceassure)
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mobiReady (/ar/mobile/deviceassure)
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- Afilias Email Newsletter (/ar/node/2386)
- Afilias Facebook Link (http://www.facebook.com/dotINFO)
- Afilias Twitter Link (http://www.twitter.com/Afilias)
- Afilias YouTube Link (http://www.youtube.com/user/AfiliasLimited)
- Afilias LinkedIn Link (http://www.linkedin.com/companies/afilias)
- Afilias Google+ (https://plus.google.com/106277859905372813285?prsrc=3)

EXHIBIT KM-5

DOMAIN INCITE

Afilias bought .io for $70 million

Kevin Murphy, November 9, 2018, 21:59:02 (UTC), Domain Registries

Did you know Afilias owns .io? I didn't, but it paid $70 million for the popular alternative TLD 18 months ago.

A recently published financial statement in Ireland shows that the company spent $70.17 million cash — a 10x revenue multiple — for 100% of Internet Computer Bureau Ltd in April 2017.

ICB runs .io, .ac and .sh, the ccTLDs for the British Indian Ocean Territories (.io), Ascension Island (.ac), and Saint Helena, Ascension and Tristan Da Cunha (.sh).

Afilias has never publicly announced the deal, and I haven't seen it reported elsewhere, so I thought it was worth blogging up here.

At the time, the deal was characterized to registrars as a back-end contract win.

But it seems that Afilias actually purchased the back-end provider, then migrated (not as smoothly as it usually does) the TLDs over to its own infrastructure.

That would have opened up .io to all the registrars already plugged in to Afilias' TLDs, potentially greatly increasing its reach.

But it's probably not just the back-end Afilias has acquired.

Would a registry service provider spend 10 times annual revenue on a ccTLD back-end contractor, unless it had a damn good reason to believe that it would be able to at least recoup its investment, either through a long-term contract or some other mechanism?

It's quite possible Afilias actually bought the .io ccTLD Manager.

The ccTLD Manager listed by ICANN in the IANA database is "IO Top Level Domain Registry", but "c/o Sure (Diego Garcia) Limited". That changed a week or so ago from "IO Top Level Domain Registry, Cable & Wireless"

Sure is the arm of telecommunications firm Cable & Wireless that provides internet access to remote islands in various parts of the world.

I don't know what "IO Top Level Domain Registry" is.

Afilias tells me confidentiality arrangements are in place.

.io has proven popular as a TLD for technology startup companies that couldn't get the .com they wanted.

Across its small portfolio, ICB was a $6.9 million business last year, but .io, with a reported 270,000 domains, must account for the large majority of that.

Due to the timing of the deal, ICB contributed $5.3 million to Afilias' top line and was the main reason its revenue grew last year, its 2017 accounts reveal.

RECENT POSTS

World's youngest country launches its Nazi-risk TLD next week

Is ICANN chickening out of Whois access role?

Irony alert! Data protection agency complains it can't get access to private Whois data

ICANN dissenter explains why she wanted .org sale approved

CSC removes reference to "retiring" new gTLD domain after retiring new gTLD domain

Google launches .meet gTLD after Meet service goes free during lockdown

Aussie ccTLD surges under coronavirus lockdown

Spring Break redux! ICANN picks Cancun for 2023 meeting

ICANN's .org decision was NOT unanimous, and it was made in secret

Donuts kicks down .place fences after attempt at innovation

.org sale officially dead

Afilias promotes .vote domains amid US vote-by-mail controversy

After Zoom trolling, ICANN 68 will be password-

RECENT COMMENTS

Shaun:
whata.me.ss... read more

lifesavings.online:
Ain't that Some Shit?... read more

Dan:
This seems like a SSAD state of affairs (had to be done..) Is there any precedence for ICANNs roll being expanded via... read more

Theo Geurts:
Reminds me somewhat of the case of Microsoft Ireland vs the US DOJ https://en.wikipedia.org/wiki/Microsoft_Corp._v._Uni... read more

Volker:
The new domain honestly looks like alphabet soup. Who is going to remember that string. The earlier one was better,

protected
Despite Brexit, .eu actually returned to growth in Q1
ICANN whistleblower expects to be fired after alleging budget irregularities, bugged meetings
Portugal ccTLD says growth better than expected during pandemic
The .org deal may be dead and buried, but calls remain for PIR to lose its contract
“Dangerous precedent” as ICANN rejects $1.13 billion .org buyout
ICANN may scrap its $0.18 reg tax in coronavirus “solidarity”
Domain industry likely to suffer from coronavirus as ICANN slashes budget by 8%
Decision on .org deal may come sooner than you think
ICANN meeting got “Zoombombed” with offensive material
CentralNic does not expect big coronavirus impact as it posts almost-doubled revenue for 2019
Verisign expects to sell fewer domains because of coronavirus
Coronavirus lockdown is working out great for at least one registry
Coronavirus could cause “high risk of widespread outages”, ICANN says
Free domains registrar gets FOURTH breach notice
Four more dot-brands join the gTLD deadpool
As ICANN meets to decide .org’s fate, California AG says billion-dollar deal must be rejected
Whois privacy talks in Bizarro World as governments and trademark owners urge coronavirus delay
GoDaddy signs up 30 partners to lockdown-era marketing scheme
Kuala Lumpur meeting cancelled and ICANN 68 could be even trickier online
Five SAFE ways to buy and sell domains during the coronavirus pandemic
To show new focus on registry, Uniregistry dumps “registry” from its brand. Um…
No ICANN tax relief for Chinese registrars
ICANN declares coronavirus a “natural disaster” to protect expired domains
Ethos clarifies .org price rises, promises to reveal number of censored domains
End of the road for Neustar as GoDaddy U-turns again and buys out its registry biz
ICANN to consider cancelling ICANN 68 tomorrow
Coronavirus: more delay and free domains for .gay
CentralNic seeing no impact from coronavirus

In 2017, Afilias saw revenue grow from $106.7 million to $113.6 million. Profit before tax was down slightly, from $38.6 million to $36 million

Again, that was due largely to ICB, which contributed $1.4 million of red ink to the bottom line.

Afilias is a private company, by the way, which is why these numbers all refer to 2017. It’s the final full year of it being based in Ireland, before its move to the US for tax reasons.

The disclosure also reveals that Afilias took a 45% stake in Dot Global, manager of the .global gTLD registry, in December 2017.

Dot Global had revenue of $1.9 million and a $320,000 loss last year, the report states.

doMEn, the Montenegro ccTLD (.me) operator in which Afilias has a 36.85% share, made a profit of $2.59 million on revenue of $7.39 million, it says. Both of those numbers were down slightly on 2016.

Afilias also says in the filing that it expects revenue to be down in 2018, due to the renegotiation of back-end contracts. I gather the contract with Public Interest Registry, which reportedly could cost about $10 million a year, is the main problem.

Given the accounts were signed off in May this year, it seems that this decline is expected despite the lucrative .au ccTLD contract, which Afilias signed at the end of 2017.

Related posts (automatically generated):

Afilias retains .org back-end deal

Afilias sues India to block $12 million Neustar back-end deal

101domain founders suing Afilias over unpaid $1 million after $15.5 million acquisition

Tweet

Tagged: .ac, .sh, afilias, internet computer bureau, io, public interest registry

COMMENTS (13)

Rob Hall
November 10, 2018 at 2:53 am

Great win for Afilias. Super smart.

Only downside I see is it puts .io squarely in the jurisdiction of the US courts and takedown court orders.

I think .io was often considered one of the ccTLD’s that was fairly immune from typical takedown procedures.

Reply

Mark Thorpe
November 10, 2018 at 3:39 am

Afilias gives .io stability, but shady (crypto) .io domain owners won’t like Afilias owning the .io registry. Harder to do scams etc.

Reply

Matt Nordhoff
November 10, 2018 at 9:15 am

The so-called British Indian Ocean Territory was stolen by the British to build an American military base. It’s fitting for its ccTLD to follow a similar path.

Reply

Kevin Murphy
November 10, 2018 at 10:44 pm

I have mentioned this before.

http://domainincite.com/18181-start-ups-protest-the-dark-side-of-io

Reply

alth... read more

Konstantinos Zournas:
LOL! Nice one... They tried to "fix" it and brought more attention to it.... read more

gpmgroup:
The problem is the very flawed agreement between ICANN and its contracted new gTLD registries being foisted on legacy gT... read more

Jean Guillon:
FairWinds Partners, which offers the same kind of Corporate domain name management services (including new gTLDs) operat... read more

Bob Banker:
It was a bank error. They agreed to not go public with the "error" after further investigation.... read more

convergence:
leading edge... read more

Voice Acting:
If you are sitting around all day at home, "Hey, I want to start a business! Let me buy a domain name."... read more

Kyle-K:
Makes you wonder how much this was helped along by the promotional giveaway done by one of the largest registrars in Aus... read more

parse:
Moroccan Dirham... read more

Dan:
Have any examples of supposed "innovation" in the new gTLD space actually panned out?... read more

John:
Excluding all forms of competition is a violation of US competition laws. ICANN’s agreement with the registry operators... read more

gpmgroup:
Every one in ICANN knows (or should know) that domains are not substitutable the cost to move i.e. design, stationery, s... read more

Mark Thorpe:
ICANN never walks a straight line and tells the whole truth, so them saying the entire Board stands by this decision, bu... read more

John:
Where are the statements from the other ICANN board members? Who attended these secret meetings? Jones Day and JJ li... read more

Avri Doria:
I have not worked for either PIR or Donuts, or any other contracted party, since before I joined the Board. This was a p... read more

DomainBoss:
Hundreds of thousands a year in huge salaries and fun at public expense. Then these guys have the nerve to call ICANN... read more

DomainBoss:
I am just glad that this Anti-Public deal was finally rejected. ICANN has done first good thing in their entire exis... read more

DomainBoss:
There is hardly any place for .place TLD in domaining as new GTDs like these are failing more and more.... read more

DomainBoss:
It is ICANN's moral and ethical duty to transfer the control of .ORG registry away from disgraced ISOC/PIR combo to anot... read more

Mogreen:
Hmmm - wonder why Avri Doria voted in favor of the sale Avri Doria is a research consultant. Her professional activit... read more

John:
So Jon Nevett is telling everyone “PIR is no longer for sale to any other party” If that was the case – why did Jon N... read more

Jack:
.org now needs a new steward. PIR doesn't care at all about .org registrants and was willing to throw all non profits... read more

Rob:
If I were PIR, I would raise prices for a .org to $ 19.99 immediately. ISOC lost out on a huge endowment fund. The... read more

Chris Bell:
Surely at an internet convention the name given to us at birth is our fake name, while the name we made up ourselves is ... read more

Theo Geurts:
Since ICANN participation is open to everyone and their dog, anyone can apply to a WG or a public session or IRT. Settin... read more

Mr James Stevens
March 10, 2019 at 7:10 pm

https://www.theguardian.com/world/2019/feb/25/un-court-rejects-uk-claim-to-sovereignty-over-chagos-islands

The UN recently order the UK to give back the islands …. what implications this could have for dot-IO one can only guess.

dot-UY (Yugoslavia) was dropped when it ceases to exist.

Reply

Kevin Murphy
March 10, 2019 at 10:11 pm

I broke this news a couple weeks ago.
http://domainincite.com/23957-un-ruling-may-put-io-domains-at-risk

Reply

Mr James Stevens
March 11, 2019 at 11:10 am

You're right, so you did – sorry I missed it.

Reply

Mr James Stevens
March 10, 2019 at 7:08 pm

"I don't know what "IO Top Level Domain Registry" is."

My research suggests it doesn't exist and never has.

Reply

Mr James Stevens
March 11, 2019 at 11:27 am

I just found the answer in the nic.io T&Cs

"IO Top Level Domain Registry and NIC.IO are trading names of Internet Computer Bureau Limited relating to the management and operation of the .IO top level domain name."

It's just a department of ICB and has nothing to do with Sure or Cable & Wireless at all.

https://www.nic.io/terms.htm

Reply

Mr James Stevens
March 11, 2019 at 12:43 pm

The names behind ICB ….

https://beta.companieshouse.gov.uk/company/03226374/officers

You'll recognise a few names here … "TM DOMAIN REGISTRY LIMITED"

https://beta.companieshouse.gov.uk/company/04323414/officers

Reply

Mr James Stevens
March 11, 2019 at 12:50 pm

Interestingly, Mr & Mrs Kane's "Correspondence address" is "Mecklenburgh House, Mecklenburgh Square, London, WC1N 2AD", but the land registry have no record of that property existing.

https://www.gov.uk/search-property-information-land-registry

Reply

Mr James Stevens
March 10, 2019 at 7:23 pm

This press release from 2017 seems oddly worded, considering they bought ICB !!!???!?!

https://www.internetnews.me/2017/04/12/afilias-wins-contract-run-backend-registry-services-io-ac-sh/

"Afilias Wins Contract to Run Backend Registry Services for .io, .ac and .sh
April 12, 2017 by Michele Neylon

Steve GOBIN:
LOL... read more

Owen:
The earliest reference re: government ID I could find was ICANN61: "All attendees will be required to present valid gove... read more

John:
Given the nature of these allegations, I find it concerning ICANN does not show this particular request on their website... read more

John:
Why was this particular reqeust not published on ICANN's DIDP Requests and Responses" page? How many other requests t... read more

lifesavings.online:
Vaguely related: President Trump is using http://share.djt.app to promote campaign. It forwards to his .com but that ... read more

Owen:
ICANN started requiring government IDs to obtain name badges several years ago- perhaps it was ICANN57 in Hyderabad?... read more

Alfonso Bedoya:
"The only reason the DIDP (pdf) is in the public domain at all is that Sudowski copied it to the mailing list of the Emp... read more

David:
Do it with any other termination but not .Com .Net .Org They shouldn't be a privatization for them.... read more

Rubens Kuhl:
I was sure it was a rick-roll, but I was wrong.... read more

Antony Van Couvering:
Oh, the ironies... Some may recall that ICANN was set up in response to another Internet governance effort, the gTLD-... read more

Brad Mugford:
No, the "dangerous precedent" was handing over a legacy extension to a brand new private equity company with no track re... read more

John Berryhill:
Here: https://www.youtube.com/watch?v=UO1T9dkWCL8... read more

Rubens Kuhl:
Where can I find the Ethos statement in full ?... read more

Domenclature.com:
Ouch!!... read more

John Berryhill:
The full Ethos statement is much better than the excerpt above, especially the part about "wicked thieving Hobbitses ste... read more

Chris Bell:
Both ICANN and the Attorney General did the right thing, by defending the interests of the registrants eventually. I... read more

Mark Thorpe:
"Ethos responded angrily almost immediately" No one feels bad for you.... read more

Konstantinos Zournas:
Yeah, I forgot to include Michele Neylon to my list of useful idiots... Sorry about this. https://onlinedomain.com/2... read more

Ciera Hutson:
Wow. This article. It's just wrong- let me count the ways....... read more

Andrew:
Which one company in the world will benefit the most from this rebate ? Yes the same company asking for it (Godaddy... read more

Richard Funden:
By Gabthars hammer, what a savings!... read more

Jack:
The .ORG deal is DEAD. Otherwise ICANN will be smashed by the California Attorney General and it's the last (bad) dec... read more

Mark Thorpe:
The .ORG deal should already be rejected by now!... read more

Samit:
I'll be extremely surprised if the sale doesn't go through. Public comment and objections are being ignored for every... read more

Bub:
Not sure domain investors are opposed to Ethos. But a slew of major nonprofits, some senior and respected politicians, t... read more

Brad Mugford:
A better show of "solidarity" would be for ICANN to side with the vast majority of stakeholders and quit making

Afilias has won the contract to run the backend registry services for a number of country code domain extensions. The new contract will see Afilias handling the technical side of .io, .ac and .sh which are currently run in-house by The Internet Computer Bureau."

Reply

Kevin Murphy
March 10, 2019 at 10:11 pm

That's not a press release from Afilias, it's a blog post from a registrar, I believe based on what the registrars were told by Afilias at the time of the handover.

Reply

ADD YOUR COMMENT

Name (required)

Mail (will not be published) (required)

Web site (optional)

Submit Comment

decision... read more

Konstantinos Zournas:
Yes, let's look at the $30-40 million and leave the $2-3 billion untouched.... read more

Brad Mugford:
Looks like ICANN might need more shady kickbacks, like in the Verisign .COM extension... Brad... read more

Michiel Henneke:
As the author of the original piece I'd like to add: most entrepreneurs going online now are working local, regional or ... read more

Ron Andruff:
My personal view, from experience and observation: This action (resign before your fired) was LOOOOONNNNGGG over due. Th... read more

Chris:
A lot of existing businesses have also been unable to make money from their stores, while there has been a large increas... read more

James Gannon:
Went off without a hitch for the record... read more

Voice Acting:
People got ideas, they got time, and they are home. A great combination for domain registrations.... read more

John:
But the key issue is that there is no "balanced consensus" in the ICANN multi-stakeholder model anymore. ICANN is no lo... read more

Acro:
What an elite group of privileged bureaucrats!... read more

John Berryhill:
Once again, it is time to shift gears from.... "If ICANN doesn't do (insert demand here), then government authorities... read more

Rubens Kuhl:
Most EU ccTLD models have all the features BC, IPC and GAC don't like, including treating legal and natural persons the ... read more

Konstantinos Zournas:
There is now a new deadline: May 4. This is also a very important point: "My office is also concerned that the .ORG ... read more

lifesavings.online:
A lot of it is about a loan. I wrote so during the very earliest days on one of these blogs. Somone's back is against... read more

Chris:
At ICANN they love to reinvent the wheel. But within the EU there are already at least 27 GDPR compliant whois models in... read more

lifesavings.online:
We need whois. Law enforcement, as stated. Why should icann be the only ones to know? They aren't doing anything to shut... read more

Observer:
So you're saying that someone who is now working out of their home due to this pandemic situation can't acquire an expir... read more

Rubens Kuhl:
Because that's the foreseen moment to exit and cash out.... read more

page howe:
hmm im not sure the harm to a possible potential new owner will compare to the loss of long time names to current owners... read more

Green Jobs:
This is hilarious... thanks for sharing!... read more

Adam:
Late for April Fool's but love it.... read more

price

PIR thinks 20-year domain regs are a good idea

Amazon beats South America! Dot-brand contracts now signed

Q3 industry growth driven by .tk, .com and .icu

ICANN throws out second .org appeal, so URS stays

Warning (or threat?) prices must go up or .org will suffer DAYS of downtime

Russian company approved as gTLD escrow provider

Guy gets 14 years for trying to steal a domain with a gun

GoDaddy girls often make more money than the men

Non-coms want .org's future carved in stone

Kamel's deputy gets promoted at ICANN

ICANN delays approval of .org acquisition

AlpNames died months ago. Why is it still the "most-abused" registrar?

Ethos promises to keep .org for many many many many years

Amid .org controversy, Cerf predicts the death of all domains

#SaveDotOrg to hold public web conference tomorrow with Ethos execs

As pricey .new launches, Google reveals first set of big-name users including rapper Drake

Three more dot-brands fizzle out. Total now 69, dudes

Are ISOC's claims about .org's history bogus?

Criminal .uk suspensions down this year

EXHIBIT KM-6

Redacted – Third Party Designated Confidential Information

EXHIBIT KM-7

10-K 1 gddy-12312016x10k.htm 10-K

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2016
or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from __________ to __________
Commission File Number: 001-36904

GoDaddy Inc.

(Exact name of registrant as specified in its charter)

Delaware	**46-5769934**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification Number)

14455 N. Hayden Road
Scottsdale, Arizona 85260
(Address of principal executive offices, including zip code)

(480) 505-8800
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Class A Common Stock, par value $0.001 per share	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer (Do not check if a smaller reporting company)	☐	Smaller reporting company	☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of June 30, 2016, the aggregate market value of the registrant's Class A common stock held by non-affiliates, based upon the closing sales price for the registrant's Class A common stock as reported by the New York Stock Exchange, was $1,476,049,440. For the purpose of calculating the aggregate market value of shares held by non-affiliates, we have assumed that all outstanding shares are held by non-affiliates, except for shares beneficially owned by each of our executive officers, directors and 5% or greater stockholders. In the case of 5% or greater stockholders, we have not deemed such stockholders to be affiliates unless there are facts and circumstances indicating that such stockholders exercise any control over our company. This determination of affiliate status is not necessarily a conclusive determination for any other purpose.

As of February 24, 2017, there were 89,672,472 shares of GoDaddy Inc.'s Class A common stock, $0.001 par value per share, outstanding and 78,409,899 shares of GoDaddy Inc.'s Class B common stock, $0.001 par value per share, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Definitive Proxy Statement relating to the Annual Meeting of Stockholders are incorporated by reference into Part III of this Annual Report on Form 10-K where indicated. Such Definitive Proxy Statement will be filed with the Securities and Exchange Commission within 120 days after the end of the registrant's fiscal year ended December 31, 2016.

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GoDaddy Inc.
Annual Report on Form 10-K
Year Ended December 31, 2016

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NOTE ABOUT FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K, including the sections titled "Business," "Risk Factors," "Use of Proceeds" and "Management's Discussion and Analysis of Financial Condition and Results of Operations," contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, involving substantial risks and uncertainties. The words "believe," "may," "will," "potentially," "plan," "estimate," "continue," "anticipate," "intend," "project," "expect" and similar expressions conveying uncertainty of future events or outcomes are intended to identify forward-looking statements. These statements include, among other things, those regarding:

- our ability to continue to add new customers and increase sales to our existing customers;
- our ability to develop new solutions and bring them to market in a timely manner;
- our ability to timely and effectively scale and adapt our existing solutions, including GoCentral;
- our dependence on establishing and maintaining a strong brand;
- the occurrence of service interruptions and security or privacy breaches;
- system failures or capacity constraints;
- the rate of growth of, and anticipated trends and challenges in, our business and in the market for our products;
- our future financial performance, including our expectations regarding our revenue, cost of revenue, operating expenses, including changes in technology and development, marketing and advertising, general and administrative and customer care expenses, and our ability to achieve and maintain, future profitability;
- our ability to continue efficiently acquiring customers, maintaining our high customer retention rates and maintaining the level of our customers' lifetime spend;
- our ability to provide high quality Customer Care;
- the effects of increased competition in our markets and our ability to compete effectively;
- our ability to grow internationally;
- the impact of fluctuations in foreign currency exchange rates on our business and our ability to effectively manage the exposure to such fluctuations;
- our ability to effectively manage our growth and associated investments;
- our ability to integrate recent or potential future acquisitions, including our proposed acquisition of Host Europe Holdings Limited (HEG);
- the transaction costs in connection with our acquisition of HEG;
- the timing of and our ability to consummate our acquisition of HEG;
- our ability to maintain our relationships with our partners;
- adverse consequences of our substantial level of indebtedness;
- our ability to maintain, protect and enhance our intellectual property;
- our ability to maintain or improve our market share;
- sufficiency of cash and cash equivalents to meet our needs for at least the next 12 months;
- beliefs and objectives for future operations;
- our ability to stay in compliance with laws and regulations currently applicable to, or which may become applicable to, our business both in the United States (U.S.) and internationally;
- economic and industry trends or trend analysis;
- the attraction and retention of qualified employees and key personnel;
- the amount and timing of any payments we make under tax receivable agreements (TRAs) or for tax distributions;
- the future trading prices of our Class A common stock;

as well as other statements regarding our future operations, financial condition, prospects and business strategies.

NOTE ABOUT FORWARD-LOOKING STATEMENTS (continued)

We operate in very competitive and rapidly-changing environments, and new risks emerge from time-to-time. It is not possible for us to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the forward-looking events discussed in this report may not occur, and actual results could differ materially and adversely from those implied in our forward-looking statements.

You should not rely upon forward-looking statements as predictions of future events. Although we believe the expectations reflected in our forward-looking statements are reasonable, we cannot guarantee the future results, levels of activity, performance or events and circumstances described in the forward-looking statements will be achieved or occur. Neither we, nor any other person, assume responsibility for the accuracy and completeness of the forward-looking statements. We undertake no obligation to publicly update any forward-looking statements for any reason after the date of this report to conform such statements to actual results or to changes in our expectations, except as required by law. Given these risks and uncertainties, readers are cautioned not to place undue reliance on such forward-looking statements.

Unless expressly indicated or the context suggests otherwise, references to GoDaddy, we, us and our refer to GoDaddy Inc. and its consolidated subsidiaries, including Desert Newco, LLC and its subsidiaries (Desert Newco). We refer to Kohlberg Kravis Roberts & Co. L.P. (together with its affiliates, KKR), Silver Lake Partners (together with its affiliates, Silver Lake) and Technology Crossover Ventures (together with its affiliates, TCV) collectively as the Sponsors. We refer to YAM Special Holdings, Inc. as YAM. We refer to Robert R. Parsons, the sole beneficial owner of YAM, our founder and a member of our board of directors, as Bob Parsons.

Part I.

Item 1. Business

Our customers have bold aspirations—the drive to be their own boss, write their own story and take a leap of faith to pursue their dreams. Launching that brewery, running that wedding planning service, organizing that fundraiser, expanding that web-design business or whatever sparks their passion. We are inspired by our customers, and are dedicated to helping them turn their powerful ideas into meaningful action. Our vision is to radically shift the global economy toward life-fulfilling independent ventures.

Overview

Our nearly 15 million customers are people and organizations with vibrant ideas—businesses, both large and small, entrepreneurs, universities, charities and hobbyists. They are defined by their guts, grit and determination to transform their ideas into something meaningful. They wear many hats and juggle many responsibilities, and they need to make the most of their time. Our customers need help navigating today's dynamic Internet environment and want the benefits of the latest technology to help them succeed. We are a trusted partner and champion for organizations of all sizes in their quest to build successful online ventures.

We are a leading technology provider to small businesses, web design professionals and individuals, delivering simple, easy-to-use cloud-based products and outcome-driven, personalized Customer Care. We operate the world's largest domain marketplace, where our customers can find that unique piece of digital real estate perfectly matching their idea. We provide website building, hosting and security tools to help customers easily construct and protect their online presence. As our customers grow, we provide applications and access to relevant third party products helping them connect to their customers, manage and grow their businesses and get found online.

Our customers need help navigating today's dynamic Internet environment and want the benefits of the latest technology to help them succeed. The increase in broadband penetration, mobile device usage and the need for presence across search engines, content destinations, listing providers (e.g. Yelp), e-commerce sites and social media channels create both opportunities and challenges for them. We offer products and solutions to help our customers tackle this rapidly changing technology landscape. We develop the majority of our products internally and believe our solutions are among the best in the industry in terms of breadth, performance, functionality and ease of use.

Often technology companies force their customers to choose between technology and support, delivering one but not the other. At GoDaddy, we don't believe our customers should have to choose and strive to deliver both great technology and great customer support. We believe engaging with our customers in a proactive, consultative way helps them knock down the technology hurdles they face. Through the thousands of conversations we have with our customers every day, we receive valuable feedback enabling us to continually evolve our products and solutions and respond to their changing needs.

Our people and unique culture have been integral to our success. We live by the same principles that enable new ventures to survive and thrive: hard work, perseverance, conviction, an obsession with customer satisfaction and a belief that no one can do it better. We take responsibility for driving successful outcomes and are accountable to our customers, which we believe has been a key factor in enabling our rapid customer and revenue growth. We believe we have one of the most recognized technology brands in the U.S.

Our Size and Scale

Our combination of easy-to-use cloud-based products, personalized Customer Care, a powerful brand and a unique culture have helped us build an attractive business with strong financial performance.

- We are the global market leader in domain name registration—a key on-ramp to establishing a business online in our connected economy—with more than 63 million domains under management as of December 31, 2016. According to VeriSign's Domain Name Industry Brief, we had 19% of the world's domains registered as of June 30, 2016.
- As of December 31, 2016, we had nearly 15 million customers and added approximately 1 million customers in 2016.
- As of December 31, 2016, we had nearly 800,000 customers who each spent more than $500 a year.

- In each of the five years ended December 31, 2016, our customer retention rate exceeded 85% and our retention rate for customers who had been with us for over three years was approximately 90%.
- In 2016, we generated $2,155 million in total bookings, up 12.6% (or approximately 13.8% on a constant currency basis) from $1,914 million in 2015. In 2016, we had $1,848 million of revenue, up 15.0% (or approximately 16.7% on a constant currency basis) from $1,607 million in 2015.
- As of December 31, 2016, we provided localized solutions in 56 markets. For the year ended December 31, 2016, approximately 28% of our total bookings were attributable to customers outside of the U.S.
- Our highly-rated Customer Care team of more than 4,100 specialists, including more than 1,100 outside the U.S., is focused on providing high-quality, personalized care. As a result of their ongoing dialogue with customers, our Customer Care team also drives bookings and in 2016 generated approximately 24% of our total bookings.

Our Market

Our customers represent a large and diverse market which we believe is largely underserved. According to the U.S. Small Business Administration, there were approximately 28 million small businesses in 2012. Based on data from the 2012 U.S. Census Bureau and the U.S. Small Business Administration, over 85% of small businesses have fewer than five employees and approximately 23 million, or over 75% of, small businesses were non-employer firms. Furthermore, the Kauffman Index of Entrepreneurial Activity Report estimated that in 2015 there were approximately 530,000 new business owners created each month in the U.S. Moreover, according to a study performed by the International Finance Corporation and McKinsey Company, there are more than 420 million micro, small and medium enterprises (defined as one to 250 employees) worldwide. We believe our addressable market extends beyond small businesses and includes individuals and organizations, such as universities, charities and hobbyists.

Despite the ubiquity and importance of the Internet to individual consumers, many small businesses and organizations have remained offline given their limited resources and inadequate tools. We believe approximately 60% of small businesses do not have a website. However, as proliferation of mobile devices blurs the online/offline distinction into an "always online" world, having an impactful online presence is becoming a "must have" for small businesses worldwide.

What it means for small businesses and ventures to be online continues to evolve. Only a few years ago, an online presence typically consisted of a simple and static website with basic information, perhaps supported by limited search engine marketing. Today, having an effective online presence requires much more, including a secure and content rich website viewable from any device; presence on social media sites and an increasing number of horizontal and vertical marketplaces (e.g. Yelp and OpenTable); branded email communication; online marketing; and Internet-enabled reservation and scheduling capabilities. In addition, other needs such as telephony, invoicing, payment processing, and accounting and tax preparation, which are typically separate point solutions, can now increasingly be linked to the front-end.

The shift toward dynamic online presence for small business has been fueled by the emergence of simple, yet powerful, cloud-based technologies that can easily be utilized by individuals with limited technical skills. Cloud technologies have helped enable the integration of front and back-end activities. Cloud-based products, which can be "rented" on a monthly or yearly basis, allow a business to more easily scale from a nascent idea to a thriving venture. The Parallels SMB Cloud Insights for Global 2014 report estimates the cloud market for small business was $62 billion in 2013, and will double by 2016, growing to $125 billion.

Our Customers

Our customers share common traits, such as tenacity and determination, yet their specific needs vary depending on the type and stage of their ventures. They range from individuals who are thinking about starting a business to established ventures that are up and running but need help attracting customers, growing their sales, managing their business or expanding their operations. While our customers have differing degrees of resources and technical capabilities, they all share a desire to bring their ideas to life. Our customers are united by a number of common characteristics: entrepreneurial spirit, strong work ethic and, above all, passion for their ventures.

Our target customers are primarily local service-based businesses. Most of our customers have fewer than five employees and most identify themselves as having little to no technology skills. They need our help to give their businesses a unique and secure digital identity and tools to help them stay connected with their customers.

To serve our customers well at every phase of their ventures, we group them into multiple stages of growth, starting with "nascent" and evolving to "established and content." We have also identified special groups like the "digital commerce" group, which is made up of web-savvy individuals who utilize digital commerce platforms as their primary business vehicles. We also serve a group of customers consisting of web-designers and web-developers—who we call "Web Pros"—who are in the business of building, designing and managing the online presence of others. Each of these groups is unique in their needs, and we personalize our solutions to meet them at each stage in their lifecycle.

Our Opportunity—What Successful Ventures Need

Our customers are consumers themselves and use the Internet to get informed, research and shop for solutions, which makes them keenly aware of the need to have an impactful online presence. While our customers' needs change depending on where they are in their lifecycle, the most common customer needs we serve include:

- **Getting online and looking great**. Our customers want to find a name perfectly identifying their business, hobby or passion. Once they have a name, they want to create a digital identity so their customers can find, engage and transact with them online. We believe a complete digital identity includes an elegant, mobile-enabled website and the ability to get found across various search engines, social media platforms and vertical marketplaces.
- **Growing their business and running their operations**. Our customers need to communicate with their existing customers and find new customers. They also need tools to help them run their businesses, from telephony, productivity and marketing tools to getting paid and balancing their books. In today's online world, these activities can now increasingly be linked to a customer's online presence.
- **Easy-to-use products with help from a real person when needed**. Our customers want easy-to-use products and sometimes they need help from real people to set up their website, launch a new feature or try something new. We build products that are intuitive for beginners to use, yet robust and feature-rich to address the needs of expert designers and power-users. We also provide high quality, consultative Customer Care and advise our customers as needed.
- **Technology that grows with them**. Our customers need a simple platform and set of tools enabling their domain, website and other solutions to easily work together as their venture grows and becomes more complex. The right platform can meet the needs of both an entrepreneur who is not technologically savvy and a Web Pro with a more complex set of requirements.
- **Reliability, security and performance**. Our customers expect reliable products and want to be confident their digital presence is secure. Our customers work on their ventures whenever and however they can and need solutions fitting their lifestyle and schedule.
- **Affordable solutions**. Our customers often have limited financial resources and are unable to make large, upfront investments in the latest technology. Our customers need affordable solutions leveling the playing field and giving them the tools to look and act like bigger ventures.

Our Solution—What We Do and How We Do It

We built GoDaddy to serve our customers by providing elegant, easy-to-use cloud-based products wrapped with personalized Customer Care. Our customers turn to us in order to:

- **Get a great domain name**. Every great idea needs a great name. Staking a claim with a domain name has become the first step in establishing an idea and presence online. When inspiration strikes, we are there to provide our customers with high-quality search, discovery and recommendation tools as well as the broadest selection of domains to help them find the right name for their venture.
- **Turn their domain into a dynamic online presence**. Our products, including GoCentral, enable anyone to build an elegant website or online store, for both desktop and mobile, regardless of technical skill. Our products, powered by a unified cloud platform, enable our customers to get found online by helping to enhance the information on their website and extending their website and its content to where they need to be, from search engine results (e.g. Google) to social media (e.g. Facebook) to vertical marketplaces (e.g. Yelp and FourSquare), all from one location. For more technically-sophisticated web designers, developers and customers, we provide high-performance, flexible hosting and security products that can be used with a variety of open source design tools. We design these solutions to be easy to use, effective, reliable, flexible and a great value.

- **Add back-office and marketing products**. Our customers want to spend their time on what matters most to them, selling their products or services or helping their customers do the same. We provide them with productivity tools such as domain-specific email, online storage and invoicing and payment solutions to help run their ventures. We also provide robust marketing products, such as email marketing, to help them attract and retain customers.
- **Use our products together in a solution that grows with our customers over time**. Our API-driven technology platform is built on state-of-the-art, open source technologies like Hadoop, OpenStack and other large-scale, distributed systems. Simply put, we believe our products work well together and are more valuable and easier to use together than if our customers purchased them individually from other companies and tried to integrate them. Additionally, our platform allows our developers to innovate new and enhanced products or product features assembled from common building blocks leading to faster deployment cycles.
- **Receive assistance from our highly-rated Customer Care team**. Our Customer Care team consists of more than 4,100 specialists who are available 24/7/365 and are capable of providing care to customers having different levels of technical sophistication. Our specialists are evaluated on customer outcomes and the quality of the experience they provide. We strive to provide high-quality, consultative care and deliver a distinctive experience helping us create loyal customers who renew their subscriptions, purchase additional products and refer their family and friends to us.
- **Utilize a reliable, secure, global technology platform and infrastructure**. In 2016, we handled on average nearly 18 billion DNS queries per day and hosted approximately 10 million websites on servers located throughout our worldwide data centers. We focus on online security, customer privacy and reliable infrastructure to address the evolving needs of our customers.
- **Receive high value**. We price most of our products at a few dollars per month while providing our customers with robust features and functionality. We believe our high-quality products and personalized Customer Care provide our customers with an affordable bridge between their available resources and their aspirations.

Our Advantages—Why We Win

We believe the following strengths provide us with competitive advantages in realizing the potential of our opportunity:

- **We are the leading domain name marketplace, a key on-ramp in establishing a digital identity**. We are the global market leader in domain name registration. According to VeriSign's Domain Name Industry Brief, we held over 19% of the approximately 335 million worldwide domain names under management as of June 30, 2016. As of December 31, 2016, we had more than 63 million domains under management.
- **We combine an integrated cloud-technology platform with rich data science**. At our core, we are a product and technology company. As of December 31, 2016, we had 922 engineers, 193 issued patents and 186 pending patent applications in the U.S. Our investments in technology and development and our data science capabilities enable us to innovate and deliver a personalized experience to our customers.
- **We operate an industry-leading Customer Care team that also drives bookings**. We give our customers much more than typical customer support. Our team is unique, blending personalized Customer Care with the ability to evaluate our customers' needs, which allows us to help and advise them as well as drive incremental bookings. Our Customer Care team contributed approximately 24% of our total bookings in 2016. Our customers respond to our personalized approach with high marks for customer satisfaction. Our proactive Customer Care model is a key component helping create long-term customer relationships, which is reflected in our high retention rates.
- **Our brand and marketing efficiency**. We believe GoDaddy is one of the most recognized technology brands in the U.S. Through a combination of cost-effective direct-marketing, brand advertising and customer referrals, we have increased our total customers from 10.2 million as of December 31, 2012 to 14.7 million as of December 31, 2016.
- **Our financial model**. Our stable and predictable business model is driven by efficient customer acquisition, high customer retention rates and increasing lifetime spend. In each of the five years ended December 31, 2016, our customer retention rate exceeded 85% and our retention rate for customers who had been with us for over three years was approximately 90%. We believe the breadth and depth of our product offerings and the high quality and responsiveness of our Customer Care team builds strong customer relationships and are keys to our high level of customer retention.
- **Our people and our culture**. We are a company whose people embody the grit and determination of our customers. Our world-class engineers, scientists, designers, marketers and Customer Care specialists share a passion for technology and its ability to change our customers' lives. We value hard work, extraordinary effort, living passionately,

taking intelligent risks and working together toward successful customer outcomes. Our relentless pursuit of doing right for our customers has been a crucial ingredient of our growth.

- **Our scale**. We have achieved significant scale in our business enabling us to efficiently acquire new customers, serve our existing customers and continue to invest in growth.
  - In 2016, we generated $2,155 million in total bookings up from $1,250 million in 2012, representing a compound annual growth rate (CAGR) of 15%.
  - In 2016, we had $1,848 million of revenue up from $911 million in 2012, representing a CAGR of 19%.
  - In 2016, we had $387 million of net cash provided by operating activities.
  - In the five years ended December 31, 2016, we invested to support our growth with $1,190 million in technology and development expenses and $871 million in marketing and advertising expenses.

Our Strategy—How We Grow

We are pursuing the following principal strategies to drive our business:

- **Expand and innovate our product offerings**. Our product innovation priorities include:
  - ***Delivering the next generation of naming***. The first generation of naming included a limited set of generic top-level domains (gTLDs), such as .com and .net, and country code top-level domains (ccTLDs), such as .uk and .in. With approximately 335 million existing domains registered, it may be increasingly difficult for customers to find the name best suiting their needs. As a result, ICANN began introducing more than 1,300 new gTLDs in late 2013. We merchandise hundreds of these newer gTLDs, including new generic options (e.g. .shop and .blog) as well as names geared toward professions (e.g. .photography), personal interests (e.g. .club), geographies (e.g. .london, .nyc and .vegas) and just plain fun (e.g. .ninja). Additionally, we have invested to expand the secondary market to help match buyers to sellers who already own domains. Our GoDaddy Investor mobile application helps investors watch and bid on domains at auction and stay on top of current bids from their mobile devices. We continue to invest in search, discovery and recommendation tools and transfer protocols for both primary and secondary domains.
  - ***Powering elegant and effortless presence***. We continue to invest in tools, templates and technology to make building, maintaining and updating a professional looking mobile or desktop website simple and easy. Additionally, we are investing in products to help our customers drive their customer acquisition efforts by managing their presence across search engines, social networks and vertical marketplaces and keep their online presence and information secure. We recently launched GoCentral, a new service combining a mobile-optimized website builder with an integrated set of marketing and e-commerce tools to help our customers create an audience for their idea or business, enabling them to design a professional website in under an hour.
  - ***Making the business of business easy***. Our business applications range from domain-specific email and email marketing to telephony services and payment tools to help our customers communicate with their customers and grow their ventures. We intend to continue investing in the breadth of our product offerings to help our customers connect with their customers and run their ventures.
- **Win the Web Pros**. We are investing in building a suite of tools and services for web designers and developers to help them save time, make money and exceed client expectations. These client management tools include administrative access and shopping features making it easier for designers and developers to buy and manage products for their clients. We have further bolstered our Web Pro-focused suite through recent acquisitions, strengthening our site management capabilities and technical support and extending our reach into the WordPress community.
- **Go global**. As of December 31, 2016, approximately 34% of our customers were located in international markets, notably Canada, India and the United Kingdom. We have made significant investments in the localization of our service offerings in markets outside of the U.S. and, as of December 31, 2016, we offered localized products and Customer Care in 56 markets. To support our international growth, we will continue investing to develop our local capabilities across products, marketing programs, data centers and Customer Care. Our recent international acquisitions, including our proposed acquisition of HEG, are an important part of this international growth.
- **Partner up**. Our flexible platform also enables us to acquire companies and quickly launch new products for our customers, including through partnerships such as Microsoft Office 365 for email and PayPal for payments. We have

also acquired companies and technologies to complement our product and service offerings and expand our geographic footprint. We intend to continue identifying value-added technology acquisition targets and partnership opportunities.

- **Make it personal**. We seek to leverage data and insights to personalize the product and Customer Care experiences of our customers as well as tailor our solutions and marketing efforts to each of our customer groups. We are constantly seeking to improve our website, marketing programs and Customer Care to intelligently reflect where customers are in their lifecycle and identify their specific product needs. We intend to continue investing in our technology and data platforms to further enable our personalization efforts.
- **Wrap it with Care**. We believe our highly-rated Customer Care team is distinctive and essential to the lifetime value proposition we offer our customers. We continue to invest in our Customer Care team, including investing to expand our Customer Care service, improve the quality of our Customer Care resources and introduce enhanced tools and processes across our expanding global footprint.

Products

We have designed and developed an extensive set of easy-to-use cloud-based technology products enabling our customers to establish a digital presence, connect with their customers and manage their ventures. We understand our customers' needs vary depending on the type and stage of their venture, which is why we offer our products both independently and bundled as suites of integrated products designed for specific activities.

Our domain name registration products enable us to engage customers at the initial stage of establishing a digital identity and act as an on-ramp for our other products. We believe our hosting, presence and business applications products increase our revenue and margin growth opportunities, frequently serve as starting points for our customer relationships, improve customer retention and significantly improve our value proposition to customers.

Domains

We are the global market leader in domain name registration. Securing a domain is a necessary first step to creating a digital identity and our domain products often serve as the starting point in our customer relationships. As of December 31, 2016, more than 93% of our customers had purchased a domain from us, and as of December 31, 2016, we had more than 63 million domains under management. In 2016, 2015 and 2014, we generated approximately 50%, 52% and 55% of our total revenue, respectively, from sales of our domain products.

Our primary domains product offerings are:

Primary Registrations. Using our website or mobile application, we offer customers the ability to search for and register available domain names, or primary registrations, with the relevant registry. Our inventory for primary registrations is defined by the number of top-level domains (TLDs) we offer. As of December 31, 2016, 391 different gTLDs (e.g. .com, .net and .org) and 50 different ccTLDs (e.g. .de, .ca, .in and .jp.) were available for purchase through our primary registration product. Since 2013, new gTLDs have been periodically launched, including names geared toward professions (e.g. .photography), personal interests (e.g. .guru), geographies (e.g. .london, .nyc and .vegas) and just plain fun (e.g. .ninja). These new gTLDs make it easier for companies and individuals to find and register new, easy-to-remember domain names tailored to their ventures, industry or interests that may not have been available in the relatively crowded, traditional gTLDs such as .com. ccTLDs are important to our international expansion efforts as we have found international customers often prefer the ccTLD for the country or geographic market in which they operate. Our primary registration offering relies heavily on our search, discovery and recommendation tools which enable our customers to find a name matching their needs. We also sell domain registrations through relationships with third-party resellers.

A*ftermarket*. We operate the world's largest domain aftermarket which processes aftermarket, or secondary, domain name sales. Our aftermarket platform, which we substantially supplemented through our acquisition of Afternic in 2013, is designed to enable the seamless purchase and sale of an already registered domain name through an online auction, an offer and counter-offer transaction or a "buy now" transaction. In 2015 and 2016, we acquired more than 430,000 domain names to increase the inventory available to our customers. In January 2016, we launched the GoDaddy Investor mobile application to help investors watch and bid on domains at auction and stay on top of their current bids, all from their mobile devices. We operate a cross-registrar network that automates transaction execution across registrars thereby reducing the time required to complete a transaction. We receive a percentage of the sales price for each domain sold.

Domain Name Add-Ons. Domain name add-ons are features a customer can add to a domain name registration. Our domain name privacy product allows our customers to register a domain name on an "unlisted" basis. This product helps prevent privacy intrusions, helps deter domain related spam and allows our customers to confidentially secure a domain for an unannounced product, service or idea. Domain name add-ons are typically purchased concurrently with domain name registrations and have minimal costs associated with their delivery.

Hosting and Presence

We offer a variety of hosting and presence products enabling our customers to create and manage their digital identity, or in the case of Web Pros, the digital identities of their end-customers. As of December 31, 2016, we hosted approximately 10 million websites. In each of 2016, 2015 and 2014, we derived approximately 37% of our total revenue from sales of our hosting and presence products.

Our primary hosting products are:

Shared Website Hosting. The term "shared hosting" refers to the housing of multiple websites on the same server via the use of chroot environments. Shared hosting is our most popular hosting product. We operate, maintain and support shared website hosting in our owned and operated data center and our leased co-located data center facilities using either Linux or Windows operating systems. We currently offer three tiers of shared website hosting plans to suit the needs and resources of our customers, all of which use industry standard cPanel or Parallels Plesk control panels. We also bundle our hosting plans with a variety of applications and products such as web analytics and SSL certificates.

Website Hosting on Virtual Private Servers and Virtual Dedicated Servers. Our broad range of virtual private server and virtual dedicated server offerings allows our customers to select the server configuration best suited for their applications, requirements and growth. Our virtual private server offering provides customers with a single virtual machine running on a single bare metal server that is running multiple other virtual machines for other customers. Our virtual private server product is designed to meet the requirements of customers with a need for greater control, more advanced technical capabilities and higher performance than that offered by our shared hosting plans. For those customers who have a need for dedicated resources, we created our virtual dedicated server product, providing customers with a single tenant virtual machine housed on a bare metal server reserved exclusively for their use. Our customers have the ability to tailor their virtual dedicated server plan based on a range of performance, storage, bandwidth and operating system.

Managed Hosting. With our managed hosting products, we set up, monitor, maintain, secure and patch software and servers for our customers. We offer a variety of managed hosting plans to support our customers' needs including multiple tiers of Managed WordPress hosting on a platform optimized for WordPress. We also offer other managed environments that span across our VPS and Dedicated products like Joomla, Drupal and Magento and apps like Gallery. In addition to managed hosting plans tailored to our customers' needs, we also offer expert services, which provide additional support services at a fixed hourly rate.

Security. Our security products include secure sockets layer certificates (SSLs), malware scanners and malware removal. According to Netcraft, we are one of the world's largest provider of SSLs. An SSL validates a customer's website identity and encrypts online transactional information, such as credit card information, and communications sent to or by the website. We offer a variety of SSLs all of which provide high-grade, 256-bit encryption. Our SSL offerings include multiple domain SSLs and "wildcard" SSLs, which secure a singular website URL as well as subdomains on that URL (e.g. protectmyvisitors.com and cart.protectmyvisitors.com). We also offer "code signing certificates" designed to prove the identity of software authors and validate that the software has not been tampered with since its original distribution.

Our primary presence products are:

Website Builder. Our Website Builder is an easy-to-use, do-it-yourself online tool enabling customers, irrespective of their technical skills, to build elegant websites. We offer a variety of plans, with pricing dependent on the number of available design styles and desired business and marketing features. With each of these plans, customers have access to hundreds of professional designs which can be further customized using our drag-and-drop editor by adding photos, graphics or text. Our designs cover a wide range of categories with professionally written content for small businesses, organizations, families, athletic teams, weddings, reunions and other interest groups. Once built, websites can be easily connected to social profiles, such as Facebook and Twitter, and optimized for search engines. Our customers are also able to receive a mobile-optimized version of their website through Website Builder.

E-commerce. Our online store product allows customers to easily create their own standalone website with an integrated online store optimized for mobile shopping, which allows customers to showcase products, manage inventory and shipping and securely accept payments via credit card, Apple Pay or PayPal. The online store also provides integrated tools for customers to maximize their sales via Google, email marketing and Facebook.

Search Engine Visibility. Search Engine Visibility (SEV) helps our customers get their websites found on major search sites through search engine optimization. SEV offers a simple step-by-step wizard giving targeted recommendations on which search phrases are most likely to drive traffic to a customer's site. We have built a ground-up system that helps our customers receive specific recommendations on keywords and content. Customers who are using a domain name and DNS purchased from GoDaddy can also automatically apply updates with one click, meaning they never have to touch a line of code.

Business Applications

We offer a variety of products designed to make the business of business easier for our customers. The products we offer include those developed in-house as well as third-party applications which we distribute and support, such as Microsoft Office 365. In 2016, 2015 and 2014, we derived approximately 13%, 11% and 8% of our total revenue, respectively, from sales of our business applications products.

Our primary business applications products are:

Microsoft Office 365. We offer fully-supported Microsoft Office 365 email accounts that are easy to set up and use with our customers' domains. We offer Microsoft Office 365 in multiple plans ranging from email with calendar and contacts connected to a custom domain to a full suite of productivity tools, including file sharing and full desktop versions of applications, including Outlook, Word, Excel and PowerPoint. For customers needing to comply with regulatory requirements, we offer email add-on services such as HIPPA-enabled email, encryption services (in partnership with ProofPoint) and archiving services (in partnership with Sonian). Microsoft Office 365 is easy to set up and can be up and running in minutes.

Email Accounts. We offer a range of email service plans that connect to our customers' domains. Some of these plans include a multi-feature web interface, an integrated calendar and secure online storage. The pricing of these plans depends on the customer's desired amount of storage and number of email addresses. All of our email accounts are advertising-free and include security functionality designed to provide protection from spam, viruses and other forms of online fraud, such as phishing.

Email Marketing. Our email marketing product helps customers market their businesses through permission-based email. Customers can easily create and send newsletters, targeted advertising campaigns, promotions and surveys as well as connect email campaigns with their social media networks and track the results of campaigns.

Telephony. Through our 2016 acquisition of Freedom Voice, we provide internet-based telephone services that can be accessed with either IP phones, or traditional local or cellular telephone services. Some of our telephone plans include additional services, such as voicemail, a virtual receptionist, a customizable phone tree, voicemail transcription, follow-me call forwarding, fax on demand and email delivery of voicemail. We expect to launch expanded telephony services through our Smartline offering during the second quarter of 2017.

Technology and Infrastructure

Our technology platform forms the core of many of our solutions, and we have invested significantly to develop a platform designed to be intelligent, fast, secure and scalable. Our technology and development expenses, including those expenses related to our technology platform, were $288 million, $270 million and $251 million in 2016, 2015 and 2014, respectively. We have built a scalable platform allowing us to provide faster business insights at lower costs, develop and introduce new products quickly and leverage economies of scale to reduce costs and enable next-generation hosting architecture. Our technology stack, which includes physical infrastructure, Infrastructure-as-a-Service, Platform-as-a-Service, applications and data science, allows our customers to build and manage their digital identities and enable access across multiple devices. We seek to continuously enhance the performance and reliability of our technology infrastructure by investing in faster data centers, improved network connectivity and improved resiliency, both domestically and internationally.

Physical infrastructure

Our physical technology infrastructure includes servers located throughout 12 data centers around the world. We have also invested significantly in our peering architecture and utilize multiple peering sites allowing us to handle high IP transit traffic at low bandwidth costs. Our large technology infrastructure footprint allows us to leverage economies of scale through low server, network, storage and processing costs by commoditizing hardware across various systems and leveraging virtualization where possible.

Infrastructure-as-a-Service

We leverage an Infrastructure-as-a-Service model geared toward the virtualization and automation of common physical data center components like servers, load balancers, switches and storage. We use open source solutions when possible to automate manual processes and thereby reduce the risk of human error as well as to lower costs. Additionally, we are beginning to use a single automated infrastructure based on OpenStack to enable next-generation services.

Platform-as-a-Service

Our cloud platform offers our customers an integrated and comprehensive set of time-saving services. Our platform is designed to help us reduce costs, increase personalization and more easily and quickly build and deploy new products. We continuously invest to develop our platform capabilities and have recently deployed a new authentication platform allowing us to onboard new products more quickly and securely. We have also deployed Cassandra, an open source distributed database management system, across our datacenters for improved customer data replication enabling personalization. We have started to introduce container technology, managed through an orchestration platform, to further simplify and automate how we build and manage services.

Applications

Our platform is highly-flexible, allowing us to easily integrate third-party offerings and enhance our value proposition to our customers by offering comprehensive and integrated solutions that can be rapidly scaled up or down and used across multiple platforms, including mobile. Our platform also allows resellers to easily sell our products, thereby broadening our distribution channels. We seek to continuously launch new and relevant applications and streamline our existing offerings in order to provide the best user experience to our customers.

Data science

Our data collection technology enables us to collect customer, product and business data from various sources, including web crawling, local listings providers (e.g. Yelp and state business registrations), social platforms (e.g. Facebook and Twitter) and mobile platforms (e.g. geolocation and e-commerce). We use Hadoop, an open source software framework for storage and large-scale processing of data sets, to develop an integrated customer insights data platform. By integrating this data, we are able to offer personalized and intelligent insights and business intelligence to our customers that they can access via dashboards. These dashboards also enhance our ability to develop and offer differentiated products and more intelligent Customer Care. We believe our ability to offer this insight helps us deliver the right solutions targeted to the needs of our customers and attract more businesses to our platform.

Customer Care

We have more than 4,100 Customer Care specialists who provide technical assistance 24/7/365 to customers located around the world. Operating as "business consultants," our specialists advise customers of products best suiting their individual needs. This ability to provide real-time product suggestions while providing a world-class support experience allows our Customer Care team to provide an impactful contribution to bookings through the sale of product subscriptions. Our Customer Care specialists take great pride in owning outcomes and being accountable to our customers, both of which are essential to enhancing customer experience. In each of 2016, 2015 and 2014, at least 23% of our total bookings were generated from the sale of product subscriptions by our Customer Care team. The majority of our Customer Care specialists are located in our Arizona and Iowa facilities in the U.S. We have additional international specialists providing in-region support in native languages. In addition, our easy-to-use website contains extensive educational content designed to demystify the process of establishing an online presence and to assist customers in choosing the products best meeting their needs.

Our Customer Care team spans a variety of channels to provide tailored and timely support to our customers, handling approximately 14 million contacts annually in each of the last three years. Our customers can choose their preferred Customer Care channel, including proactive and reactive chat and phone support. We take a consultative approach to our customers, acting as a trusted partner to guide them through the process with technical solutions supporting them at each phase of their lifecycle and offer real-time product suggestions best suited to the customers' needs. The effectiveness of our model is reflected in the high ratings we receive from our customers, the bookings generated by our Customer Care team and strong customer referrals.

The strength of our Customer Care team is our people. Our hiring process is extensive and highly selective, designed to yield individuals who will thrive in our team based on core values, character, work ethic and ability. Our new Customer Care hires spend over a month moving from classroom to a live "nesting" environment where they refine their customer and technology skills. With a commitment to life-long learning, we offer hundreds of classes to our employees spanning leadership, sales, service and technology. We have an incentive program that rewards outcomes, across both customer satisfaction and bookings goals. For that and many other reasons, as of December 31, 2016, approximately 40% of our Customer Care specialists had been with us for at least three years.

Marketing

We believe GoDaddy is one of the most recognized technology brands in the U.S. We have established this high level of brand awareness primarily through our advertising campaigns across various platforms including television commercials, print, online and billboards. We have supplemented these advertising campaigns with athlete and celebrity sponsorships. Our strong brand has helped us attract and retain nearly 15 million customers as of December 31, 2016. We intend to continue investing in our brand as we seek to further grow our total customers, particularly internationally. Customer referrals are another highly efficient and cost-effective channel for acquiring customers.

We complement our brand marketing efforts with highly focused and metric-driven direct response marketing to acquire new customers. We use a variety of targeted online marketing programs for lead generation, including search engine marketing, search engine optimization and targeted email and social media marketing campaigns, as well as more traditional direct marketing and indirect channel partner marketing programs, to drive interest in our products and traffic to our websites. As part of this effort, we regularly run numerous campaigns simultaneously and constantly refine our media mix across our channels.

International

Central to our international strategy is a philosophy of localizing our product offerings and deploying them through our global infrastructure. We have nearly 5 million customers outside of the U.S. In 2016, we derived approximately 28% of our total bookings from international sales compared to 26% in 2015 and 25% in 2014. We have devoted substantial, dedicated resources to growing our international presence, leading to the expansion of our localized products and Customer Care to 56 markets as of December 31, 2016. We believe our international scale and growth to date are indicative of the international growth opportunities available to us and position us to continue to grow our business outside the U.S.

We have built a dedicated team responsible for the internationalization and localization of our core product offerings as well as our Customer Care and marketing efforts. In conjunction with our localization efforts, we have added on-the-ground regional teams and increased our country and regional specific marketing spend. These investments have enabled us to successfully launch and expand our business in select international markets. Our success in these markets has furthered our belief that our international model can work in both established and emerging markets. We have taken a rigorous approach to managing the level of investment we expect to make in each geographic market we enter based on a market tier approach. We expect to continue to expand internationally, growing our share and increasing penetration of the international markets we've entered in recent years, including through our proposed acquisition of HEG.

Competition

We provide cloud-based solutions enabling individuals, businesses and organizations to establish an online presence, connect with customers and manage their ventures. The market for providing these solutions is highly fragmented and competitive. These solutions are also rapidly evolving, creating opportunity for new competitors to enter the market with point-solution products or address specific segments of the market. In some instances, we have commercial partnerships with companies with which we also compete. Given our broad product portfolio, we compete with niche point-solution products and broader solution providers. Our competitors include providers of:

- domain registration services and web-hosting solutions such as Endurance, Rightside, United Internet and Web.com;
- website creation and management solutions such as Automattic, Shopify, Squarespace, and Wix;
- cloud-infrastructure services and online security providers such as Comodo, Symantec, Let's Encrypt and WP Engine;

- alternative web presence and marketing solutions such as Constant Contact, Etsy, OpenTable, Yelp and Zillow; and
- productivity tools such as business-class email, calendaring and file-sharing such as Dropbox, Microsoft and Google.

We expect continued competition from companies in the domain, hosting and presence markets such as Automattic, Endurance, Rightside, Squarespace, United Internet, Web.com and Wix. We also expect potential increased competition from companies like Amazon, Google and Microsoft, which are providers of web-hosting and other cloud-based services. Google has recently entered the domain registration business, with eBay and Facebook both offering robust Internet marketing platforms.

We believe the principal competitive factors include: product capabilities meeting customer requirements, a secure, reliable and integrated technology platform, cost-effective customer acquisition, brand awareness and reputation, customer service and support and overall customer satisfaction. We believe we compete favorably with respect to each of these factors. For additional information, see "Risk Factors."

Regulation

Our business is subject to regulation by ICANN, federal and state laws in the U.S. and the laws of other jurisdictions in which we do business.

ICANN. The registration of domain names is governed by ICANN. ICANN is a multi-stakeholder private sector, not-for-profit corporation formed in 1998 for the express purposes of overseeing a number of Internet related tasks, including management of the DNS, allocation of IP addresses, accreditation of domain name registrars and registries and the definition and coordination of policy development for all of these functions. We are accredited by ICANN as a domain name registrar and thus our ability to offer domain name registration products is subject to our ongoing relationship with and accreditation by ICANN. The regulation of Internet domain names in the U.S. and in foreign countries is subject to change. For example, in 2016, the National Telecommunications and Information Administration, or the NTIA, an agency of the U.S. Department of Commerce, transitioned oversight of key Internet domain name functions to the global multi-stakeholder community. As a result, there is uncertainty at this time concerning the nature and significance of this recent transition from U.S. oversight of ICANN to oversight of ICANN by other bodies.

ccTLD Authorities. The regulation of ccTLDs is governed by national regulatory agencies of the country underlying the specific ccTLDs, such as China (.cn), Canada (.ca) and the United Kingdom (.uk). Our ability to sell ccTLDs is dependent on our and our partners' ability to maintain accreditation in good standing with these various international authorities.

Advertising and promotional information presented on our websites and in our products, and our other marketing and promotional activities, are subject to federal and state consumer protection laws regulating unfair and deceptive practices. U.S. federal, state, and foreign legislatures have also adopted laws and regulations regulating numerous other aspects of our business. Regulations relating to the Internet, including laws governing online content, user privacy, taxation, liability for third-party activities and jurisdiction, are particularly relevant to our business. Such laws and regulations are discussed below.

Communications Decency Act. The CDA regulates content of material on the Internet, and provides immunity to Internet service providers and providers of interactive computer services for certain claims based on content posted by third parties. The CDA and the case law interpreting it generally provide that domain name registrars and website hosting providers cannot be liable for defamatory or obscene content posted by customers on their servers unless they participate in creating or developing the content.

Digital Millennium Copyright Act. The DMCA provides domain name registrars and website hosting providers a safe harbor from liability for third-party copyright infringement. To qualify for the safe harbor, however, registrars and website hosting providers must satisfy numerous requirements, including adoption of a user policy providing for termination of service access of users who are repeat infringers, informing users of this policy, and implementing the policy in a reasonable manner. In addition, registrars and website hosting providers must expeditiously remove or disable access to content upon receiving a proper notice from a copyright owner alleging infringement of its protected works. A registrar or website hosting provider failing to comply with these safe harbor requirements may be found liable for copyright infringement.

*Anti-Cybersquatting Consumer Pr*otection Act. The ACPA was enacted to address piracy on the Internet by curtailing a practice known as "cybersquatting," or the bad-faith registration of a domain name identical or similar to another party's trademark, or to the name of another living person, in order to profit from that name or mark. The ACPA provides that registrars may not be held liable for damages for registration or maintenance of a domain name for another person absent a showing of the registrar's bad faith intent to profit. Registrars may, however, be held liable if their activities are deemed outside the scope of basic registrar functions.

Lanham Act. The Lanham Act governs trademarks and false advertising. Case law interpreting the Lanham Act has limited liability for many online service providers such as search engines and domain name registrars. Nevertheless, there is no statutory safe harbor for trademark violations comparable to the provisions of the DMCA and we may be subject to a variety of trademark claims in the future.

Privacy and Data Protection. In the areas of personal privacy and data protection, the U.S. federal and various state and foreign governments have adopted or proposed limitations on, and requirements associated with, the collection, distribution, use, storage, and security of personal information of individuals. If our practices with respect to the collection, distribution, storage, or security of personal information are challenged, we may not be able to demonstrate adequate compliance with existing or future laws or regulations. In addition, in the European Union member states and certain other countries outside the U.S., data protection is more highly regulated and rigidly enforced. As we conduct and expand our business within these countries, we expect compliance with these regulatory schemes to be more burdensome and costly for us.

Laws and regulations relating to our activities are unsettled in many jurisdictions, or may prove difficult or impossible to comply with in some jurisdictions. Additionally, federal, state, local and foreign governments are also considering legislative and regulatory proposals that would regulate the Internet and our activities in more and different ways than exist today. It also is impossible to predict whether new taxes will be imposed on our services, and depending upon the type of such taxes, whether and how we would be affected. Laws and regulations in the U.S. or in foreign jurisdictions may be applied in new or different manners in pending or future litigation. Further, other existing bodies of law, including the criminal laws of various jurisdictions, may be deemed to apply to our activities, or new statutes or regulations may be adopted in the future.

Intellectual Property and Proprietary Rights

Our intellectual property and proprietary rights are important to our business. We rely on a combination of trademark, patent, copyright and trade secret laws, confidentiality and access-related procedures and safeguards and contractual provisions to protect our proprietary technologies, confidential information, brands and other intellectual property.

We have also developed, acquired or licensed proprietary technologies for use in our business. As of December 31, 2016, we had 193 issued patents in the U.S. covering various aspects of our product offerings. Additionally, as of December 31, 2016, we had 186 pending U.S. patent applications and intend to file additional patent applications in the future.

We have non-disclosure, confidentiality and license agreements with employees, contractors, customers and other third parties, which limit access to and use of our proprietary information. Though we rely in part upon these legal and contractual protections, as well as various procedural safeguards, we believe the skill and ingenuity of our employees, the functionality and frequent enhancements to our solutions and our ability to introduce new products and features meeting the needs of our customers are more important to maintaining our competitive position in the marketplace.

We have an ongoing trademark and service mark registration program pursuant to which we register our brand names and product names, taglines and logos in the U.S. and other countries to the extent we determine appropriate and cost-effective. We also have common law rights in some unregistered trademarks that were established over years of use. In addition, we have a trademark and service mark enforcement program pursuant to which we monitor applications filed by third parties to register trademarks and service marks that may be confusingly similar to ours, as well as the use of our major brand names in social media, domain names and other Internet sites.

Despite our efforts to preserve and protect our intellectual property, unauthorized third parties may attempt to copy, reverse engineer or otherwise obtain access to our proprietary rights, and competitors may attempt to develop solutions that could compete with us in the markets we serve. Unauthorized disclosure of our confidential information or proprietary technologies by our employees or third parties could also occur. The risk of unauthorized use of our proprietary and intellectual property rights may increase as we continue to expand outside of the U.S.

Third-party infringement claims are also possible in our industry, especially as functionality and features expand, evolve and overlap across industries. Third parties, including non-practicing patent holders, have from time to time claimed, and could claim in the future, that our processes, technologies or websites infringe patents they now hold or might obtain or be issued in the future.

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Employees

As of December 31, 2016, we had 4,749 employees worldwide, including 3,019 in our Customer Care team, 922 in technology and development, 164 in marketing and advertising and 644 in general and administrative. Excluded from our employee figures are more than 1,100 Customer Care specialists located in China, The Philippines, Mexico, India and the United Kingdom who are directly employed by third-party partners, but who are dedicated to GoDaddy on a full time basis. Substantially all of our employees are based in the U.S. None of our employees is represented by a labor union or is party to any collective bargaining agreement in connection with his or her employment with us.

Item 1A. Risk Factors

Our operations and financial results are subject to various risks and uncertainties, including those described below. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties we are unaware of, or we currently believe are not material, may also become important factors affecting us. If any of the following risks occur, our business, financial condition, operating results and prospects could be materially and adversely affected. In that event, the price of our Class A common stock could decline.

Risks Related to Our Business

If we are unable to attract and retain customers and increase sales to new and existing customers, our business and operating results would be harmed.

Our success depends on our ability to attract and retain customers and increase sales to new and existing customers. We derive a substantial portion of our revenue from domains and our hosting and presence products. The rate at which new and existing customers purchase and renew subscriptions to our products depends on a number of factors, including those outside of our control. Although our total customers and revenue have grown rapidly in the past, in recent periods our slower growth rates have reflected the size and scale of our business. We cannot be assured that we will achieve similar growth rates in future periods. In future periods, our total customers and revenue could decline or grow more slowly than we expect. Our sales could fluctuate or decline as a result of lower demand for domain names, websites and related products, declines in our customers' level of satisfaction with our products and our Customer Care, the timeliness and success of product enhancements and introductions by us and those of our competitors, the pricing offered by us and our competitors, the frequency and severity of any system outages, breaches and technological change. Our revenue has grown historically due in large part to sustained customer growth rates and strong renewal sales of subscriptions to our domain name registration and hosting and presence products. Our future success depends in part on maintaining strong renewal sales. Our costs associated with renewal sales are substantially lower than costs associated with generating revenue from new customers and costs associated with generating sales of additional products to existing customers. Therefore, a reduction in renewals, even if offset by an increase in other revenue, would reduce our operating margins in the near term. Any failure by us to continue to attract new customers or maintain strong renewal sales could have a material adverse effect on our business, growth prospects and operating results. If we are unable to increase sales of additional products, such as personalized email accounts and other business applications products, to new and existing customers, our growth prospects may be harmed.

If we do not successfully develop and market products that anticipate or respond promptly to the needs of our customers, our business and operating results may suffer.

The markets in which we compete are characterized by constant change and innovation, and we expect them to continue to evolve rapidly. Our historical success has been based on our ability to identify and anticipate customer needs and design products providing small businesses and ventures with the tools they need to create, manage and augment their digital identity. To the extent we are not able to continue to identify challenges faced by small businesses and ventures and provide products responding in a timely and effective manner to their evolving needs, our business, operating results and financial condition will be adversely affected.

The process of developing new technology is complex and uncertain. If we fail to accurately predict customers' changing needs or emerging technological trends, or if we fail to achieve the benefits expected from our investments in technology (including investments in our internal development efforts, such as our "do-it-yourself" website builder GoCentral and security products; acquisitions, such as the acquisition of FreedomVoice and the addition of telephony services such as Smartline; or partner programs), our business could be harmed. We must continue to commit significant resources to develop our technology in order to maintain our competitive position, and these commitments will be made without knowing whether such investments will result in products our customers will accept. Our new products or product enhancements could fail to attain meaningful customer acceptance for many reasons, including:

- delays in releasing new products or product enhancements, or those of companies we may acquire, to the market;
- our failure to accurately predict market demand or customer preferences;
- defects, errors or failures in product design or performance;
- negative publicity about product performance or effectiveness;
- introduction of competing products (or the anticipation thereof) by other market participants;

- poor business conditions for our customers or poor general macroeconomic conditions;
- the perceived value of our products or product enhancements relative to their cost; and
- changing regulatory requirements adversely affecting the products we offer.

There is no assurance we will successfully identify new opportunities, develop and bring new products to market on a timely basis, or products and technologies developed by others will not render our products or technologies obsolete or noncompetitive, any of which could adversely affect our business and operating results. If our new products or enhancements do not achieve adequate acceptance by our customers, or if our new products do not result in increased sales or subscriptions, our competitive position will be impaired, our anticipated revenue growth may not be achieved and the negative impact on our operating results may be particularly acute because of the upfront technology and development, marketing and advertising and other expenses we may incur in connection with the new product or enhancement.

Our brand is integral to our success. If we fail to protect or promote our brand, our business and competitive position may be harmed.

Protecting and maintaining awareness of our brand is important to our success, particularly as we seek to attract new customers globally. We have invested, and expect to continue to invest, substantial resources to increase our brand awareness, both generally and in specific geographies and to specific customer groups, such as Web Pros. There can be no assurance that our brand development strategies will enhance the recognition of our brand or lead to increased sales. Furthermore, our international branding efforts may prove unsuccessful due to language barriers and cultural differences. If our efforts to protect and promote our brand are not successful, our operating results may be adversely affected. In addition, even if our brand recognition and loyalty increases, our revenue may not increase at a level commensurate with our marketing spend.

A network attack, a security breach or other data security incident could delay or interrupt service to our customers, harm our reputation or subject us to significant liability.

Our operations depend on our ability to protect our network and systems against interruption or damage from unauthorized entry, computer viruses, denial of service attacks and other security threats beyond our control. We regularly experience distributed denial of service (DDOS) attacks by hackers aimed at disrupting service to our customers and attempts to place illegal or abusive content on our or our customers' websites, and we may be subject to DDOS attacks or content abuse in the future. Our response to such DDOS attacks may be insufficient to protect our network and systems, especially as such attacks increase in size (such as the DYN attack in October 2016). In addition, there has been an increase in the number of malicious software attacks in the technology industry, including malware and ransomware. In addition, from time to time, activities of our customers or other parties may cause us to suspend or terminate customer accounts. We have suspended and terminated, and will in the future suspend or terminate, a customer's use of our products when their activities on their site breach our terms of service (for example, phishing or resource misuse), interfere with or harm other customers' websites sharing the same resources or otherwise violate applicable law. We may also suspend or terminate a customer's website if it is repeatedly targeted by DDOS or other attacks disrupting other customers' websites or servers or otherwise impacts our infrastructure. We cannot guarantee our backup systems, regular data backups, security protocols, network protection mechanisms and other procedures currently in place, or that may be in place in the future, will be adequate to prevent or remedy network and service interruption, system failure, damage to one or more of our systems, data loss, security breaches or other data security incidents. Also, our products are cloud-based, and the amount of data we store for our customers on our servers has been increasing as our business has grown. Despite the implementation of security measures, our infrastructure may be vulnerable to computer viruses, worms, other malicious software programs, illegal or abusive content or similar disruptive problems caused by our customers, employees, consultants or other Internet users who attempt to invade or disrupt public and private data networks or to improperly access, use or obtain data. Any actual or perceived breach of our security, or any other data security incident, could damage our reputation and brand, expose us to a risk of loss or litigation and possible liability, subject us to regulatory or other government inquiries or investigations, require us to expend significant capital and other resources to alleviate problems caused by the breach, and deter customers from using our products, any of which would harm our business, financial condition and operating results.

If the security of the confidential information or personally identifiable information we maintain, including that of our customers and the visitors to our customers' websites stored in our systems, is breached or otherwise subjected to unauthorized access, our reputation may be harmed and we may be exposed to liability.

Our business involves the storage and transmission of confidential information, including personally identifiable information. In addition, as nearly all of our products are cloud-based, the amount of data we store for our customers on our servers (including personally identifiable information and other potentially sensitive information) has been increasing. We take measures intended to protect the security, integrity and confidentiality of the personal information and other sensitive information, including payment card information, we collect, store or transmit, but cannot guarantee that inadvertent or unauthorized use or disclosure will not occur or that third parties will not gain unauthorized access to this information despite our efforts. If third parties succeed in penetrating our security measures or those of our vendors and partners, or in otherwise accessing or obtaining without authorization the payment card information or other sensitive or confidential information we or our vendors and partners maintain, we could be subject to liability, loss of business, litigation, government investigations or other losses. Hackers or individuals who attempt to breach our security measures or those of our vendors and partners could, if successful, cause the unauthorized disclosure, misuse, or loss of personally identifiable information or other confidential information, including payment card information, suspend our web-hosting operations or cause malfunctions or interruptions in our networks.

If we or our partners experience any breaches of our security measures or sabotage, or otherwise suffer unauthorized use or disclosure of, or access to, personally identifiable information or other confidential information, including payment card information, we might be required to expend significant capital and resources to protect against or address these problems. We may not be able to remedy any problems caused by hackers or other similar actors in a timely manner, or at all. Because techniques used to obtain unauthorized access or to sabotage systems change frequently and generally are not recognized until after they are launched against a target, we and our vendors and partners may be unable to anticipate these techniques or to implement adequate preventative measures. Advances in computer capabilities, discoveries of new weaknesses and other developments with software generally used by the Internet community, such as the Heartbleed vulnerability, which is a vulnerability in Open Secure Sockets Layer (Open SSL) library or the Shellshock vulnerability in the Linux Bash shell, also increase the risk we, or our customers using our servers, will suffer a security breach. Our partners and we may also suffer security breaches or unauthorized access to personally identifiable information and other confidential information, including payment card information, due to employee error, rogue employee activity, unauthorized access by third parties acting with malicious intent or who commit an inadvertent mistake or social engineering. If a breach of our security or other data security incident occurs or is perceived to have occurred, the perception of the effectiveness of our security measures and our reputation could be harmed and we could lose current and potential customers.

Security breaches or other unauthorized access to personally identifiable information and other confidential information, including payment card information, could result in claims against us for unauthorized purchases with payment card information, identity theft or other similar fraud claims as well as for other misuses of personally identifiable information, including for unauthorized marketing purposes, which could result in a material adverse effect on our business or financial condition. Moreover, these claims could cause us to incur penalties from payment card associations (including those resulting from our failure to adhere to industry data security standards), termination by payment card associations of our ability to accept credit or debit card payments, litigation and adverse publicity, and regulatory or other government inquiries or investigations, any of which could have a material adverse effect on our business and financial condition. We expect to continue to expend significant resources to protect against security breaches and other data security incidents. The risk that these types of events could seriously harm our business is likely to increase as we expand the number of cloud-based products we offer and operate in more countries.

We are exposed to the risk of system failures and capacity constraints.

We have experienced, and may in the future experience, system failures and outages disrupting the operation of our websites or our products such as web-hosting and email, or the availability of our Customer Care operations. For example, certain of our customers experienced a service outage in September 2012, which led to our granting of $10.4 million of service disruption credits to certain customers. Our revenue depends in large part on the volume of traffic to our websites, the number of customers whose websites we host on our servers and the availability of our Customer Care operations. Accordingly, the performance, reliability and availability of our websites and servers for our corporate operations and infrastructure, as well as in the delivery of products to customers, are critical to our reputation and our ability to attract and retain customers.

We are continually working to expand and enhance our website features, technology and network infrastructure and other technologies to accommodate substantial increases in the volume of traffic on our godaddy.com and affiliated websites, the number of customer websites we host and our overall total customers. We may be unsuccessful in these efforts, or we may be unable to project accurately the rate or timing of these increases. In the future, we may be required to allocate resources, including spending substantial amounts, to build, purchase or lease data centers and equipment and upgrade our technology and network infrastructure in order to handle increased customer traffic, as well as increased traffic to customer websites we host. We cannot predict whether we will be able to add network capacity from third-party suppliers or otherwise as we require it. In addition, our network or our suppliers' networks might be unable to achieve or maintain data transmission capacity high enough to process orders or download data effectively in a timely manner. Our failure, or our suppliers' failure, to achieve or maintain high data transmission capacity could significantly reduce consumer demand for our products. Such reduced demand and resulting loss of traffic, cost increases, or failure to accommodate new technologies could harm our business, revenue and financial condition.

Our systems, including those of our data centers and Customer Care operations, are also vulnerable to damage from fire, power loss, telecommunications failures, computer viruses, physical and electronic break-ins and similar events. The property and business interruption insurance coverage we carry may not be adequate to compensate us fully for losses that may occur.

Evolving technologies and resulting changes in customer behavior or customer practices may impact the value of and demand for domain names.

Historically, Internet users would typically navigate to a website by directly typing its domain name into a web browser or navigation bar. The domain name serves as a branded, unique identifier not unlike a phone number or email address. People now use multiple methods in addition to direct navigation to access websites. For example, people increasingly use search engines to find and access websites as an alternative to typing a website address directly into a web browser navigation bar. People are also using social networking and microblogging sites more frequently to find and access websites. Further, as people continue to access the Internet more frequently through applications on mobile devices, domain names may become less prominent and their value may decline. These evolving technologies and changes in customer behavior may have an adverse effect on our business and prospects.

We rely on our marketing efforts and channels to promote our brand and acquire new customers. These efforts may require significant expense and may not be successful or cost-effective.

We use a variety of marketing channels to promote our brand, including online keyword search, sponsorships and celebrity endorsements, television, radio and print advertising, email and social media marketing. If we lose access to one or more of these channels, such as online keyword search, because the costs of advertising become prohibitively expensive or for other reasons, we may become unable to promote our brand effectively, which could limit our ability to grow our business. Further, if our marketing activities fail to generate traffic to our website, attract customers and lead to new and renewal sales of our subscriptions at the levels we anticipate, our business and operating results would be adversely affected. There can be no assurance our marketing efforts will succeed or be cost-efficient, and if our customer acquisition costs increase, our business, operating results and financial performance could be adversely affected.

Our ability to increase sales of our products is highly dependent on the quality of our Customer Care. Our failure to provide high-quality Customer Care would have an adverse effect on our business, brand and operating results.

Our Customer Care team has historically contributed significantly to our total bookings. In each of 2016, 2015 and 2014, at least 23% of our total bookings were generated from the sale of product subscriptions by our Customer Care team.

The majority of our current offerings are designed for customers who often self-identify as having limited to no technology skills. Our customers depend on our Customer Care to assist them as they create, manage and grow their digital identities. After launching their sites and leveraging our product offerings, customers depend on our Customer Care team to quickly resolve any issues relating to those offerings. Further, as we continue to broaden our portfolio of solutions, increase the size of our customer base and increase the size of our solution deployments within our customers' IT infrastructure, we must continue to adapt our customer support organization to ensure our customers continue to receive the high level of customer service which they have come to expect. Notwithstanding our commitment to Customer Care, our customers will occasionally encounter interruptions in service and other technical challenges and it is therefore critical we are there to provide ongoing, high-quality support to help our customers and ensure high renewal rates and cross-selling of our products. Additionally, we focus on Web Pros and continue to expand into non-U.S. markets. We must continue to refine our efforts in Customer Care so we can adequately serve these customer groups as we expand.

If we do not provide effective ongoing Customer Care, our ability to sell our products to new and existing customers could be harmed, our subscription renewal rates may decline and our reputation may suffer, any of which could adversely affect our business, reputation and operating results.

We face significant competition for our products in the domain name registration and web-hosting markets and other markets in which we compete, which we expect will continue to intensify, and we may not be able to maintain or improve our competitive position or market share.

We provide cloud-based solutions enabling individuals, businesses and organizations to establish an online presence, connect with customers and manage their ventures. The market for these solutions is highly fragmented and competitive. These solutions are also rapidly evolving, creating opportunity for new competitors to enter the market with point-solution products or address specific segments of the market. In some instances, we have commercial partnerships with companies with which we also

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compete. Given our broad product portfolio, we compete with niche point-solution products and broader solution providers. Our competitors include providers of domain registration services, web-hosting solutions, website creation and management solutions, e-commerce enablement providers, cloud computing service and online security providers, alternative web presence and marketing solutions providers and providers of productivity tools such as business-class email.

We expect competition to increase in the future from competitors in the domain and hosting and presence markets, such as Endurance, United Internet, Web.com and Rightside, as well as competition from companies such as Amazon, Google and Microsoft, all of which are providers of web-hosting and other cloud-based services and have recently entered the domain name registration business as upstream registries, and eBay and Facebook, both of which offer robust Internet marketing platforms. In addition, we face competition in the website building market from competitors outside of the domain and hosting markets, such as Wix and Weebly. Some of our current and potential competitors have greater resources, more brand recognition and consumer awareness, more diversified product offerings, greater international scope and larger customer bases than we do, and we may therefore not be able to effectively compete with them. If these competitors and potential competitors decide to devote greater resources to the development, promotion and sale of products in the markets in which we compete, or if the products offered by these companies are more attractive to or better meet the evolving needs of our customers, our market share, growth prospects and operating results may be adversely affected.

In addition, in an attempt to gain market share, competitors may offer aggressive price discounts or alternative pricing models on the products they offer, such as so-called "freemium" pricing in which a basic offering is provided for free with advanced features provided for a fee, or increase commissions paid to their referral sources. As a result, increased competition could result in lower sales, price reductions, reduced margins and the loss of market share.

Furthermore, conditions in our market could change rapidly and significantly as a result of technological advancements, partnering by our competitors or continuing market consolidation. Innovative new start-up companies and large competitors making significant investments in technology and development may invent similar or superior products and technologies competing with our products and technology. Our current and potential competitors may also establish cooperative relationships among themselves or with third parties that may further enhance their ability to compete. The continued entry of competitors into the domain name registration and web-hosting markets, and the rapid growth of some competitors that have already entered each market, may make it difficult for us to maintain our market position. Our ability to compete will depend upon our ability to provide a better product than our competitors at a competitive price and supported by superior Customer Care. To remain competitive, we may be required to make substantial additional investments in research, development, marketing and sales in order to respond to competition, and there can be no assurance that these investments will achieve any returns for us or that we will be able to compete successfully in the future.

The future growth of our business depends in significant part on increasing our international bookings. Our recent and continuing international expansion efforts subject us to additional risks.

Bookings outside of the U.S. represented approximately 28%, 26% and 25% of our totals for 2016, 2015 and 2014, respectively. In 2012, we began the process of localizing our products in numerous markets, languages and currencies, expanding our systems to accept payments in forms common outside of the U.S., focusing our marketing efforts in numerous non-U.S. geographies, tailoring our Customer Care offerings to serve these markets, expanding our infrastructure in various non-U.S. locations and establishing Customer Care operations in overseas locations. We intend to continue our international expansion efforts, including through our acquisition of HEG. As a result, we must continue to hire and train experienced personnel to staff and manage our international expansion. Our international expansion efforts may be slow or unsuccessful to the extent we experience difficulties in recruiting, training, managing and retaining qualified personnel with international experience, language skills and cultural competencies in the geographic markets we target. Furthermore, as we continue to expand internationally, it may prove difficult to maintain our corporate culture, which we believe has been critical to our success. In addition, we have limited experience operating in foreign jurisdictions. Conducting and expanding international operations subjects us to new risks we have not generally faced in the U.S., including the following:

- management, communication and integration problems resulting from language barriers, cultural differences and geographic dispersion of our customers and personnel;
- language translation of, and associated Customer Care support for, our products;
- compliance with foreign laws, including laws regarding online disclaimers, advertising, liability of online service providers for activities of customers especially with respect to hosted content and more stringent laws in foreign jurisdictions relating to consumer privacy and protection of data collected from individuals and other third parties;

- accreditation and other regulatory requirements to do business and to provide domain name registration, web-hosting and other products in foreign jurisdictions;
- greater difficulty in enforcing contracts, including our universal terms of service and other agreements;
- increased expenses incurred in establishing and maintaining office space and equipment for our international operations;
- greater costs and expenses associated with international marketing and operations;
- greater risk of unexpected changes in regulatory practices, tariffs and tax laws and treaties;
- different or lesser degrees of protection for our or our customers' intellectual property and free speech rights in certain markets;
- increased exposure to foreign currency risks;
- increased risk of a failure of employees to comply with both U.S. and foreign laws, including export and antitrust regulations, anti-bribery regulations and any trade regulations ensuring fair trade practices;
- heightened risk of unfair or corrupt business practices in certain geographies; and
- the potential for political, social or economic unrest, terrorism, hostilities or war; and multiple and possibly overlapping tax regimes.

In addition, the expansion of our existing international operations and entry into additional international markets has required and will continue to require significant management attention and financial resources. In particular, we have invested, and intend to continue to invest, in product marketing, infrastructure and personnel to support our international expansion efforts. These increased marketing costs may increase our cost of acquiring international customers, which may delay our ability to achieve profitability or reduce our profitability in the future. We may also face pressure to lower our prices in order to compete in emerging markets, which could adversely affect revenue derived from our international operations. These and other factors associated with our international operations could impair our growth prospects and adversely affect our business, operating results and financial condition.

Mobile devices are increasingly being used to access the Internet, and our cloud-based and mobile support products may not operate or be as effective when accessed through these devices, which could harm our business.

We offer our products across a variety of operating systems and through the Internet. Historically, we designed our web-based products for use on a desktop or laptop computer; however, mobile devices, such as smartphones and tablets, are increasingly being used as the primary means for accessing the Internet and conducting e-commerce. We are dependent on the interoperability of our products with third-party mobile devices and mobile operating systems, as well as web browsers we do not control. Any changes in such devices, systems or web browsers degrading the functionality of our products or giving preferential treatment to competitive products could adversely affect usage of our products. In the event our customers have difficulty accessing and using our products on mobile devices, our customer growth, business and operating results could be adversely affected.

We have made significant investments in recent periods to support our growth strategy. These investments may not succeed. If we do not effectively manage future growth, our operating results will be adversely affected.

We continue to increase the breadth and scope of our product offerings and operations. To support future growth, we must continue to improve our information technology and financial infrastructure, operating and administrative systems and ability to effectively manage headcount, capital and processes. We must also continue to increase the productivity of our existing employees and hire, train and manage new employees while maintaining our unique corporate culture. If we fail to manage our growth or change in a manner failing to preserve the key aspects of our corporate culture, the quality of our platform, products and Customer Care may suffer, which could negatively affect our brand and reputation and harm our ability to retain and attract customers and employees.

We have incurred, and will continue to incur, expenses relating to our investments in international operations and infrastructure, such as the expansion of our offerings and marketing presence in India, Europe, Latin America and Asia; our targeted marketing spending to attract new customer groups, such as Web Pros and customers in non-U.S. markets; and investments in software systems and additional data center resources to keep pace with the growth of our cloud infrastructure and cloud-based product offerings. We have made significant investments in product development, corporate infrastructure and technology and development, and intend to continue investing in the development of our products and infrastructure and our marketing and Customer Care teams.

We are likely to recognize the costs associated with these investments earlier than some of the anticipated benefits, and the return on these investments may be lower or may develop more slowly than we expect. If we do not achieve the benefits anticipated from these investments, or if the achievement of these benefits is delayed, our operating results may be adversely affected.

We have experienced rapid growth over the last several years, which has the potential to strain on our management, administrative, operational and financial infrastructure. The scalability and flexibility of our infrastructure depends on the functionality and bandwidth of our data centers, peering sites and servers. The significant growth in our total customers and the increase in the number of transactions we process have increased the amount of our stored customer data. Any loss of data or disruption in our ability to provide our product offerings due to disruptions in our infrastructure or services could result in harm to our brand or reputation. Moreover, as our customer base continues to grow and uses our platform for more complicated tasks, we will need to devote additional resources to improve our infrastructure and continue to enhance its scalability and security. If we do not manage the growth of our business and operations effectively, the quality of our platform and efficiency of our operations could suffer, which could harm our operating and business results.

In January 2016, we selected a new enterprise resource planning system. During the fourth quarter of 2016, we completed the human capital management portion of our system implementation. We expect to begin the system implementation of the financial portion in 2017, continuing into early 2018. As we plan for and implement a new system, we may experience difficulties in managing our existing systems and processes, which could disrupt our operations and the management of our finances. Our failure to improve our systems and processes, or their failure to operate in the intended manner, may result in our inability to manage the growth of our business and to accurately forecast and report our results.

We may acquire other businesses or talent, which could require significant management attention, disrupt our business, dilute stockholder value and adversely affect our operating results.

As part of our business strategy, we have in the past made, and may in the future make, acquisitions or investments in companies, talent, products and technologies we believe will complement our business and address the needs of our customers. With respect to our recent acquisitions, such as FreedomVoice and ManageWP, and our proposed acquisition of HEG, we cannot ensure we will be able to successfully integrate the acquired products, talent and technology or benefit from increased subscriptions and revenue. For example, we may be unsuccessful in capturing the Web Pro market or in helping our customers attract new customers to their businesses from sites like Google, Yahoo!, Facebook and Yelp. In the future, we may not be able to find suitable acquisition candidates, and we may not be able to complete such acquisitions on favorable terms, if at all. If we do complete acquisitions, we may be unsuccessful in achieving the anticipated benefits of the acquisition and may fail to integrate the acquired business and operations effectively. In addition, any future acquisitions we complete could be viewed negatively by our customers, investors and industry analysts.

We may have to pay cash, incur debt or issue equity securities to pay for future acquisitions, each of which could adversely affect our financial condition or the value of our Class A common stock. Equity issuances in connection with potential future acquisitions may also result in dilution to our stockholders. In addition, our future operating results may be impacted by performance earn-outs or contingent bonuses. Furthermore, acquisitions may involve contingent liabilities, adverse tax consequences, additional equity-based compensation expense, adjustments for fair value of deferred revenue, the recording and subsequent amortization of amounts related to certain purchased intangible assets and, if unsuccessful, impairment charges resulting from the write-off of goodwill or other intangible assets associated with the acquisition, any of which could negatively impact our future results of operations.

In addition, if we are unsuccessful at integrating the operations or technologies associated with such acquisitions, into our company, the revenue and operating results of the combined company could be adversely affected. We may fail to identify all of the problems, liabilities or other shortcomings or challenges of an acquired company, including issues related to intellectual property, solution quality or architecture, regulatory compliance practices and customer or sales channel issues. Any integration process may result in unforeseen operating difficulties and require significant time and resources, and we may not be able to manage the process successfully. In particular, we may encounter difficulties assimilating or integrating the companies, solutions, technologies, accounting systems, personnel or operations we acquire, particularly if the key personnel are geographically dispersed or choose not to work for us. We may also experience difficulty in effectively integrating or preserving the different cultures and practices of the companies we acquire. Acquisitions may also disrupt our core business, divert our resources and require significant management attention that would otherwise be available for development of our business. We may not successfully evaluate or utilize the acquired technology, intellectual property or personnel, or accurately forecast the financial impact of an acquisition transaction, including accounting charges. If we fail to properly evaluate, execute or integrate acquisitions or investments, the anticipated benefits may not be realized, we may be exposed to unknown or unanticipated liabilities, and our business and prospects could be harmed.

If the rate of growth of small businesses and ventures is significantly lower than our estimates or if demand for our products does not meet expectations, our ability to generate revenue and meet our financial targets could be adversely affected.

Although we expect continued demand from small businesses and ventures for our products, it is possible the rate of growth may not meet our expectations, or the market may not grow, either of which would adversely affect our business. Our expectations for future revenue growth are based in part on assumptions reflecting our industry knowledge and experience serving small businesses and ventures, as well as our assumptions regarding demographic shifts, growth in the availability and capacity of Internet infrastructure internationally and the general economic climate. If any of these assumptions proves to be inaccurate, our revenue growth could be significantly lower than expected.

Our ability to compete successfully depends on our ability to offer an integrated and comprehensive suite of products enabling our diverse base of customers to start, grow and run their businesses. The success of our domains, hosting, presence and business applications offerings is predicated on the assumption that an online presence is, and will continue to be, an important factor in our customers' abilities to establish, expand and manage their businesses quickly, easily and affordably. If we are incorrect in this assumption, for example due to the introduction of a new technology or industry standard superseding the importance of an online presence or renders our existing or future products obsolete, then our ability to retain existing customers and attract new customers could be adversely affected, which could harm our ability to generate revenue and meet our financial targets.

We rely on search engines to attract a meaningful portion of our customers. If search engines change their search algorithms or policies regarding advertising, increase their pricing or suffer problems, our ability to attract new customers may be impaired.

Many of our customers locate our website and products through Internet search engines such as Google, Yahoo! and Bing. The prominence of our website in response to search inquiries is a critical factor in attracting potential customers to our websites. If we are listed less prominently or fail to appear in search results for any reason, visits to our websites by customers and potential customers could decline significantly, and we may not be able to replace this traffic. Search engines revise their algorithms from time to time in an attempt to optimize their search results. If search engines on which we rely for algorithmic listings modify their algorithms, our websites may appear less prominently or not at all in search results, which could result in reduced traffic to our websites. Additionally, if the costs of search engine marketing services, such as Google AdWords, increase, we may incur additional marketing expenses or be required to allocate a larger portion of our marketing spend to this channel and our business and operating results could be adversely affected.

Furthermore, competitors may in the future bid on our brand names and other search terms we use to drive traffic to our websites. Such actions could increase our advertising costs and result in decreased traffic to our websites. In addition, search engines or social networking sites may change their advertising policies from time to time. If any change to these policies delays or prevents us from advertising through these channels, it could result in reduced traffic to our website and sales of our subscriptions.

If we are unable to increase sales of our products to Web Pros, our business, growth prospects and operating results will be adversely affected.

Historically, our business has been focused on serving individuals who are thinking about starting a business to small businesses and ventures that are up and running but need help growing and expanding their digital capabilities. As a result, our products were less suited to the needs of more technically skilled individuals or web developers and other Web Pros. Furthermore, we did not target Web Pros with our marketing activities or provide Customer Care resources tailored to this customer group. We continue to focus on Web Pros to increase our total customers and grow our revenue. Our recent acquisitions have further expanded our Web Pro offerings by providing additional features such as Managed WordPress, bolstered our Web Pro-focused Customer Care team and extended our reach into the Web Pro community. We are also working to tailor our marketing efforts to, and build dedicated Customer Care resources for, Web Pros. If we are unable to develop products and provide Customer Care addressing the needs of Web Pros, successfully target them with our marketing efforts or successfully leverage the Media Temple brand to capture a greater portion of the Web Pros market, our business, growth prospects and operating results could be adversely affected.

We maintain a network of different types of partners, some of which create integrations with our products. For example, we partnered with Microsoft Corporation to offer Office 365 email and other productivity tools to our customers and SiteLock, LLC (SiteLock) to offer website security products to our customers, and we have worked to make certain of our products interoperable with services such as Yelp. We have invested and will continue to invest in partner programs to provide new product offerings to our customers and help us attract additional customers. However, our relationships with our partners may not be as successful in generating new customers as we anticipate, which could adversely affect our ability to increase our total customers. Further, these programs could require substantial investment while providing no assurance of return or incremental revenue. We also rely on some of our partners to create integrations with third-party applications and platforms used by our customers, such as Office 365 and SiteLock. If our partners fail to create such integrations, or if they change the features of their applications or alter the terms governing use of their applications in an adverse manner, demand for our products could decrease, which would harm our business and operating results. If we are unable to maintain our contractual relationships with existing partners or establish new contractual relationships with potential partners, we may not be able to offer the products and related functionality our customers expect, and we may experience delays and increased costs in adding customers and may lose customers, which could have a material adverse effect on us. Any ineffectiveness of our partner programs could adversely affect our business and results of operations.

Our quarterly and annual operating results may be adversely affected due to a variety of factors, which could make our future results difficult to predict and could cause our operating results to fall below investor or analyst expectations.

Our quarterly and annual operating results and key metrics have varied from period to period in the past, and we expect they may continue to fluctuate as a result of a number of factors, many of which are outside of our control, including:

- our ability to attract new customers and retain existing customers;
- the timing and success of introductions of new products;
- changes in the growth rate of small businesses and ventures;
- changes in renewal rates for our subscriptions and our ability to sell additional products to existing customers;
- refunds to our customers could be higher than expected;
- the timing of revenue recognition relative to the recording of the related expense;
- any negative publicity or other actions which harm our brand;
- the timing of our marketing expenditures;
- the mix of products sold;
- our ability to maintain a high level of personalized Customer Care and resulting customer satisfaction;
- competition in the market for our products;
- our ability to expand internationally;
- changes in foreign currency exchange rates;
- rapid technological change, frequent new product introductions and evolving industry standards;
- systems, data center and Internet failures, breaches and service interruptions;
- changes in U.S. or foreign regulations that could impact one or more of our product offerings or changes to regulatory bodies, such as ICANN, as well as increased regulation by governments or multi-governmental organizations, such as the International Telecommunications Union, a specialized agency of the United Nations or the European Union, that could affect our business and our industry;
- a delay in the authorization of new TLDs by ICANN or our ability to successfully on-board new TLDs which would impact the breadth of our customer offerings;
- shortcomings in, or misinterpretations of, our metrics and data which cause us to fail to anticipate or identify market trends;
- terminations of, disputes with, or material changes to our relationships with third-party partners, including referral sources, product partners and payment processors;
- reductions in the selling prices for our products;

- timing of the completion of our acquisition of HEG;
- costs and integration issues associated with our acquisition of HEG and any other acquisitions we may make;
- changes in legislation affecting our collection of indirect taxes both in the U.S. and in foreign jurisdictions;
- recording higher than expected domain portfolio assets resulting from an increased rate of failed sales on our aftermarket platform for transactions in which we act as the primary obligor;
- timing of expenses and tax distributions;
- threatened or actual litigation; and
- loss of key employees.

Any one of the factors above, or the cumulative effect of some of the factors referred to above, may result in significant fluctuations in our quarterly or annual operating results, including fluctuations in our key financial and operating metrics, our ability to forecast those results and our ability to achieve those forecasts. This variability and unpredictability could result in our failing to meet our revenue, bookings or operating results expectations or those of securities analysts or investors for any period. In addition, a significant percentage of our operating expenses are fixed in nature and based on forecasted revenue and bookings trends. Accordingly, in the event of revenue or bookings shortfalls, we are generally unable to mitigate the negative impact on operating results in the short term.

We may release guidance in our quarterly earnings conference calls, quarterly earnings releases, or otherwise, based on predictions of management, which are necessarily speculative in nature. Our guidance may vary materially from actual results for a variety of reasons, including that our cash generation may be uneven across quarters. If our revenue, bookings or operating results, or the rate of growth of our revenue, bookings or operating results, fall below the expectations of our investors or financial analysts, or below any forecasts or guidance we may provide to the market, or if the forecasts we provide to the market are below the expectations of analysts or investors, the price of our common stock could decline substantially. Such a stock price decline could occur even when we have met our own or other publicly stated revenue, bookings or earnings forecasts. Our failure to meet our own or other publicly stated revenue, bookings or earnings forecasts, or even when we meet our own forecasts but fall short of analyst or investor expectations, could cause our stock price to decline and expose us to costly lawsuits, including securities class action suits. Such litigation against us could impose substantial costs and divert management's attention and resources.

We have a history of operating losses and may not be able to achieve profitability in the future.

We had net losses of $22 million, $120 million and $143 million, in 2016, 2015 and 2014, respectively. While we have experienced revenue growth over these same periods, we may not be able to sustain or increase our growth or achieve profitability in the future or on a consistent basis. We have incurred substantial expenses and expended significant resources upfront to market, promote and sell our products. We also expect to continue to invest for future growth. In addition, we expect to continue to incur significant accounting, legal and other expenses as a public company.

As a result of our increased expenditures, we will have to generate and sustain increased revenue to achieve future profitability. Achieving profitability will require us to increase revenues, manage our cost structure and avoid significant liabilities. Revenue growth may slow or decline, or we may incur significant losses in the future for a number of possible reasons, including general macroeconomic conditions, increased competition, a decrease in the growth of the markets in which we operate, or if we fail for any reason to continue to capitalize on growth opportunities. Additionally, we may encounter unforeseen operating expenses, difficulties, complications, delays and other unknown factors that may result in losses in future periods. If these losses exceed our expectations or our revenue growth expectations are not met in future periods, our financial performance will be harmed, and our stock price could be volatile or decline.

We may need additional equity, debt or other financing in the future, which we may not be able to obtain on acceptable terms, or at all, and any additional financing may result in restrictions on our operations or substantial dilution to our stockholders.

We may need to raise funds in the future, for example, to develop new technologies, expand our business, respond to competitive pressures and make acquisitions. We may try to raise additional funds through public or private financings, strategic relationships or other arrangements. Although our credit agreement limits our ability to incur additional indebtedness, these restrictions are subject to a number of qualifications and exceptions and may be amended with the consent of our lenders. Accordingly, under certain circumstances, we may incur substantial additional debt.

Our ability to obtain debt or equity funding will depend on a number of factors, including market conditions, interest rates, our operating performance, our credit rating and investor interest. Additional funding may not be available to us on acceptable terms or at all. If adequate funds are not available, we may be required to reduce expenditures, including curtailing our growth strategies, foregoing acquisitions or reducing our product development efforts. If we succeed in raising additional funds through the issuance of equity or equity-linked securities, then existing stockholders could experience substantial dilution. If we raise additional funds through the issuance of debt securities or preferred stock, these new securities would have rights, preferences and privileges senior to those of the holders of our Class A common stock. In addition, any such issuance could subject us to restrictive covenants relating to our capital raising activities and other financial and operational matters, which may make it more difficult for us to obtain additional capital and to pursue business opportunities, including potential acquisitions. Further, to the extent we incur additional indebtedness or such other obligations, the risks associated with our substantial leverage described elsewhere in this 10-K, including our possible inability to service our debt, would increase.

Changes in accounting principles, or interpretations thereof, may cause unexpected financial reporting fluctuations and adversely affect our operating results and financial statements going forward.

We prepare our consolidated financial statements and the related notes in accordance with generally accepted accounting principles in the U.S. (GAAP). These principles are subject to interpretation by the Financial Accounting Standards Board (FASB), the SEC and various bodies formed to create and interpret appropriate accounting principles. Accounting rules and regulations are continually changing in ways that could materially impact our financial statements, and a change in the current accounting principles could have a significant effect on our reported results or may retroactively affect previously reported transactions. Additionally, the adoption of new or revised accounting principles may require us to make significant changes to our systems, processes and controls. For example, the FASB issued Accounting Standards Update No. 2014-09, *Revenue from Contracts with Customers (Topic 606), as amended*, will supersede nearly all existing revenue recognition guidance. While we continue to assess the potential impacts of the new standard, we do not know or cannot reasonably estimate quantitative information related to its impact on our consolidated financial statements and related disclosures at this time. We cannot predict the impact of future changes to accounting principles or our accounting policies on our financial statements going forward, which could have a significant effect on our reported financial results. In addition, if we were to change our critical accounting estimates as a result of new accounting standards in the future, our financial position or results of operations could be significantly affected.

See Note 2 to our consolidated financial statements for information regarding recent accounting pronouncements.

Because we are generally required to recognize revenue for our products over the term of the applicable agreement, changes in our sales may not be immediately reflected in our operating results.

As described in Note 2 to our consolidated financial statements, we generally recognize revenue from our customers ratably over the respective terms of their subscriptions in accordance with GAAP. Our subscription terms are typically one year, but can range from monthly terms to multi-annual terms of up to 10 years depending on the product. Accordingly, increases in sales during a particular period do not translate into immediate, proportional increases in revenue during such period, and a substantial portion of the revenue we recognize during a quarter is derived from deferred revenue from customer subscriptions we entered into during previous quarters. As a result, our margins may suffer despite substantial sales activity during a particular period, since GAAP does not permit us to recognize all of the revenue from our sales immediately. Conversely, a decline in new or renewed subscriptions in any one quarter may not be reflected in our revenue for that quarter and the existence of substantial deferred revenue may prevent deteriorating sales activity from becoming immediately observable in our consolidated statement of operations. In addition, we may not be able to adjust spending in a timely manner to compensate for any unexpected bookings shortfall, and any significant shortfall in bookings relative to planned expenditures could negatively impact our business and results of operations.

Our failure to properly register or maintain our customers' domain names could subject us to additional expenses, claims of loss or negative publicity that could have a material adverse effect on our business.

System and process failures related to our domain name registration product may result in inaccurate and incomplete information in our domain name database. Despite testing, system and process failures may remain undetected or unknown, which could result in compromised customer data, loss of or delay in revenues, failure to achieve market acceptance, injury to our reputation or increased product costs, any of which could harm our business. Furthermore, the requirements for securing and renewing domain names vary from registry to registry and are subject to change. We cannot guarantee we will be able to readily adopt and comply with the various registry requirements. Our failure or inability to properly register or maintain our customers' domain names, even if we are not at fault, might result in significant expenses and subject us to claims of loss or to negative publicity, which could harm our business, brand and operating results.

We rely heavily on the reliability, security and performance of our internally developed systems and operations. Any difficulties in maintaining these systems may result in damage to our brand, service interruptions, decreased customer service or increased expenditures.

The reliability and continuous availability of the software, hardware and workflow processes underlying our internal systems, networks and infrastructure and the ability to deliver our products are critical to our business, and any interruptions resulting in our inability to timely deliver our products or Customer Care, or materially impacting the efficiency or cost with which we provide our products and Customer Care, would harm our brand, profitability and ability to conduct business. In addition, many of the software and other systems we currently use will need to be enhanced over time or replaced with equivalent commercial products or services, which may not be available on commercially reasonable terms or at all. Enhancing or replacing our systems, networks or infrastructure could entail considerable effort and expense. If we fail to develop and execute reliable policies, procedures and tools to operate our systems, networks or infrastructure, we could face a substantial decrease in workflow efficiency and increased costs, as well as a decline in our revenue.

We rely on a limited number of data centers to deliver most of our products. If we are unable to renew our data center agreements on favorable terms, or at all, our operating margins and profitability could be adversely affected and our business could be harmed.

We own one of our data centers and lease our remaining data center capacity from wholesale providers. We occupy our leased data center capacity pursuant to co-location service agreements with third-party data center facilities, which have built and maintain the co-located data centers for us and other parties. We currently serve all our customers from our GoDaddy-owned, Arizona-based data center as well as seven domestic and four international co-located data center facilities located in Arizona, California, Virginia, New York, the Netherlands and Singapore. Although we own the servers in these co-located data centers and engineer and architect the systems upon which our platforms run, we do not control the operation of these facilities, and we depend on the operators of these facilities to ensure their proper security and maintenance.

Despite precautions taken at our data centers, these facilities may be vulnerable to damage or interruption from break-ins, computer viruses, DDOS or other cyber-attacks, acts of terrorism, vandalism or sabotage, power loss, telecommunications failures, fires, floods, earthquakes, hurricanes, tornadoes and similar events. The occurrence of any of these events or other unanticipated problems at these facilities could result in loss of data (including personal or payment card information), lengthy interruptions in the availability of our services and harm to our reputation and brand. While we have disaster recovery arrangements in place, they have been tested in only very limited circumstances and not during any large-scale or prolonged disasters or similar events.

The terms of our existing co-located data center agreements vary in length and expire on various dates through 2026. Only some of our agreements with our co-located data centers provide us with options to renew under negotiated terms. We also have agreements with other critical infrastructure vendors who provide all of our facilities, including our data centers, with bandwidth, fiber optics and electrical power. None of these infrastructure vendors are under any obligation to continue to provide these services after the expiration of their respective agreements with us, nor are they obligated to renew the terms of those agreements.

Our existing co-located data center agreements may not provide us with adequate time to transfer operations to a new facility in the event of early termination. If we were required to move our equipment to a new facility without adequate time to plan and prepare for such migration, we would face significant challenges due to the technical complexity, risk and high costs of the relocation. Any such migration could result in significant costs for us and may result in data loss and significant downtime for a significant number of our customers which could damage our reputation, cause us to lose current and potential customers and adversely affect our operating results and financial condition.

Undetected or unknown defects in our products could harm our business and future operating results.

The products we offer or develop, including our proprietary technology and technology provided by third parties, could contain undetected defects or errors. For example, a small number of recently issued SSL certificates failed due to a software bug inadvertently introduced during a routine code change. We revoked the SSL certificates potentially affected by the bug as a precautionary matter, remedied the bug, contacted affected customers, and initiated a new certificate request on their behalf at no additional cost. The performance of our products could have unforeseen or unknown adverse effects on the networks over which they are delivered as well as, more broadly, on Internet users and consumers and third-party applications and services utilizing our solutions. These adverse effects, defects and errors, and other performance problems relating to our products could result in legal claims against us that harm our business and damage our reputation. The occurrence of any of the foregoing could result in compromised customer data, loss of or delay in revenues, an increase in our annual refund rate, which has ranged from 6.6% to 7.2% of total bookings from 2014 to 2016, loss of market share, failure to achieve market acceptance, diversion of development resources, injury to our reputation or brand and increased costs. In addition, while our terms of service specifically disclaim certain warranties, and contain limitations on our liability, courts may still hold us liable for such claims if asserted against us.

Privacy concerns relating to our technology could damage our reputation and deter existing and new customers from using our products.

From time to time, concerns have been expressed about whether our products or processes compromise the privacy of customers and others. Concerns about our practices with regard to the collection, use, disclosure or security of personally identifiable information, including payment card information, or other privacy related matters, even if unfounded, could damage our reputation and adversely affect our operating results. In addition, as nearly all of our products are cloud-based, the amount of data we store for our customers on our servers (including personally identifiable information) has been increasing. Any systems failure or compromise of our security resulting in the release of our users' or customers' data could seriously limit the adoption of our product offerings, as well as harm our reputation and brand and, therefore, our business. We expect to continue to expend significant resources to protect against security breaches. The risk that these types of events could seriously harm our business is likely to increase as we expand the number of cloud-based products we offer and operate in more countries.

We are subject to privacy and data protection laws and regulations as well as contractual privacy and data protection obligations. Our failure to comply with these or any future laws, regulations or obligations could subject us to sanctions and damages and could harm our reputation and business.

We are subject to a variety of laws and regulations, including regulation by various federal government agencies, including the Federal Trade Commission (FTC), Federal Communications Commission, and state and local agencies. We collect personally identifiable information, including payment card information, and other data from our current and prospective customers, website users and employees. The U.S. federal and various state and foreign governments have adopted or proposed limitations on, or requirements regarding, the collection, distribution, use, security and storage of personally identifiable information of individuals, including payment card information, and the FTC and many state attorneys general are applying federal and state consumer protection laws to impose standards on the online collection, use and dissemination of data. Self-regulatory obligations, other industry standards, policies, and other legal obligations may apply to our collection, distribution, use, security or storage of personally identifiable information or other data relating to individuals, including payment card information. These obligations may be interpreted and applied in an inconsistent manner from one jurisdiction to another and may conflict with one another, other regulatory requirements or our internal practices. Any failure or perceived failure by us to comply with U.S., E.U. or other foreign privacy or security laws, policies, industry standards or legal obligations or any security incident resulting in the unauthorized access to, or acquisition, release or transfer of, personally identifiable information or other data relating to our customers, employees and others, including payment card information, may result in governmental enforcement actions, litigation, fines and penalties or adverse publicity and could cause our customers to lose trust in us, which could have an adverse effect on our reputation and business.

We expect there will continue to be new proposed laws, regulations and industry standards concerning privacy, data protection and information security in the U.S., the European Union and other jurisdictions, and we cannot yet determine the impact such future laws, regulations and standards may have on our business. Future laws, regulations, standards and other obligations could impair our ability to collect or use information we utilize to provide targeted advertising to our customers, thereby impairing our ability to maintain and grow our total customers and increase revenue. Future restrictions on the collection, use, sharing or disclosure of our users' data or additional requirements for express or implied consent of users for the use and disclosure of such information could require us to modify our products, possibly in a material manner, and could limit our ability to develop new products and features.

In particular, with regard to transfers of personal data, as such term is used in the 1995 EU Data Protection Directive and applicable European Union member state legislation, from our employees and European customers and users to the U.S., we historically have relied upon adherence to the U.S. Department of Commerce's Safe Harbor Privacy Principles and compliance with the U.S.-EU Safe Harbor Framework agreed to by the U.S. Department of Commerce and the European Union. The U.S.-EU Safe Harbor Framework, which established means for legitimizing the transfer of personal data by U.S. companies from the European Economic Area (the EEA) to the U.S., was invalidated in October 2015 by a decision of the European Court of Justice (the ECJ). In light of the ECJ's decision, we have engaged in a review of our business practices and recently self-certified under the U.S.-EU Privacy Shield, a replacement framework for the U.S.-EU Safe Harbor Framework that was adopted in July 2016. The U.S.-EU Privacy Shield may be subject to legal challenge and may be modified or invalidated, and we may be unsuccessful in maintaining legitimate means for our transfer and receipt of personal data from the EEA. We may experience reluctance or refusal by current or prospective European customers to use our products, and we may find it necessary or desirable to make further changes to our handling of personal data of EEA residents. The regulatory environment applicable to the handling of EEA residents' personal data, and our actions taken in response, may cause us to assume additional liabilities or incur additional costs, and could result in our business, operating results and financial condition being harmed. Additionally, we and our customers may face a risk of enforcement actions by data protection authorities in the EEA relating to personal data transfers to us and by us from the EEA. Any such enforcement actions could result in substantial costs and diversion of resources, distract management and technical personnel and negatively affect our business, operating results and financial condition.

In addition, several foreign countries and governmental bodies including the European Union and Canada, have laws and regulations concerning the collection and use of personally identifiable information obtained from their residents, including payment card information, which are often more restrictive than those in the U.S. Laws and regulations in these jurisdictions apply broadly to the collection, use, storage, disclosure and security of personally identifiable information, including payment card information identifying, or which may be used to identify, an individual, such as names, email addresses and, in some jurisdictions, Internet Protocol (IP) addresses. Although we are working to comply with those laws and regulations applicable to us, these and other obligations may be modified and they may be interpreted in different ways by courts, and new laws and regulations may be enacted in the future. Within the European Union, legislators have approved the General Data Protection Regulation (GDPR), a new regulation that will become effective in May 2018 and, at that time, will supersede the 1995 European Union Data Protection Directive. The GDPR includes more stringent operational requirements for processors and controllers of personal data, including payment card information, imposes significant penalties for non-compliance and has broader extra-territorial effect. As the GDPR is a regulation rather than a directive, it requires strict adoption by all EU member states, but permits those member states to enact supplemental requirements if they so choose. Further, following a referendum in June 2016 in which voters in the United Kingdom approved an exit from the EU, it is expected that the United Kingdom government will initiate a process to leave the EU. This has created uncertainty with regard to the future regulation of data protection in the United Kingdom.

Any new laws, regulations, other legal obligations or industry standards, or any changed interpretation of existing laws, regulations or other standards may require us to incur additional costs and restrict our business operations. If our privacy or data security measures fail to comply with current or future laws, regulations, policies, legal obligations or industry standards, we may be subject to litigation, regulatory investigations, fines or other liabilities, as well as negative publicity and a potential loss of business. Moreover, if future laws, regulations, other legal obligations or industry standards, or any changed interpretations of the foregoing limit our customers' ability to use and share personally identifiable information, including payment card information, or our ability to store, process and share such personally identifiable information or other data, demand for our products could decrease, our costs could increase, and our business, operating results and financial condition could be harmed.

Failure to adequately protect and enforce our intellectual property rights could substantially harm our business and operating results.

The success of our business depends in part on our ability to protect and enforce our patents, trademarks, copyrights, trade secrets and other intellectual property rights. We attempt to protect our intellectual property under patent, trademark, copyright and trade secret laws, and through a combination of confidentiality procedures, contractual provisions and other methods, all of which offer only limited protection.

As of December 31, 2016, we had 193 issued patents in the U.S. covering various aspects of our product offerings. Additionally, as of December 31, 2016, we had 186 pending U.S. patent applications and intend to file additional patent applications in the future. The process of obtaining patent protection is expensive and time-consuming, and we may not be able to prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. We may choose not to seek patent protection for certain innovations and may choose not to pursue patent protection in certain jurisdictions, and under the laws of certain jurisdictions, patents or others intellectual property may be unavailable or limited in scope. Furthermore, it is possible that our patent applications may not issue as granted patents, that the scope of our issued patents will be insufficient or not have the coverage originally sought, that our issued patents will not provide us with any competitive advantages, and that our patents and other intellectual property rights may be challenged by others or invalidated through administrative processes or litigation. In addition, issuance of a patent does not assure that we have an absolute right to practice the patented invention, or that we have the right to exclude others from practicing the claimed invention. As a result, we may not be able to obtain adequate patent protection or to enforce our issued patents effectively.

In addition to patented technology, we rely on our unpatented proprietary technology and confidential proprietary information, including trade secrets and know-how. Despite our efforts to protect the proprietary and confidential nature of such technology and information, unauthorized parties may attempt to misappropriate, reverse engineer or otherwise obtain and use them. The contractual provisions in confidentiality agreements and other agreements we generally enter into with employees, consultants, partners, vendors and customers may not prevent unauthorized use or disclosure of our proprietary technology or intellectual property rights and may not provide an adequate remedy in the event of unauthorized use or disclosure of our proprietary technology or intellectual property rights. Moreover, policing unauthorized use of our technologies, products and intellectual property is difficult, expensive and time-consuming, particularly in foreign countries where the laws may not be as protective of intellectual property rights as those in the U.S. and where mechanisms for enforcement of intellectual property rights may be weak. To the extent we expand our international activities, our exposure to unauthorized copying and use of our products and proprietary information may increase. We may be unable to determine the extent of any unauthorized use or infringement of our products, technologies or intellectual property rights.

As of December 31, 2016, we had 395 registered trademarks in 63 countries, including the GoDaddy logo and mark in all international markets in which we operate or intend to operate. We have also registered, or applied to register, the trademarks associated with several of our leading brands in the U.S. and in certain other countries. Competitors and others may have adopted, and in the future may adopt, tag lines or service or product names similar to ours, which could impede our ability to build our brands' identities and possibly lead to confusion. In addition, there could be potential trade name or trademark infringement claims brought by owners of other registered and common law trademarks or trademarks incorporating variations of the terms or designs of one or more of our trademarks and opposition filings made when we apply to register our trademarks.

From time to time, legal action by us may be necessary to enforce our patents, trademarks and other intellectual property rights, to protect our trade secrets, to determine the validity and scope of the intellectual property rights of others or to defend against claims of infringement or invalidity. Such litigation could result in substantial costs and diversion of resources, distract management and technical personnel and negatively affect our business, operating results and financial condition. If we are unable to protect our intellectual property rights, we may find ourselves at a competitive disadvantage to others who need not incur the additional expense, time and effort required to create the innovative products that have enabled us to be successful to date. Any inability on our part to protect adequately our intellectual property may have a material adverse effect on our business, operating results and financial condition.

We are currently a party to intellectual property claims and litigation asserted by third parties, and may be subject to additional claims and litigation in the future, which could result in significant costs and substantially harm our business and results of operations.

In recent years, there has been significant litigation in the U.S. and abroad involving patents and other intellectual property rights. Companies providing web-based and cloud-based products are increasingly bringing, and becoming subject to, suits alleging infringement of proprietary rights, particularly patent rights. The possibility of intellectual property infringement claims also may increase to the extent we face increasing competition and become increasingly visible. Any claims we assert against perceived infringers could provoke these parties to assert counterclaims against us alleging that we infringe their intellectual property rights. In addition, our exposure to risks associated with the use of intellectual property may increase as a result of acquisitions we make or our use of software licensed from or hosted by third parties, as we have less visibility into the development process with respect to such technology or the care taken to safeguard against infringement risks. Third parties may make infringement and similar or related claims after we have acquired or licensed technology that had not been asserted prior to our acquisition or license. Many companies are devoting significant resources to obtaining patents that could affect many aspects of our business. This may prevent us from deterring patent infringement claims, and our competitors and others may now

EXHIBIT KM-8

Redacted – Confidential Information

EXHIBIT KM-9

About Us Newsroom Investor Relations

April 06, 2020

GoDaddy Acquires Neustar's Registry Business

Share — Twitter Facebook LinkedIn Copy Link

Furthers GoDaddy's Commitment to Investing in the Infrastructure of the Internet to Deliver Great Customer Experiences Punctuated by Speed, Security and Reliability

SCOTTSDALE, Ariz., April 6, 2020 /PRNewswire/ -- GoDaddy Inc. (NYSE: GDDY), the company that empowers everyday entrepreneurs, today announced it is acquiring Neustar Inc's Registry business. Financial details of the transaction were not disclosed. The deal is expected to close in Q2 2020.

The Neustar Registry business features a high-performance backend registry technology platform and enhanced domain security systems that enable people and brands to seamlessly connect and transact online with speed, security and reliability.

"GoDaddy is committed to helping everyday entrepreneurs bring their ideas online with the best possible domain name choices," said GoDaddy Chief Operating Officer Andrew Low Ah Kee. "Neustar's registry platform enables us to accelerate that commitment and provides enhanced scalability for future growth. For more than two decades, GoDaddy has used its consumer insight to drive innovation in the domain industry and we'll continue to do so by creating more choice and value for consumers."

The new service will be called GoDaddy Registry and will be led by Nicolai Bezsonoff, currently Senior Vice President and General Manager of Neustar's Registry business. As part of the transaction, GoDaddy will strictly adhere to a governance model that maintains independence between the GoDaddy registry and registrar businesses. GoDaddy has worked closely with both registrars and registries for more than 20 years to help grow a healthy and competitive domains market and it will continue to do so for the benefit of consumers and the industry.

Commenting on the acquisition, Mr. Bezsonoff said, "Our team is thrilled to join the GoDaddy family. We share a strong history of partnership and collaboration with GoDaddy that spans two decades. Additionally, we have the same values, a common culture of innovation, and a mutual vision for empowering individuals, businesses and brands to succeed online."

The Neustar Registry business includes an extensive portfolio of top-level domains, including .biz, .co, .in, .nyc and .us, and supports more than 215 TLDs and approximately 12 million domains. This includes its Managed Registry Services business that provides end-to-end registry management for over 130 brand TLDs and 70 generic TLDs.

Debevoise & Plimpton LLP acted as legal advisor to GoDaddy.

About GoDaddy

GoDaddy is empowering everyday entrepreneurs around the world by providing all of the help and tools to succeed online. With 19 million customers worldwide, GoDaddy is the place people come to name their idea, build a professional website, attract customers and manage their work. Our mission is to give our customers the tools, insights and the people to transform their ideas and personal initiative into success. To learn more about the company visit www.GoDaddy.com.

Source: GoDaddy Inc.

View original content to download multimedia:http://www.prnewswire.com/news-releases/godaddy-acquires-neustars-registry-business-301036134.html

SOURCE GoDaddy Inc.

Legal Privacy Policy Advertising Preferences Cookies

EXHIBIT KM-10

Topics:

Frequently Asked Questions

Here's a short FAQ with some of the most common questions about .CO. For a more comprehensive FAQ, please visit our corporate site.

1. What does .CO mean (suffix)? What is the meaning of .CO? What is .CO in a web address?

Every website lives within a domain space such as .com, .net, .biz and others. Introduced to satisfy the need for short and memorable web addresses, .CO is a new domain extension that offers you a global option for branding your online presence.

.CO is already meaningful and recognizable in multiple languages and cultures.

- It's the acronym for "company". For most people[1], the two letters – CO – are recognized as meaning company and/or corporation across the globe. Look around and someone near you is already using the letters CO in that context.
- It's used in country-code domain extensions. More than 20 countries use .CO to mean company and/or commercial content in their websites (e.g. .co.uk, .co.in, .co.il, .co.jp, etc.). By adding a .CO domain to their online marketing strategy, country specific websites can now have a version of their site serving their global customers.
- In other uses it has geographic meaning. CO means Colombia and it also means the State of Colorado in the USA.

[1] According to a research study conducted by Penn, Schoen and Berland in 2009, out of 600 past and prospective domain registrants in the USA, more than 75% of respondents associated .CO with company, corporation, or other commercial endeavors.

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2. .CO vs. .COM, what's the difference? .CO vs. .NET, .CO vs. .ORG.

.COM is the legacy domain extension with more than 100 million registrations. Stick with .com if you're OK with the status-quo. .CO on the other hand is fresh, shorter, social, and... it's available! With an increasing number of people web browsing on mobile devices, the need for short and memorable web addresses has never been so important. In essence, if you want something innovative and cutting edge, go with .CO.

Domain extensions like .info, .mobi, .org and .tv enjoy specific niche markets, which is great if that is what you need for your online branding. .CO is different in that it is more general in meaning and not niche specific.

.CO is registered just like all the other domain extensions. You can get it from domain retailers (a/k/a registrars) for one year or multiple years in advance. As long as you renew your .CO web address, it's yours to keep.

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3. What is the price of .CO? Why is .CO more expensive than .COM?

While you may find may find different prices and promotions out there, the yearly price tag for registration of .CO domain names is typically higher than .com's and other legacy domain extensions. This premium pricing aims to deter domain squatters from registering thousands of domain names without using them.

Simply put, we believe that if you're an entrepreneur or a real business that needs a credible domain for your online branding, our pricing is just right for you.

^ Back to top

4. Does .CO rank on search engines the same way as .COM?

Yes, it sure does! Google has specifically labeled .CO as a generic domain extension ("*gccTLD*" to be exact) and that means your site is given equal treatment in their search results pages assuming you have quality content. Check out our section about .CO and SEO for more information.

^ Back to top

5. How do I switch to .CO?

It's fairly simple and your search engine rankings will not be affected. Just make sure to implement 301 redirects appropriately. Check out the section on how to upgrade to .CO.

^ Back to top

6. When was .CO launched?

.CO was launched globally on July 20th, 2010. To learn more about our trajectory, check out our two year anniversary infographic.

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7. Is .CO the ccTLD for the country of Colombia?

Absolutely. In a little-known language called "ICANN-ese", .CO is the ccTLD for the country of Colombia according to ISO 3166. However, if you're interested in building a website for users in Colombia, we highly recommend using a .COM.CO domain instead. It's the domain extension used by Google in Colombia and some of the largest websites targeting Colombian users. If you're building a global site, targeting users in any country in the world, go with .CO.

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EXHIBIT KM-11

Frequently Asked Questions about the .US Domain

Definitions

+ **What's a TLD?**

+ **What is a ccTLD?**

+ **What is a registrant?**

+ **What's the difference between a registry and a registrar?**

+ **What is a .US reserved domain name?**

+ **What is WHOIS?**

General Information

+ **Who is the usTLD Administrator?**

+ **Who is Neustar?**

+ **What is the relationship between the usTLD Admnistrator and ICANN?**

+ **Can I use .US brand assets on my website?**

Domain Management

+ **How do I buy a .US domain?**

+ **Where can I register a .US domain?**

- **Who can register a .US domain name?**

Any U.S. citizen or resident, as well as any business or organization, including federal, state, and local government with a bona fide presence in the United States can register a .US domain name. One of the following three eligibility requirements must be met:

1. A natural person (i) who is a citizen or permanent resident of the United States of America or any of its possessions or territories or (ii) whose primary place of domicile is in the United States of America or any of its possessions, or
2. Any entity or organization that is incorporated within one of the fifty (50) U.S. states, the District of Columbia, or any of the United States possessions or territories or (ii) organized or otherwise constituted under the laws of a state of the United States of America, the District of Columbia, or any of its possessions or territories, or
3. An entity or organization (including federal, state, or local government of the United States, or a political subdivision thereof) that has a bona fide presence in the United States.

+ **Will proxy registrations, sometimes called "domain privacy" be alllowed on my .US domain name?**

+ **Are Internationalized Domain Names (IDNs) offered in .US?**

+ **Why are some .US domain names reserved?**

+ **The .US domain name I am looking for is unavailable and appears reserved. Where can I see a list of reserved .US domain names and policies?**

+ **How do I change a Permanently Reserved .US Domain Name to resolve on the Internet?**

+ **How do I transfer my .US domain name?**

+ **What is an < AUTHINFO > code?**

+ **What is the Redemption Grace Period (RGP)?**

+ **What is PendingDelete Status?**

+ **How do I find a list of .US domains scheduled to be released from the Registry?**

+ **What should I do if someone infringes on a trademark I own with a .US domain name?**

+ **How can I get access to the .US zone file?**

Domain Security

+ **What is the .US Registry doing about Domain Name abuse such as phishing, malware, and spam?**

+ **What is DNSSEC?**

+ **What problem does DNSSEC solve?**

+ **What problem does DNSSEC NOT solve?**

+ **How does DNSSEC work?**

+ **What's the process for implementing DNSSEC?**

+ **Is there a requirement that registrars implement DNSSEC?**

+ **Is DNSSEC available to .US web address holders?**

+ **How does a customer sign a .US zone with DNSSEC?**

+ **Where can more information be found on DNSSEC?**

.US Locality Management

+ **How do I register a new .US Locality Domain Name?**

+ **How long does it take to process my locality domain name contact or nameserver change request?**

+ **How do I update/change my .US Locality Domain Name information that is reflected in the WHOIS database?**

+ **Why does my locality domain name have the term “unknown contacts” in the WHOIS?**

+ **Which locality domains are included in the .US WHOIS?**

+ **I have a third/fourth/fifth/sixth-level locality .US domain name, but I can’t find it in the .US WHOIS. How can I correct this?**

+ **Can I become a .US Locality Delegated Manager?**

Registrars & Resellers

+ **Who can become a .US-Accredited Registrar?**

+ **Which Registry Services Provider (RSP) does the .US Registry use for its technical provisions?**

+ **Where can I find technical support in relation to my .US accreditation?**

Find your .US domain now:

Search

- Privacy
- Legal

- Policies & Governance
- Contact
- Home.neustar
- About usTLD Administrator
-
-
-

- Other Neustar Services: Registry SolutionsMarketing SolutionsRisk SolutionsSecurity SolutionsCommunications Solutions

neustar

EXHIBIT KM-12

nTLDStats | Statistics | Services | API | Help | Sign in

Registrar | Registry | Backend | New gTLDs | Country | Parking | Fraud

.top

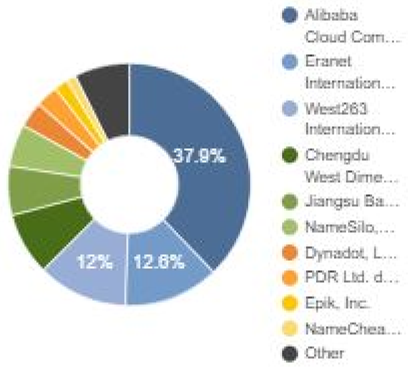
Count of unprocessed Domains: 10,330

.top

Domains:	In Zonefile:	Signed Zones:	Parked Domains:	Upcoming Deletes:
3,818,825 (10.96%)	3,400,277 (89.04%)	0 (0.00%)	2,259,277 (59.16%)	231,035 (6.05%)
Registry:	**Registry Backend:**	**Rest. / Documents:**	**Rankings:**	**More on:**
Jiangsu Bangning Science & Technology C...	ZDNS	| DR | RA	(7,643) | (4,046) | (18,781)	ICANNWiki

Registrations of .top

Registrar Market Shares



.top breakdown

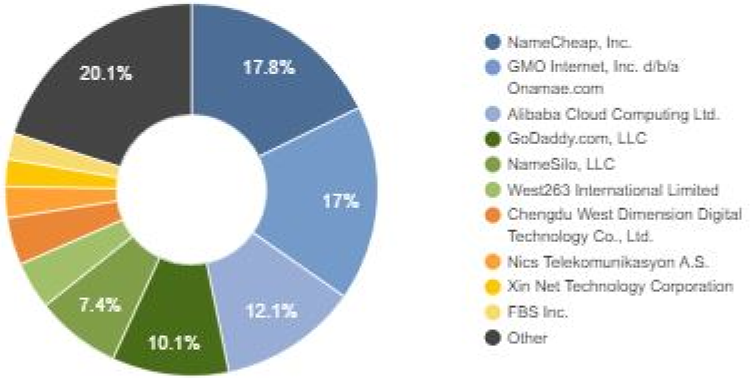
.xyz

Count of unprocessed Domains: 144,369

Domains:	In Zonefile:	Signed Zones:	Parked Domains:	Upcoming Deletes:
3,204,824 (9.20%)	2,716,889 (84.77%)	0 (0.00%)	1,378,515 (43.01%)	197,782 (6.17%)
Registry:	**Registry Backend:**	**Rest. / Documents:**	**Rankings:**	**More on:**
XYZ.COM LLC	CentralNic	DR | RA	(2,391) | (35,511) | (7,608)	ICANNWiki

Registrations of .xyz

Registrar Market Shares



.xyz breakdown

nTLDStats | Statistics | Services | </> API | Help | Sign in

Registrar | Registry | Backend | New gTLDs | Country | Parking | Fraud

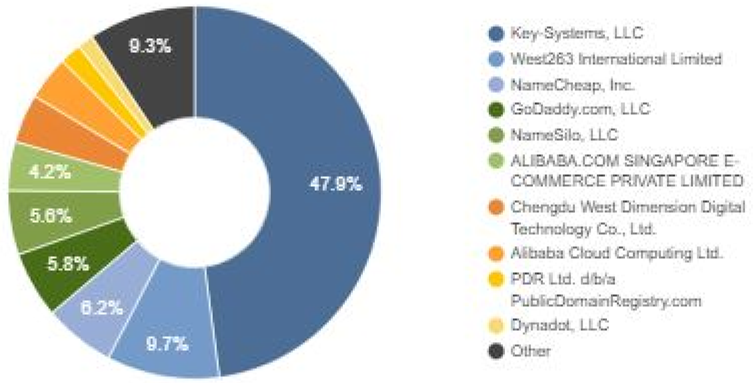
.loan

Count of unprocessed Domains: 9

Domains:	In Zonefile:	Signed Zones:	Parked Domains:	Upcoming Deletes:
20,730 (0.06%)	9,912 (47.81%)	0 (0.00%)	N/A	9,863 (47.58%)
Registry:	**Registry Backend:**	**Rest. / Documents:**	**Rankings:**	**More on:**
Global Registry Services Limited (Domai...	Neustar Inc.	DR | RA	N/A	ICANNWiki

Registrations of .loan

Registrar Market Shares



.loan breakdown

nTLDStats | Statistics | Services | </> API | Help | Sign in

Registrar | Registry | Backend | New gTLDs | Country | Parking | Fraud

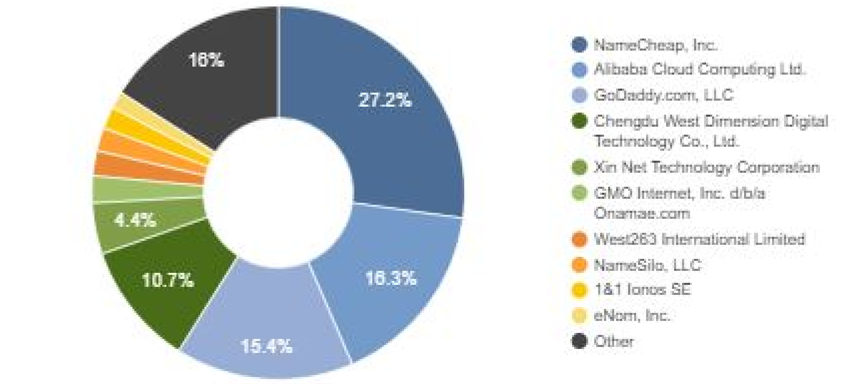
.club

Count of unprocessed Domains: 3,981

Domains:	In Zonefile:	Signed Zones:	Parked Domains:	Upcoming Deletes:
1,373,144 (3.94%)	1,226,792 (89.34%)	0 (0.00%)	967,678 (70.47%)	54,755 (3.99%)
Registry:	**Registry Backend:**	**Rest. / Documents:**	**Rankings:**	**More on:**
CLUB Domains LLC	Neustar Inc.	| DR | RA	(5,679) | (2,133) | (5,523)	ICANNWiki

Registrations of .club

Registrar Market Shares



.club breakdown

.online

Count of unprocessed Domains: 86,978

.online

Domains: 1,564,454 (4.49%)

In Zonefile: 1,409,395 (90.09%)

Signed Zones: 0 (0.00%)

Parked Domains: 777,827 (49.72%)

Upcoming Deletes: 66,023 (4.22%)

Registry: DotOnline Inc. (Radix FZC)

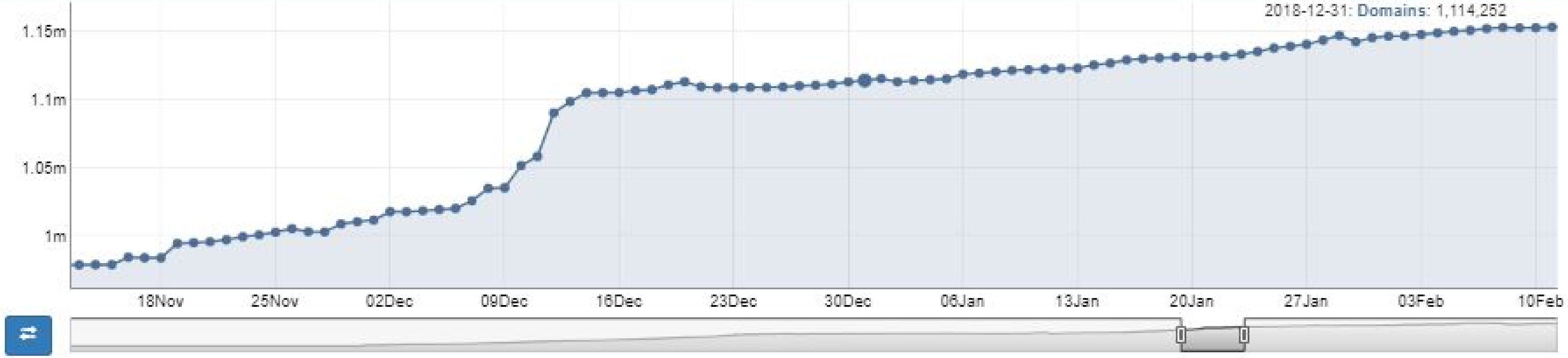
Registry Backend: CentralNic

Rest. / Documents: | DR | RA

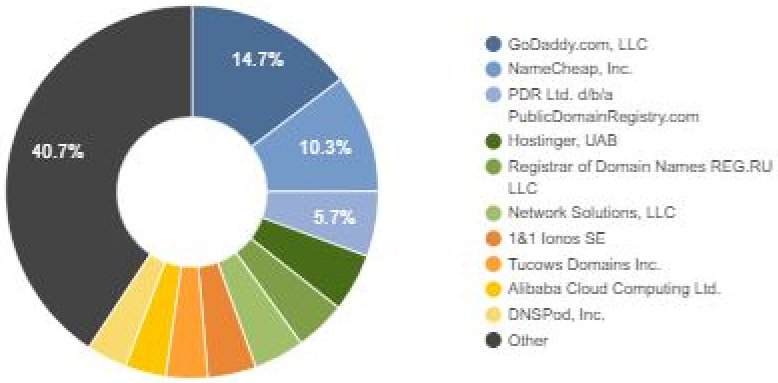
Rankings: (2,345) | (646) | (1,975)

More on: ICANNWiki

Registrations of .online



Registrar Market Shares



.online breakdown

nTLDStats | Statistics | Services | API | Help | Sign in

Registrar | Registry | Backend | New gTLDs | Country | Parking | Fraud

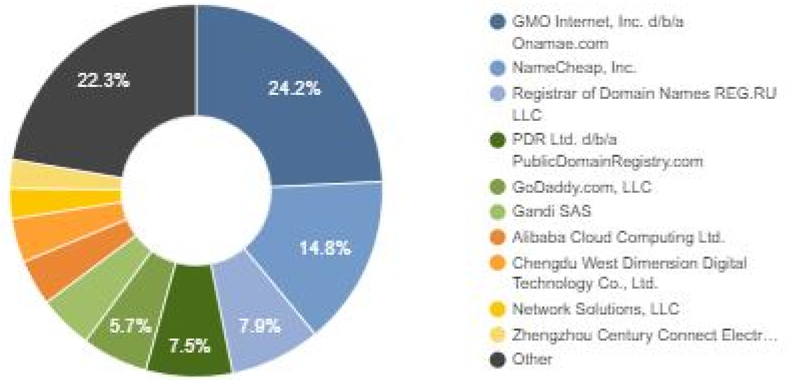
.site

Count of unprocessed Domains: 86,029

Domains:	In Zonefile:	Signed Zones:	Parked Domains:	Upcoming Deletes:
2,137,159 (6.13%)	1,838,750 (86.04%)	0 (0.00%)	975,149 (45.63%)	117,888 (5.52%)
Registry:	**Registry Backend:**	**Rest. / Documents:**	**Rankings:**	**More on:**
DotSite Inc. (Radix FZC)	CentralNic	| DR | RA	(449,057) | (2,226) | (5,776)	ICANNWiki

Registrations of .site

Registrar Market Shares



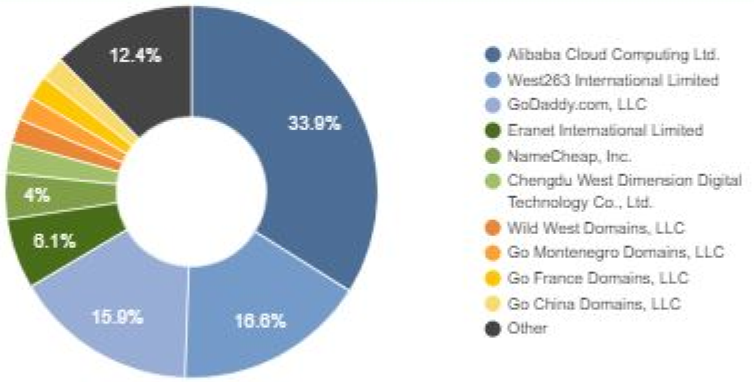
.site breakdown

.vip

Domains:	In Zonefile:	Signed Zones:	Parked Domains:	Upcoming Deletes:
1,393,644 (4.00%)	1,144,866 (82.15%)	0 (0.00%)	621,502 (44.60%)	219,363 (15.74%)
Registry:	**Registry Backend:**	**Rest. / Documents:**	**Rankings:**	**More on:**
Minds + Machines Group Limited (Minds...	Nominet	DR | RA	(17,837) | (44,336)	ICANNWiki

Registrations of .vip

Registrar Market Shares



.vip breakdown

.shop

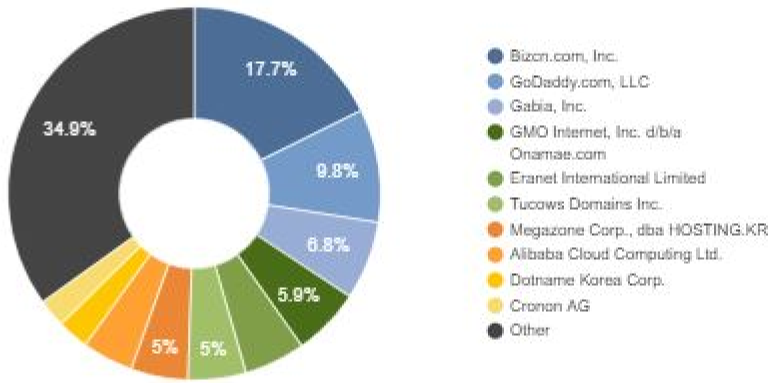
Count of unprocessed Domains: 2,982

.shop

Domains:	In Zonefile:	Signed Zones:	Parked Domains:	Upcoming Deletes:
759,857 (2.18%)	588,220 (77.41%)	0 (0.00%)	401,591 (52.85%)	85,947 (11.31%)
Registry:	**Registry Backend:**	**Rest. / Documents:**	**Rankings:**	**More on:**
GMO Registry, Inc.	GMO Registry, Inc.	| DR | RA	(448,982) | (11,739) | (41,197)	ICANNWiki

Registrations of .shop

Registrar Market Shares



.shop breakdown

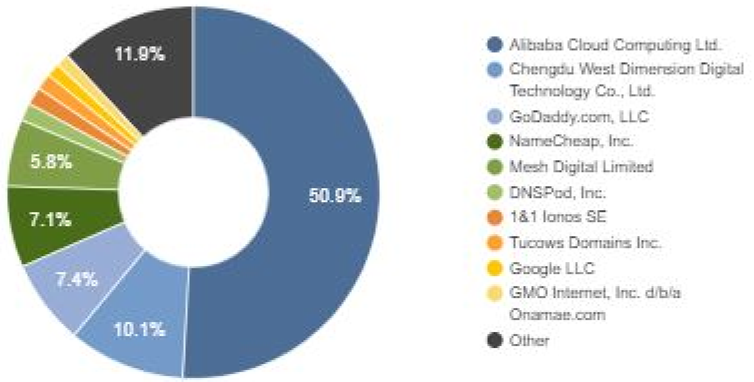
.ltd

Count of unprocessed Domains: 224

Domains:	In Zonefile:	Signed Zones:	Parked Domains:	Upcoming Deletes:
112,079 (0.32%)	103,162 (92.04%)	0 (0.00%)	N/A	4,823 (4.30%)
Registry:	**Registry Backend:**	**Rest. / Documents:**	**Rankings:**	**More on:**
Binky Moon, LLC (Donuts Inc.)	Donuts Inc.	| DR | RA	(449,497) | (1,680) | (158,979)	ICANNWiki

Registrations of .ltd

Registrar Market Shares



.ltd breakdown

.work

Count of unprocessed Domains: 3,808

.work DOMAIN NAMES

Domains: 685,955 (1.97%)

In Zonefile: 637,563 (92.95%)

Signed Zones: 0 (0.00%)

Parked Domains: 315,359 (45.97%)

Upcoming Deletes: 29,915 (4.36%)

Registry: Top Level Domain Holdings Limited (Min...

Registry Backend: Nominet

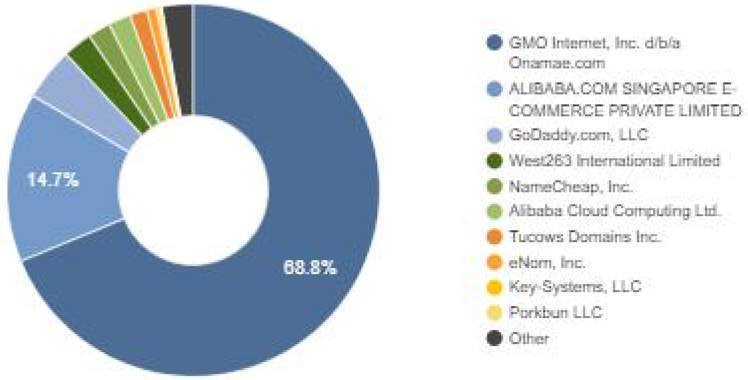
Rest. / Documents: | DR | RA

Rankings: (3,769) | (34,235) | (37,549)

More on: ICANNWiki

Registrations of .work

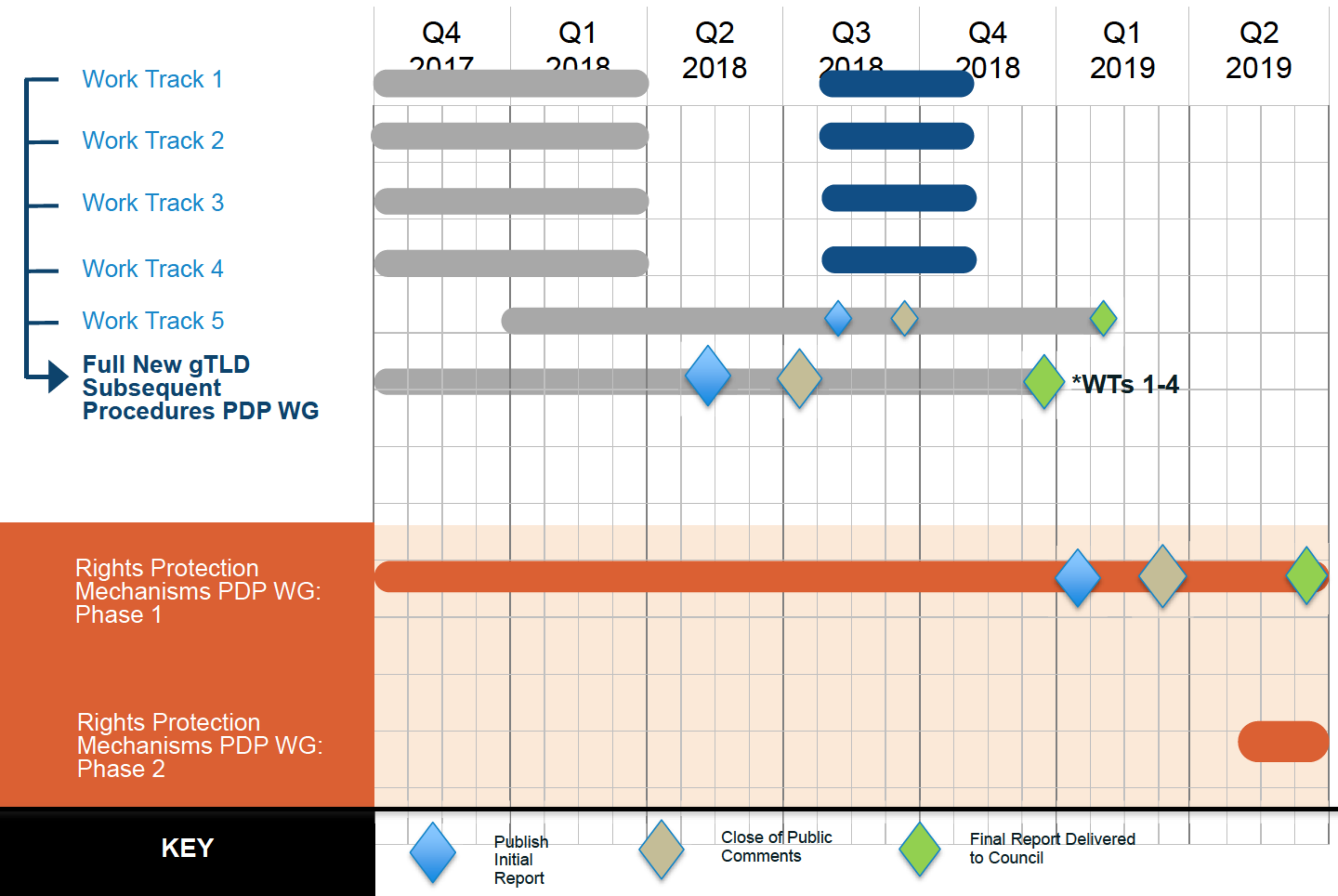
Registrar Market Shares



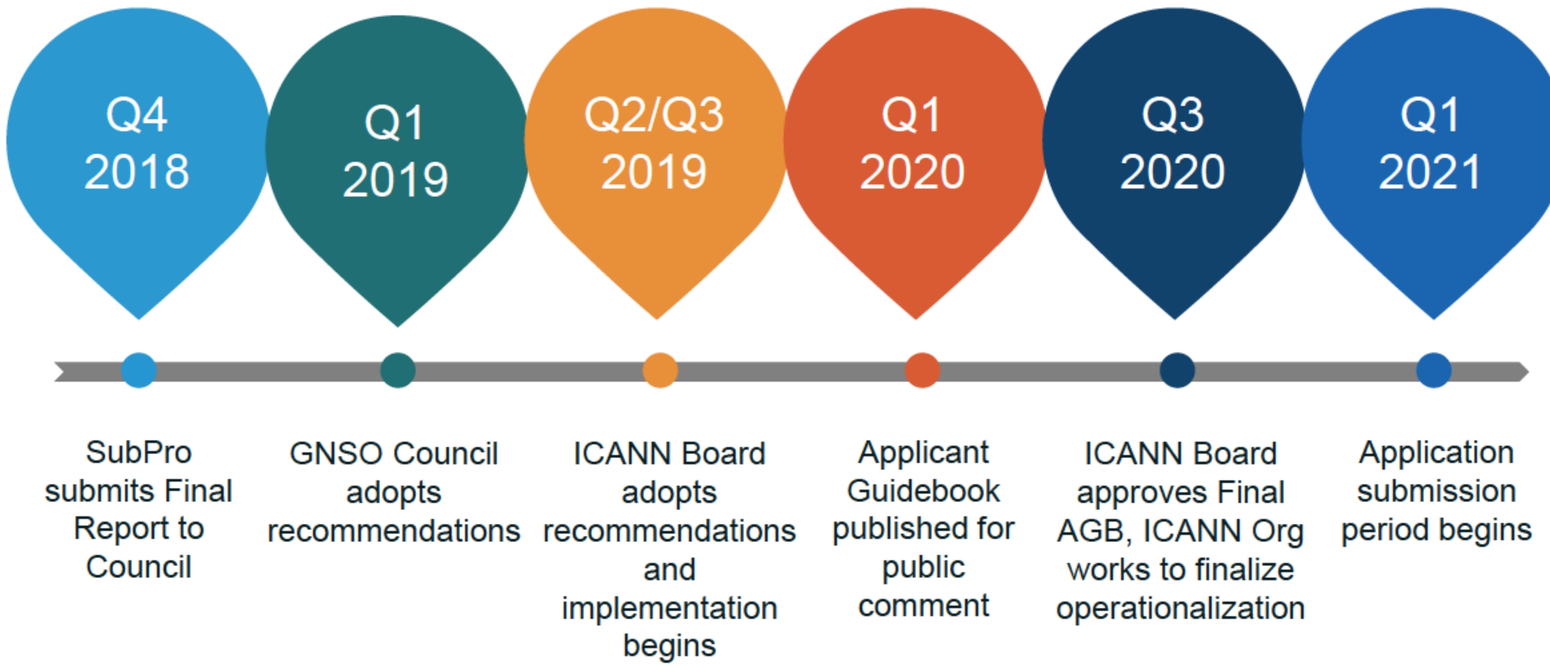
.work breakdown

EXHIBIT KM-13

New gTLD Subsequent Procedures / Rights Protection



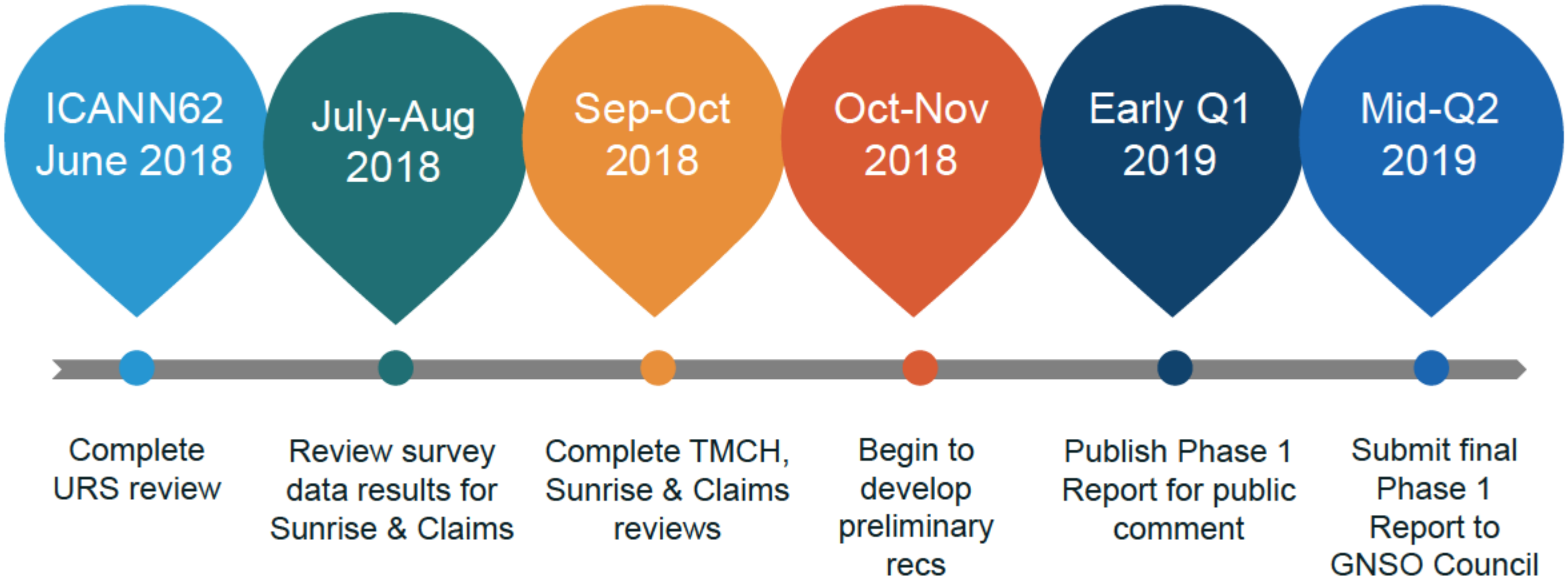
SubPro – Best Case Timeline to Launch



Plausible Path to Subsequent Procedures

While it is difficult to predict when the New gTLD Program will commence with any level of certainty, the above timeline is provided as a plausible path. It also serves as a reminder of some of the likely and necessary steps to reach that point.

RPMs – Best Case Timeline to Phase 1 Completion



Timeline Explanation:

Given the need to collect and analyze a sizable amount of quantitative data and anecdotal feedback, the above timeline is provided as a plausible path.

From the RPMs Charter

(b) Coordination with Other Parallel Efforts

In the course of its work, the Working Group should ***monitor*** *the progress of and, where appropriate,* ***coordinate*** *with, other ICANN groups that are working on topics that may overlap with or otherwise provide useful input to this PDP. In particular, this PDP Working Group* ***shall maintain a close working relationship*** *with the Competition, Consumer Trust and Consumer Choice (CCT) Review Team and the* ***PDP Working Group on New gTLDs Subsequent Procedures****. To facilitate interaction between the two GNSO PDPs, a GNSO* ***community liaison****, who is a member of both PDP WGs, shall be appointed by both Working Groups as soon as both Groups have taken up their work. In addition, the RPM PDP Working Group should also take into consideration the work/outcome of the TMCH Independent Review, the CCT Review, and any other relevant GNSO policy development projects.*

** Bold emphasis added*

From the SubPro Charter

Second-Level Rights Protection Mechanisms: ***Proposing recommendations directly related to RPMs is beyond the remit of this PDP****. There is an anticipated PDP on the "current state of all rights protection mechanisms (RPMs) implemented for both existing and new gTLDs, including but not limited to the UDRP and the URS...".* ***Duplication or conflicting work*** *between the New gTLD Subsequent Procedures PDP and the PDP on RPMs* ***must be avoided****. If topics related to RPMs are uncovered and discussed in the deliberations of this PDP, those topics should be* ***relayed to the PDP on RPMs for resolution****. To assure effective coordination between the two groups, a* ***community liaison****, who is a member of both Groups, is to be appointed jointly by both Groups and confirmed by the GNSO Council.*

** Bold emphasis added*

EXHIBIT KM-14

nielsen

ICANN
GLOBAL CONSUMER RESEARCH

APRIL 2015

ICANN

TABLE OF CONTENTS

BACKGROUND

- ICANN's New TLD Program was developed as part of a community-driven policy development process that spanned several years and aims to **enhance competition** and **consumer choice** for both registrants and Internet users.
- To assess the current TLD landscape, as well as measure factors such as consumer awareness, experience, choice, and trust with new TLDs and the domain name system in general, audience tracking research was implemented among two groups:
  - Global online **consumer end-users** (including prospective registrants)
  - Global domain name **registrants**, who were interviewed and will be reported separately

This report focuses on wave 1 results among the Consumer Segment.
A second comparison wave will be conducted in approximately a years time and will provide a set of comparison data.

METHODOLOGY

Qualifying criteria

- Adults 18+
- 5+ hours spent per week on Internet
- Demographically projectable to each region's online population – representing 75% of global users

Total of **6144 Consumers**, representing **Asia, Europe, Africa, North America, and South America**. Drawn from **24 countries**, administered in 18 languages

- Countries: China, India, Indonesia, Japan, Philippines, Russia, South Korea, Vietnam, France, Germany, Italy, Poland, Spain, Turkey, United Kingdom, Egypt, Nigeria, South Africa, Canada, Mexico, United States, Argentina, Brazil, Colombia
- Languages: English, Spanish, Portuguese (Brazil), Simplified Chinese, French, German, Italian, Japanese, Korean, Russian, Arabic, Vietnamese, Tagalog, Turkish, Polish, Latam_Spanish, British English, Bahasa

Significance testing is performed at a 95% confidence level throughout this report:

- Letters denote where a region is significantly higher than the region whose column in marked that that letter
- Green and red circles denote where a region is significantly ●higher or ● lower than the Total

ONLINE SURVEY
February 2-19
2015

SURVEY COMMISSIONED BY ICANN AND CONDUCTED BY NIELSEN

SUMMARY OF HIGH LEVEL METRICS

AVERAGE AWARENESS AND VISITATION

Familiarity—real or perceived—differentiates extensions

Among legacy TLDs, a small number of extensions lead awareness. Despite differences in number of registrations, .com, .net and .org have similar awareness—the virtue of longevity and relevance (they are the sites people most often say they visit.)

New TLDs have room to grow

It is interesting that our reference set of new extensions has higher average awareness and reported visitation than the low tier legacy extensions. This reflects a pattern in this research that interpretability of the extension breeds a sense of familiarity.

LEGACY TLDS	TOTAL	
AVERAGE AWARENESS (%)		
High	79%	(74%-89% across regions)
Moderate	36%	(31%-45% across regions)
Low	9%	(5%-12% across regions)
Geographically Targeted TLDs	86%	(52%-95% across country)
AVERAGE VISITATION (%)		
High	71%	(66%-81% across regions)
Moderate	22%	(15%-31% across regions)
Low	4%	(2%-7% across regions)
Geographically Targeted TLDs	81%	(31%-94% across country)

High .com, .net, .org
Moderate: .info, .biz
Low: .mobi, .pro, .tel, .asia, .coop
Geographically Targeted: based on only those shown in that region

NEW TLDS	TOTAL	
AVERAGE AWARENESS (%)		
Generic Extensions	14%	(8%-17% across regions)
Geographically Targeted TLDs	7%	(1%-18% across country)
AVERAGE VISITATION (%)		
Generic Extensions	15%	(10%-17% across regions)
Geographically Targeted TLDs	7%	(0%-16% across country)

Generic: .email, .photography, .link, .guru, .realtor, .club, .xyz

Geographically Targeted: based on only those shown in that region

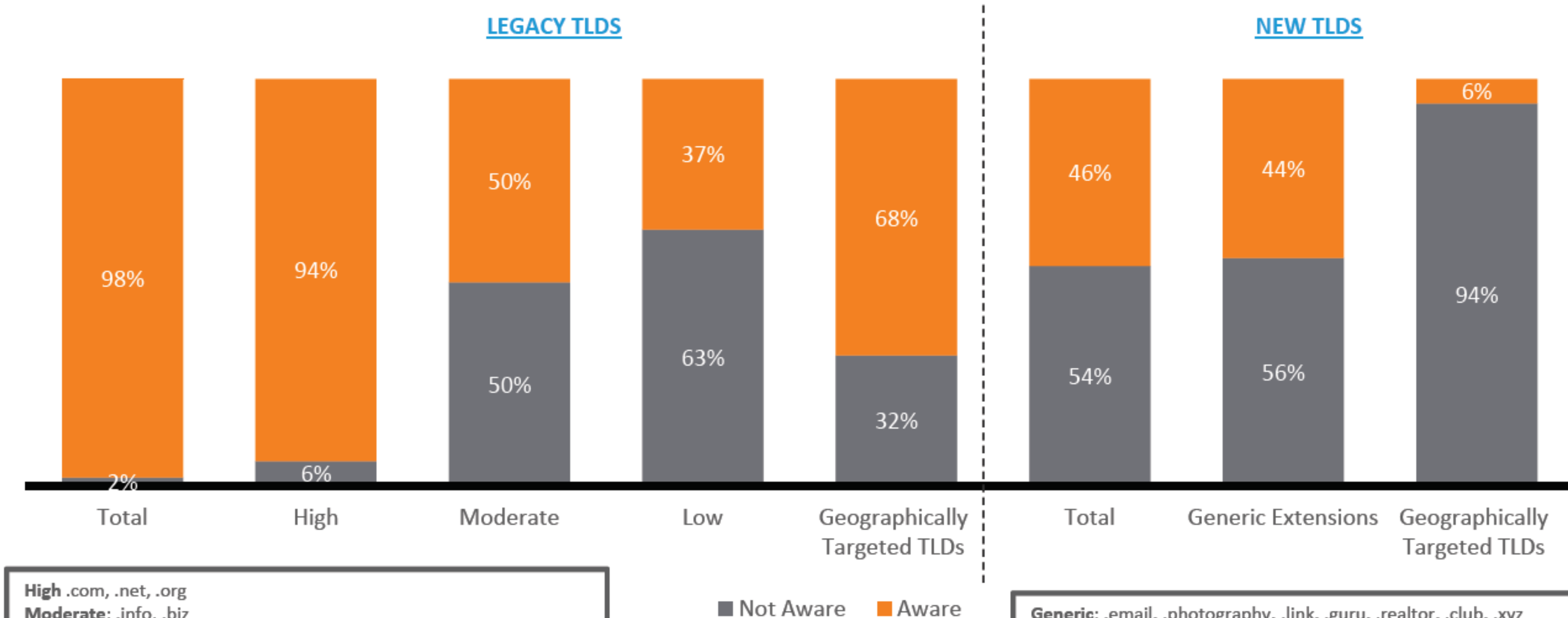
AWARENESS OF TLDS

Traditional extensions clearly lead awareness

A small number of extensions lead awareness—the virtue of longevity and being among a limited set of early TLDs.

Consumers are moderately aware of newer TLDs

The new TLDs have yet to elicit high awareness levels, but do enjoy aggregate awareness similar to that of moderate legacy extensions - .info and .biz.



High .com, .net, .org
Moderate: .info, .biz
Low: .mobi, .pro, .tel, .asia, .coop
Geographically Targeted: based on only those shown in that region

Generic: .email, .photography, .link, .guru, .realtor, .club, .xyz

Geographically Targeted: based on only those shown in that region

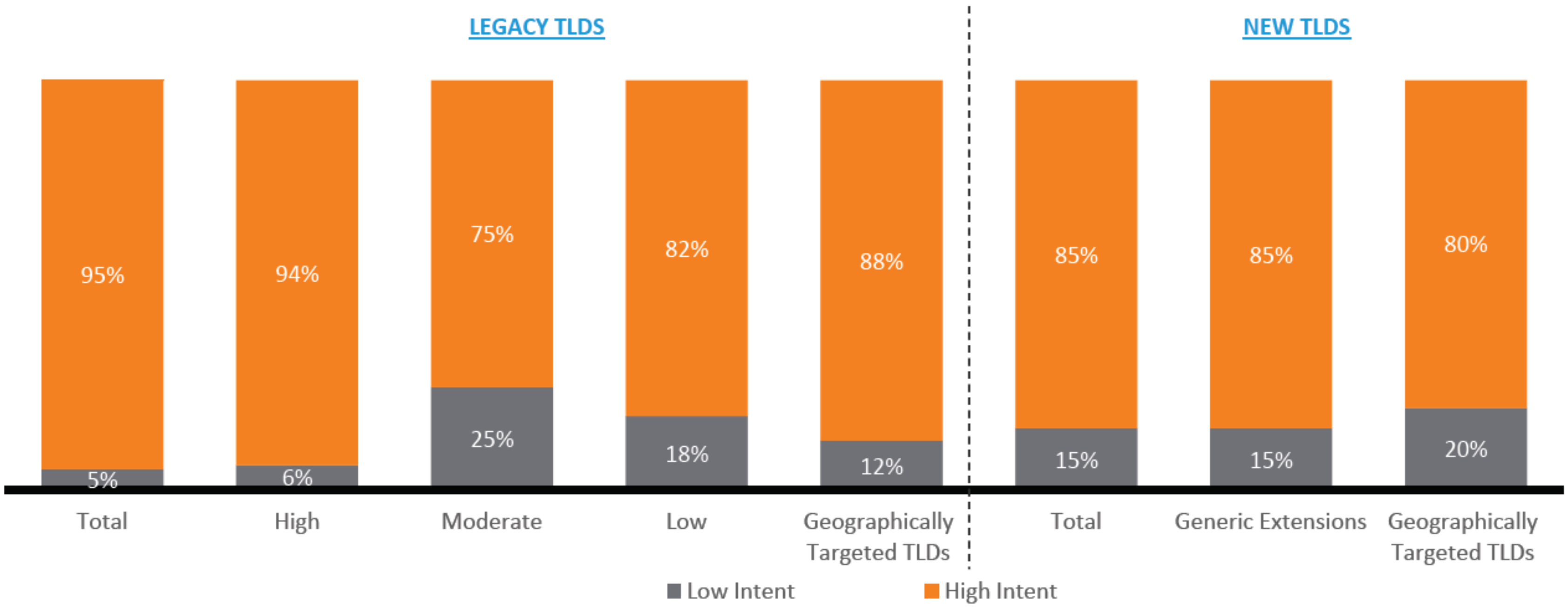
INTENT TO VISIT AMONG THOSE AWARE

Awareness generally translates to visitation

When we look at the relationship between awareness and visitation, we see relatively few internet citizens who are aware of a TLD but who have low intent to visit it.

Relevance appears key

This pattern reflects other findings in the research that shows perceived relevance of a site with a specific extension is key motivation for intended visitation. Familiarity and perceived relevance also appear to be stronger motivating factors for visiting new TLDs than concerns of legitimacy or trustworthiness – about a quarter or more of consumers say they are likely to visit a new TLD if it has the information they are seeking and about one in four cite a lack of relevancy as a reason for low intent to visit.



TRUST IN TLDS

Newer TLDs have yet to establish high levels of trust

Relative to the top tier legacy TLDs, or to the industry in general, the reference set of new TLDs has relatively lower trust levels.

Trust can be improved by having some level of purchase restrictions

While there is a general sense that domain registration should have only light or no purchase restrictions, have some level of purchase restriction does increase the perceived trustworthiness of a particular TLD. And internet users generally have a positive sense that the industry takes reasonable precautions to protect consumers.

Still, most modify their behavior

Regardless of a general sense of trustworthiness, most take some personal actions to improve their online security—most commonly installing anti-virus software and modifying their online behavior.

LEGACY TLDS	TOTAL	
AVERAGE TRUST (T2B%)		
Legacy Extensions	90%	(88%-96% across regions)
Geographically Targeted TLDs	94%	(75%-98% across country)

NEW TLDS	TOTAL	
AVERAGE TRUST (T2B%)		
New Extensions	49%	(39%-53% across regions)
Geographically Targeted TLDs	47%	(26%-64% across country)

Top: .com, .net, .org

New: .email, .photography, .link, .guru, .realtor, .club, .xyz

Geographically Targeted: based on only those shown in that region

T2B% = % who say very/somewhat trustworthy

TRUST IN THE DOMAIN NAME INDUSTRY

Online users generally expect the domain industry to be diligent

Overall, three-quarters of respondents trust the domain industry to take precautions about who gets a name, to screen registrants, and/or to give consumers what they expect.

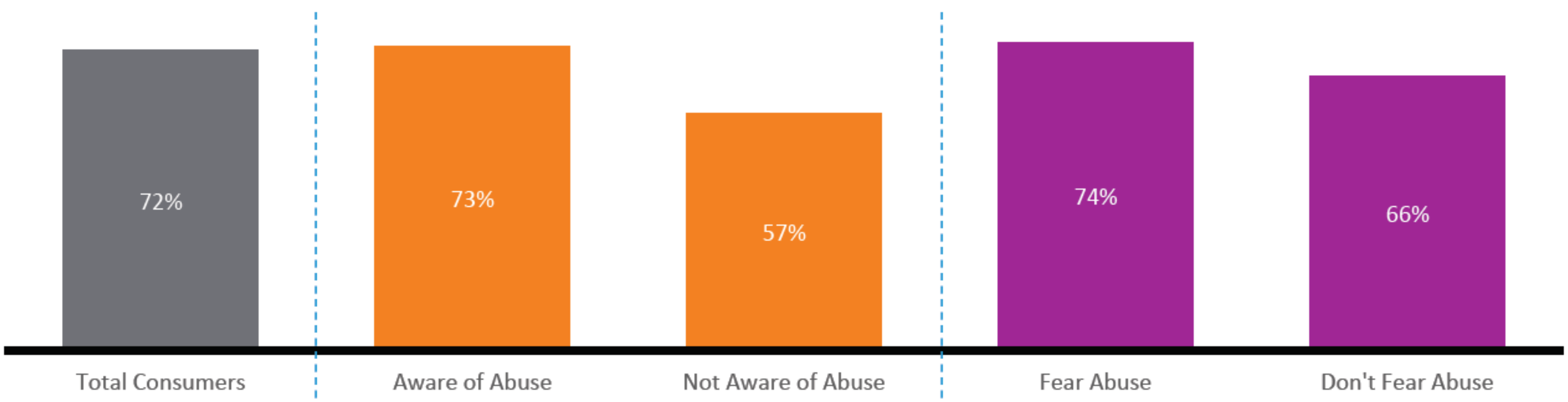
Awareness of abuse is generally high

Malware, phishing and stolen credentials are all things that at least three quarters of the respondents are aware of—cybersquatting is the only bad behavior that the majority are unfamiliar with— only 1 in 3 are aware. Interestingly though, awareness of these bad behaviors is correlated with higher trust in the domain industry. Very possibly, these common behaviors are not associated with domain names. And, it may be that generally more knowledgeable citizens have greater confidence in the system. Programs to educate internet users may help to further improve perceptions of the industry.

Fear stems from targeted attacks

Some bad behaviors, such as spamming, are well recognized annoyances but do not really create widespread strong fear in the online populace. But having ones' online credentials stolen, or falling victim to malware or phishing, are widespread and relatively strong worries. Again though, those with more concern are those who also tend to trust the industry to use due diligence when assigning domain names. This may reflect the fact that stolen credentials are not typically seen to be a problem with the industry, rather a matter for criminal authorities to address.

TRUST IN DOMAIN NAME INDUSTRY



UNDERSTANDING OF AND EXPERIENCE WITH LEGACY TLDS

KEY TAKEAWAYS – LEGACY TLDS

This section focuses on legacy TLDs, exploring consumer perceptions in the established domain extension space; also creating a base of knowledge for reference in interpretation of findings relative to the new TLDs and understanding DNS changes.

1 Traditional extensions clearly lead awareness

Based on the number of registrations and traffic patterns, a small number of extensions lead awareness. Despite differences in number of registrations, .com, .net and .org have similar awareness—the virtue of longevity and being among a limited set of early TLDs.

2 Learn from the top 3

Looking at what contributes to the difference between top and mid-tier extensions in terms of awareness, for example, .com and .info, could help understand factors that may affect acceptance of new TLDs. Similarly, understanding what drives the relative success of extensions like .mobi or .pro could provide additional clues to successful extension adoption.

3 Potential for extensions that make implicit sense

It may be that the strong intent stated in this research to visit domains like .pro, .coop and .tel is in part because they are easy to interpret and impart an aura of legitimacy—whereas other extensions that may not be easily recognized as a word or part of a word may suffer from lack of interpretability.

4 Interest in lesser known extensions is higher outside US/Europe

When setting up a new domain, even among legacy TLDs there is a preference for the most common extensions and hesitancy to use less familiar ones—however willingness does increase in Asia, South America and Africa.

5 Country level names are trustworthy

The most trusted TLDs, as reported by consumers, are those with longer history—but within regions, country level names have inherent trust —possibly due to national association/pride. The web had early acceptance in the US with the most heavily trafficked sites originating in the US. Geographically targeted extensions are breaching the top ranks, suggesting that local relevance is becoming an important factor.

6 Restriction has pros and cons

While restrictions on domain purchases generally provide a boost in the perception of trustworthiness, many feel that there should not be any or only limited purchase restrictions. This would likely change in specific scenarios where negative intent is more apparent, for example, a site advocating racism, but it demonstrates the difficult balance needed in managing site registration.

7 Education is needed

When website abuse occurs, most are at a loss for where to turn—or they may turn to potentially inappropriate resources. There is an opportunity to educate the online world about how to handle suspected abuse.

AWARENESS OF DOMAIN EXTENSIONS

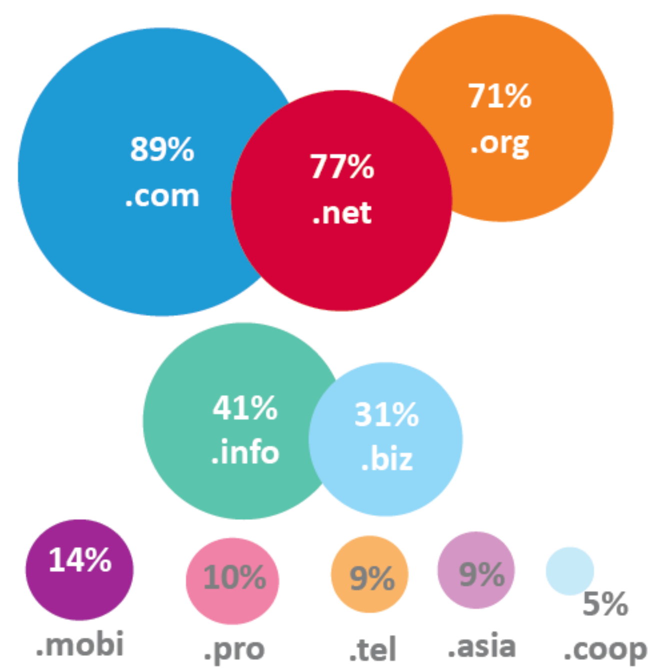
Awareness beyond the common legacy extensions - .com, .net, and .org – is relatively low; half or less of consumers across all regions.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Aware of any below	**98%**	**99% ACE**	**97%**	**98%**	**98%**
.com	92% E	90%	89%	91%	88%
.net	85% CDE	82% E	80% E	78% E	73%
.org	89% BCDE	80% E	79% E	76% E	61%
.info	33%	44% A	48% AE	50% AE	40% A
.biz	33% BE	18%	36% BE	41% ABE	29% B
.mobi	8%	9%	12% A	40% ABCE	14% AB
.pro	5%	8% AD	8% AD	3%	13%ABCD
.tel	8%	12% ACD	8%	7%	10%
.asia	3%	5% A	6% A	6% A	12% ABCD
.coop	3%	8% ACD	4% AD	2%	6% ACD

Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

TOTAL AWARENESS BY DOMAIN EXTENSION – TOTAL

98% Aware of Any (Net)



Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

AWARENESS OF GEOGRAPHICALLY TARGETED DOMAIN EXTENSIONS

By country, awareness of the common legacy extensions is fairly consistent. And awareness of most geographically targeted extensions is quite high; only the US and Egypt report moderate awareness.

HIGH AWARENESS

- .mx (Mexico)
- .ca (Canada)
- .it (Italy)
- .tr (Turkey)
- .es (Spain)
- .pl (Poland)
- .uk (UK)
- .fr (France)
- .de (Germany)
- .za (South Africa)
- .ng (Nigeria)

- .vn (Vietnam)
- .cn (China)
- .jp (Japan)
- .kr (Korea)
- .ph (Philippines)
- .ru (Russia)
- .id (Indonesia)
- .in (India)
- .co (Colombia)
- .ar (Argentina)
- .br (Brazil)

MODERATE AWARENESS

- .us (United States)
- .eg (Egypt)

80% or more Aware

50%-65% Aware

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

DOMAIN NAME EXTENSIONS VISITED

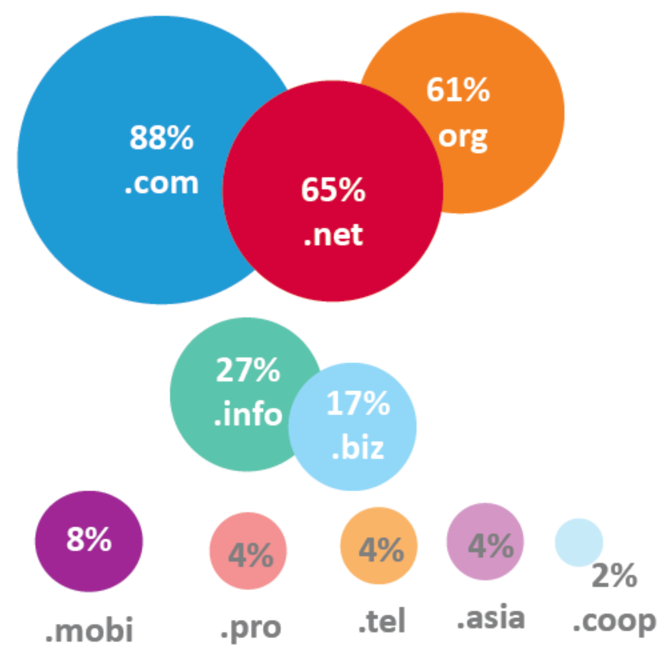
Similarly, only the three common legacy extensions are highly visited currently. Awareness and visitation of .info and .biz extensions is most prevalent in Europe and Africa, along with .mobi in Africa.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Visited any below	**98%**	**99% C**	**98%**	**99%**	**98%**
.com	91% CE	88%	86%	91% CE	87%
.net	71% BCE	65%	63%	71% BCE	63%
.org	80% BCDE	73% CE	64% E	72% CE	50%
.info	17%	25% A	34% ABE	35% ABE	27% A
.biz	13% B	9%	22% ABE	27% ABCE	17% AB
.mobi	3%	3%	6% AB	31% ABCE	8% ABC
.pro	2%	3% D	3% D	1%	6% ABCD
.asia	1%	2% A	2% A	1%	6% ABCD
.tel	2%	4% A	3% A	2%	4% A
.coop	1%	5% ACDE	2% A	0%	3% AD

Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

VISITATION BY DOMAIN EXTENSION - TOTAL

99% Visited Any (Net)



Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

DOMAIN EXTENSIONS LIKELY TO VISIT IN NEXT 6 MONTHS

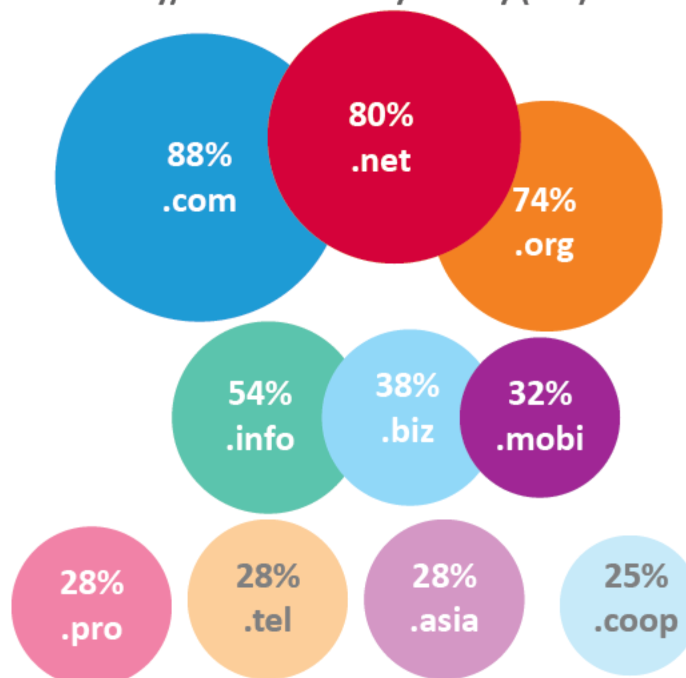
Future intent scores are optimistic, with notable increases from current visitation levels for many. The North American and European regions express lower intent relative to their counterparts.

Top 2 Box (Very/ Somewhat Likely)	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very/Somewhat Likely for ANY below	**94%**	**92%**	**92%**	**99% ABCE**	**96% ABC**
.com	89% BC	84%	85%	95% ABCE	89% BC
.net	79% C	78%	75%	90% ABCE	81% C
.org	84% CE	81% CE	71%	90% ABCE	69%
.info	41%	55% A	51% A	65% ABCE	57% AC
.biz	28%	35% A	31%	48% ABC	44% ABC
.mobi	17%	30% AC	21% A	53% ABCE	37% ABC
.tel	18%	33% ACD	21%	22%	34% ACD
.pro	15%	30% ACD	21% A	22% A	34% ACD
.asia	11%	27% ACD	16% A	16% A	36% ABCD
.coop	13%	31% ACD	17% A	15%	31% ACD

Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

FUTURE VISITATION BY DOMAIN EXTENSION - TOTAL

94% Very/Somewhat Likely for Any (Net)



Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

GEOGRAPHICALLY TARGETED DOMAIN EXTENSIONS VISITED

Overall, awareness of the geographically targeted extensions is translating to visitation; however, visitation is particularly low in the US. About 8 in 10 consumers report likelihood to visit their geographically targeted extension in the next 6 months; the exception being the US at 4 in 10.

HIGH VISITATION

- .mx (Mexico)
- .ca (Canada)

- .it (Italy)
- .tr (Turkey)
- .es (Spain)
- .pl (Poland)
- .uk (UK)
- .fr (France)
- .de (Germany)

- .za (South Africa)
- .ng (Nigeria)

- .vn (Vietnam)
- .cn (China)
- .jp (Japan)
- .kr (Korea)
- .ru (Russia)
- .in (India)

- .co (Colombia)
- .ar (Argentina)
- .br (Brazil)

75% or more have Visited

MODERATE VISITATION

- .ph (Philippines)
- .id (Indonesia)
- .eg (Egypt)

60%-74% have visited

LOW VISITATION

- .us (United States)

35% or less have Visited

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

REASONS VERY LIKELY/UNLIKELY TO VISIT WEBSITE - TOTAL

Top drivers of visitation are largely consistent across extension – familiarity with the type of site being the most notable. Secondary are trust, need, and perceptions of legitimacy.

Reasons likely to visit (among those who said they are likely to visit each extension)

Reasons unlikely to visit (among those who said they are unlikely to visit each extension)

TOTAL	Have never been to this type of website before	Have been to this type of website before	Don't trust this extension	Trust this extension	Have no reason to go there	Has information I'm seeking	Doesn't seem legitimate	Seems legitimate	It's where you go for specific information	Afraid of my information being stolen if I go there	Not afraid of my info being stolen if I go here
.com	9%	56%	7%	44%	17%	43%	4%	34%	33%	11%	17%
.org	24%	54%	6%	41%	28%	40%	7%	34%	33%	10%	19%
.net	20%	53%	7%	39%	27%	38%	6%	33%	28%	9%	15%
.info	37%	42%	11%	31%	36%	37%	8%	28%	33%	8%	17%
.biz	44%	38%	15%	29%	38%	31%	11%	29%	27%	10%	18%
.mobi	47%	34%	14%	27%	41%	28%	13%	25%	25%	10%	16%
.asia	48%	29%	17%	29%	42%	28%	13%	33%	26%	11%	22%
.tel	46%	26%	14%	26%	40%	25%	11%	30%	23%	10%	17%
.pro	48%	25%	15%	27%	37%	25%	11%	32%	23%	9%	19%
.coop	49%	22%	15%	28%	40%	26%	13%	29%	21%	10%	17%

No notable differences observed between regions

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

CONSIDERATION OF LEGACY TLD FOR OWN WEBSITE

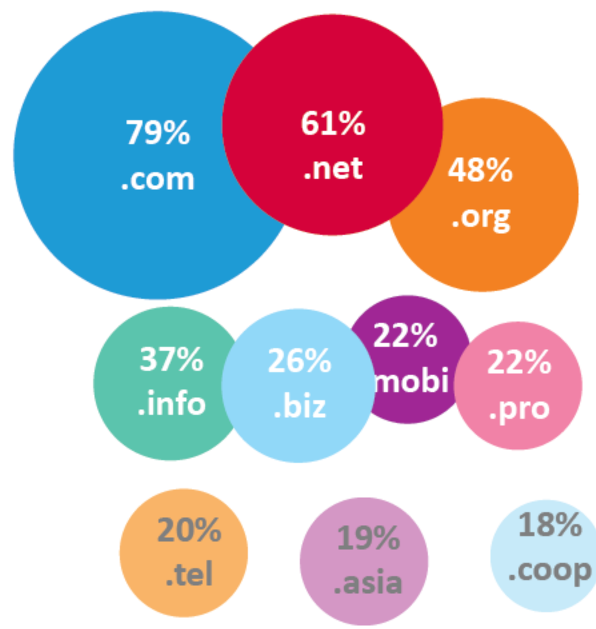
If setting up a website, North Americans and Europeans are less likely to consider one of the less common extensions, while roughly a quarter or so of consumers in South America, Africa, and Asia are more open.

Top 2 Box (Very/ Somewhat Likely)	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very/Somewhat Likely for ANY below	**85%**	**92% ACE**	**84%**	**98% ABCE**	**88% AC**
.com	79% C	86% ACE	67%	92% ABCE	80% C
.net	56% C	62% AC	48%	73% ABCE	65% AC
.org	46% C	52% AC	40%	72% ABCE	48% C
.info	23%	40% AC	30% A	47% ABC	42% AC
.biz	17%	21% AC	16%	38% ABCE	32% ABC
.pro	13%	21% ACD	15%	15%	27% ABCD
.mobi	9%	20% AC	13% A	33% ABCE	27% ABC
.tel	10%	22% ACD	14% A	13%	26% ABCD
.asia	7%	17% ACD	10% A	8%	28% ABCD
.coop	8%	23% ACD	11% A	12% A	24% ACD

Letters indicate significantly higher than region. Region vs. Total Higher Lower

PURCHASE CONSIDERATION BY DOMAIN EXTENSION - TOTAL

88% Likely for Any (Net)



Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

CONSIDERATION OF LEGACY TLD FOR OWN WEBSITE– BY COUNTRY

In North America, US and Canada are driving the lower North America numbers. Within Europe, Turkey and Poland are particularly open to the lesser known TLDs relative to the rest of the region.

Aside from the US and Japan, about three-quarters or more of consumers would consider their geographically targeted extension.

Consideration	TOTAL	NA	US	CA	MX	SA	CO	AR	BR	EUR	IT	TR	ES	PL	UK	FR	DE	AFR	NG	ZA	EG	ASIA	CN	VN	PH	JP	KR	RU	IN	ID
T2B for any below	**88%**	**85%**	**78%**	**89%**	**97%**	**92%**	**96%**	**96%**	**90%**	**84%**	**86%**	**95%**	**85%**	**96%**	**83%**	**76%**	**79%**	**98%**	**98%**	**95%**	**100%**	**88%**	**85%**	**93%**	**94%**	**66%**	**87%**	**97%**	**98%**	**96%**
.com	79%	79%	74%	77%	94%	86%	93%	87%	84%	67%	66%	92%	77%	87%	69%	61%	46%	92%	96%	80%	96%	80%	78%	87%	85%	52%	80%	81%	91%	94%
.net	61%	56%	55%	40%	72%	62%	68%	56%	62%	48%	47%	78%	51%	59%	46%	49%	31%	73%	81%	50%	83%	65%	60%	72%	71%	39%	74%	64%	77%	79%
.org	48%	46%	42%	40%	61%	52%	61%	48%	50%	40%	37%	75%	32%	52%	49%	38%	18%	72%	84%	54%	66%	48%	36%	56%	58%	19%	38%	54%	76%	65%
.info	37%	23%	17%	16%	43%	40%	43%	44%	37%	30%	37%	59%	24%	50%	28%	18%	19%	47%	54%	29%	51%	42%	33%	54%	53%	21%	33%	54%	60%	49%
.biz	26%	17%	16%	14%	21%	21%	14%	16%	25%	16%	13%	41%	14%	21%	18%	11%	8%	38%	51%	27%	24%	32%	25%	29%	37%	16%	29%	33%	47%	40%
.pro	22%	13%	10%	14%	21%	21%	15%	11%	26%	15%	10%	28%	14%	28%	14%	17%	7%	15%	15%	8%	20%	27%	27%	25%	24%	12%	23%	36%	37%	27%
.mobi	22%	9%	7%	6%	18%	20%	18%	12%	23%	13%	8%	27%	14%	22%	14%	9%	6%	33%	30%	50%	22%	27%	26%	29%	23%	11%	22%	28%	37%	30%
.tel	20%	10%	7%	7%	22%	22%	21%	12%	25%	14%	9%	27%	14%	22%	14%	12%	6%	13%	14%	8%	17%	26%	27%	22%	20%	11%	22%	24%	34%	27%
.asia	19%	7%	5%	6%	13%	17%	13%	5%	22%	10%	7%	24%	12%	20%	9%	6%	4%	8%	7%	4%	14%	28%	26%	19%	33%	11%	22%	21%	43%	31%
.coop	18%	8%	6%	7%	15%	23%	19%	22%	24%	11%	9%	25%	12%	20%	13%	6%	6%	12%	11%	6%	18%	24%	25%	21%	20%	10%	24%	23%	30%	23%

T2B% = % who say very/somewhat likely

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

DOMAIN EXTENSION TRUSTWORTHINESS

As would be expected, the common extensions, such as .com and .org, are highly trusted across all regions.

By country, three-quarters or more trust their geographically targeted extension as well, including the US.

70% or more rated extension Very/Somewhat Trustworthy

NORTH AMERICA

General Extensions
.com
.org
.net
.info

Geographically Targeted Extensions
.mx
.ca
.us

SOUTH AMERICA

General Extensions
.com
.org
.net
.info

Geographically Targeted Extensions
.ar
.co
.br

EUROPE

General Extensions
.com
.org
.net
.info

Geographically Targeted Extensions
.pl
.de
.it
.fr
.es
.uk
.tr

AFRICA

General Extensions
.com
.org
.net
.info

Geographically Targeted Extensions
.ng
.za
.eg

ASIA

General Extensions
.com
.org
.net
.info

Geographically Targeted Extensions
.id
.ph
.in
.ru
.vn
.cn
.jp
.kr

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

LEGACY TLD EXPERIENCE

Very few negative user experiences are reported for any extension within any region.

75% or more had Very/Somewhat Positive experience with extension

NORTH AMERICA

General Extensions
.com
.org
.net
.info
.biz

Geographically Targeted Extensions
.mx
.ca
.us

SOUTH AMERICA

General Extensions
.com
.org
.net
.info
.biz

Geographically Targeted Extensions
.co
.br
.ar

EUROPE

General Extensions
.com .mobi
.org .tel
.net .pro
.info
.biz

Geographically Targeted Extensions
.it
.tr
.de
.pl
.uk
.es
.fr

AFRICA

General Extensions
.com
.org
.net
.info
.biz
.mobi

Geographically Targeted Extensions
.za
.eg
.ng

ASIA

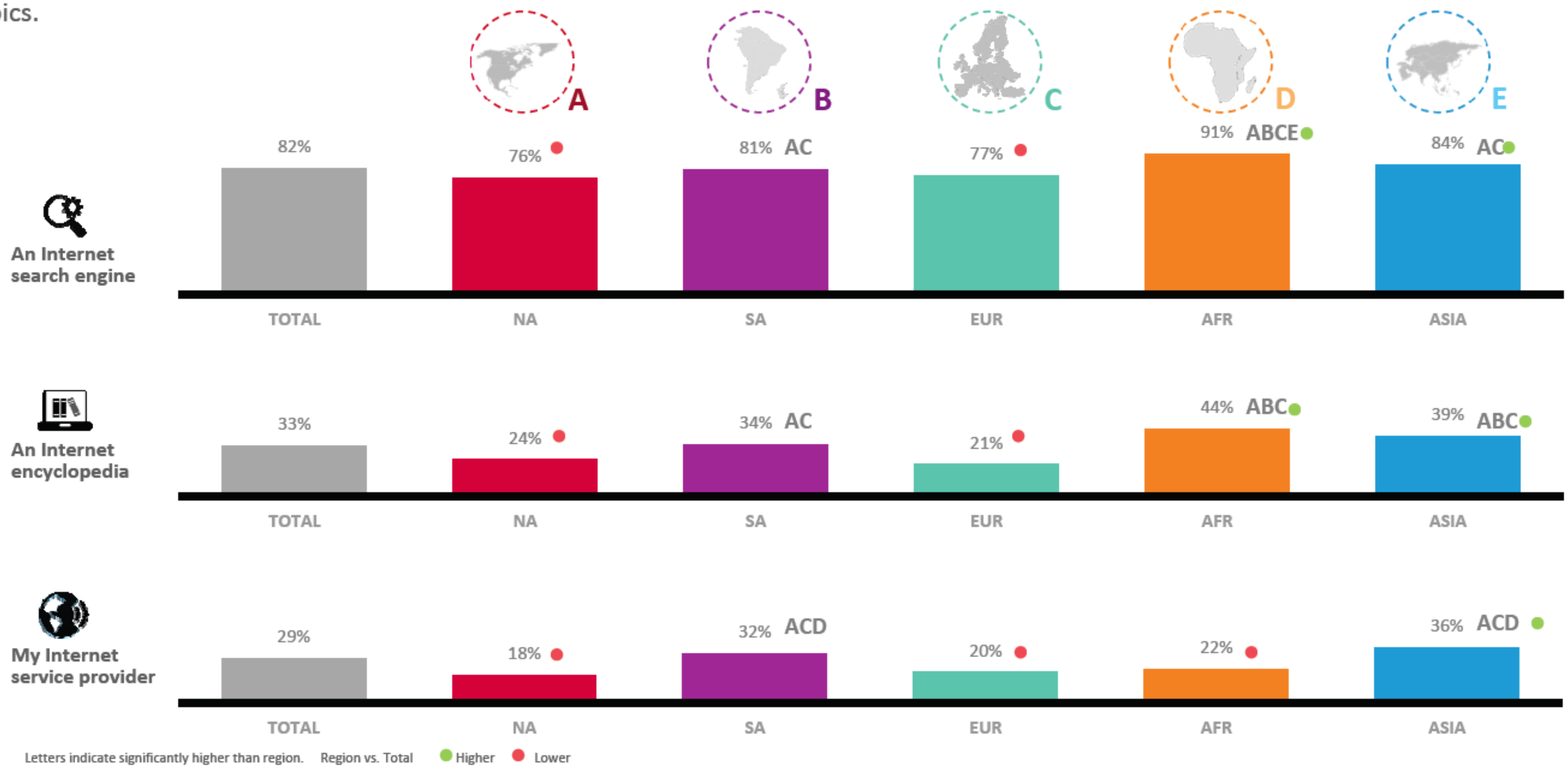
General Extensions
.com .mobi
.org .tel
.net .pro
.info .asia
.biz .coop

Geographically Targeted Extensions
.ph .jp
.id .cn
.vn
.kr
.ru
.in

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.
* Only those with base over 30 reported

PREFERRED SOURCES FOR MORE INFORMATION

Internet search is by and large the primary means consumers would use to learn more about domain name extensions. This is no surprise, as we consistently see Internet search is the dominant method for online populations to locate information about most topics.



IMAGERY PERCEPTIONS OF LEGACY TLDS

Many consumers aren't acutely aware of why websites have different extensions, but many of those who do believe it is to classify sites, differentiate purpose or content, and identify the geographic location.

The common TLDs are seen as functional - Useful, Informative, and Helpful - by consumers.

TLD RESTRICTIONS

Few feel that strict purchase restrictions are required on these TLDs.

Strict purchase restrictions should be required	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
.com	19%	13%	15%	13%	24% ABC	24% ABC
.info	16%	16%	15%	13%	18% C	16%C
.net	16%	12%	13%	10%	21% ABC	18% ABC
.org	25%	26% C	26% C	18%	29% C	26% C
Some purchase restrictions should be required	**TOTAL**	**NORTH AMERICA (A)**	**SOUTH AMERICA (B)**	**EUROPE (C)**	**AFRICA (D)**	**ASIA (E)**
.com	40%	38%	40%	40% D	34%	41% D
.info	49%	48% D	45%	48% D	40%	51% ABD
.net	47%	44%	42%	45%	45%	50% ABC
.org	44%	40%	39%	44% BD	37%	47% ABD
No purchase restrictions should be required	**TOTAL**	**NORTH AMERICA (A)**	**SOUTH AMERICA (B)**	**EUROPE (C)**	**AFRICA (D)**	**ASIA (E)**
.com	41%	49% DE	45% E	47% E	42% E	35%
.info	36%	37% E	40% E	39% E	42% E	32%
.net	38%	44% DE	45% DE	45% DE	33%	32%
.org	31%	34% E	35% E	38% AE	34% E	27%

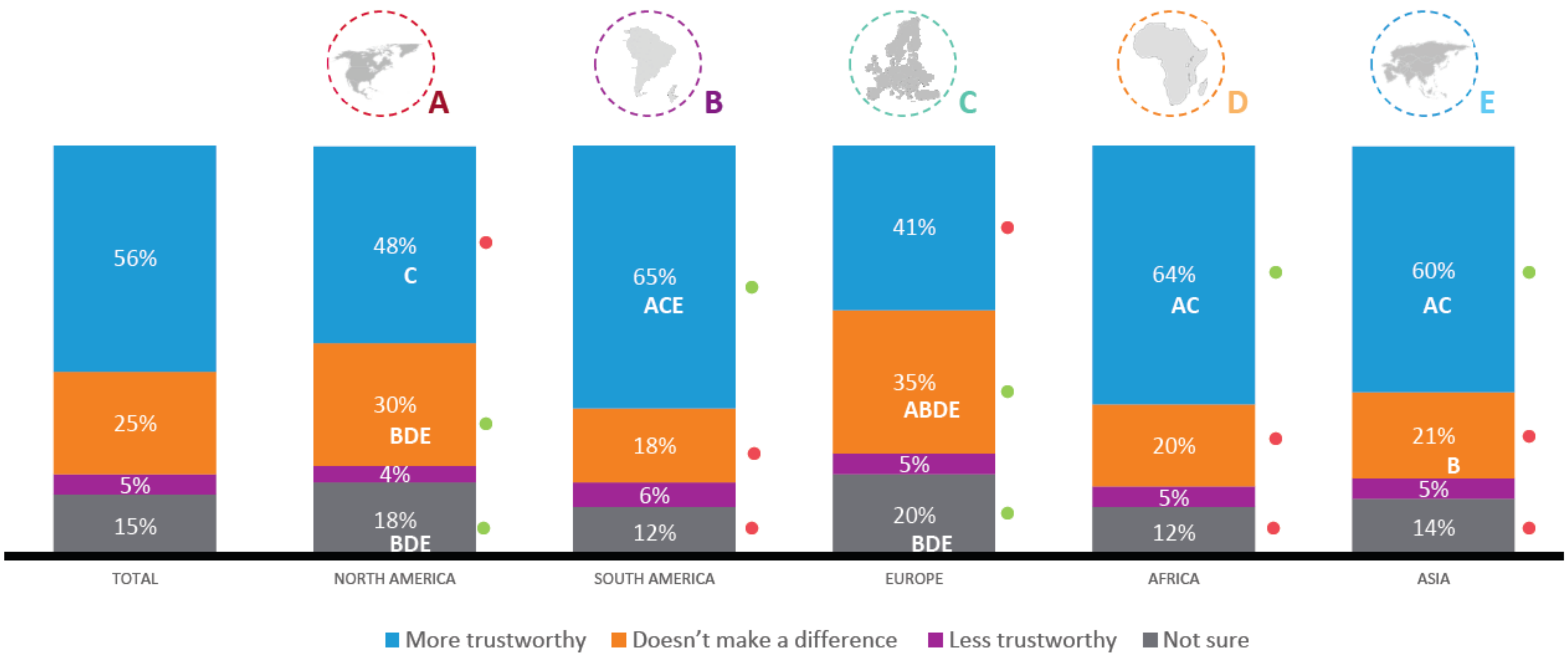
Letters indicate significantly higher than region. Region vs. Total: Higher, Lower

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

In several countries, including Colombia, Argentina, Italy, Poland, France, Germany, and Mexico, roughly half of consumers feel there should be no restrictions on their geographically targeted domain extensions

IMPACT OF PURCHASE RESTRICTIONS ON TRUST

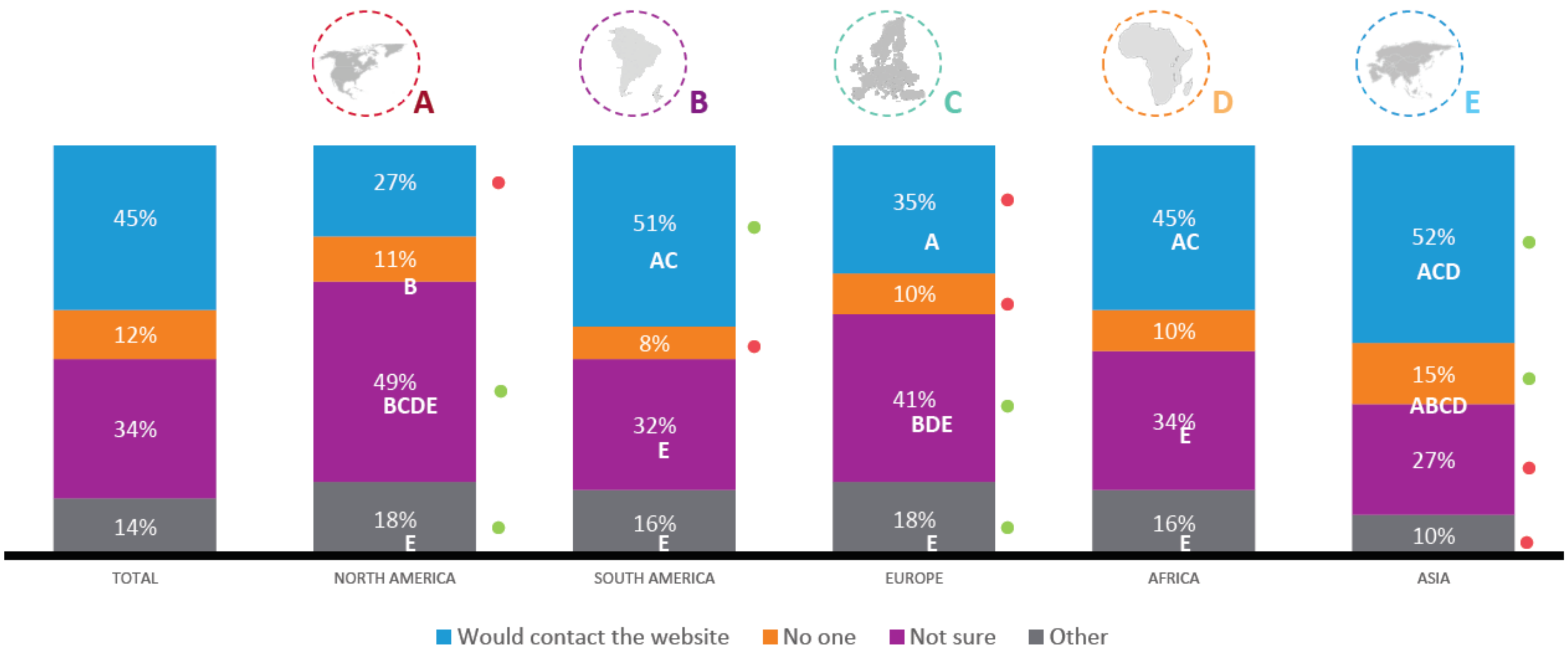
It is clear that having some purchase restrictions does contribute to a sense of trust around the globe, especially among consumers in South America, Africa, and Asia.



Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

REPORTING SITE ABUSE

Many consumers are unsure of how they would report an improperly run site. Consumers in South America and Asia are more inclined to contact the website than other regions. Other cited options include the police or authorities.

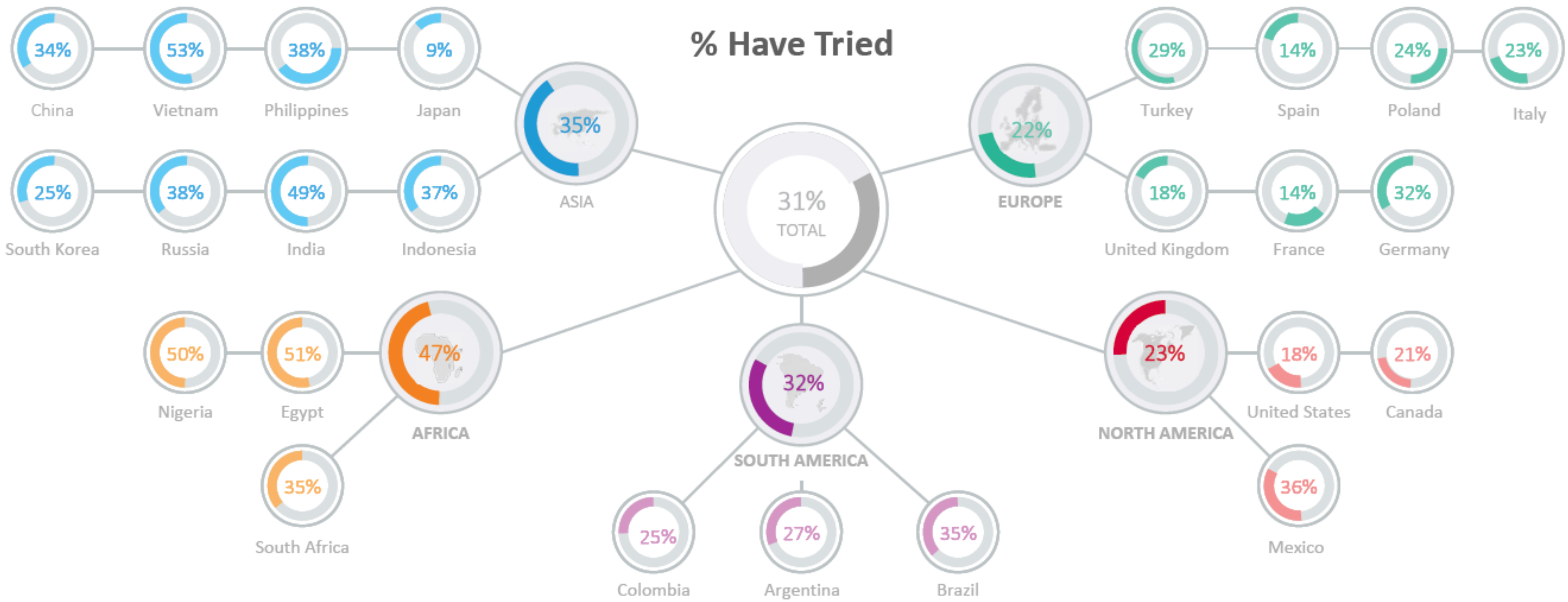


Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

IDENTIFYING WEBSITE CREATORS

Consumers in Africa are far more likely to have tried to identify the registrant of a website than any other region, Nigeria and Egypt in particular. The practice is least prevalent among North Americans and Europeans.

Prevalent methods for doing so include doing an Internet search or looking on the website itself.



UNDERSTANDING OF AND EXPERIENCE WITH NEW TLDS

KEY TAKEAWAYS – NEW TLDS

This section is focused on consumer perceptions and experience with newer TLDs. In addition to exploring levels of awareness and visitation, intent to visit and what affects this willingness, we also look at factors related to purchase of extensions.

1 New TLDs seem to benefit from implied familiarity

The new TLDs that lead in awareness are those that appear to convey a purpose to the common user—as we saw in the prior section. If this is true, this may be somewhat false awareness.

However, if supposed awareness can be generated by familiar sounding extensions, choosing domain names based on what they suggest they are about could be key in improving early acceptance.

2 Trust and Relevance are key

The ability to trust the legitimacy of the domain is key for consumers— but they first have to feel they have a reason to visit. Lack of familiarity and perceived relevance appear to be stronger inhibitors for visiting new TLDs than concerns of legitimacy or trustworthiness.

3 Interpretability is powerful

While the new TLDs carry a connotation of innovation, that is likely to be a relatively short term association. As they settle in, the goal will be for new TLDs to strengthen the sense that they provide more information (interpretability again) rather than adding to confusion.

4 Price cannot be forgotten

It is also important to note that consumers see price as a major consideration in purchasing a TLD. We should expect that some buyers may choose meaningful and relevant new TLDs for cost advantages.

AWARENESS OF NEW TLDS

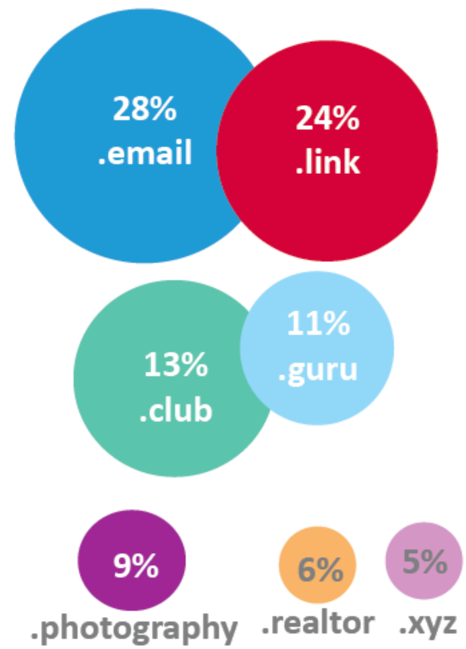
Awareness of new TLDs is particularly low in North America, due to very low awareness in the US and Canada, as well as in much of Europe. Awareness is notably heightened in South America and Asia, mostly for .email and .link.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Aware of any below	29%	54% AC	33%	48% AC	53% AC
.email	16%	39% ACDE	22% A	31% AC	32% AC
.link	14%	35% ACE	13%	31% AC	28% AC
.club	5%	11% AC	7%	12% AC	17% ABCD
.guru	6% C	15% AC	4%	15% AC	13% AC
.photography	3%	12% AC	6% A	9% AC	11% AC
.realtor	7% BCD	5% C	2%	4% C	7% BCD
.xyz	2%	5% AC	2%	4%	7% ABCD

Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

TOTAL AWARENESS BY NEW DOMAIN EXTENSION – TOTAL

46% Aware of Any (Net)



Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

NEW TLDS VISITED

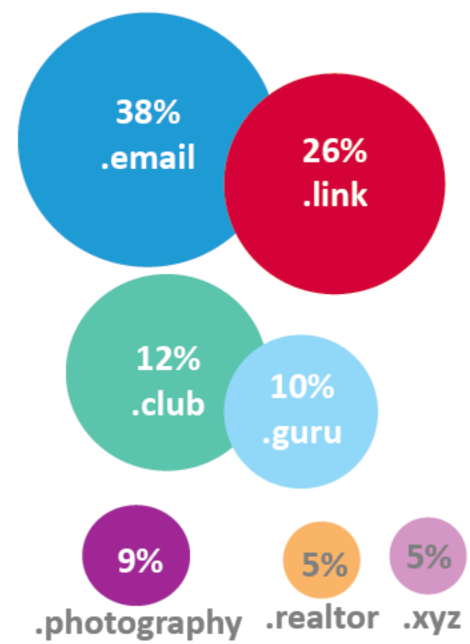
7 in 10 consumers in South America and Asia who are aware say they have visited one of the new TLDs, most notably .email and .link. Reported visitation is more moderate in the other regions.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Visited any below	**55%** 🔴	**70% AC**	**49%** 🔴	**63% C**	**70% AC**
.email	29% 🔴	46% ACDE 🟢	33% 🔴	36%	39% AC
.link	24% C	34% ACE 🟢	14% 🔴	30% C	27% C
.club	7% 🔴	8% 🔴	8% 🔴	11%	15% ABC 🟢
.guru	4% 🔴	14% AC 🟢	4% 🔴	14% AC	11% AC 🟢
.photography	3% 🔴	8% A	8% A	8% A	10% A 🟢
.realtor	7% CD	6% C	2% 🔴	2% 🔴	6% CD 🟢
.xyz	1% 🔴	5% AC	1% 🔴	5% AC	6% AC 🟢

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

VISITATION BY NEW DOMAIN EXTENSION - TOTAL

65% Visited Any (Net)



Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

AWARENESS AND VISITATION OF NEW TLDS – BY COUNTRY

By country, awareness and visitation varies widely. Scores in Japan are lower than seen in the rest of Asia and US and Canada are driving the lower North America numbers.

Awareness and visitation of the new geographically targeted TLDs (.wang, .nyc, etc) is universally low; below 20% in all cases.

AWARENESS	TOTAL	NA	US	CA	MX	SA	CO	AR	BR	EUR	IT	TR	ES	PL	UK	FR	DE	AFR	NG	ZA	EG	ASIA	CN	VN	PH	JP	KR	RU	IN	ID
Aware of any below	46%	29%	21%	27%	50%	54%	70%	58%	47%	33%	30%	69%	23%	41%	33%	17%	32%	48%	47%	37%	63%	53%	52%	66%	50%	23%	53%	62%	63%	62%
.email	28%	16%	9%	11%	35%	39%	46%	40%	36%	22%	26%	49%	17%	31%	20%	10%	18%	31%	26%	20%	52%	32%	31%	39%	24%	13%	33%	43%	40%	34%
.link	24%	14%	6%	8%	37%	35%	50%	53%	25%	13%	12%	37%	11%	15%	14%	10%	7%	31%	30%	22%	42%	28%	23%	41%	28%	13%	28%	33%	34%	44%
.club	13%	5%	2%	4%	14%	11%	8%	8%	13%	7%	10%	17%	4%	7%	7%	2%	6%	12%	14%	5%	16%	17%	18%	26%	16%	5%	20%	22%	18%	18%
.guru	11%	6%	4%	8%	9%	15%	35%	7%	11%	4%	4%	7%	1%	1%	7%	2%	2%	15%	22%	15%	3%	13%	7%	14%	17%	3%	9%	15%	25%	18%
.photography	9%	3%	2%	3%	5%	12%	13%	14%	11%	6%	6%	21%	0%	13%	4%	1%	3%	9%	7%	9%	12%	11%	8%	18%	10%	3%	10%	14%	17%	17%
.realtor	6%	7%	8%	11%	3%	5%	4%	4%	5%	2%	1%	4%	0%	4%	3%	0%	1%	4%	5%	6%	1%	7%	5%	7%	10%	1%	6%	8%	12%	8%
.xyz	5%	2%	2%	3%	2%	5%	3%	5%	5%	2%	2%	5%	1%	3%	0%	1%	3%	4%	5%	0%	4%	7%	8%	11%	6%	6%	7%	5%	8%	8%

VISITATION	TOTAL	NA	US	CA	MX	SA	CO	AR	BR	EUR	IT	TR	ES*	PL	UK	FR	DE	AFR	NG	ZA	EG	ASIA	CN	VN	PH	JP	KR	RU	IN	ID
Visit any below	65%	55%	34%	37%	84%	70%	65%	62%	75%	49%	53%	67%	48%	76%	45%	38%	24%	63%	63%	51%	71%	70%	72%	79%	68%	39%	67%	59%	73%	80%
.email	38%	29%	16%	17%	46%	46%	36%	39%	53%	33%	50%	49%	35%	46%	27%	18%	15%	36%	29%	31%	51%	39%	38%	48%	27%	22%	37%	37%	44%	43%
.link	26%	24%	8%	6%	48%	34%	31%	52%	29%	14%	17%	27%	4%	13%	12%	15%	4%	30%	32%	26%	29%	27%	26%	41%	30%	20%	31%	19%	24%	40%
.club	12%	7%	1%	6%	13%	8%	1%	5%	12%	8%	17%	14%	4%	4%	8%	0%	4%	11%	10%	5%	15%	15%	17%	18%	13%	6%	18%	14%	12%	16%
.guru	10%	4%	5%	2%	5%	14%	22%	6%	13%	4%	7%	6%	4%	0%	7%	0%	3%	14%	22%	10%	5%	11%	7%	15%	15%	6%	7%	5%	18%	16%
.photography	9%	3%	1%	6%	4%	8%	6%	9%	9%	8%	10%	19%	0%	15%	5%	6%	0%	8%	6%	10%	9%	10%	9%	12%	8%	5%	8%	11%	13%	13%
.realtor	5%	7%	10%	11%	2%	6%	4%	2%	8%	2%	3%	3%	0%	4%	1%	0%	0%	2%	3%	3%	0%	6%	6%	6%	7%	2%	5%	3%	8%	5%
.xyz	5%	1%	0%	2%	2%	5%	0%	2%	8%	1%	0%	3%	4%	2%	0%	0%	1%	5%	6%	0%	5%	6%	8%	11%	4%	5%	7%	2%	4%	8%

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.
* Base below 30

LIKELY TO VISIT NEW TLDS IN NEXT 6 MONTHS

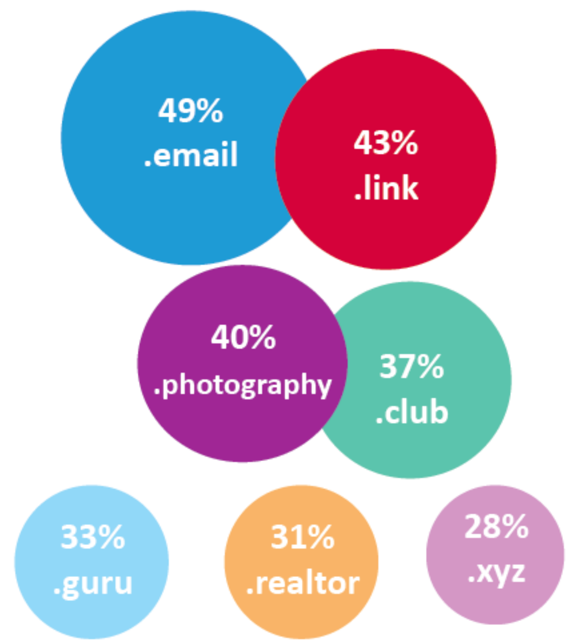
Future intent to visit new TLDs is moderate in North America and Europe, but 7 in 10 in the remaining regions say they are likely to visit in the next 6 months, with a quarter or more reporting intent for any of the TLDs.

Top 2 Box (Very/ Somewhat Likely)	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very/Somewhat Likely for ANY below	**46%**	**68% AC**	**41%**	**69% AC**	**66% AC**
.email	34%	60% ACDE	33%	53% AC	55% AC
.link	27%	57% ACDE	26%	50% AC	49% AC
.photography	28%	51% ACE	26%	47% AC	45% AC
.club	22%	46% AC	21%	40% AC	46% ACD
.guru	19%	38% AC	18%	40% AC	41% AC
.realtor	24% C	37% AC	16%	34% AC	37% AC
.xyz	14%	35% ACD	16%	28% AC	36% ACD

Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

FUTURE VISITATION BY NEW DOMAIN EXTENSION

59% Likely for Any (Net)



Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

LIKELIHOOD TO VISIT NEW TLDS – BY COUNTRY

Japan does not share the high likelihood to visit seen in other parts of Asia. And US and Canada express well below average intent for North America. Within Europe, Turkey is particularly open to the new TLDs, as is Egypt in Africa.

In China, likelihood to visit the new geographically targeted TLDs is moderate at a little less than half of consumers; the other countries express low intent to visit their geographically targeted extensions.

Likely Visitation	TOTAL	NA	US	CA	MX	SA	CO	AR	BR	EUR	IT	TR	ES	PL	UK	FR	DE	AFR	NG	ZA	EG	ASIA	CN	VN	PH	JP	KR	RU	IN	ID
T2B for any below	59%	46%	38%	38%	69%	68%	76%	66%	66%	41%	44%	72%	39%	54%	43%	28%	32%	69%	67%	63%	81%	66%	68%	74%	66%	24%	59%	71%	80%	85%
.email	49%	34%	27%	23%	59%	60%	67%	56%	59%	33%	37%	66%	33%	46%	30%	23%	22%	53%	53%	37%	71%	55%	56%	63%	46%	20%	49%	64%	68%	76%
.link	43%	27%	18%	19%	57%	57%	69%	57%	52%	26%	31%	55%	27%	39%	20%	20%	16%	50%	45%	40%	68%	49%	48%	55%	44%	18%	41%	55%	62%	71%
.photography	40%	28%	23%	21%	48%	51%	59%	48%	49%	26%	30%	54%	28%	39%	22%	20%	16%	47%	43%	49%	51%	45%	41%	46%	45%	15%	35%	54%	59%	65%
.club	37%	22%	14%	19%	40%	46%	48%	42%	46%	21%	24%	46%	23%	30%	17%	18%	12%	40%	40%	27%	53%	46%	48%	43%	38%	16%	41%	54%	54%	61%
.guru	33%	19%	14%	14%	33%	38%	55%	27%	36%	18%	18%	39%	22%	22%	19%	13%	8%	40%	48%	29%	38%	41%	39%	32%	35%	14%	29%	48%	57%	60%
.realtor	31%	24%	23%	24%	28%	37%	44%	30%	37%	16%	16%	36%	19%	24%	12%	14%	8%	34%	35%	30%	37%	37%	39%	32%	30%	13%	24%	46%	48%	43%
.xyz	28%	14%	11%	11%	26%	35%	36%	30%	36%	16%	16%	37%	19%	21%	13%	14%	7%	28%	29%	14%	39%	36%	41%	33%	24%	14%	26%	41%	42%	44%
.wang																							42%							
.xn-55qx5d																							47%							
.xn-ses554g																							47%							
.london															30%															
.nyc			18%																											
.berlin																	22%													
.ovh																	7%													

T2B% = % who say very/somewhat likely

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

REASONS VERY LIKELY/UNLIKELY TO VISIT NEW TLD - TOTAL

Top drivers of visitation are relatively consistent across new TLDs; legitimacy and trust are key. Those who do not plan to visit are more likely to cite a lack of need or familiarity.

Reasons likely to visit (among those who said they are likely to visit each extension)

Reasons unlikely to visit (among those who said they are unlikely to visit each extension)

TOTAL	Doesn't seem legitimate	Seems legitimate	Don't trust this extension	Trust this extension	Have no reason to go there	Has information I'm seeking	It's where you go for specific information	Have never been to this type of website before	Have been to this type of website before	Afraid of my information being stolen if I go there	Not afraid of my info being stolen if I go here
.email	14%	39%	20%	30%	42%	28%	26%	40%	22%	13%	16%
.link	15%	38%	21%	26%	42%	27%	27%	39%	21%	12%	16%
.photography	14%	34%	21%	24%	43%	32%	30%	40%	14%	11%	12%
.club	16%	34%	20%	24%	44%	25%	28%	40%	17%	13%	17%
.realtor	15%	33%	22%	25%	43%	27%	26%	41%	17%	13%	15%
.guru	19%	31%	23%	27%	43%	27%	27%	41%	17%	14%	17%
.xyz	24%	29%	26%	23%	40%	23%	24%	40%	17%	15%	18%

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.
Few notable differences observed between regions

CONSIDERATION OF NEW TLD FOR OWN WEBSITE

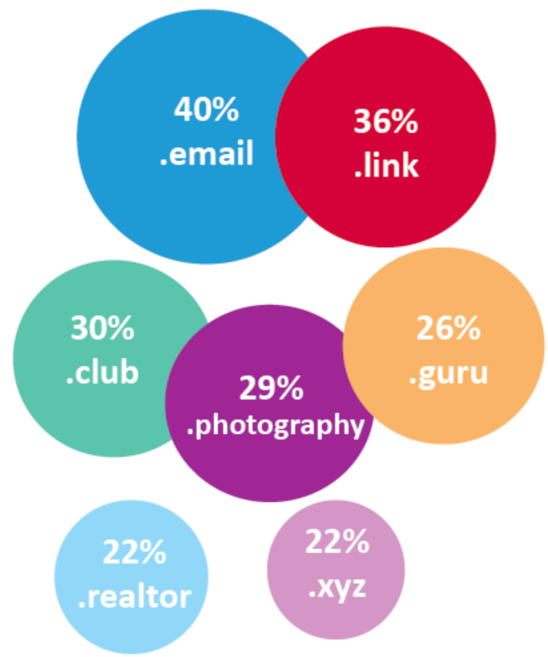
The majority of consumers in North America and Europe would not consider one of the new TLDs for their own website, while the other regions are more open, particularly to .email and .link extensions.

Top 2 Box (Very/ Somewhat Likely)	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very/Somewhat Likely for ANY below	**36%**	**59% AC**	**35%**	**60% AC**	**60% AC**
.email	24%	49% AC	25%	43% AC	47% AC
.link	22%	46% AC	20%	42% AC	43% AC
.club	17%	36% ACD	17%	27% AC	38% ACD
.photography	17%	35% ACD	16%	28% AC	35% ACD
.guru	13%	30% AC	12%	28% AC	34% ACD
.xyz	11%	26% ACD	11%	19% AC	29% ACD
.realtor	11%	26% ACD	11%	19% AC	29% ACD

Letters indicate significantly higher than region. Region vs. Total Higher Lower

PURCHASE CONSIDERATION BY NEW DOMAIN EXTENSION - TOTAL

52% Likely for Any (Net)



Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

CONSIDERATION OF NEW TLD FOR OWN WEBSITE– BY COUNTRY

As seen previously, Japan (20%) is not as open to the new TLDs as other parts of Asia (60%). And in North America, US and Canada express intent well below Total. Within Europe, Turkey is particularly open to the new TLDs, as is Egypt in Africa.

About a third of consumers in China are open to the new geographically targeted TLDs as well (.wang, .xn-55qx5d, and .xn.ses554g).

Consideration	TOTAL	NA	US	CA	MX	SA	CO	AR	BR	EUR	IT	TR	ES	PL	UK	FR	DE	AFR	NG	ZA	EG	ASIA	CN	VN	PH	JP	KR	RU	IN	ID
T2B for any below	52%	36%	25%	29%	67%	59%	63%	60%	58%	35%	27%	69%	36%	48%	35%	25%	24%	60%	60%	49%	73%	60%	59%	64%	65%	20%	59%	66%	75%	75%
.email	40%	24%	15%	17%	51%	49%	53%	48%	48%	25%	21%	55%	25%	37%	26%	18%	16%	43%	42%	28%	61%	47%	47%	52%	42%	15%	43%	51%	62%	61%
.link	36%	22%	13%	17%	48%	46%	52%	42%	45%	20%	18%	52%	22%	23%	21%	15%	8%	42%	43%	24%	60%	43%	41%	40%	43%	15%	44%	47%	54%	61%
.club	30%	17%	9%	15%	37%	36%	28%	33%	39%	17%	16%	31%	19%	29%	14%	15%	9%	27%	26%	14%	41%	38%	38%	37%	38%	11%	35%	45%	46%	50%
.photography	29%	17%	10%	12%	35%	35%	38%	29%	36%	16%	13%	41%	17%	25%	16%	11%	6%	28%	27%	23%	35%	35%	32%	36%	41%	11%	33%	35%	49%	45%
.guru	26%	13%	10%	12%	23%	30%	34%	22%	31%	12%	8%	25%	16%	21%	16%	6%	5%	28%	33%	15%	32%	34%	32%	27%	30%	9%	28%	35%	49%	45%
.realtor	22%	11%	7%	10%	19%	26%	26%	17%	29%	11%	8%	21%	11%	18%	13%	8%	5%	19%	20%	9%	28%	29%	30%	25%	27%	9%	24%	26%	39%	30%
.xyz	22%	11%	8%	8%	20%	26%	16%	15%	32%	11%	8%	25%	14%	21%	12%	8%	5%	19%	17%	10%	33%	29%	32%	27%	20%	12%	22%	25%	38%	31%
.wang																							34%							
.xn-55qx5d																							37%							
.xn-ses554g																							37%							
.london															19%															
.nyc			8%																											
.berlin																	14%													
.ovh																	4%													

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

FACTORS IN TLD PURCHASE

Having a well-known extension is the main factor across the board in determining which TLD to purchase. However, price is also a notable factor, and equally important in Europe.

Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

NEW TLD TRUSTWORTHINESS

Trust perceptions of the new TLDs are divided, with about half of consumers reporting high levels of trust to most, while others are not seen as particularly trustworthy. However, scores in Europe are somewhat muted compared to the other regions.

The majority of the new geographically targeted TLDs, particularly those in Asia, are seen as trustworthy by about half of consumers as well.

50% or more rated extension Very/Somewhat Trustworthy

NORTH AMERICA

General Extensions
.email
.link
.photography
.realtor

Geographically Targeted Extensions
.nyc

SOUTH AMERICA

General Extensions
.email
.link
.photography

EUROPE

General Extensions
.email

Geographically Targeted Extensions
.london
.berlin

AFRICA

General Extensions
.email
.link
.photography

ASIA

General Extensions
.email
.link
.photography
.club

Geographically Targeted Extensions
.xn-55qx5d
.xn-ses554g
.wang

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

NEW TLD EXPERIENCE

Outside of Asia, usage of the new TLDs is quite low, but experiences so far are positive.

80% or more had Very/Somewhat Positive experience with extension

NORTH AMERICA

General Extensions
.email
.link

SOUTH AMERICA

General Extensions
.email
.link
.guru

EUROPE

General Extensions
.email
.link

AFRICA

General Extensions
.email
.link

ASIA

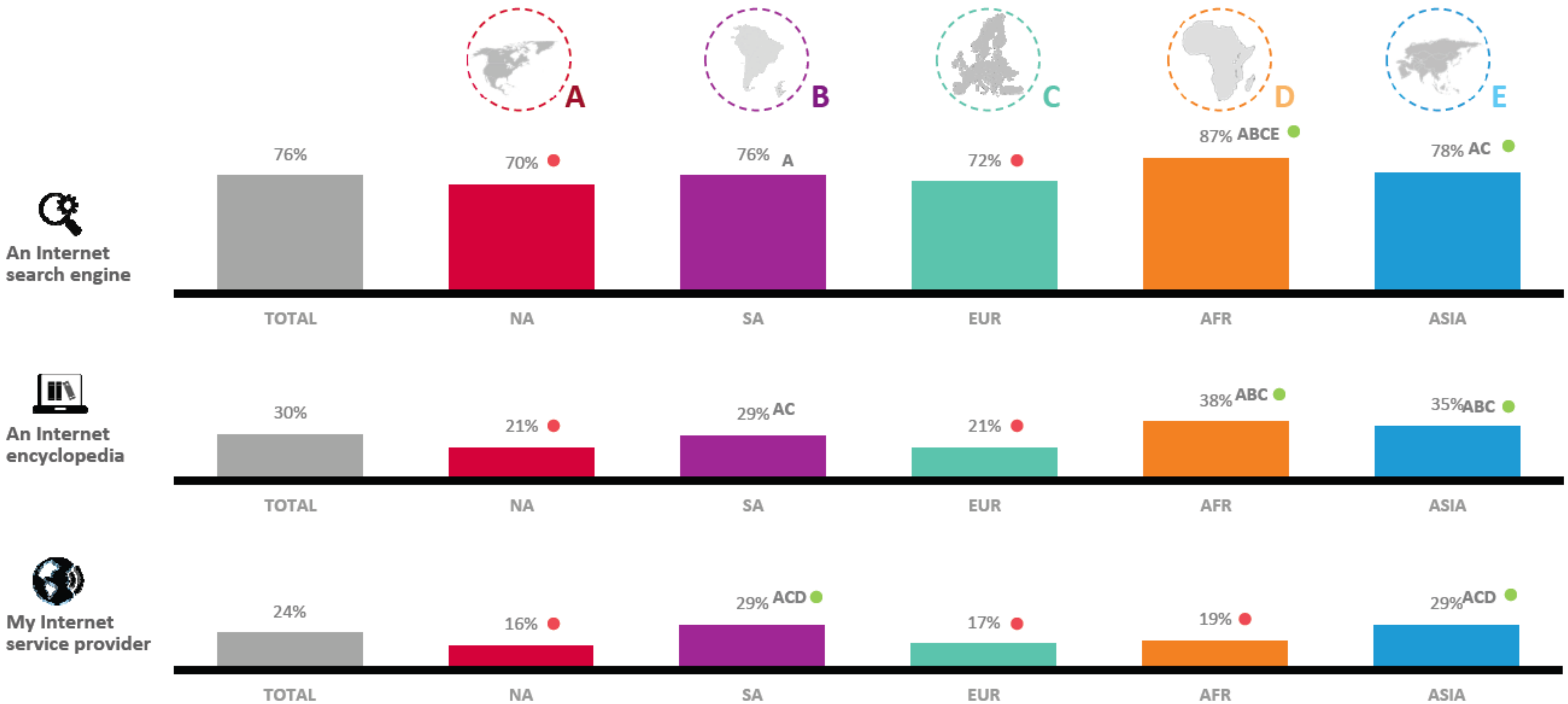
General Extensions
.email
.link
.club
.guru
.photography
.realtor
.xyz

Geographically Targeted Extensions
.xn-ses554g
.xn-55qx5d
.wang

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.
* Only extensions with base over 30 reported

PREFERRED SOURCES FOR MORE INFORMATION ON NEW TLDS

Again, we see Internet search as the dominant method for online populations to locate information about new TLDs.



Letters indicate significantly higher than region. Region vs. Total Higher Lower

IMAGERY PERCEPTIONS OF NEW TLDS

Many consumers aren't sure why new TLDs have been created, but those who do believe it is to solve consumer demand and to provide better differentiation between types of sites.

While we still see functional associations, such as Useful, Informative and Helpful, the new TLDs are equally seen as Interesting and Innovative.

NEW TLD RESTRICTIONS

Roughly half of consumers favor light purchase restrictions on the new TLDs, including the geographically targeted extensions, and another third feel there should be none.

Both Europe and Africa are generally more prone to favor less restriction.

Strict purchase restrictions should be required	TOTAL
.email	20%
.link	18%
.club	18%
.guru	18%
.photography	18%
.realtor	19%
.xyz	18%

Some purchase restrictions should be required	TOTAL
.email	48%
.link	49%
.club	50%
.guru	48%
.photography	50%
.realtor	49%
.xyz	46%

No purchase restrictions should be required	TOTAL
.email	32%
.link	33%
.club	32%
.guru	34%
.photography	32%
.realtor	32%
.xyz	37%

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

TRUST AND EXPERIENCE WITH THE DOMAIN NAME SYSTEM

KEY TAKEAWAYS – DOMAIN NAME SYSTEM

This section explores findings related to perceptions of the domain name system in more general terms—ease of registration, trust in the industry, and expectations regarding the behavior of the industry.

1 Registration is not hard, but it isn't easy either

Globally, about half of registrants would classify the process as "not easy". This may be in part due to the infrequency of the task/lack of familiarity with the process, but there is clearly room to improve the ease of the registration process.

2 A faster, cheaper, easier process is desired

Reflecting the price finding from the prior section, lower cost is the top desired change in the registration process. Then come process improvements around speed and efficiency, including ease of registering multiple domains. The new TLDs may help—providing more options for extensions so it is easier to register "your" domain at an affordable price. Supplemental data will be available from the registrant portion of the study.

3 A cautious registration approach is expected

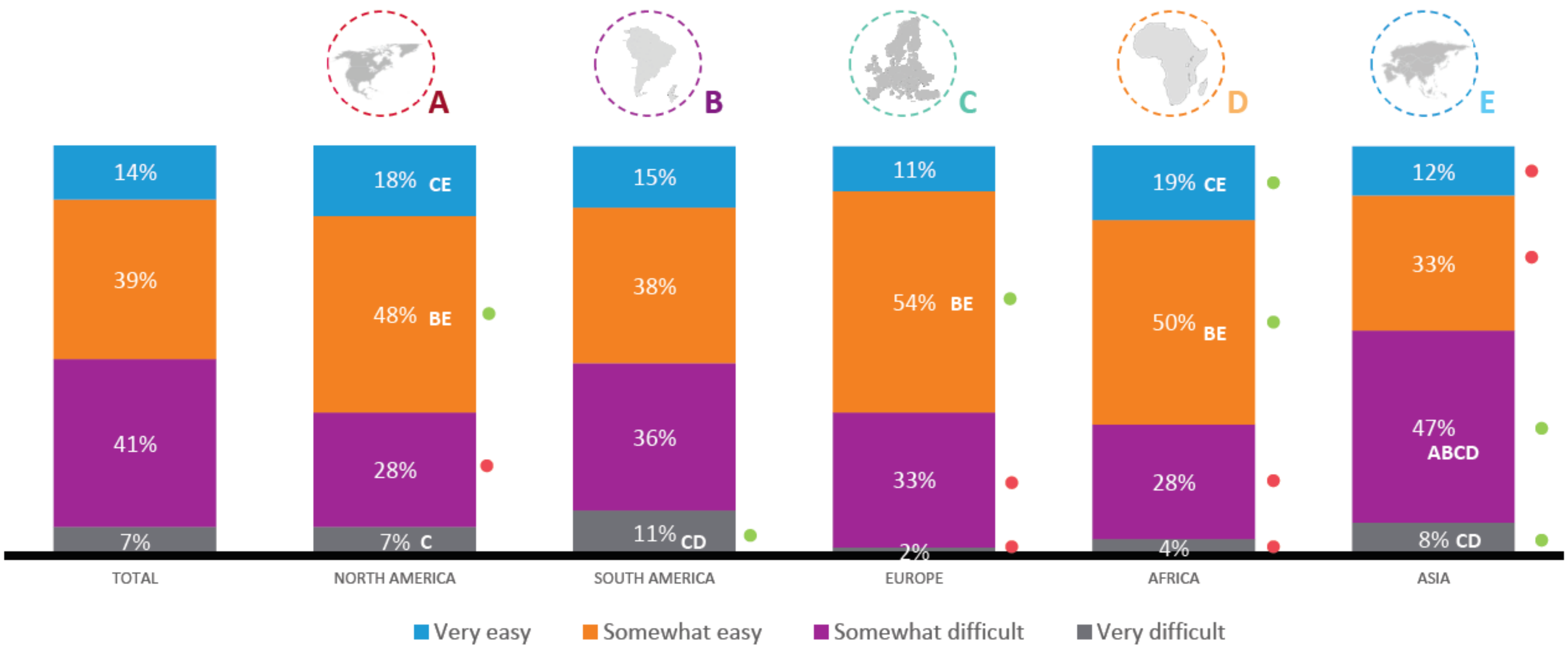
Interestingly, while restrictions are often viewed negatively, consumers seem to suggest that they expect or assume entities are validating registrants. This suggests that Internet citizens have an expectation that the industry will police itself.

4 Trust in the industry is high

Low restriction and self policing may be made acceptable by the fact that the domain registration industry is seen to be at least as credible and trustworthy as other tech oriented businesses.

EASE OF REGISTERING A DOMAIN - REGISTRANTS

Registering a domain is not seen as particularly easy or hard. Those in North America, Europe, and Africa tend to report an easier experience, while those in Asia report more difficulty, specifically Vietnam, Philippines, Japan and South Korea. South America reports some heightened difficulty perceptions as well.



Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

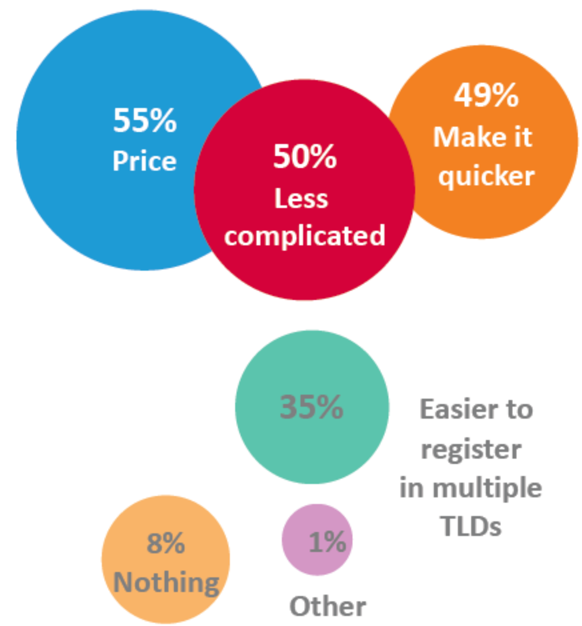
CHANGES TO THE PURCHASE PROCESS - REGISTRANTS

Half of registrants would prefer a cheaper, quicker, less complicated experience when purchasing a domain name. There is also a notable desire to make the process of registering in multiple TLDs easier; this may to be contributing to the difficulty in Asia and South America.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Price	49%	44% 🔴	59% AB	61% AB	57% AB
Make it less complicated	30% 🔴	46% AC	30% 🔴	50% AC	57% ABCD 🟢
Make it quicker	36% 🔴	47% AC	31% 🔴	52% AC	54% ABC 🟢
Make it easier to register in multiple TLDs	29% 🔴	36% C	24% 🔴	33% C	39% AC 🟢
Other	2% E 🟢	1%	1%	2% E	<1% 🔴
Nothing	18% BDE 🟢	10% E	16% BDE 🟢	7%	6% 🔴

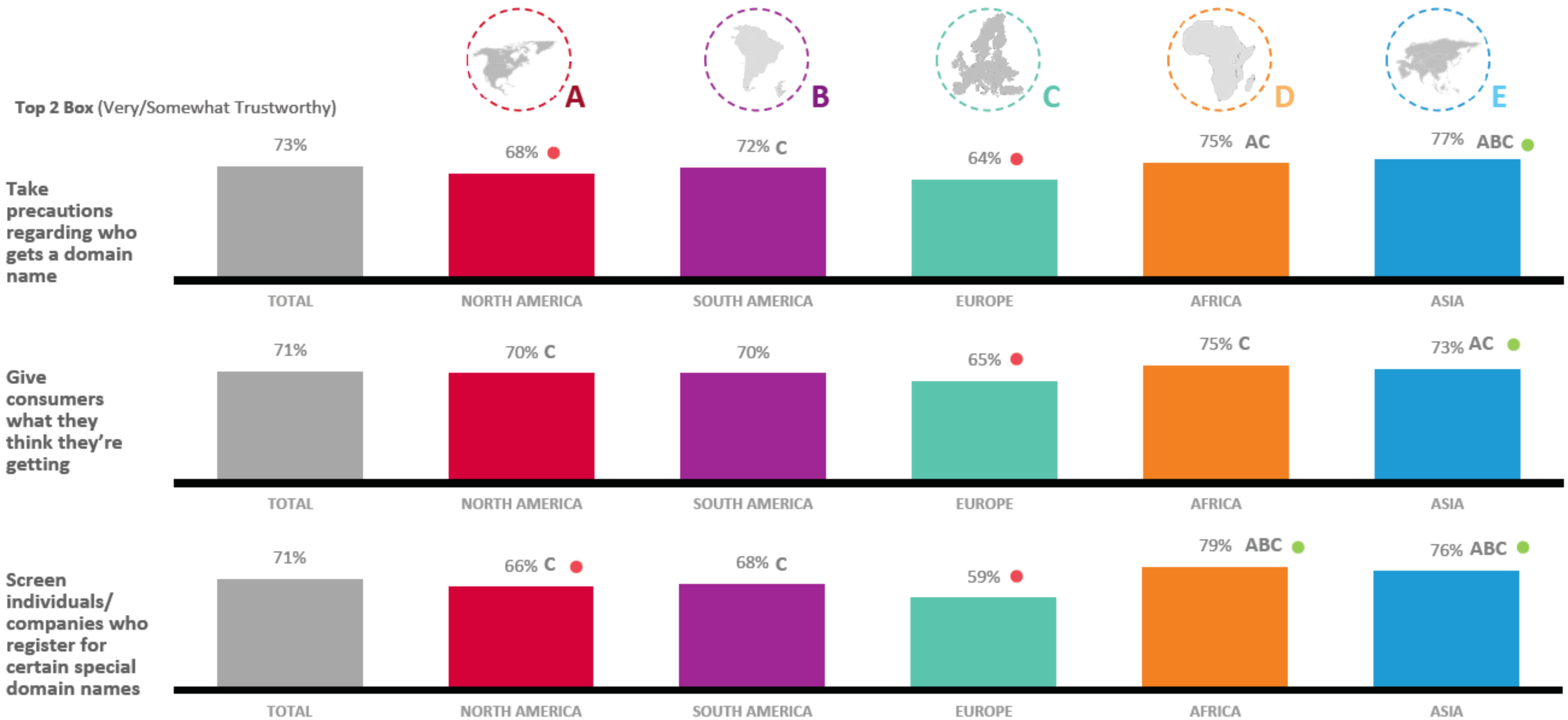
Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

CHANGES TO THE DOMAIN NAME PROCESS - TOTAL



TRUSTWORTHINESS OF ENTITIES THAT OFFER DOMAIN NAMES

There are generally high levels of trust that the domain name entities will use due diligence, although somewhat tempered in North America and Europe.

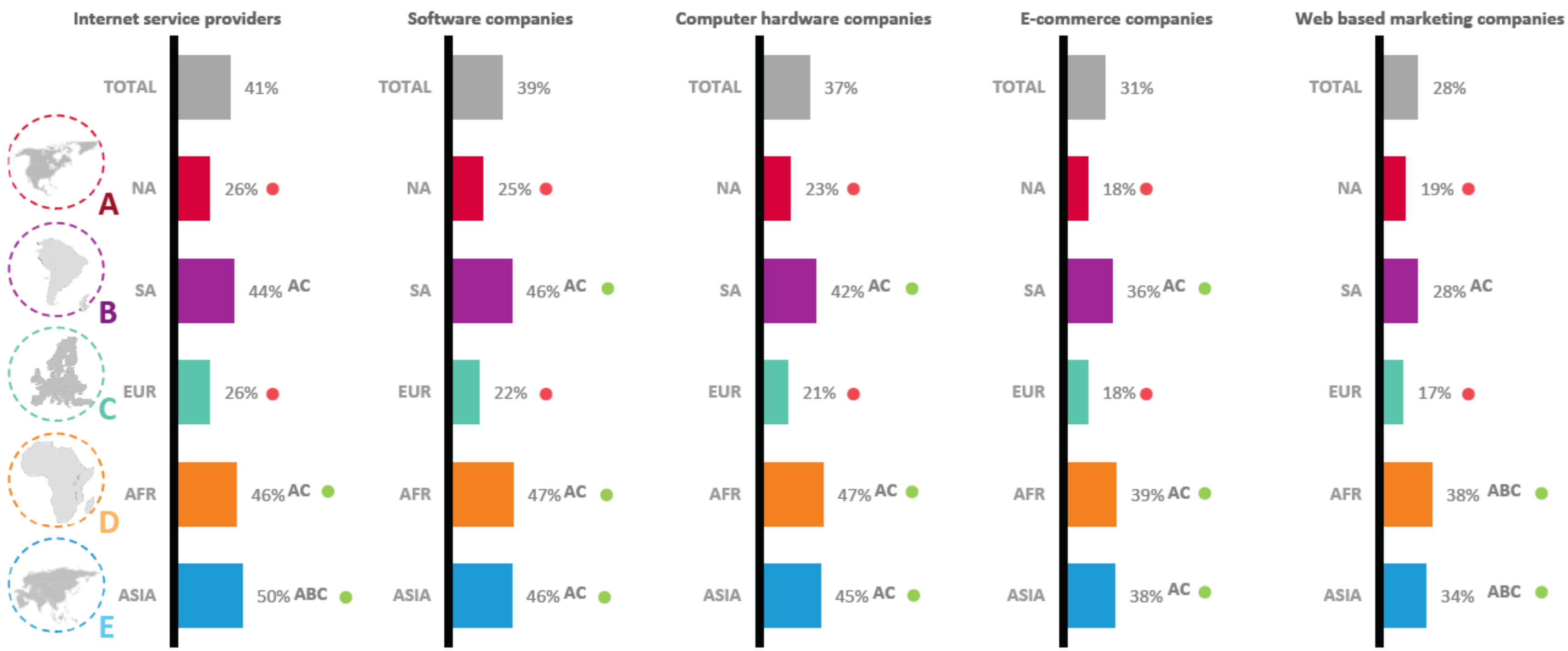


Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

TRUST IN THE DOMAIN NAME INDUSTRY VS. OTHER INDUSTRIES

Overall, about half of consumers trust the Domain Name industry just as much as those listed below, and the rest are more inclined to trust it more as opposed to less.
Africa, Asia, and South America, more so than the other regions, say they trust the Domain Name industry more comparatively.

Top 2 Box (Trust **Domain Name Industry** much more/somewhat more)



Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

REACHING THE INTENDED WEBSITE

KEY TAKEAWAYS – REACHING WEBSITES

This section focuses on general Internet behaviors, such as device usage, preference for accessing websites, and experience with URL shorteners and QR codes.

1 Navigation has not changed appreciably

Around the globe people use a variety of devices to access the web. While a wider range of devices are being used, the way that people navigate web pages is largely the same—predominantly search engines, with direct entry into a browser a distant second.

URL shorteners and QR codes are not showing widespread adoption, with Asia being a potential exception for QR codes.

2 Most visited sites are remembered

Many consumers remember the actual URLs for the sites they visit most often. And we can expect that once a relevant site using a new TLD extension is discovered and found to be useful by an individual, the extension may become a non-issue.

URL shortening is an Internet technique in which a URL may be made substantially shorter in length and still direct to the required page.

A **QR code** consists of black dots arranged in a square grid on a white background, which can be read by an imaging device (such as a camera). Reading the QR code with your Smartphone takes you to a website or ad for more information.

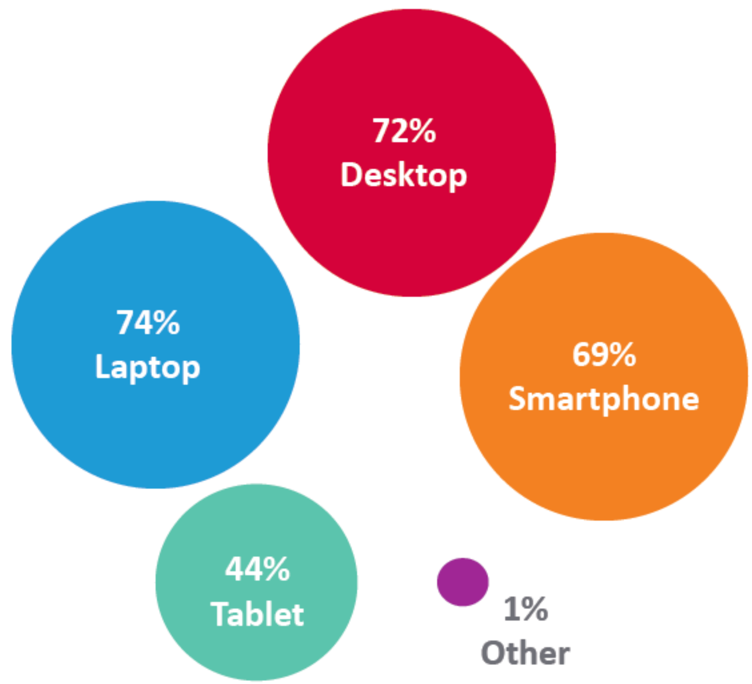
DEVICES USED FOR INTERNET ACCESS

Roughly 7 in 10 consumers use laptops, desktops and smartphones to access the Internet.
Smartphone use is less prevalent in North America and Europe compared to their regional counterparts.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Laptop computer	72%	72%	74%	80% ABCE	73%
Desktop computer	64%	79% ACD	65%	70% A	75% ACD
Smartphone	58%	72% AC	62% A	77% AC	73%AC
Tablet	47% C	43%	40%	42%	44% C
Other	1%	1%	1%	1%	1%

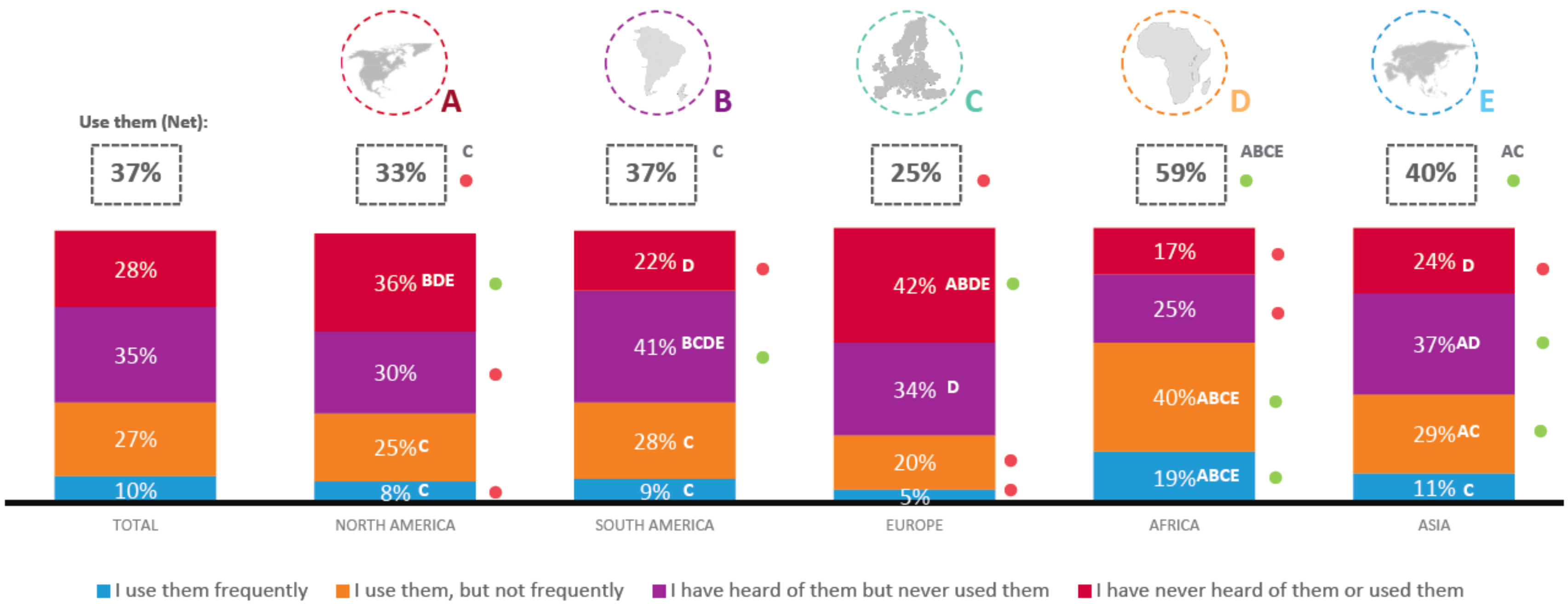
Letters indicate significantly higher than region. Region vs. Total Higher Lower

TOTAL DEVICES USED



URL SHORTENER USAGE

Usage of URL shorteners is low overall, at least in part due to lack of awareness. Africa reports above average usage, with lower penetration in North America and Europe, who are more inclined to say they have never heard of them.



URL shortening is an Internet technique in which a URL may be made substantially shorter in length and still direct to the required page.

Letters indicate significantly higher than region. Region vs. Total Higher Lower

REASONS FOR USING/NOT USING URL SHORTENER

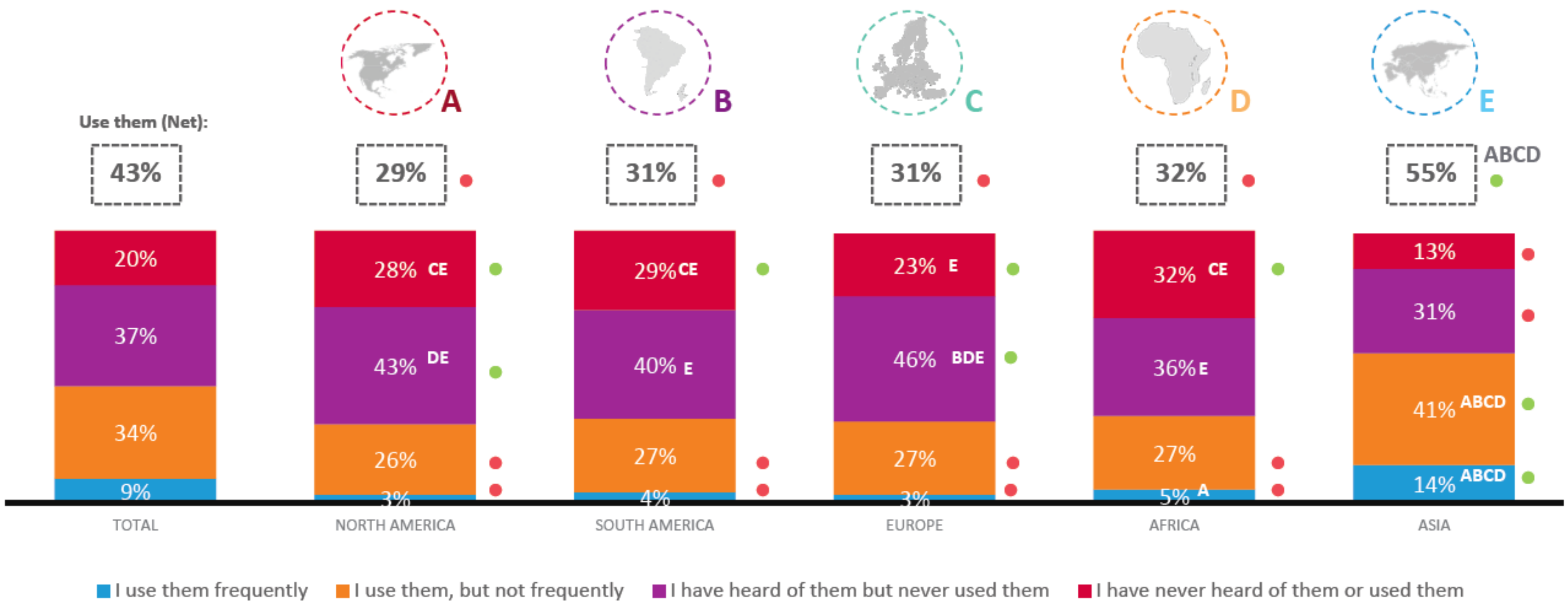
Convenience and time savings are key benefits to using URL shorteners, while lack of need is the main reason cited for non-use, followed by a lack of awareness.

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Reasons for Using						
They are convenient	64%	61%	61%	58%	60%	67% C
They save me time	57%	56% B	44%	54% B	58% B	59% B
It's the latest thing	21%	7%	19% AC	8%	18% AC	28% ABCD
Other	5%	11% BCDE	5%	6%	5%	3%
Reasons for Not Using						
Never needed to	43%	35%	49% AE	46% A	46% A	43% A
Never heard of them	35%	48% BCDE	32%	41% BE	34%	29%
Confused about website I'm going to	21%	14%	16%	14%	14%	29% ABCD
Don't trust them	8%	6%	8%	6%	11% C	9% C
Don't like them	7%	5%	7%	5%	4%	8% AC

Letters indicate significantly higher than region. Region vs. Total Higher Lower

EXPERIENCE WITH QR CODES

QR code usage also remains low, with less than a third reporting using one in the past across most regions. Consumers in Asia, particularly China, Vietnam, Japan and South Korea, are far more prone to the practice than the remaining regions.



A **QR code** consists of black dots arranged in a square grid on a white background, which can be read by an imaging device (such as a camera). Reading the QR code with your Smartphone takes you to a website or ad for more information.

Letters indicate significantly higher than region. Region vs. Total Higher Lower

REASONS FOR USING/NOT USING QR CODES

Using QR codes is seen as a convenient time saver, but about a quarter or more of consumers are drawn to the novelty. Those that have not used QR codes see no need to do so.

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Reasons for Using						
They are convenient	67%	56%	60%	60%	62%	71% ABCD
They save me time	51%	43%	49%	50%	55% A	52% A
It's the latest thing	35%	27%	27%	21%	34% C	39% ABC
Other	4%	10% BDE	3%	7% BE	4%	2%
Reasons for Not Using						
Never needed to	57%	54%	53%	63% ABDE	51%	58% D
Never heard of them	26%	31% CE	35% CE	21%	36% CE	23%
Don't like them	11%	8%	9%	13% AD	5%	14% ABD
Don't trust them	10%	6%	7%	9% A	10% A	14% ABCD
Other	5%	10% BCDE	3%	6% BE	5%	3%

Letters indicate significantly higher than region. Region vs. Total Higher Lower

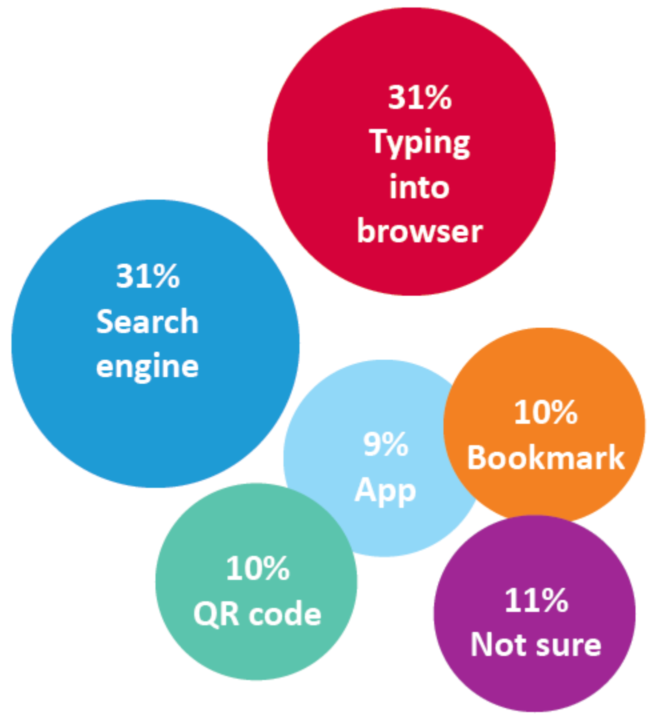
WEBSITE ACCESS SAFETY

The majority of respondents feel more comfortable accessing websites by typing the name into a browser or finding via an Internet search engine.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Typing domain name into a browser	38% CE	38% CE	32% E	40% CE	25%
Finding via an Internet search engine	25%	27%	31% A	37% ABCE	32% AB
Accessing via a bookmark	7%	11% ACD	6%	5%	12% ACD
Accessing via a QR code	5%	8% A	6%	6%	13% ABCD
Using an app	8%	7%	8%	7%	10% ABD
Not sure	17% BDE	9% D	16% BDE	5%	8%

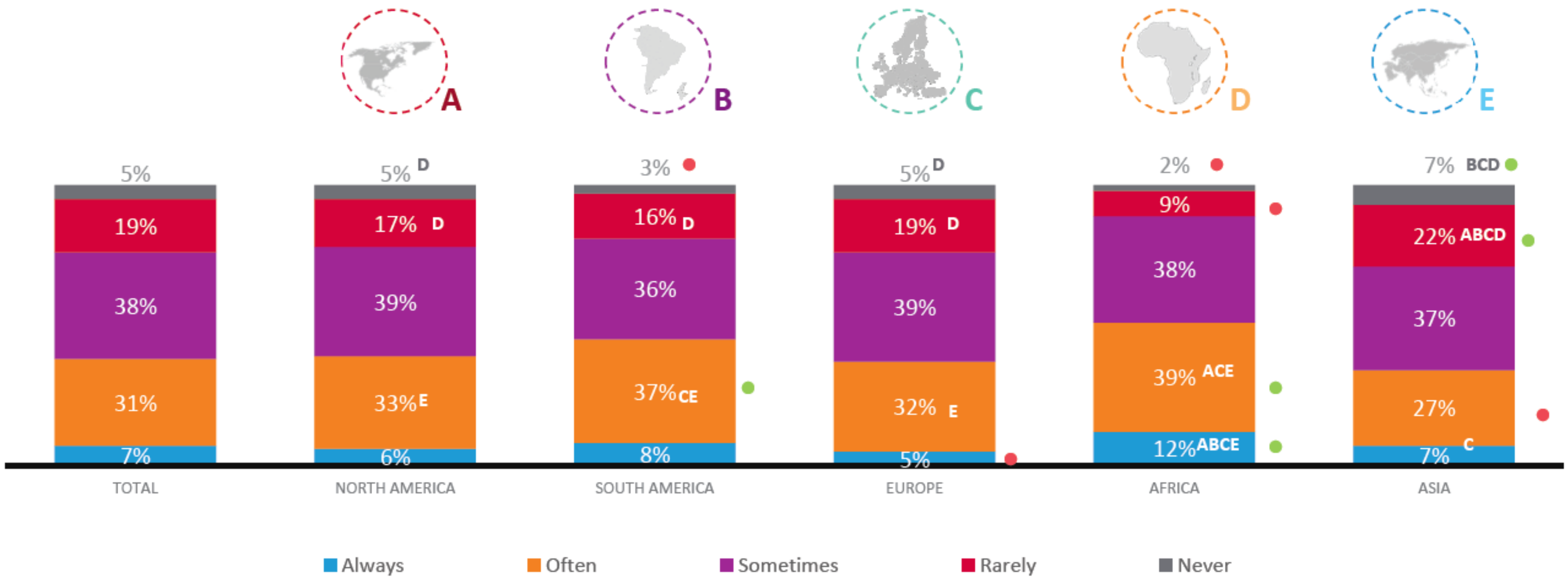
Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

SAFEST ACCESS - TOTAL



WEBSITE ADDRESS RECALL

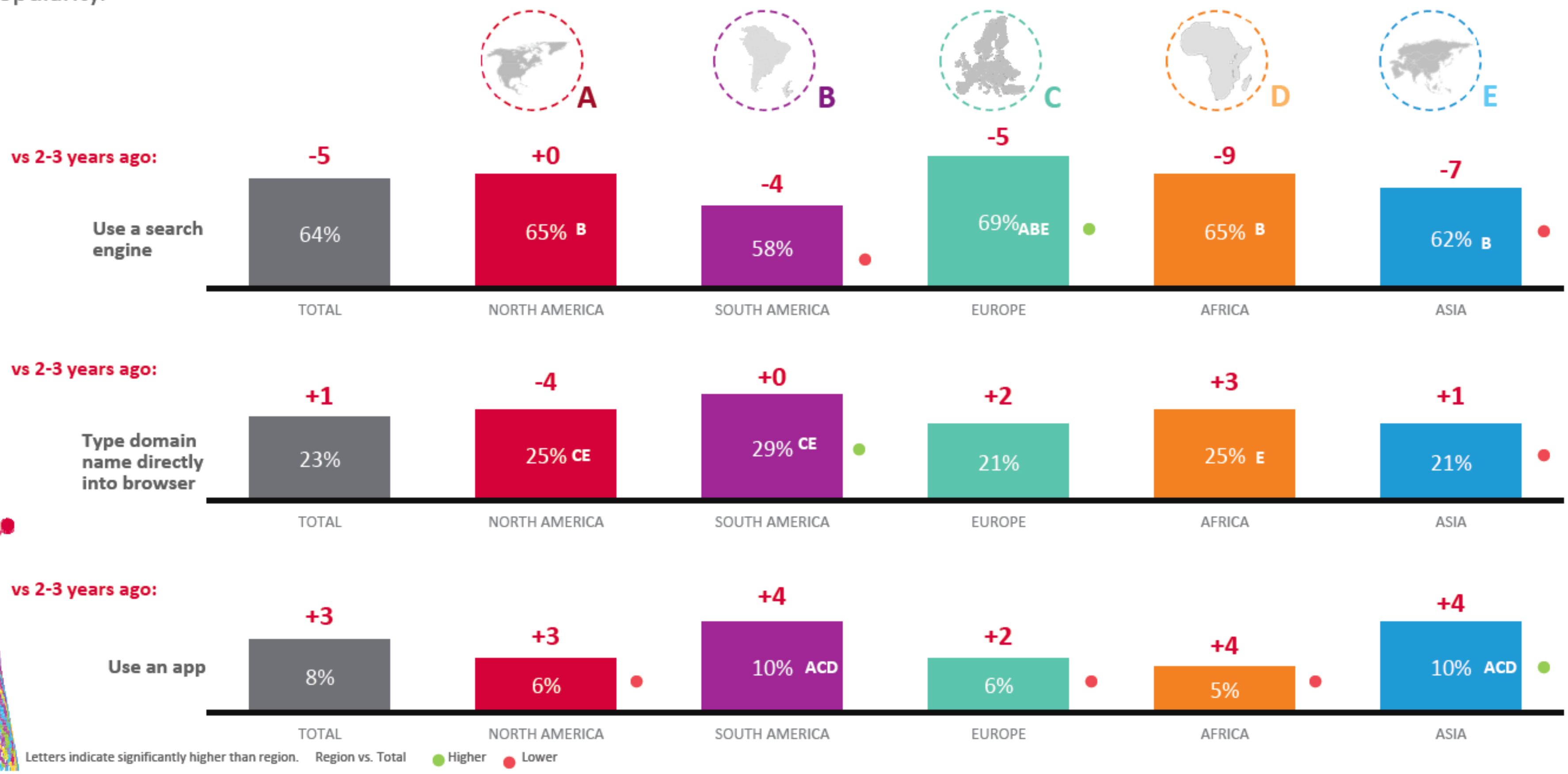
And many consumers report at least somewhat frequent recall of specific website addresses they want to visit.



Letters indicate significantly higher than region. Region vs. Total Higher Lower

PREFERRED WAY OF FINDING WEBSITES - PAST AND PRESENT

Overall, the preferred way to find a website was and remains to use a search engine. However, using an app has gained slightly in popularity.



ABUSIVE INTERNET BEHAVIOR AND CYBER CRIME

KEY TAKEAWAYS – INTERNET ABUSE& CYBER CRIME

This section focuses on awareness, experience with, and perceptions with regard to protection against abusive Internet behavior.

1 Bad Internet behavior is the law's responsibility

This appears consistent with the general sense that domain registration should be largely unrestricted—that the responsibility to stop abuses largely lies outside of the registration industry.

2 However, a portion expect ICANN to play a role

This is especially true for cybersquatting where one in three say that ICANN is one of the entities responsible for stopping the practice. For other abusive behaviors, about 1 in 5 say that ICANN has a role—far below law enforcement and consumer protection agencies, but enough that ICANN should be seen as contributing to or at least facilitating policing actions.

3 Personal impacts are low, but fear is high

Aside from spam and malware, many have not personally experienced cyber crimes, but that does not mean they are not worried—fear is widespread, especially for theft of online credentials.

4 Anti-virus software is treated as a solution

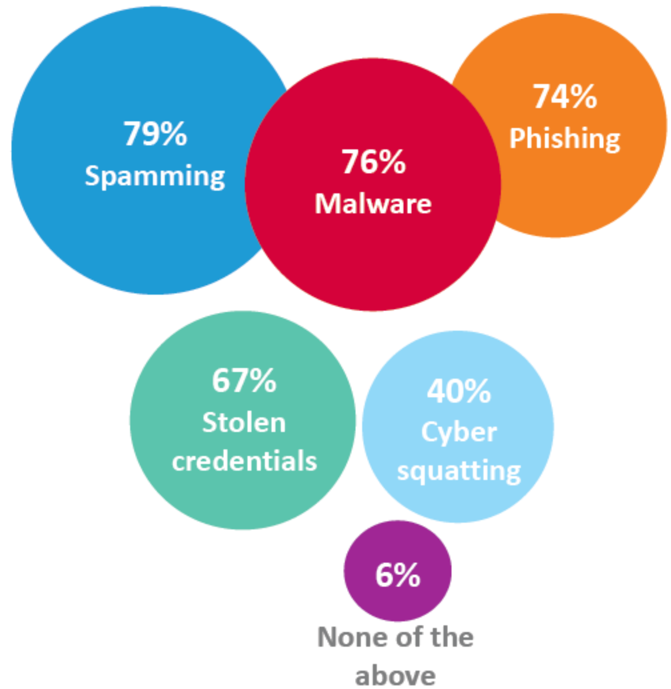
Personal AV software is the #1 reported step for combating phishing and cybersquatting—activities against which AV software may have only limited effectiveness. This indicates a false sense of security and lack of understanding about how to protect oneself against cyber crime. More education about how to keep oneself safe online may be helpful.

AWARENESS OF TYPES OF ABUSIVE INTERNET BEHAVIOR

The majority of consumers are attuned to most abusive Internet behavior, with the exception of cyber squatting, which is more familiar in Africa and Asia (excluding Japan and South Korea).

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Spamming	87% BCE	80% E	79% E	84% CE	76%
Malware	86% BCDE	77% E	76%	77%	73%
Phishing	81% BCDE	62%	74% B	76% B	75% B
Stolen credentials	74% BCDE	63%	69% BE	65%	65%
Cyber squatting	37% BC	31%	29%	50% ABC	45% ABC
None of the above	5%	6%	10% ABDE	5%	5%

AWARENESS OF TYPES OF ABUSIVE INTERNET BEHAVIOR – TOTAL



Letters indicate significantly higher than region. Region vs. Total Higher Lower

SOURCES OF ABUSIVE INTERNET BEHAVIOR

Consumers generally consider organized groups and individuals equally to blame for Internet abuse.

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Phishing						
Organized groups (Net)	63%	63% BD	53% 🔴	68% BD 🟢	51% 🔴	64% BD 🟢
Individuals (Net)	58%	68% BCDE 🟢	57%	52% 🔴	50% 🔴	58% CD
Don't know	17%	17%	19% E	19% E	24% AE 🟢	15% 🔴
Spamming						
Organized groups (Net)	63%	67% BD 🟢	54% 🔴	67% BD 🟢	49% 🔴	63% BD
Individuals (Net)	57%	62% CD 🟢	59% C	50% 🔴	54%	58% C
Don't know	16%	17% E	17%	18% E	20% E 🟢	14% 🔴
Cyber squatting						
Organized groups (Net)	64%	66% D	59%	66% D	56% 🔴	65% D
Individuals (Net)	57%	65% BCDE 🟢	52%	57% D	43% 🔴	58% D
Don't know	16%	16%	19%	18%	23% AE 🟢	14% 🔴
Stolen credentials						
Organized groups (Net)	65%	68% BD	61% 🔴	69% BD 🟢	53% 🔴	66% D
Individuals (Net)	59%	68% BCDE 🟢	56%	54% 🔴	53%	58% C
Don't know	16%	15%	16%	18% E	21% AE 🟢	15% 🔴
Malware						
Organized groups (Net)	67%	69% BD	60% 🔴	68% BD	56% 🔴	68% BD 🟢
Individuals (Net)	55%	64% BCDE 🟢	54% D	53% D	46% 🔴	55% D
Don't know	17%	16%	18%	19% E	23% AE 🟢	16% 🔴

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

PARTY RESPONSIBLE FOR STOPPING PHISHING

In North America, consumers favor putting responsibility for protection against phishing on consumer protection agencies, while the remaining regions believe law enforcement should play a larger role. ICANN is mentioned more prevalently in Asia.

Phishing	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
National law enforcement (non-US only)	18% 🔴	36% A 🔴	43% AB	37% A	49% ABCD 🟢
Consumer protection agency	35% CE	30%	29%	45% ABCE 🟢	30% 🔴
Interpol	27% 🔴	33% A	34% AE 🟢	32%	29%
Local police	15% 🔴	22% AC	17% 🔴	22% A	34% ABCD 🟢
Federal police (non-US only)	16% 🔴	40% ACDE 🟢	33% ADE 🟢	24% A	19% A 🔴
ICANN	15% C 🔴	13% 🔴	11% 🔴	19% BC	30% ABCD 🟢
Private security companies	17% C	19% C 🟢	10% 🔴	17% C	15% C
FBI (US only)	23% 🟢	--	--	--	--
CIA (US only)	10% 🟢	--	--	--	--
Don't know	29% BCDE 🟢	15%	23% BDE 🟢	14% 🔴	14% 🔴

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

PARTY RESPONSIBLE FOR STOPPING PHISHING – TOTAL

Respondents were shown a fixed list of parties responsible for preventing abusive internet behavior and some targeted to the individual region. ICANN was not defined to respondents and could be chosen as one of many options.

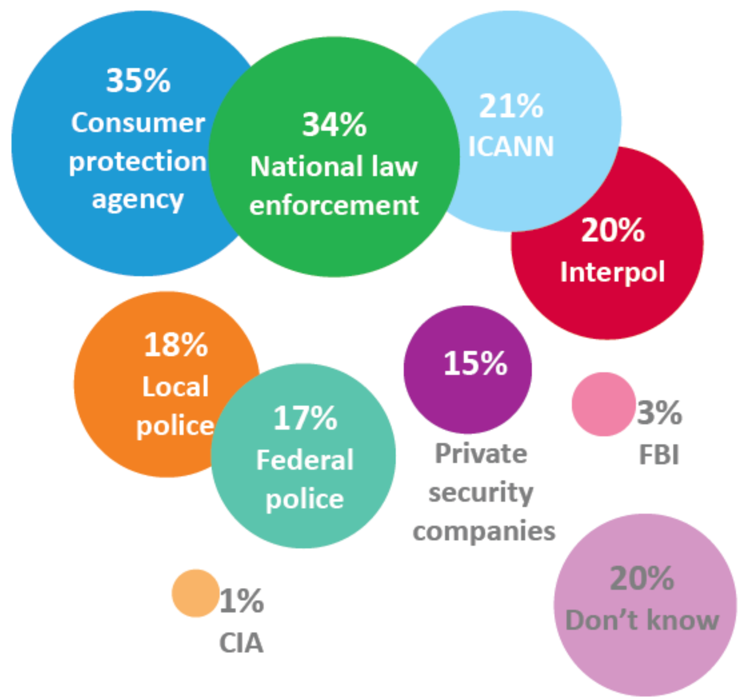
PARTY RESPONSIBLE FOR STOPPING SPAMMING

With regard to spamming, most regions agree that the consumer protection agency should be responsible, along with national law enforcement.

Spamming	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Consumer protection agency	39% E 🟢	38% E	37% E	44% CE 🟢	31% 🔴
National law enforcement (non-US only)	13% 🔴	28% A 🔴	34% AB	31% A	42% ABCD 🟢
ICANN	16% BC 🔴	11% 🔴	12% 🔴	18% BC	28% ABCD 🟢
Interpol	18%	17%	22%	22%	21%
Local police	12% 🔴	12% 🔴	13% 🔴	14% 🔴	25% ABCD 🟢
Federal police (non-US only)	10% 🔴	29% ACDE 🟢	23% AE 🟢	18% A	15% A 🔴
Private security companies	16% C	17% C	9% 🔴	19% C 🟢	16% C
FBI (US only)	17% 🟢	--	--	--	--
CIA (US only)	9% 🟢	--	--	--	--
Don't know	30% BCDE 🟢	20% E	25% BDE 🟢	15% 🔴	16% 🔴

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

PARTY RESPONSIBLE FOR STOPPING SPAMMING– TOTAL



Respondents were shown a fixed list of parties responsible for preventing abusive internet behavior and some targeted to the individual region. ICANN was not defined to respondents and could be chosen as one of many options.

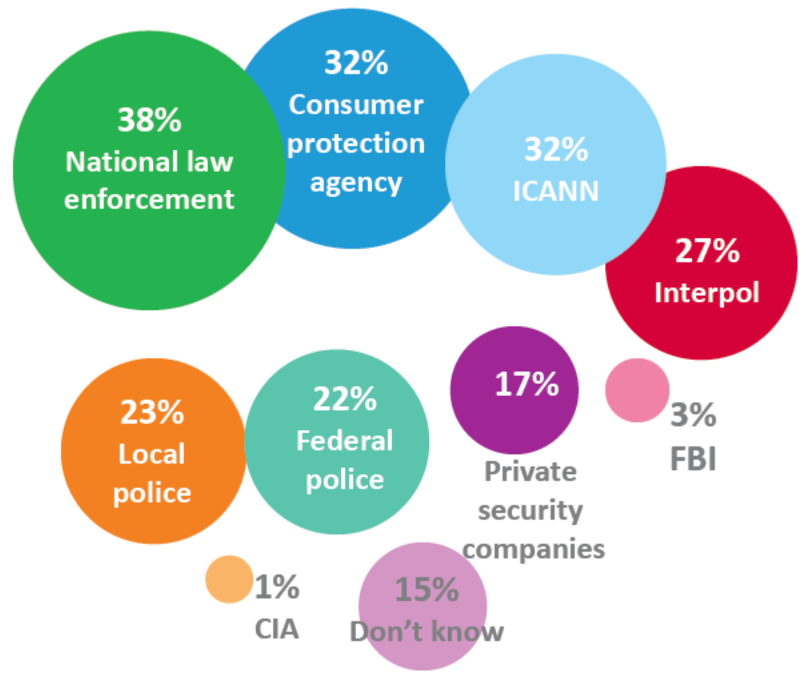
PARTY RESPONSIBLE FOR STOPPING CYBER SQUATTING

With cyber squatting, a less familiar abuse, consumers are almost equally likely to expect ICANN's involvement as much as consumer protection agency and national law enforcement.

Cyber squatting	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
National law enforcement (non-US only)	16% 🔴	31% A 🔴	40% AB	38% A	44% AB 🟢
Consumer protection agency	34%	30%	32%	39% E 🟢	31%
ICANN	27% B 🔴	16% 🔴	22% 🔴	26% B 🔴	39% ABCD 🟢
Interpol	21% 🔴	30% A	35% AE 🟢	35% AE 🟢	25% 🔴
Local police	14% 🔴	18%	19%	24% A	26% ABC 🟢
Federal police (non-US only)	15% 🔴	41% ACDE 🟢	32% AE 🟢	30% AE 🟢	18% 🔴
Private security companies	18%	22% C	14%	20%	17%
FBI (US only)	19% 🟢	--	--	--	--
CIA (US only)	8% 🟢	--	--	--	--
Don't know	24% BDE 🟢	15%	21% DE 🟢	10%	11% 🔴

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

PARTY RESPONSIBLE FOR STOPPING CYBER SQUATTING – TOTAL



Respondents were shown a fixed list of parties responsible for preventing abusive internet behavior and some targeted to the individual region. ICANN was not defined to respondents and could be chosen as one of many options.

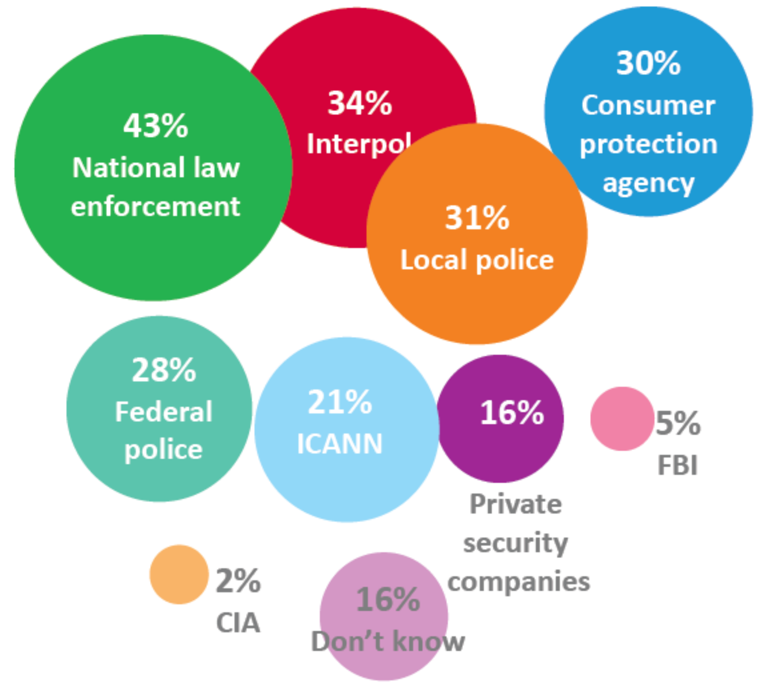
PARTY RESPONSIBLE FOR STOPPING STOLEN CREDENTIALS

A desire for law enforcement involvement is higher in the case of stolen credentials.

Stolen credentials	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
National law enforcement (non-US only)	21% 🔴	38% A 🔴	51% ABD 🟢	40% A	49% ABD 🟢
Interpol	32%	34%	39% AE 🟢	36%	33%
Local police	26% 🔴	25% 🔴	24% 🔴	27%	36% ABCD 🟢
Consumer protection agency	33% BCE 🟢	25% 🔴	26% 🔴	41% ABCE 🟢	29%
Federal police (non-US only)	19% 🔴	48% ACDE 🟢	37% AE 🟢	33% AE	23% A 🔴
ICANN	15% 🔴	14% 🔴	12% 🔴	20% BC	28% ABCD 🟢
Private security companies	17% C	17% C	10% 🔴	22% CE 🟢	17% C
FBI (US only)	29% 🟢	--	--	--	--
CIA (US only)	13% 🟢	--	--	--	--
Don't know	24% BCDE 🟢	13%	19% BDE 🟢	12%	13% 🔴

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

PARTY RESPONSIBLE FOR STOPPING STOLEN CREDENTIALS – TOTAL



Respondents were shown a fixed list of parties responsible for preventing abusive internet behavior and some targeted to the individual region. ICANN was not defined to respondents and could be chosen as one of many options.

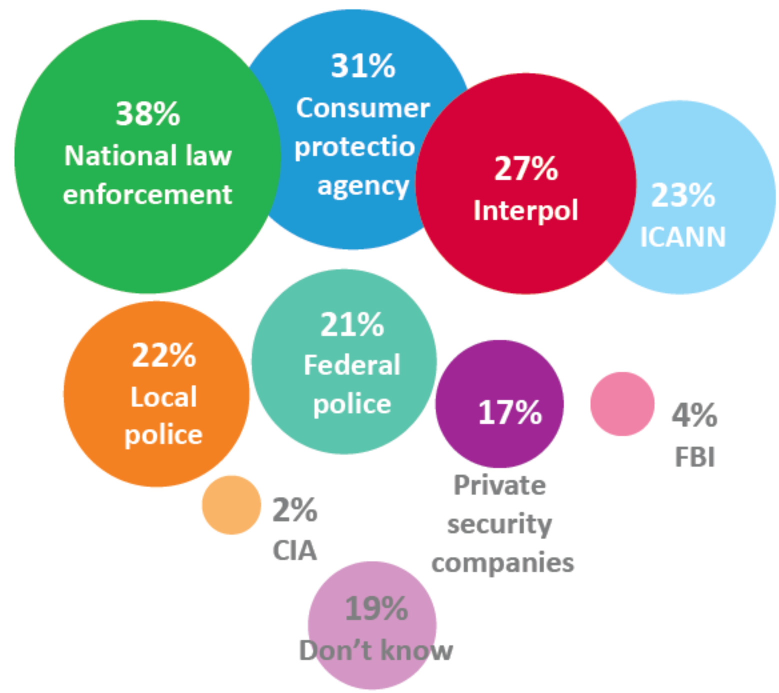
PARTY RESPONSIBLE FOR STOPPING MALWARE

As with most other Internet abuse, there is a sense that law enforcement should be responsible for malware abuses. Again, Asia reports a heightened expectation for ICANN's involvement.

Malware	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
National law enforcement (non-US only)	16% 🔴	30% A 🔴	43% ABD 🟢	31% A 🔴	46% ABD 🟢
Consumer protection agency	34% C	31%	27% 🔴	42% ABDE 🟢	31%
Interpol	25%	23% 🔴	30% B 🟢	29% B	27%
ICANN	18% BC 🔴	13% 🔴	13% 🔴	23% BC	30% ABCD 🟢
Local police	13% 🔴	15% 🔴	15% 🔴	15% 🔴	29% ABCD 🟢
Federal police (non-US only)	13% 🔴	37% ACDE 🟢	29% ADE 🟢	19% A	18% A 🔴
Private security companies	18% C	21% C	13% 🔴	24% ACE 🟢	17% C
FBI (US only)	21% 🟢	--	--	--	--
CIA (US only)	11% 🟢	--	--	--	--
Don't know	28% BCDE 🟢	19% E	24% BDE 🟢	15%	15% 🔴

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

PARTY RESPONSIBLE FOR STOPPING MALWARE– TOTAL



Respondents were shown a fixed list of parties responsible for preventing abusive internet behavior and some targeted to the individual region. ICANN was not defined to respondents and could be chosen as one of many options.

COMMONALITY OF ABUSIVE INTERNET BEHAVIOR

Spamming and malware are seen as the most common Internet abuses. Generally, abusive behavior is seen as less common in Europe and Asia.

Phishing	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very common	49%	64% BCDE 🟢	56% CE 🟢	50% E	55% E 🟢	41% 🔴
Somewhat common	37%	25% 🔴	30% A 🔴	34% A	34% A	43% ABCD 🟢
Not at all/not very common	9%	5% 🔴	9% A	7% A	6%	11% ACD 🟢

Spamming	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very common	75%	83% CE 🟢	85% CDE 🟢	75% E	78% E	71% 🔴
Somewhat common	17%	12% 🔴	10% 🔴	16% AB	15% B	22% ABCD 🟢
Not at all/not very common	3%	1% 🔴	2%	3% A	3%	5% ABC 🟢

Cyber Squatting	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very common	36%	41% CE 🟢	45% CE 🟢	30% 🔴	51% ACE 🟢	32% 🔴
Somewhat common	42%	38%	33% 🔴	42% BD	33% 🔴	46% ABD 🟢
Not at all/not very common	16%	13%	18%	17%	12%	17% A

Stolen Credentials	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very common	42%	52% CE 🟢	52% CE 🟢	37% 🔴	53% CE 🟢	38% 🔴
Somewhat common	39%	34% 🔴	35%	37%	32% 🔴	42% ABCD 🟢
Not at all/not very common	14%	9% 🔴	9% 🔴	17% ABD 🟢	11%	16% AB 🟢

Malware	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very common	61%	70% CE 🟢	71% CE 🟢	55% 🔴	69% CE 🟢	56% 🔴
Somewhat common	29%	23% 🔴	21% 🔴	31% ABD	22% 🔴	32% ABD 🟢
Not at all/not very common	6%	3% 🔴	4%	7% A	6% A	8% AB 🟢

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

PERSONAL IMPACT OF ABUSIVE INTERNET BEHAVIOR

Around 3 in 4 say they have been impacted by spamming, and over half by malware.

Phishing	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Yes	30%	27%	38% ACE	26%	33% C	31% C
No	54%	59% BE	43%	60% BDE	52% B	51% B
Not sure	17%	14%	19% AC	14%	15%	18% AC
Spamming	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Yes	73%	68%	80% ACE	73% A	75% A	72% A
No	19%	24% BCDE	13%	19% B	18% B	20% B
Not sure	8%	8%	7%	8%	7%	8%
Cyber Squatting	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Yes	18%	15%	26% ACE	10%	18% C	19% C
No	66%	73% BE	52%	76% BDE	65% B	64% B
Not sure	16%	12%	22% AC	14%	17%	17% A
Stolen Credentials	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Yes	20%	15%	22% AC	13%	22% AC	23% AC
No	64%	74% BDE	61%	74% BDE	66% E	58%
Not sure	16%	10%	16% A	14% A	12%	19% ACD
Malware	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Yes	60%	57%	67% ACE	54%	62% C	61% AC
No	27%	32% BDE	20%	34% BDE	25%	25% B
Not sure	13%	11%	13%	12%	13%	13%

Letters indicate significantly higher than region. Region vs. Total Higher Lower

FEAR OF BEING IMPACTED BY ABUSIVE INTERNET BEHAVIOR

Consumer fear is greatest around stolen credentials and malware. North America and Europe exhibit muted fear compared to the other regions.

Phishing	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very Scared	34%	25% 🔴	49% ACDE 🟢	27% 🔴	35% AC	36% AC 🟢
Somewhat Scared	43%	38% 🔴	33% 🔴	41% B	39%	47% ABCD 🟢
Not Very/Not at all Scared	23%	37% BCDE 🟢	18% 🔴	32% BDE 🟢	26% BE	17% 🔴
Spamming	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very Scared	21%	17% 🔴	23% AC	15% 🔴	23% AC	25% AC 🟢
Somewhat Scared	38%	35% 🔴	31% 🔴	32% 🔴	32% 🔴	44% ABCD 🟢
Not Very/Not at all Scared	40%	48% E 🟢	46% E 🟢	52% BDE 🟢	44% E	32% 🔴
Cyber Squatting	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very Scared	29%	23% 🔴	46% ACE 🟢	21% 🔴	40% ACE 🟢	28% C
Somewhat Scared	37%	30% 🔴	38%	38% A	32%	39% A 🟢
Not Very/Not at all Scared	34%	47% BDE 🟢	16% 🔴	41% BDE 🟢	28% B 🔴	33% B
Stolen Credentials	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very Scared	50%	45% 🔴	62% ACDE 🟢	45% 🔴	54% AC	51% AC
Somewhat Scared	36%	34% BD	28% 🔴	39% BD	27% 🔴	37% BD 🟢
Not Very/Not at all Scared	14%	21% BCE 🟢	10% 🔴	16% BE	19% BE	12% 🔴
Malware	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very Scared	40%	33% 🔴	41% AC	30% 🔴	40% AC	45% AC 🟢
Somewhat Scared	41%	41%	36% 🔴	47% ABDE 🟢	37%	41%
Not Very/Not at all Scared	19%	26% E 🟢	22% E 🟢	23% E 🟢	22% E	14% 🔴

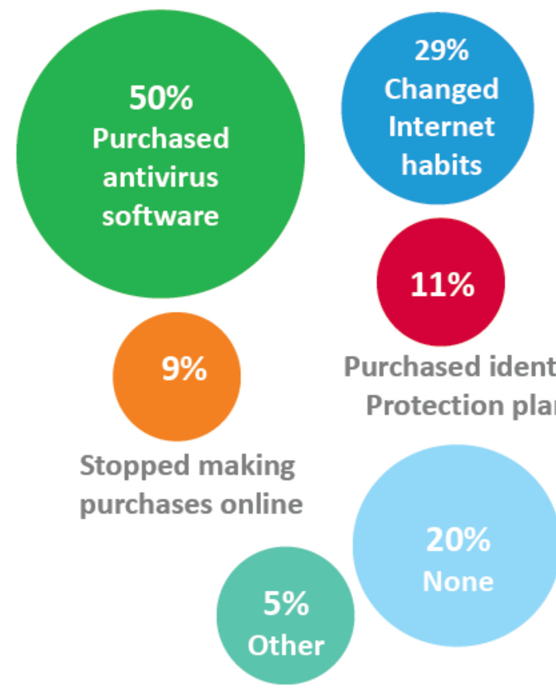
Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

MEASURES TAKEN TO AVOID PHISHING

Only half of consumers report purchasing antivirus software and about a quarter to changing Internet habits in an attempt to protect themselves against phishing.

Phishing	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Purchased antivirus software for my computer	53% BD	44%	51% BD	45%	51% BD
Changed my Internet habits	27%	34% ACE	25%	37% ACE	29% C
Purchased an identity protection plan	9% C	8%	6%	11% C	14% ABCD
Stopped making purchases online	6%	8% C	5%	13% ABC	11% AC
Other	8% BE	2%	6% BE	6% B	4% B
None	23% DE	23% DE	25% DE	16%	16%

MEASURES TAKEN TO AVOID PHISHING – TOTAL



Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

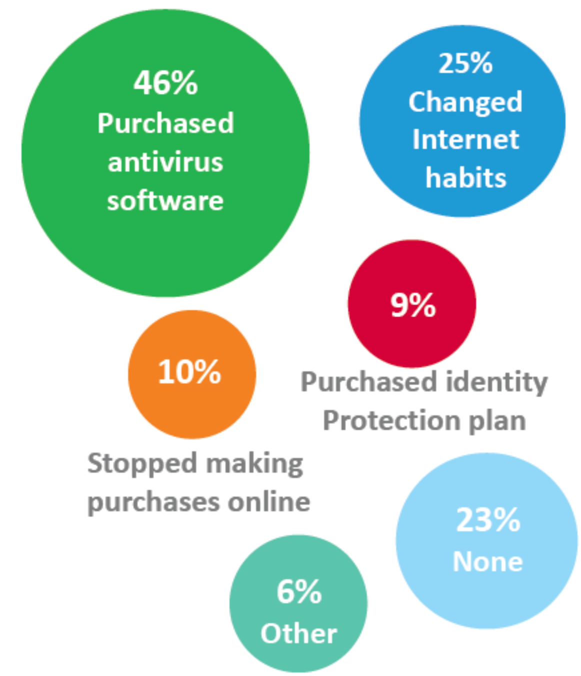
MEASURES TAKEN TO AVOID SPAMMING

Less than half of consumers report purchasing antivirus software and a quarter to changing Internet habits in an attempt to protect themselves against spamming. A quarter report doing nothing.

Spamming	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Purchased antivirus software for my computer	49% D	45%	47%	42%	46%
Changed my Internet habits	26% C	30% CE	20%	34% ACE	23% C
Stopped making purchases online	6%	7%	5%	11% ABC	13% ABC
Purchased an identity protection plan	7%	8% C	5%	13% ABC	11% ABC
Other	7% BE	2%	7% BE	7% B	5% B
None	25% DE	23% D	29% BDE	17%	21% D

Letters indicate significantly higher than region. Region vs. Total Higher Lower

MEASURES TAKEN TO AVOID SPAMMING – TOTAL



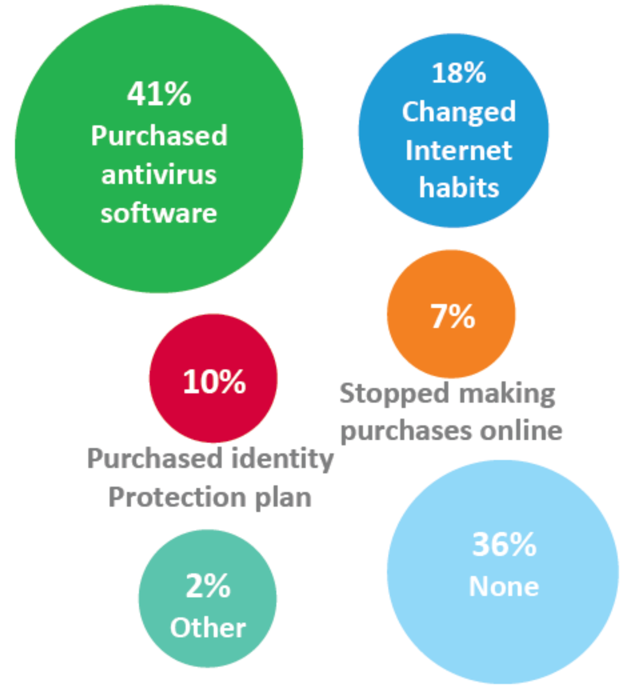
MEASURES TAKEN TO AVOID CYBER SQUATTING

Over a third of consumers report taking no action to avoid being affected by cyber squatting.

Cyber Squatting	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Purchased antivirus software for my computer	40%	42%	40%	42%	42%
Changed my Internet habits	18% C	25% ACE 🟢	14% 🔴	27% ACE 🟢	18% C
Purchased an identity protection plan	7% 🔴	9% C	5% 🔴	12% AC	12% ABC 🟢
Stopped making purchases online	5% 🔴	5% 🔴	4% 🔴	11% ABC 🟢	8% ABC 🟢
Other	2%	1% 🔴	2%	3% B	2% B
None	43% BDE 🟢	31% 🔴	44% BDE 🟢	26% 🔴	33% D 🔴

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

MEASURES TAKEN TO AVOID CYBER SQUATTING– TOTAL



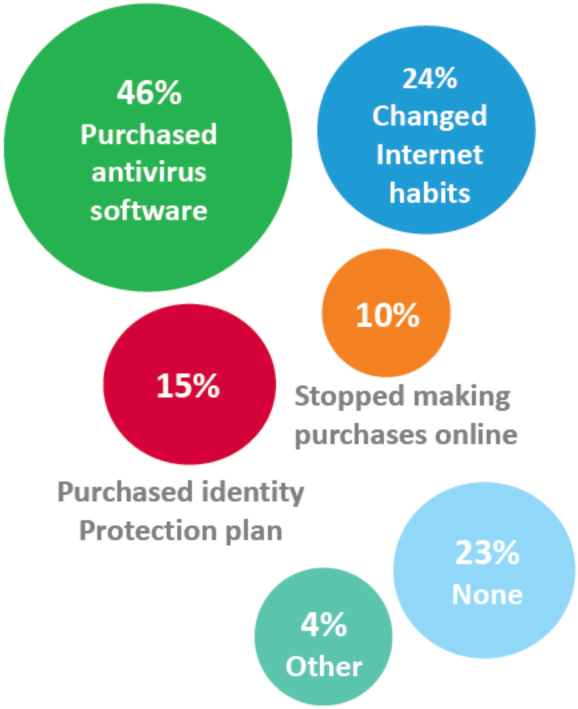
MEASURES TAKEN TO AVOID STOLEN CREDENTIALS

To protect their credentials, nearly half of consumers purchased antivirus software and a quarter changed their Internet habits.

Stolen Credentials	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Purchased antivirus software for my computer	49% BCD 🟢	40% 🔴	44%	40% 🔴	48% BCD 🟢
Changed my Internet habits	27% CE 🟢	29% CE 🟢	23%	28% E	23% 🔴
Purchased an identity protection plan	12% C 🔴	13% C	8% 🔴	16% C	19% ABC 🟢
Stopped making purchases online	8% C	9% C	5% 🔴	14% ABC 🟢	12% ABC 🟢
Other	6% BCE 🟢	2% 🔴	4% B	6% BE	3% 🔴
None	25% E	25% E	29% ABDE 🟢	21%	20% 🔴

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

MEASURES TAKEN TO AVOID STOLEN CREDENTIALS – TOTAL



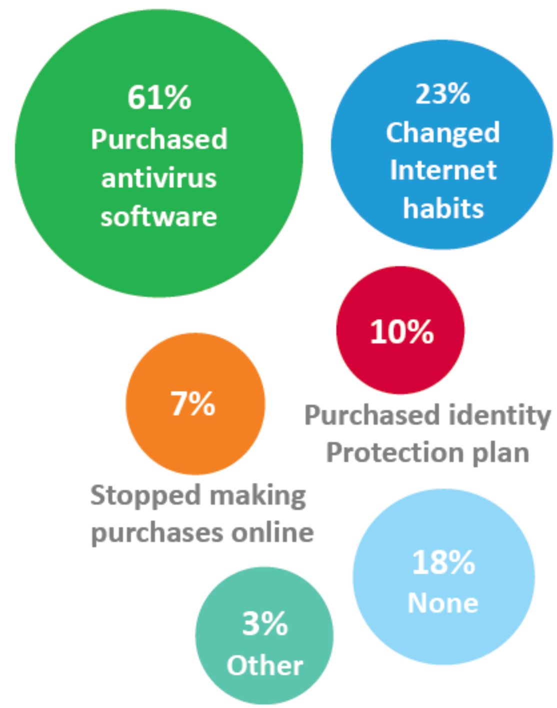
MEASURES TAKEN TO AVOID MALWARE

Nearly two-thirds of users globally say they purchased antivirus software to avoid being affected by malware.

Malware	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Purchased antivirus software for my computer	66% BCE	54%	61% B	64% B	60% B
Changed my Internet habits	25% C	27% CE	20%	25%	22%
Purchased an identity protection plan	8%	9% C	6%	11% C	13% ABC
Stopped making purchases online	5%	5%	4%	6% C	8% ABC
Other	4% BCD	2%	2%	2%	3%
None	19%	20% DE	22% DE	15%	16%

Letters indicate significantly higher than region. Region vs. Total Higher Lower

MEASURES TAKEN TO AVOID MALWARE– TOTAL



APPENDIX: GLOBAL CONSUMER SURVEY QUESTIONNAIRE

J45961a ICANN Global Consumer Survey Outline 1/26/15

N=5,950 online consumers, 24 countries
Field dates: February 2-27, 2015
15 minute online survey

SECTION 600: SAMPLE PRELOAD AND SCREENING QUESTIONS

BASE: ALL RESPONDENTS
Q258 The progress bar below indicates approximately what portion of the survey you have completed.

First we would like to ask some classification questions so that we can customize the survey for you.

In which country or region do you currently reside?

BASE: ALL RESPONDENTS
Q268 Are you…?

1 Male
2 Female

BASE: ALL RESPONDENTS
Q270 In what year were you born? Please enter your response as a four-digit number (for example, 1977).

|__|__|__|__|

BASE: ALL RESPONDENTS
Q280 [HIDDEN QUESTION - FINAL AGE FOR SURVEY LOGIC AND/OR QUOTAS]

BASE: ALL RESPONDENTS
Q600 How many hours per week do you spend using the Internet?

1 0 hours to less than 1 hour [TERMINATE]
2 1-4 hours [TERMINATE]
3 5-10 hours
4 11-15 hours
5 16-20 hours
6 More than 20 hours
7 Don’t Know [TERMINATE]

BASE: ALL QUALIFIED RESPONDENTS
Q605 Have you ever registered a domain name?

1 Yes
2 No

BASE: IF HAVEN'T REGISTERED A DOMAIN NAME
Q610 Do you plan to register a domain name in the next 6-12 months?

1 Yes
2 No

SECTION 2: UNDERSTANDING OF/EXPERIENCE WITH LEGACY GTLDS

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q701 As you are probably aware, website domain names can have different suffixes or extensions. For example, some domain names end with .com, while other common extensions are .org or .net. For the website [INSERT WEBSITE FOR REGION], "[INSERT SECOND LEVEL DOMAIN FOR REGION]" is the domain name and "[INSERT TLD FOR REGION]" is the domain name extension.

Region	Website	Second Level Domain	TLD
China	Google.cn	Google	.cn
Vietnam	Google.com.vn	Google	.com.vn
Philippines	Google.com.ph	Google	.com.ph
Japan	Google.co.jp	Google	.co.jp
South Korea	Google.co.kr	Google	.co.kr
Russia	Google.ru	Google	.ru
India	Google.co.in	Google	.co.in
Indonesia	Google.co.id	Google	.co.id
Nigeria	Google.com.ng	Google	.com.ng
South Africa	Google.com.za	Google	.com.za
Egypt	Google.com.eg	Google	.com.eg
Colombia	Google.com.co	Google	.com.co
Argentina	Google.com.ar	Google	.com.ar
Brazil	Google.com.br	Google	.com.br
Italy	Google.it	Google	.it
Turkey	Google.com.tr	Google	.com.tr
Spain	Google.es	Google	.es
Poland	Google.pl	Google	.pl
United Kingdom	Google.co.uk	Google	.co.uk
France	Google.fr	Google	.fr
Germany	Google.de	Google	.de
United States	Google.com	Google	.com
Canada	Google.ca	Google	.ca
Mexico	Google.mx	Google	.mx

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q700 Which of the following domain name extensions, if any, have you heard of? Please select **all** that apply.

1 .biz
2 .com
3 .info
4 .mobi
5 .net
6 .org
7 .tel
8 .asia
9 .pro
10 .coop
11 [CHINA ONLY] .cn
12 [VIETNAM ONLY] .vn
13 [PHILIPPINES ONLY] .ph
14 [JAPAN ONLY] .jp
15 [SOUTH KOREA ONLY] .kr
16 [RUSSIA ONLY] .ru
17 [INDIA ONLY] .in
18 [INDONESIA ONLY] .id
19 [NIGERIA ONLY] .ng
20 [SOUTH AFRICA ONLY] .za
21 [EGYPT ONLY] .eg
22 [COLOMBIA ONLY] .co
23 [ARGENTINA ONLY] .ar
24 [BRAZIL ONLY] .br
25 [ITALY ONLY] .it
26 [TURKEY ONLY] .tr
27 [SPAIN ONLY] .es
28 [POLAND ONLY] .pl
29 [UNITED KINGDOM ONLY] .uk
30 [FRANCE ONLY] .fr
31 [GERMANY ONLY] .de
32 [UNITED STATES ONLY] .us
33 [CANADA ONLY] .ca
34 [MEXICO ONLY] .mx
35 I am not aware of any of these

BASE: HAS HEARD OF EXTENSIONS Q99/1 AND Q700/1-34

Q705 Which of the following domain name extensions have you personally visited when going to websites? Please select all that apply.

1 .biz
2 .com
3 .info
4 .mobi
5 .net
6 .org
7 .tel
8 .asia
9 .pro
10 .coop
11 [CHINA ONLY] .cn
12 [VIETNAM ONLY] .vn
13 [PHILIPPINES ONLY] .ph
14 [JAPAN ONLY] .jp
15 [SOUTH KOREA ONLY] .kr
16 [RUSSIA ONLY] .ru
17 [INDIA ONLY] .in
18 [INDONESIA ONLY] .id
19 [NIGERIA ONLY] .ng
20 [SOUTH AFRICA ONLY] .za
21 [EGYPT ONLY] .eg
22 [COLOMBIA ONLY] .co
23 [ARGENTINA ONLY] .ar
24 [BRAZIL ONLY] .br
25 [ITALY ONLY] .it
26 [TURKEY ONLY] .tr
27 [SPAIN ONLY] .es
28 [POLAND ONLY] .pl
29 [UNITED KINGDOM ONLY] .uk
30 [FRANCE ONLY] .fr
31 [GERMANY ONLY] .de
32 [UNITED STATES ONLY] .us
33 [CANADA ONLY] .ca
34 [MEXICO ONLY] .mx

99 None of these above

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q710 How likely are you to visit websites with the following domain name extensions in the next 6 months?

Q711

1 .biz
2 .com
3 .info
4 .mobi
5 .net
6 .org
7 .tel
8 .asia
9 .pro
10 .coop
11 [CHINA ONLY] .cn
12 [VIETNAM ONLY] .vn
13 [PHILIPPINES ONLY] .ph
14 [JAPAN ONLY] .jp
15 [SOUTH KOREA ONLY] .kr
16 [RUSSIA ONLY] .ru
17 [INDIA ONLY] .in
18 [INDONESIA ONLY] .id
19 [NIGERIA ONLY] .ng
20 [SOUTH AFRICA ONLY] .za
21 [EGYPT ONLY] .eg
22 [COLOMBIA ONLY] .co
23 [ARGENTINA ONLY] .ar
24 [BRAZIL ONLY] .br
25 [ITALY ONLY] .it
26 [TURKEY ONLY] .tr
27 [SPAIN ONLY] .es
28 [POLAND ONLY] .pl
29 [UNITED KINGDOM ONLY] .uk
30 [FRANCE ONLY] .fr
31 [GERMANY ONLY] .de
32 [UNITED STATES ONLY] .us
33 [CANADA ONLY] .ca
34 [MEXICO ONLY] .mx
35 None of these

1 Very unlikely
2 Somewhat unlikely
3 Somewhat likely
4 Very likely
5 Not sure

BASE: VERY LIKELY TO VISIT WEBSITE WITH DOMAIN NAME EXTENSION (Q711 AND Q710/4)

Q715 Why are you **very likely** to visit a website with each of these extensions in the future? Please select all that apply.

1. .biz
2. .com
3. .info
4. .mobi
5. .net
6. .org
7. .tel
8. .asia
9. .pro
10. .coop
11. [CHINA ONLY] .cn
12. [VIETNAM ONLY] .vn
13. [PHILIPPINES ONLY] .ph
14. [JAPAN ONLY] .jp
15. [SOUTH KOREA ONLY] .kr
16. [RUSSIA ONLY] .ru
17. [INDIA ONLY] .in
18. [INDONESIA ONLY] .id
19. [NIGERIA ONLY] .ng
20. [SOUTH AFRICA ONLY] .za
21. [EGYPT ONLY] .eg
22. [COLOMBIA ONLY] .co
23. [ARGENTINA ONLY] .ar
24. [BRAZIL ONLY] .br
25. [ITALY ONLY] .it
26. [TURKEY ONLY] .tr
27. [SPAIN ONLY] .es
28. [POLAND ONLY] .pl
29. [UNITED KINGDOM ONLY] .uk
30. [FRANCE ONLY] .fr
31. [GERMANY ONLY] .de
32. [UNITED STATES ONLY] .us
33. [CANADA ONLY] .ca
34. [MEXICO ONLY] .mx

1 I've been to this type of website before
2 I trust this extension
3 It seems legitimate
4 I'm not afraid of my information being stolen if I go here
5 It has information I'm seeking
6 It's where you go for specific information
7 Other
8 Not sure

[LOOP Q723 FOR EACH Q716 AND Q715/4]

BASE: OTHER REASON VERY LIKELY TO VISIT WEBSITE WITH DOMAIN NAME EXTENSION (Q715/7)

Q723 Why else are you **very likely** to visit a website with the [INSERT DOMAIN NAME FROM Q715 WHERE RESPONDENT SELECTED OTHER] domain name?

BASE: VERY UNLIKELY TO VISIT WEBSITE WITH DOMAIN NAME EXTENSION (Q711 AND Q710/1)

Q717 Why are you **very unlikely** to visit a website with each of these extensions in the future? Please select all that apply.

1. .biz
2. .com
3. .info
4. .mobi
5. .net
6. .org
7. .tel
8. .asia
9. .pro
10. .coop
11. [CHINA ONLY] .cn
12. [VIETNAM ONLY] .vn
13. [PHILIPPINES ONLY] .ph
14. [JAPAN ONLY] .jp
15. [SOUTH KOREA ONLY] .kr
16. [RUSSIA ONLY] .ru
17. [INDIA ONLY] .in
18. [INDONESIA ONLY] .id
19. [NIGERIA ONLY] .ng
20. [SOUTH AFRICA ONLY] .za
21. [EGYPT ONLY] .eg
22. [COLOMBIA ONLY] .co
23. [ARGENTINA ONLY] .ar
24. [BRAZIL ONLY] .br
25. [ITALY ONLY] .it
26. [TURKEY ONLY] .tr
27. [SPAIN ONLY] .es
28. [POLAND ONLY] .pl
29. [UNITED KINGDOM ONLY] .uk
30. [FRANCE ONLY] .fr
31. [GERMANY ONLY] .de
32. [UNITED STATES ONLY] .us
33. [CANADA ONLY] .ca
34. [MEXICO ONLY] .mx

1 I've never been to this type of website before
2 I don't trust this extension
3 It doesn't seem legitimate
4 I'm afraid of my information being stolen if I go here
5 I have no reason to go there
6 Other
7 Not sure

[LOOP Q724 FOR EACH Q718 AND Q717/4]

BASE: OTHER REASON VERY UNLIKELY TO VISIT WEBSITE WITH DOMAIN NAME EXTENSION (Q717/6)

Q724 Why else are you **very unlikely** to visit a website with the [INSERT DOMAIN NAME FROM Q717 WHERE RESPONDENT SELECTED OTHER] domain name?

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q720 If you were setting up your own website in the next 6 months, how likely would you be to consider the following domain name extensions?

Q721

1 .biz
2 .com
3 .info
4 .mobi
5 .net
6 .org
7 .tel
8 .asia
9 .pro
10 .coop
11 [CHINA ONLY] .cn
12 [VIETNAM ONLY] .vn
13 [PHILIPPINES ONLY] .ph
14 [JAPAN ONLY] .jp
15 [SOUTH KOREA ONLY] .kr
16 [RUSSIA ONLY] .ru
17 [INDIA ONLY] .in
18 [INDONESIA ONLY] .id
19 [NIGERIA ONLY] .ng
20 [SOUTH AFRICA ONLY] .za
21 [EGYPT ONLY] .eg
22 [COLOMBIA ONLY] .co
23 [ARGENTINA ONLY] .ar
24 [BRAZIL ONLY] .br
25 [ITALY ONLY] .it
26 [TURKEY ONLY] .tr
27 [SPAIN ONLY] .es
28 [POLAND ONLY] .pl
29 [UNITED KINGDOM ONLY] .uk
30 [FRANCE ONLY] .fr
31 [GERMANY ONLY] .de
32 [UNITED STATES ONLY] .us
33 [CANADA ONLY] .ca
34 [MEXICO ONLY] .mx

1 Very unlikely
2 Somewhat unlikely
3 Somewhat likely
4 Very likely
5 Not sure

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q725 Please rate the following domain name extensions by how **trustworthy** you feel they are.

1 Very trustworthy	2 Somewhat trustworthy	3 Not very trustworthy	4 Not at all trustworthy

1 .com
2 .net
3 .info
4 .org
5 [CHINA ONLY] .cn
6 [VIETNAM ONLY] .vn
7 [PHILIPPINES ONLY] .ph
8 [JAPAN ONLY] .jp
9 [SOUTH KOREA ONLY] .kr
10 [RUSSIA ONLY] .ru
11 [INDIA ONLY] .in
12 [INDONESIA ONLY] .id
13 [NIGERIA ONLY] .ng
14 [SOUTH AFRICA ONLY] .za
15 [EGYPT ONLY] .eg
16 [COLOMBIA ONLY] .co
17 [ARGENTINA ONLY] .ar
18 [BRAZIL ONLY] .br
19 [ITALY ONLY] .it
20 [TURKEY ONLY] .tr
21 [SPAIN ONLY] .es
22 [POLAND ONLY] .pl
23 [UNITED KINGDOM ONLY] .uk
24 [FRANCE ONLY] .fr
25 [GERMANY ONLY] .de
26 [UNITED STATES ONLY] .us
27 [CANADA ONLY] .ca
28 [MEXICO ONLY] .mx

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q730 To the best of your knowledge, why do some websites have different extensions?

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q735 What has your experience been like with websites that have the following domain name extensions?

Q736

1 .biz
2 .com
3 .info
4 .mobi
5 .net
6 .org
7 .tel
8 .asia
9 .pro
10 .coop
11 [CHINA ONLY] .cn
12 [VIETNAM ONLY] .vn
13 [PHILIPPINES ONLY] .ph
14 [JAPAN ONLY] .jp
15 [SOUTH KOREA ONLY] .kr
16 [RUSSIA ONLY] .ru
17 [INDIA ONLY] .in
18 [INDONESIA ONLY] .id
19 [NIGERIA ONLY] .ng
20 [SOUTH AFRICA ONLY] .za
21 [EGYPT ONLY] .eg
22 [COLOMBIA ONLY] .co
23 [ARGENTINA ONLY] .ar
24 [BRAZIL ONLY] .br
25 [ITALY ONLY] .it
26 [TURKEY ONLY] .tr
27 [SPAIN ONLY] .es
28 [POLAND ONLY] .pl
29 [UNITED KINGDOM ONLY] .uk
30 [FRANCE ONLY] .fr
31 [GERMANY ONLY] .de
32 [UNITED STATES ONLY] .us
33 [CANADA ONLY] .ca
34 [MEXICO ONLY] .mx

1 Very negative
2 Somewhat negative
3 Somewhat positive
4 Very positive

[LOOP Q740 FOR EACH Q736 AND Q735/4]
BASE: VERY POSITIVE EXPERIENCE WITH WEBSITES WITH DOMAIN NAME EXTENSIONS (Q736 AND Q735/4)

Q740 What made your experience with [INSERT FROM Q736 **AND q735/4**] very positive?

[LOOP Q745 FOR EACH Q736 AND Q735/1]

BASE: VERY NEGATIVE EXPERIENCE WITH WEBSITES WITH DOMAIN NAME EXTENSIONS (Q736 AND Q735/1)

Q745 What made your experience with [INSERT FROM Q735 AND **q735/1**] very negative?

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q750 If you wanted more information about one of the current domain name extensions, where would you go? Please select all that apply.

1 An Internet search engine
2 An Internet encyclopedia
3 My Internet service provider
4 Other (specify) ____________________
5 Not sure

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q753 What we have been describing as domain name extensions are officially known as **generic top-level domains**, or **gTLDs** for short. For example, .com, .net and .org are all gTLDs.

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q755 How well do each of the following adjectives describe common gTLDs such as .com, .org and .net?

1 Does not describe at all	2 Does not describe very well	3 Describes somewhat well	4 Describes very well

1 Innovative
2 Cutting edge
3 Extreme
4 Trustworthy
5 Unconventional
6 Practical
7 Technical
8 Confusing
9 Overwhelming
10 Useful
11 For people like me
12 Interesting
13 Exciting
14 Helpful
15 Informative

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q765 Do you expect there to be restrictions on purchasing gTLDs with the following extensions?

1 No purchase restrictions should be required	2 Some purchase restrictions should be required	3 Strict purchase restrictions should be required

1 .com
2 .net
3 .info
4 .org
5 [CHINA ONLY] .cn
6 [VIETNAM ONLY] .vn
7 [PHILIPPINES ONLY] .ph
8 [JAPAN ONLY] .jp
9 [SOUTH KOREA ONLY] .kr
10 [RUSSIA ONLY] .ru
11 [INDIA ONLY] .in
12 [INDONESIA ONLY] .id
13 [NIGERIA ONLY] .ng
14 [SOUTH AFRICA ONLY] .za
15 [EGYPT ONLY] .eg
16 [COLOMBIA ONLY] .co
17 [ARGENTINA ONLY] .ar
18 [BRAZIL ONLY] .br
19 [ITALY ONLY] .it
20 [TURKEY ONLY] .tr
21 [SPAIN ONLY] .es
22 [POLAND ONLY] .pl
23 [UNITED KINGDOM ONLY] .uk
24 [FRANCE ONLY] .fr
25 [GERMANY ONLY] .de
26 [UNITED STATES ONLY] .us
27 [CANADA ONLY] .ca
28 [MEXICO ONLY] .mx

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q770 Does having purchase restrictions or requirements on a particular gTLD make it…?

1 More trustworthy
2 Doesn’t make a difference
3 Less trustworthy
4 Not sure

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q775 If you felt a website was being run improperly (for example, appears to be conducting illegal activity, appears to be a fake, etc.), who would you complain to? Please select all that apply.

1 Would contact the website
2 Other (specify)___________________
3 No one
4 Not sure

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q780 How do you determine whether a website is legitimate or not?

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q785 Have you ever tried to identify who created a particular website?

1 Yes
2 No

BASE: TRIED TO IDENTIFY (Q785/1)

Q790 What did you use to try and figure this out?

SECTION 3: UNDERSTANDING OF/EXPERIENCE WITH NEW GTLDS

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q801 As you may or may not know, new domain name extensions are becoming available all the time. These new extensions are called new gTLDs.

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q800 Which of the following new gTLDs, if any, have you heard of? Please select all that apply.

1	.email	
2	.photography	
3	.link	
4	.guru	
5	.realtor	
6	.club	
7	.xyz	
8	.berlin	[ONLY in Germany]
9	.ovh	[ONLY in Germany]
10	.london	[ONLY in Italy/Turkey/Spain/Poland/UK/France/Germany]
11	.nyc	[ONLY in US]
12	.wang	[ONLY IN CHINA]
13	.xn—ses554g (Chinese for network address)	[ONLY in China]
14	.xn—55qx5d (Chinese for company)	[ONLY in China
15	I am not aware of any of these	

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q805 Which of the following new gTLDs have you personally visited when going to websites? Please select all that apply.

1	.email	
2	.photography	
3	.link	
4	.guru	
5	.realtor	
6	.club	
7	.xyz	
8	.berlin	[ONLY in Germany]
9	.ovh	[ONLY in Germany]
10	.london	[ONLY in Italy/Turkey/Spain/Poland/UK/France/Germany]
11	.nyc	[ONLY in US]
12	.wang	[ONLY IN CHINA]
13	.xn—ses554g (Chinese for network address)	[ONLY in China]
14	.xn—55qx5d (Chinese for company)	[ONLY in China
99	None of the above	

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q810 How likely are you to visit the following new gTLDs in the future?

Q811

1	.email	
2	.photography	
3	.link	
4	.guru	
5	.realtor	
6	.club	
7	.xyz	
8	.berlin	[ONLY in Germany]
9	.ovh	[ONLY in Germany]
10	.london	[ONLY in Italy/Turkey/Spain/Poland/UK/France/Germany]
11	.nyc	[ONLY in US]
12	.wang	[ONLY IN CHINA]
13	.xn—ses554g (Chinese for network address)	[ONLY in China]
14	.xn—55qx5d (Chinese for company)	[ONLY in China

1 Very unlikely
2 Somewhat unlikely
3 Somewhat likely
4 Very likely
5 Not sure

BASE: VERY LIKELY TO VISIT NEW GTLD (Q811 AND Q810/4)

Q815 Why are you **very likely** to visit a website with each of these gTLDs in the future? Please select all that apply.

1 .email
2 .photography
3 .link
4 .guru
5 .realtor
6 .club
7 .xyz
8 .berlin [ONLY in Germany]
9 .ovh [ONLY in Germany]
10 .london [ONLY in Italy/Turkey/Spain/Poland/UK/France/Germany]
11 .nyc [ONLY in US]
12 .wang [ONLY IN CHINA]
13 .xn—ses554g (Chinese for network address) [ONLY in China]
14 .xn—55qx5d (Chinese for company) [ONLY in China

1 I've been to this type of website before
2 I trust this extension
3 It seems legitimate
4 I'm not afraid of my information being stolen if I go here
5 It has information I'm seeking
6 It's where you go for specific information
7 Other
8 None of the above

[LOOP Q819 FOR EACH Q816 AND Q815/7]

BASE: OTHER REASON VERY LIKELY TO VISIT NEW GTLD (Q816 AND Q815/7)

Q819 Why else are you very likely to visit a website with the [insert gTLD from q815 where respondent selected other] gTLD?

BASE: VERY LIKELY AND VERY UNLIKELY TO VIST NEW GTLD (Q811 AND Q810/ 1 AND 4)

Q824 In the next question we are going to switch gears and focus on the reasons you are very unlikely to visit websites with certain gTLDs in the future.

BASE: VERY UNLIKELY TO VISIT NEW GTLD (Q811 AND Q810/1)

Q817 Why are you **very unlikely** to visit a website with each of these gTLDs in the future? Please select all that apply.

1 .email
2 .photography
3 .link
4 .guru
5 .realtor
6 .club
7 .xyz
8 .berlin [ONLY in Germany]
9 .ovh [ONLY in Germany]
10 .london [ONLY in Italy/Turkey/Spain/Poland/UK/France/Germany]
11 .nyc [ONLY in US]
12 .wang [ONLY IN CHINA]
13 .xn—ses554g (Chinese for network address) [ONLY in China]
14 .xn—55qx5d (Chinese for company) [ONLY in China

1 I've never been to this type of website before
2 I don't trust this extension
3 It doesn't seem legitimate
4 I'm afraid of my information being stolen if I go here
5 I have no reason to go there
6 Other
7 None of the above

[LOOP Q822 FOR EACH Q818 AND Q817/6]

BASE: OTHER REASON VERY UNLIKELY TO VISIT NEW GTLD (Q818 AND Q817/6)

Q822 Why else are you very unlikely to visit a website with the [insert gTLD from q817 where respondent selected other] gTLD?

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q820 If you were setting up your own website in the next 6 months, how likely would you be to consider the following new gTLDs?

Q821

1	.email	
2	.photography	
3	.link	
4	.guru	
5	.realtor	
6	.club	
7	.xyz	
8	.berlin	[ONLY in Germany]
9	.ovh	[ONLY in Germany]
10	.london	[ONLY in Italy/Turkey/Spain/Poland/UK/France/Germany]
11	.nyc	[ONLY in US]
12	.wang	[ONLY IN CHINA]
13	.xn—ses554g (Chinese for network address)	[ONLY in China]
14	.xn—55qx5d (Chinese for company)	[ONLY in China

1 Very unlikely
2 Somewhat unlikely
3 Somewhat likely
4 Very likely
5 Not sure

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q823 Which of the following would be most important to you in determining which gTLD to purchase

1 Reasonable price
2 Has a well-known extension
3 Has a new extension
4 All of my other preferred gTLDs are unavailable
5 Other (specify) __________________

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q825 Please rate the following gTLDs by how **trustworthy** you feel they are.

1 Very trustworthy	2 Somewhat trustworthy	3 Not very trustworthy	4 Not at all trustworthy

1 .email
2 .photography
3 .link
4 .guru
5 .realtor
6 .club
7 .xyz
8 .berlin [ONLY in Germany]
9 .ovh [ONLY in Germany]
10 .london [ONLY in Italy/Turkey/Spain/Poland/UK/France/Germany]
11 .nyc [ONLY in US]
12 .wang [ONLY IN CHINA]
13 .xn—ses554g (Chinese for network address) [ONLY in China]
14 .xn—55qx5d (Chinese for company) [ONLY in China

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q830 To the best of your knowledge, why have new gTLDs been created?

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q835 What has your experience been like with websites with the following new gTLDs?

Q836
1 .email
2 .photography
3 .link
4 .guru
5 .realtor
6 .club
7 .xyz
8 .berlin [ONLY in Germany]
9 .ovh [ONLY in Germany]
10 .london [ONLY in Italy/Turkey/Spain/Poland/UK/France/Germany]
11 .nyc [ONLY in US]
12 .wang [ONLY IN CHINA]
13 .xn—ses554g (Chinese for network address) [ONLY in China]
14 .xn—55qx5d (Chinese for company) [ONLY in China

1 Very negative
2 Somewhat negative
3 Somewhat positive
4 Very positive

BASE: VERY POSITIVE EXPERIENCE (Q836 AND Q835/4)

Q840 What made your experience with [INSERT FROM Q836] very positive?

BASE: VERY NEGATIVE EXPERIENCE (Q836 AND Q835/1)

Q845 What made your experience with [INSERT FROM Q836] very negative?

BASE: REGISTRANTS (Q99/1 AND Q605/1)

Q848 How would you describe your satisfaction with the new gTLDs?

1 Very dissatisfied
2 Somewhat dissatisfied
3 Somewhat satisfied
4 Very satisfied
5 No experience with them

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q850 If you wanted more information about one of the new gTLDs, where would you go? Please select all that apply.

1 An Internet search engine
2 An Internet encyclopedia
3 My Internet service provider
4 Other (specify) ____________________
5 Not sure

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q855 How well do each of the following adjectives describe new gTLDs such as .email, .photography and .club?

1 Does not describe at all	2 Does not describe very well	3 Describes somewhat well	4 Describes very well

1 Innovative
2 Cutting edge
3 Extreme
4 Trustworthy
5 Unconventional
6 Practical
7 Technical
8 Confusing
9 Overwhelming
10 Useful
11 For people like me
12 Interesting
13 Exciting
14 Helpful
15 Informative

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q865 Do you expect there to be restrictions on purchasing the following new gTLDs?

1 No purchase restrictions should be required	2 Some purchase restrictions should be required	3 Strict purchase restrictions should be required

1 .email
2 .photography
3 .link
4 .guru
5 .realtor
6 .club
7 .xyz
8 .berlin [ONLY in Germany]
9 .ovh [ONLY in Germany]
10 .london [ONLY in Italy/Turkey/Spain/Poland/UK/France/Germany]
11 .nyc [ONLY in US]
12 .wang [ONLY IN CHINA]
13 .xn—ses554g (Chinese for network address) [ONLY in China]
14 .xn—55qx5d (Chinese for company) [ONLY in China

SECTION 4: TRUST/EXPERIENCE WITH THE DOMAIN NAME SYSTEM

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q901 Now think about the Internet and how people search for various websites.

BASE: REGISTRANTS (Q99/1 AND Q605/1)
Q900 How would you describe the processing of registering a domain?

1 Very difficult
2 Somewhat difficult
3 Somewhat easy
4 Very easy

BASE: REGISTRANTS (Q99/1 AND Q605/1)
Q905 What, if anything, would you change about the domain name purchase process? Please select all that apply.

1 Make it less complicated
2 Make it quicker
3 Make it easier to register in multiple TLDs
4 Price
5 Other (specify) ________________ (ANCHOR HERE)
6 Nothing (ANCHOR, SINGLE MENTION)

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q910 How much do you trust the entities that offer domain names to do each of the following?

1 Very trustworthy	2 Somewhat trustworthy	3 Not very trustworthy	4 Not at all trustworthy

1 Take precautions regarding who gets a domain name
2 Give consumers what they think they're getting
3 Screen individuals/companies who register for certain special domain names

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q915 How much do you trust the Domain Name industry compared to these other industries?

Q916

1 Internet service providers
2 Web based marketing companies
3 E-commerce companies
4 Software companies
5 Computer hardware companies

1 Trust much less
2 Trust somewhat less
3 Trust the same
4 Trust somewhat more
5 Trust much more

SECTION 5: REACHING THE INTENDED INFORMATION SUPPLIER

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q1000 Which devices do you use to access the Internet? Please select all that apply.

1 Desktop computer
2 Laptop computer
3 Tablet
4 Smartphone
5 Other (specify)

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q1005 What is your experience with URL shorteners? URL shortening is an Internet technique in which a URL may be made substantially shorter in length and still direct to the required page.

1 I have never heard of them or used them
2 I have heard of them but never used them
3 I use them, but not frequently
4 I use them frequently

BASE: NOT USED URL SHORTENERS (Q1005/1-2)

Q1010 Why haven't you used URL shorteners?

1 I have never heard of them
2 Confused about which website I'm going to
3 Never needed to
4 Don't like them
5 Don't trust them
6 Other (specify)

BASE: HAVE USED URL SHORTENERS (Q1005/3-4)

Q1015 Why do you use URL shorteners?

1 They are convenient
2 They save me time
3 It's the latest thing
4 Other (specify)

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q1020 What is your experience with QR codes? A QR code consists of black modules (square dots) arranged in a square grid on a white background, which can be read by an imaging device (such as a camera). Reading the QR code with your Smartphone takes you to a website or ad for more information.

1 I have never heard of them or used them
2 I have heard of them but never used them
3 I use them, but not frequently
4 I use them frequently

BASE: NOT USED QR CODES (Q1020/1-2)
Q1025 Why haven't you used QR codes?

1 I have never heard of them or seen them
2 Never needed to
3 Don't like them
4 Don't trust them
5 Other (specify)

BASE: HAVE USED QR CODES (Q1020/3-4)
Q1030 Why do you use QR codes?

1 They are convenient
2 They save me time
3 It's the latest thing
4 Other (specify)

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q1035 Which of these is the safest way to access a specific website? Please select one.

1 Using an app
2 Accessing via a QR code
3 Typing the domain name into a browser
4 Finding via an Internet search engine
5 Accessing via a bookmark
6 Not sure

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q1040 How often do you remember the address of the website you want to visit so you can type it directly into the browser?

1 Never
2 Rarely
3 Sometimes
4 Often
5 Always

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q1045 What was your preferred way of finding websites 2-3 years ago?

1 Use a search engine
2 Type the domain name directly into my browser and see if it comes up
3 Use an app
4 Use a QR code
5 Other (specify) _________________

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)
Q1050 What is your preferred way of finding websites now?

RANDOMIZE

1 Use a search engine
2 Type the domain name directly into my browser and see if it comes up
3 Use an app
4 Use a QR code
5 Other (specify) _________________

SECTION 6: ABUSIVE BEHAVIOR / CYBER CRIME

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q1100 Which types of abusive Internet behavior, if any, are you aware of? Please select all that apply.

1 Phishing - The attempt to acquire sensitive information such as usernames, passwords, and credit card details by masquerading as a trustworthy entity in electronic communication.

2 Spamming - The use of electronic messaging systems to send unsolicited messages.

3 Cyber squatting – Registering or using a domain name with bad faith intent to profit from the goodwill of a trademark belonging to someone else.

4 Stolen credentials – When hackers steal personal information stored online such as usernames, passwords, social security numbers, credit cards numbers, etc.

5 Malware – Short for "malicious software", used to disrupt computer operations, gather sensitive information or gain access to private computer systems.

6 None of the above

BASE: AWARE OF ABUSIVE INTERNET BEHAVIOR (Q1100/1-5)

Q1105 What do you think are the source(s) for each type of abusive Internet behavior?

Q1106

1 Phishing
2 Spamming
3 Cyber squatting
4 Stolen credentials
5 Malware

1 Individuals from my country
2 Individuals from outside my country
3 Organized groups from within my country
4 Organized groups from outside my country
5 Don't know [EXCLUSIVE]

BASE: AWARE OF ABUSIVE INTERNET BEHAVIOR (Q1100/1-5)
Q1110 Who should be responsible for stopping these various types of abusive Internet behavior?

Q1111
1 Phishing
2 Spamming
3 Cyber squatting
4 Stolen credentials
5 Malware

1 Local police
2 Interpol
4 ICANN
5 Private security companies
6 Consumer protection agency
7 (US ONLY) FBI
8 (US ONLY) CIA
9 (NON US ONLY) Federal police
10 (NON US ONLY) National law enforcement
11 Don't know

BASE: AWARE OF ABUSIVE INTERNET BEHAVIOR (Q1100/1-5)
Q1115 How common do you feel each type of abusive Internet behavior is?

Q1117
1 Phishing
2 Spamming
3 Cyber squatting
4 Stolen credentials
5 Malware

1 Not at all common
2 Not very common
3 Somewhat common
4 Very common
5 Don't know

BASE: AWARE OF ABUSIVE INTERNET BEHAVIOR (Q1100/1-5)

Q1120 Have you ever been impacted by any of these types of abusive Internet behaviors?

Q1121

1 Yes
2 No
3 Not sure

1 Phishing
2 Spamming
3 Cyber squatting
4 Stolen credentials
5 Malware

BASE: AWARE OF ABUSIVE INTERNET BEHAVIOR (Q1100/1-5)

Q1125 How scared are you of each of the following?

1 Not at all scared	2 Not very scared	3 Somewhat scared	4 Very scared

1 Phishing
2 Spamming
3 Cyber squatting
4 Stolen credentials
5 Malware

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q1130 What measures have you taken, if any, to avoid being affected by any of these types of abusive Internet behaviors? Please select all that apply.

Q1131

1 Phishing
2 Spamming
3 Cyber squatting
4 Stolen credentials
5 Malware

1 Changed my Iinternet habits
2 Stopped making purchases online
3 Purchased antivirus software for my computer
4 Purchased an identity protection plan
5 Other
6 None

<u>BASE: OTHER MEASURES TAKEN (Q1131/1-5 AND Q1130/5)</u>

Q1135 What other measures to avoid being affected by [INSERT Q1131 WHERE Q1130/5] have you taken?

SECTION 7: DEMOGRAPHIC QUESTIONS

BASE: ALL RESPONDENTS

Q308 [HIDDEN QUESTION - MANDATORY QUESTION SELECTION.]

01 GEOGRAPHICAL REGION (STATE/PROVINCE/REGION) (Q318)
03 ZIP/POSTAL CODE (Q326) [PN: Do not ask for Vietnam, Egypt, Indonesia and Philippines.]

06 **SINGLE** EMPLOYMENT (Q398, Q404, Q410) [PN: Do not ask for Vietnam and Philppines.]
08 EDUCATION (Q434-Q437)
09 SCHOOL LOCATION (Q440)
10 PARENTAL EDUCATION (Q444, Q446)
11 INCOME (Q450-Q466)
12 HISPANIC ORIGIN (Q474)
13 ETHNICITY (Q478-Q485)
15 SWEEPSTAKES (Q510-512, Q354, Q514)
16 SURVEY EVALUATION (Q516, Q518,Q522)
97 NONE E;

BASE: ALL RESPONDENTS

Q310 [HIDDEN QUESTION – OPTIONAL QUESTION SELECTION.]
[PN: GET CODE 1 ONLY]

1 OPTIONAL BATCH 1 – HOUSEHOLD QUESTIONS (Q364(MARITAL STATUS), Q368 (# IN HH), Q372 (# OF CHILDREN IN HH))
2 OPTIONAL BATCH 2 – HOUSEHOLD QUESTIONS AND YEAR OF BIRTH OF CHILDREN (Q364(MARITAL STATUS), Q368(# IN HH), Q372 (# OF CHILDREN IN HH), Q376-Q381(AGE OF CHILDREN IN HH))
3 PLACEHOLDER
4 OPTIONAL BATCH 4 – EMPLOYMENT AND INVESTABLE ASSETS QUESTIONS (Q424(INDUSTRY),, Q428(PROFESSION), Q470(INVESTABLE ASSETS))
5 OPTIONAL BATCH 5 – SEXUAL ORIENTATION QUESTIONS (Q498, Q500, Q504)
6 OPTIONAL BATCH 6 - INTERNET CONNECTION (Q336-Q346)
7 OPTIONAL BATCH 7 - LANGUAGE FOR WEIGHTING (Q492)
8 OPTIONAL BATCH 8 - HOUSEHOLD TELEPHONES (Q358, Q360)
9 OPTIONAL BATCH 9 - SOCIAL CLASS (Q414, Q417, Q421)
10 OPTIONAL BATCH 10 - SPOKEN HH LANGUAGE (Q488-Q490)
99 NO OPTIONAL QUESTIONSE;

Custom Demos

BASE: ALL ARGENTINA RESPONDENTS (Q264/10)
QARREG In which region do you currently reside?

1 Buenos Aires
2 Buenos Aires Province (including Gran Buenos Aires)
3 Santa Fe
4 Cordoba
5 Patagonia
6 Other

BASE: ALL SOUTH KOREA RESPONDENTS (Q264/214)
QKRINC Which of the following income categories best describes your total [INSERT LAST YEAR] household income before taxes?

1 Less than 10,000,000 Won
2 10,000,000 to 20,999,999 Won
3 21,000,000 to 29,999,999 Won
4 30,000,000 to 44,999,999 Won
5 45,000,000 to 74,999,999 Won
6 75,000,000 or more Won
7 Decline to answer

BASE: ALL SOUTH KOREA RESPONDENTS (Q264/214)
QKRBUY In the past 12 months, did you purchase any products or services over the Internet?

1 Yes
2 No

BASE: ALL INDIA RESPONDENTS (Q264/116)
QINED What is the highest level of education/literacy you have completed/obtained or the highest degree you have received?

1 Illiterate
2 Less than primary
3 Primary but less than middle
4 Middle but less than matric
5 Matric but less than graduate
6 Graduate or above

BASE: ALL INDIA RESPONDENTS (Q264/116)
QININC2 Which of the following income categories best describes your total [INSERT LAST YEAR] household income before taxes?

1 Less than 120,000 rupees
2 120,000 rupees or more
3 Decline to answer

BASE: ALL INDIA RESPONDENTS (Q264/116)
QINSUB Which of the following best describes the area in which you live?

1 Metro
2 Non-metro

BASE: ALL INDIA RESPONDENTS (Q264/116)
QINBUY In the past month, did you purchase any products or services over the Internet?

1 Yes
2 No

BASE: ALL INDONESIA RESPONDENTS (Q264/117)
Q1500 In which province do you currently reside?

1 Irian Jaya Barat
2 Papua
3 Banten
4 Jakarta Raya
5 Jawa Barat
6 Jawa Tengah
7 Jawa Timur
8 Yogyakarta
9 Kalimantan Barat
10 Kalimantan Selatan
11 Kalimantan Tengah
12 Kalimantan Timur
13 Maluku
14 Maluku Utara
15 Bali
16 Nusa Tenggara Barat
17 Nusa Tenggara Timur
18 Gorontalo
19 Sulawesi Barat
20 Sulawesi Selatan
21 Sulawesi Tengah
22 Sulawesi Tenggara
23 Sulawesi Utara
24 Aceh
25 Bangka-Belitung
26 Bengkulu
27 Jambi
28 Kepulauan Riau
29 Lampung
30 Riau
31 Sumatera Barat
32 Sumatera Selatan
33 Sumatera Utara

BASE: ALL INDONESIA RESPONDENTS (Q264/117)
Q1502 HIDDEN QUESTION FOR WEIGHTING – REGION CLASSIFICATION

1 Irian Jaya
2 Jawa
3 Kalimantan
4 Maluku
5 Nusa Tenggara
6 Sulawesi
7 Sumatera

BASE: ALL NIGERIA RESPONDENTS (Q264/174)
Q1580 What is your marital status?

1 Single, never married
2 Married (monogamous or polygamous)
3 Divorced
4 Separated
5 Widowed
6 Loosely coupled

BASE: ALL NIGERIA RESPONDENTS (Q264/174)

Q1503 In which state do you currently reside?

1	Lagos State
2	Ogun State
3	Oyo State
4	Osun State
5	Kogi State
6	Kwara State
7	Delta State
8	Ondo State
9	Edo State
10	Ekiti State
11	Anambra State
12	Abia State
13	Enugu State
14	Ebonyi State
15	Rivers State
16	Akwa Ibom State
17	Imo State
18	Cross River State
19	Bayelsa State
20	Borno State
21	Adamawa State
22	Taraba State
23	Yobe State
24	Kano State
25	Jigawa State
26	Bauchi State
27	Gombe State
28	Kaduna State
29	Katsina State
30	Sokoto State
31	Kebbi State
32	Zamfara State
33	Benue State
34	Niger State
35	Plateau State
36	Nassarawa State
37	Abuja Federal Capital Territory

BASE: ALL NIGERIA RESPONDENTS (Q264/174)
Q1504HIDDEN QUESTION FOR WEIGHTING – STATE CLASSIFICATION

1 Postal Code Region 1
2 Postal Code Region 2
3 Postal Code Region 3
4 Postal Code Region 4
5 Postal Code Region 5
6 Postal Code Region 6
7 Postal Code Region 7
8 Postal Code Region 8
9 Postal Code Region 9

BASE: ALL NIGERIA RESPONDENTS (Q264/174)
Q1550 What is the highest level of education you have completed or the highest degree you have received?

1 No level completed
2 Completed FSLC (first school leaving certificate)
3 Completed MSLC (middle school leaving certificate)
4 Vocational/COMM
5 JSS/O'Level
6 Completed O'Level/SSS (senior secondary school)
7 Completed A'Level or higher
8 Other

BASE: ALL NIGERIA RESPONDENTS (Q264/174)
Q1585 Do you consider yourself…?

1 Hausa
2 Yoruba
3 Igbo/Ibo
4 Fulanji
5 Other
9 Decline to answer

BASE: ALL EGYPT RESPONDENTS (Q264/66)

Q1505 In which governorate do you currently reside?

1 Ad Daqahlīyah
2 Al Buhayrah
3 Al Gharbīyah
4 Al Ismā`īlīyah
5 Kafr ash Shaykh
6 Dumyāt
7 Al Qalyūbīyah
8 Ash Sharqīyah
9 Al Minūfīyah
10 Al Qāhirah
11 Al Iskandarīyah
12 Būr Sa`īd
13 Al Uqsur
14 As Suways
15 Aswān
16 Asyūt
17 Al Minyā
18 Sūhāj
19 Qinā
20 Al Fayyūm
21 Al Jīzah
22 Banī Suwayf
23 Janūb Sīnā'
24 Matrūh
25 Shamal Sīnā'
26 Al Wādī al Jadīd
27 Al Bahr al Ahmar

BASE: ALL EGYPT RESPONDENTS (Q264/66)

Q1506 HIDDEN QUESTION FOR WEIGHTING – REGION CLASSIFICATION

1 Lower
2 City
3 Upper
4 Desert

BASE: ALL COLOMBIA RESPONDENTS (Q264/51)

Q4005 Which of the following income categories best describes your total 2014 household income before taxes?

01 Menos de $ 6,000.000 pesos colombianos
02 $ 6.001.000 a $ 12.000.000 pesos colombianos
03 $ 12.001.000 a $ 18.000.000 pesos colombianos
04 $ 18.001.000 a $ 24.000.000 pesos colombianos
05 $ 24.001.000 a $ 30.000.000 pesos colombianos
06 $ 30.001.000 a $ 36.000.000 pesos colombianos
07 $ 36.001.000 a $ 60.000.000 pesos colombianos
08 $ 60.001.000 a $ 84.000.000 pesos colombianos
09 $ 84.001.000 o mas pesos colombianos
99 Decline to answer

BASE: ALL VIETNAM RESPONDENTS (Q264/249)

Q4010 What is your current education level?

No schooling	01	
Some Kindergarten school	02	
Complete Kindergarten school	03	
Some Primary school (Grades 1-5)	04	
Complete Primary school (Grades 1-5)	05	
Some Lower Secondary school (Grades 6-9)	06	
Complete Lower Secondary school (Grades 6-9)	07	
Some Upper Secondary school (Grades 10-12)	08	
Complete Upper Secondary school (Grades 10-12)	09	
Some Professional Secondary school - Primary level	10	
Complete Professional Secondary school - Primary level	11	
Some Professional Secondary school - Intermediate level	12	
Complete Professional Secondary school - Intermediate level	13	
Some College	14	
Complete College	15	
Some University	16	
Complete University	17	
Some Post graduate degree	18	
Complete Post graduate degree	19	
Don't' Know/ REFUSED	99	

BASE: ALL VIETNAM RESPONDENTS (Q264/249)

Q4015 What is your current occupation?

GOVERNMENT EMPLOYEE (THE GOVERNMENT'S ORGINIZATIONS OR STATE-OWN COMPANIES)	01
Senior government official	02
Middle government official	03
Low government official	04
Production Worker	05
NON-STATE SECTOR EMPLOYEE	06
Top level management	07
Middle management	08
Low manager	09
Executive/Officer	10
EMPLOYER (owners of companies/business establishments having 'employees' on a continuous basis)	12
Owner of a company/agency/farm (10 workers or higher)	13
Owner of a company/agency/farm (1- 9 workers)	14
OWN-ACCOUNT WORKER	15
Investor (real estate, stock,…)	16
Store owner/ individual establishment owner (not having "employees" on a continuous basis)	17
Farmer, logger, fisherman (agriculture, forestry and fishing)	18
Other self-employment (professional, freelancer, own-account driver, vendor, hawker,...)	19
PART-TIME/UNPAID FAMILY WORKER/ UNEMPLOYED	20
Student/ Apprentice	21
Housewife/househusband	22
Retired	23
Family workers	24
Unemployed	25
OTHERS (UNCLASIFIABLE BY STATUS)	26
Don’t Know/ REFUSED	99

BASE: ALL VIETNAM RESPONDENTS (Q264/249)
Q4020 What is your approximate net HOUSEHOLD monthly income from all income sources after tax, based on following scale?

You don't have to be exact, just indicate the approximate amount based on this list.

	Q24a Household Income	Q24b Household Expenditure	Q24c Personal Income	Q24d Personal Expenditure
150,000,000 VND or higher	01	01	01	01
75,000,000- 149,999,999 VND	02	02	02	02
45,000,000- 74,999,999 VND	03	03	03	03
30,000,000- 44,999,999 VND	04	04	04	04
15,000,000- 29,999,999 VND	05	05	05	05
7,500,000- 14,999,999 VND	06	06	06	06
4,500,000- 7,499,999 VND	07	07	07	07
3,000,000- 4,499,999 VND	08	08	08	08
1,500,000- 2,999,999 VND	09	09	09	09
1- 1,499,999 VND	10	10	10	10
No income/ expenditure	11	11	11	11
Don’t Know/NA	12	12	12	12

BASE: ALL VIETNAM RESPONDENTS (Q264/249)
Q4025 BTS

	Code
Class A5 (150,000,000+)	01
Class A4 (75,000,000 - 149,999,999)	02
Class A3 (45,000,000 - 74,999,999)	03
Class A2 (30,000,000 - 44,999,999)	04
Class A1 (15,000,000 - 29,999,999)	05
Class B (7,500,000 - 14,999,999)	06
Class C (4,500,000 - 7,499,999)	07
Class D (3,000,000 - 4,499,000)	08
Class E (1,500,000 - 2,999,999)	09
Class F (1 - 1,499,999)	10

BASE: ALL VIETNAM RESPONDENTS (Q264/249)

Q4027 In what region do you live?

1 North East

2 Red River Delta

3 North Central Coast

4 South Central Coast

5 Central Highlands

6 South East

7 Mekong River Delta

8 North West

BASE: ALL PHILIPPINES RESPONDENTS (Q264/187)

Q4030 What is your highest educational attainment?

No schooling	01
Some elementary	02
Complete elementary	03
Some high school	04
Completed high school	05
Some vocational	06
Completed Vocational	07
Some college	08
Completed college/ Has degree	09
Some post graduate degree	10
Completed post graduate degree	11
Not know/Refused	12

BASE: ALL PHILIPPINES RESPONDENTS (Q264/187)

Q4035 At the present time, what is your occupation?

Professional, technical and kindred workers	01
Farmers and farm managers	02
Manager, officials and proprietors except farm	03
Clerical and kindred workers	04
Sales workers	05
Craftsmen, foremen and kindred workers	06
Service workers except private household workers	07
Private household workers	08
Laborers	09
Not gainfully employed	10
Housewife	11
Student	12
Refused	13
Pensioner	14
Others	15

BASE: ALL PHILIPPINES RESPONDENTS (Q264/187)

Q4036 Please select the area in which you live?

1 National Capital Region

2 Cordillera Administrative Region

3 Ilocos (Region I)

4 Cagayan Valley (Region II)

5 Central Luzon (Region III)

6 Southern Tagalog (Region IV)

7 Bicol (Region V)

8 Western Visayas (Region VI)

9 Central Visayas (Region VII)

10 Eastern Visayas (Region VIII)

11 Western Mindanao (Region IX)

12 Northern Mindanao (Region X)

13 Southern Mindanao (Region XI)

14 Central Mindanao (Region XII)

15 Autonomous Region in Muslim Mindanao

16 Caraga

BASE; ALL BRAZIL RESPONDENTS AND 21+ years of age (Q264/33 AND Q280/21+)

Q1507 What is the highest level of education you have completed or the highest degree you have received?

1 Nenhum
2 Alfabetização
3 Fundamental incompleto - fundamental I (1a. série a 3a. série)
4 Fundamental incompleto - fundamental II (4a. série a 7a. série)
5 Fundamental completo
6 Ensino Médio
7 Superior
8 Pós-graduação (Mestrado, Doutorado ou Pós-doutorado)

BASE: ALL MEXICAN RESPONDENTS AND 21+ YEARS OF AGE **(Q264/157 AND Q280/21+)**
Q1538 What is the highest level of education you have completed or the highest degree you have received?

1 No he estudiado
2 Primaria incompleta
3 Primaria completa
4 Secundaria incompleta
5 Secundaria completa
6 Carrera comercial
7 Carrera técnica
8 Preparatoria incompleta
9 Preparatoria completa
10 Licenciatura incompleta
11 Licenciatura completa
12 Diplomado/Maestría
13 Doctorado

BASE: ALL CHINESE RESPONDENTS AND 21+ YEARS OF AGE **(Q264/48 AND Q280/21+)**
Q1574 What is the highest level of education you have completed or the highest degree you have received?

1 High school or less
2 College
3 Bachelor degree
4 Post graduate

BASE: ALL TURKEY RESPONDENTS (Q264/235)
QTRED What is the highest level of education you have completed or the highest degree you have received?

1 Primary education
2 Middle school or junior high school
3 High school
4 University
5 Masters degree or doctorate
6 No schooling completed

BASE: ALL COLOMBIA RESPONDENTS (Q264/51)
QCOED What was the last year of schooling that you completed?

1 None
2 Pre-school
3 Primary
4 Secondary
5 Technical/Technology
6 University
7 Post Graduate
96 Other

BASE: ALL INDONESIA RESPONDENTS (Q264/117)
QIDED What is the highest level of education you have completed or the highest degree you have received?

1 No schooling
2 Some elementary school
3 Elementary school
4 Junior high school
5 High school or higher

BASE: ALL JAPAN RESPONDENTS (Q264/126)
QJPED What is the highest level of education you have completed or the highest degree you have received?

1 Less than high school
2 High school degree
3 Junior College degree
4 BA or University degree

BASE: ALL NIGERIA RESPONDENTS (Q264/174)
QNGED What is the highest level of education you have completed or the highest degree you have received?

1 No level completed
2 Completed FSLC (first school leaving certificate)
3 Completed MSLC (middle school leaving certificate)
4 Vocational/COMM
5 JSS/O'Level
6 Completed O'Level/SSS (senior secondary school)
7 Completed A'Level or higher
8 Other

BASE: ALL POLAND RESPONDENTS (Q264/189)
QPLED What is the highest level of education you have completed or the highest degree you have received?

1 Incomplete primary or no school education
2 Primary
3 Basic vocational
4 Secondary
5 Post-secondary
6 Tertiary

BASE: ALL RUSSIA RESPONDENTS (Q264/196)
QRUED What is the highest level of education you have completed or the highest degree you have received?

1 Incomplete secondary and lower
2 Secondary general
3 Secondary special
4 Incomplete higher
5 Higher (including postgraduate)

BASE: ALL SOUTH KOREA RESPONDENTS (Q264/214)

QKRED What is the highest level of education you have completed or the highest degree you have received?

1 Less than high school
2 High school graduate
3 College/University graduate
4 Post graduate degree

BASE; ALL BRAZIL RESPONDENTS (Q264/33)

QBRINC Which of the following income categories best describes your total [INSERT LAST YEAR] household income before taxes?

1 Less than 24,000 real
2 24,000 to 50,999 real
3 51,000 to 119,999 real
4 120,000 real or more
5 Decline to answer

BASE: ALL CHINESE RESPONDENTS (Q264/48)

QCNINC Which of the following income categories best describes your total monthly household income before taxes?

1 Less than 1000 RMB
2 1001-2000 RMB
3 2001-3000 RMB
4 3001-4000 RMB
5 4001-6000 RMB
6 6001-10,000 RMB
7 Over 10,000 RMB
99 Decline to answer

EXHIBIT KM-15

nielsen

ICANN GLOBAL CONSUMER RESEARCH WAVE 2

JUNE 2016

ICANN

TABLE OF CONTENTS

BACKGROUND

- ICANN's New gTLD Program was developed as part of a community-driven policy development process that spanned several years and aims to **enhance competition** and **consumer choice** for both registrants and Internet users.
- To assess the current gTLD landscape, as well as measure factors such as consumer awareness, experience, choice, and trust with new gTLDs and the domain name system in general, audience tracking research was implemented among two groups:
  - Global online **consumer end-users**
  - Global domain name **registrants**, who were interviewed and will be reported separately

This report focuses on the 2016 (wave 2) results among the Consumer Segment.

METHODOLOGY

Qualifying criteria

- Adults 18+; Teens 15-17 (added in 2016 (wave 2))
- 5+ hours spent per week on Internet
- Demographically projectable to each region's online population – representing 75% of global users

Total of **5,452 Consumers**, representing **Asia, Europe, Africa, North America, and South America**. Drawn from **24 countries**, administered in 18 languages

- Countries: China, India, Indonesia, Japan, Philippines, Russia, South Korea, Vietnam, France, Germany, Italy, Poland, Spain, Turkey, United Kingdom, Egypt, Nigeria, South Africa, Canada, Mexico, United States, Argentina, Brazil, Colombia
- Languages: English, Spanish, Portuguese (Brazil), Simplified Chinese, French, German, Italian, Japanese, Korean, Russian, Arabic, Vietnamese, Tagalog, Turkish, Polish, LATAM Spanish, British English, Bahasa

Significance testing is performed at a 95% confidence level throughout this report:

- Letters denote where a region is significantly higher than the region whose column is marked with that letter
- Green and red circles denote where a region is significantly ● higher or ● lower than the Total
- Arrows denote significant differences 2016 vs 2015.

ONLINE SURVEY
April 12-May 2
2016

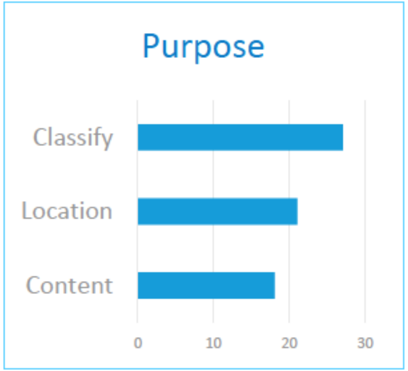
SURVEY COMMISSIONED BY ICANN AND CONDUCTED BY NIELSEN

EXECUTIVE SUMMARY

THE DOMAIN SYSTEM IS SEEN TO PROVIDE STRUCTURE, INTENT

The domain system provides structure

When asked why websites have different extensions, 1 in 5 are unsure, but the majority of responses focus on providing some form of structure, i.e. to classify by the type of site, the purpose, the location or region affiliated with it or to give an indication of the content that site contains.



New gTLDs are expected to continue this function, as well as meet demand

And when asked why the new gTLDs were created, for many, it's to further the same goals and improve the structure. But other common themes relate to improving credibility and meeting demand.

As time has gone by, demand for Web pages increases. Out of concern, more must be created. (LAC)

Better structure, recognizability/assigning companies to fields of activity. (EUR)

So that more people or companies can create their own pages for their businesses or services. (LAC)

Because of the demand on the Internet and sites and to make sure of their credibility (Africa)

AVERAGE AWARENESS AND VISITATION ON THE RISE

For legacy gTLDs, an upward trend

Awareness and visitation rates have grown wave-over-wave for all three tiers of legacy gTLDs.

New gTLDs show less movement

Among the reference set of new gTLDs that were shown in both waves, average awareness has only ticked up slightly and reported visitation has actually decreased. However, the new gTLDs added in this wave have higher average awareness and visitation than the reference set.

New gTLDs stronger outside of NA and EUR

We see strong regional differences for the new gTLDs—awareness of any new gTLD in AP, Africa and LAC is as much as 20 points higher than in North America and EUR.

LEGACY TLDS	2015	2016	
AVERAGE AWARENESS (%)			
High	79%	89%	(76%-99% across regions)
Moderate	36%	43%	(20%-64% across regions)
Low	9%	13%	(5%-12% across regions)
Geographically Targeted ccTLDs	86%	88%	(51%-99% across country)
AVERAGE VISITATION (%)			
High	71%	81%	(63%-97% across regions)
Moderate	22%	27%	(11%-44% across regions)
Low	4%	7%	(2%-32% across regions)
Geographically Targeted ccTLDs	81%	81%	(29%-98% across country)

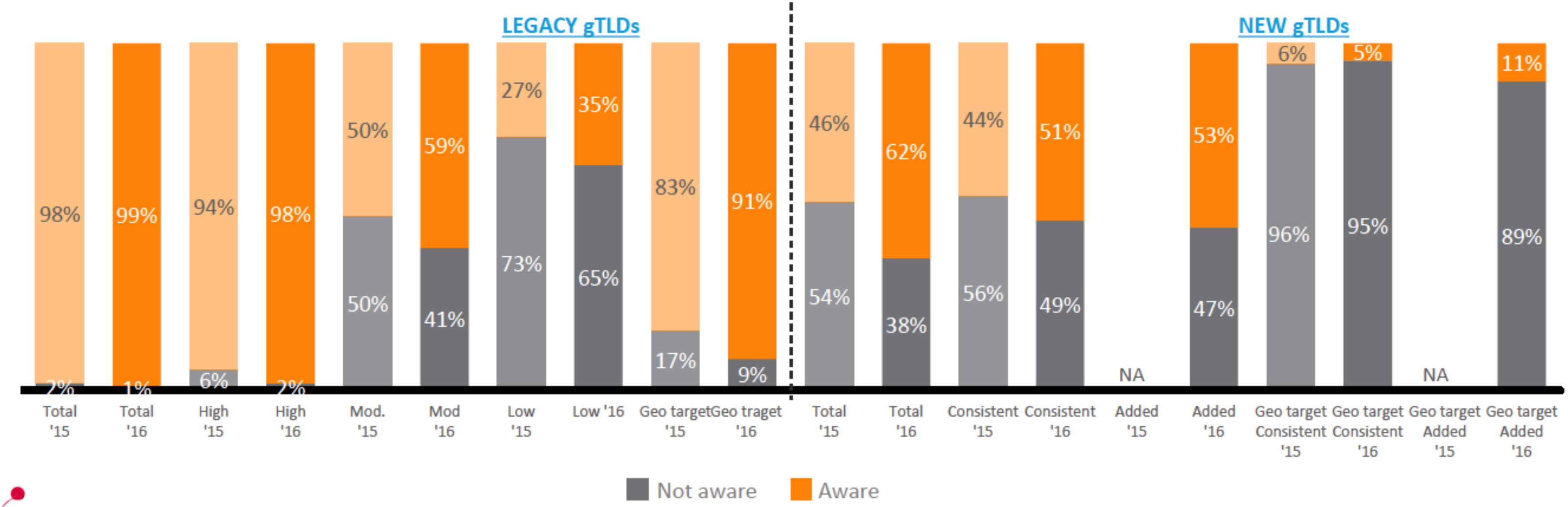
High .com, .net, .org
Moderate: .info, .biz
Low: .mobi, .pro, .tel, .asia, .coop
Geographically Targeted: based on only those shown in that region

NEW TLDS	2015	2016	
AVERAGE AWARENESS (%)			
Consistent gTLDs	14%	16%	(2%-39% across regions)
Added gTLDs	NA	20%	(7%-37% across regions)
Geographically Targeted gTLDs	10%	13%	(1%-34% across country)
AVERAGE VISITATION (%)			
Generic Extensions	15%	12%	(2%-37% across regions)
Added gTLDs	NA	15%	(2%-34% across regions)
Geographically Targeted gTLDs	12%	9%	(1%-23% across country)

Consistent—shown in both waves: .email, .photography, .link, .guru, .realtor, .club, .xyz
Added: new in this wave: .news, .online, .website, .site, .space, .pics, .top
Geographically Targeted: based on only those shown in that region

TOTAL AWARENESS OF gTLDs

Awareness of any of the legacy gTLDs has increased over the last year and awareness of those new gTLDs shown in both survey waves is also up.



High .com, .net, .org
Moderate: .info, .biz
Low: .mobi, .pro, .tel, .asia, .coop
Geographically Targeted: based on only those shown in that region

Consistent—shown in both waves: .email, .photography, .link, .guru, .realtor, .club, .xyz
Added to the survey in 2016: .news, .online, .website, .site, .space, .pics, .top
Geographically Targeted: based on only those shown in that region

REGISTRATION RESTRICTIONS AND TRUST

Trust levels are stable

And the new set of gTLDs added this wave have higher trust levels than the reference set, showing trust can vary based on interpretation.

gTLDs TRUST	2015	2016	
AVERAGE TRUST (T2B%)			
Legacy Extensions	90%	91%	(80%-98% across regions)
ccTLDs/IDNs	94%	95%	(75%-99% across country)
New gTLD Consistent	49%	45%	(17%-67% across regions)
New gTLD Added	NA	52%	(24%-79% across regions)
ccTLDs/IDNs	53%	52%	(14%-76% across country)

Legacy: .com, .net, .org
Consistent—shown in both waves: .email, .photography, .link, .guru, .realtor, .club, .xyz
Added: new in this wave: .news, .online, .website, .site, .space, .pics, .top (for restriction question, .bank, .pharmacy, .builder)
Geographically Targeted: based on only those shown in that region

T2B% = % who say very/somewhat trustworthy

Restrictions are increasingly expected

The percentage of consumers who say that registering of domain names should be unrestricted has decreased and a clear majority feel that there should be at least some level of restrictions on who can register—for both new and old gTLDs. Restrictions include credentials, location and consistent use.

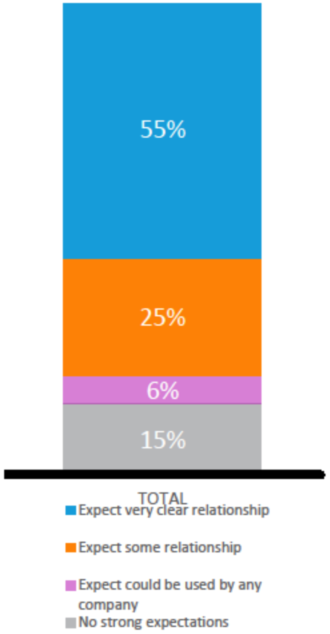
RESTRICTIONS	2015	2016
% SOME OR STRICT		
Legacy Extensions	63%	72%
ccTLDs/IDNs	62%	70%
New gTLD Consistent	67%	73%
New gTLD Added	NA	82%
ccTLDs/IDNs	67%	77%

Do restrictions increase trust?

70% Yes 2016
56% Yes 2015

And domains should reflect the intent of the gTLDs

While slightly weaker in Europe and AP, there is nonetheless a strong sense that the website should have a clear relationship to the gTLD under which it is registered.



IMPACT OF TRUST ON BEHAVIOR

Overall, trust of the industry relative to other tech companies has improved

Trust is highest compared to Internet Service Providers (ISPs). The most common justification for this trust is that it is in the industry's own best interest to protect their reputation. Trust is also a key theme when people talk about the domain system in general. Positive associations with the domain system have increased since 2015.

Comfort levels with online activities are high

Respondents tend to report at least being "somewhat" comfortable doing a wide range of activities online. The lowest comfort level is around putting personal information about family or activities on social media sites.

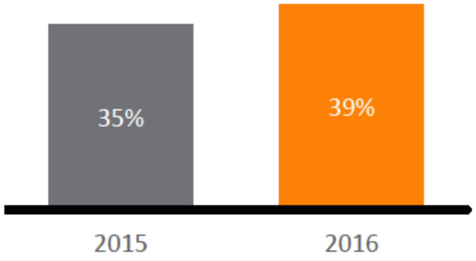
Fear is not driving a change in online behavior

There is no significant rise in the percentage of people who have limited their online behavior out of fear, and in fact the level of action taken to protect against abusive behaviors in general is largely the same as last year.

Comfort level is lower with new gTLDs and higher for ccTLDs.

When we examine types of information a site may request, we see wide acceptance of inputting email, and then progressively less for data like financial information or health care info. Typically, comfort for these tasks is on par for .com vs the respondents' ccTLD (especially if in a localized language); substantially lower for a new gTLD.

RELATIVE TRUST IN DOMAIN NAME INDUSTRY



It is their business so they protect their name and reputation. (AP)

COMFORT LEVELS
(% Very/somewhat)

92% Info Search

76% Banking

63% Social Media

GLOBALLY, TEENS SHOW SIMILAR PATTERNS TO ADULTS

Teens are more similar than dissimilar on most metrics

By and large, we don't see dramatically different results for teens compared to adult Internet users. A detailed recap of statistically significant variations is found later in the report.

Awareness tips toward newer gTLDs, lower visitation of less common legacy gTLDs

For legacy gTLDs like .net, .org and .biz, teens slow slightly lower awareness and visitation rates; .biz is the most affected with a 12 point drop in awareness and a 9 point drop in visitation. Trust is also lower for .net, .org, .pro and .coop—about 4 percentage points. However when we look at the new gTLDs, there is a general pattern for increased awareness among teens.

Mores apps and wikis, less reliance on gTLDs

Teens are more likely to use smartphones to surf (increase of 6 points), see the value in using apps, to have used QR codes and URL shorteners and to get information from an online encyclopedia than use more traditional search methods. Teens are more likely (8 points) to say that they don't pay attention to the domain extension.

Less likely to expect restrictions and enforcement

Teens are more likely to advocate for no restrictions on registration by about 5 percentage points (leaving the strong majority still in favor of restrictions.) The pattern is seen with both new and legacy gTLDs. However, they are less likely to believe restrictions will be enforced—by a margin of 7 to 14 points, depending on the nature of the restriction.

Teen comfort levels tend to be lower

There is a general pattern that teens are less comfortable with online behaviors such as shopping or accessing medical information and especially online banking (where they may just lack experience). The exception is for social media, where teens are more comfortable entering information about friends and family than are adults (71% to 63%). However, when it comes to abusive behaviors like spam, malware and phishing attacks, teens tend to be less aware, concerned or fearful than adults.

UNDERSTANDING OF AND EXPERIENCE WITH LEGACY gTLDs

KEY TAKEAWAYS – LEGACY gTLDs

This section focuses on legacy gTLDs, exploring consumer perceptions in the established domain extension space. It also provides/establishes a baseline to interpret findings as compared to new gTLDs.

1 Traditional extensions maintain strong position

When we look at the legacy extensions, we see the same pattern as in last year's wave--.com, .org and .net have strong awareness while the other legacy gTLDs are much less well known. However, awareness and visitation show a steady increase across the board, and the top three legacy gTLDS are widely considered to be trustworthy.

2 ccTLDs also stay strong

Consistent with last year's wave, the country code TLDs also maintain their strong position, especially outside of the United States. Most have broad awareness and are seen as trustworthy by 9 in 10.

3 While trust and related behaviors are stable, expectations for restrictions increase

While there is no increase in distrust about the legacy gTLDs, there is a growing expectation that at least *some* restrictions should be placed on who can register domains names using these gTLDs. The percentage who said there should be no restrictions drops an average of 8.5 percentage points across legacy gTLDs. And, the presence of restrictions is even more likely to improve trust compared to a year ago.

4 Familiarity breeds trust

When asked what makes these gTLDs trustworthy, the top responses focus around it being a recognizable or well known gTLD or being from a group, agency or place of origin that inspires trust.

5 The purpose is to convey intent

When asked why there are different gTLDs at all, the reasons provided focus on communicating something specific—type of entity behind the site, country of origin, intended content/purpose.

6 Views about the domain name system continue to be largely positive

However, while still the least common terms associated with the domain structure, negative sentiments indicating the system is "confusing" or "technical" are on the rise.

AWARENESS OF DOMAIN EXTENSIONS

Awareness beyond the common legacy extensions - .com, .net, and .org –typically 50% or less across the regions. Compared to last year, however, awareness has improved across the board.

TOTAL AWARENESS BY DOMAIN EXTENSION

	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Aware of any below	98%	99% ↑	98%	99%	99%	100% ACE ↑	97%	99% ↑	98%	100% ACE ↑	98%	99% ↑
.com	89%	95% ↑	92%	96% C ↑	90%	95% ↑	89%	94% ↑	91%	99% ABCE ↑	88%	96% C ↑
.net	77%	88% ↑	85%	94% CE ↑	82%	92% CE ↑	80%	86% ↑	78%E	93% CE ↑	73%	87% ↑
.org	71%	83% ↑	89%	95% CE ↑	80%	94% CE ↑	79%	85% E ↑	76%	93% CE ↑	61%	76% ↑
.info	41%	50% ↑	33%	37% ↑	44%	52% A ↑	48%	53% A ↑	50%	64% ABCE ↑	40%	52% A ↑
.biz	31%	36% ↑	33%	36% B	18%	20%	36%	38% B	41%	53% ABCE ↑	29%	36% B ↑
.mobi	14%	18% ↑	8%	11% ↑	9%	14%	12%	14%	40%	49% ABCE ↑	14%	18% ABC ↑
.pro	10%	13% ↑	5%	6%	8%	10% A	8%	10% A	3%	9% A ↑	13%	18% ABCD ↑
.tel	9%	14% ↑	8%	9%	12%	11%	8%	10%	7%	14% AC	10%	17% ABC ↑
.asia	9%	13% ↑	3%	5% ↑	5%	4%	6%	9% AB ↑	6%	8% AB	12%	19% ABCD ↑
.coop	5%	8% ↑	3%	4%	8%	11% ACD	4%	6% A ↑	2%	6% ↑	6%	11% ACD ↑

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Letters indicate significantly higher than region. Region vs. Total Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

DOMAIN NAME EXTENSIONS VISITED

Currently, only the three common legacy extensions are highly visited. Compared to last year, however, self-reported visitation has improved across the board.

TOTAL VISITATION BY DOMAIN EXTENSION

	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Aware of any below	99%	99%	98%	99%	99%	100% ACE ↑	98%	99% ↑	99%	99%	98%	99% ↑
.com	88%	94% ↑	91%E	95% C ↑	88%	95% C ↑	86%	89% ↑	91%	97% CE ↑	87%	94% C ↑
.net	65%	76% ↑	71%	79% C ↑	65%	81% CE ↑	63%	67%	71%	84% ACE ↑	63%	76% C ↑
.org	61%	72% ↑	80%	87% CE ↑	73%	90% ACE ↑	64%	68% E	72%	90% CE ↑	50%	63% ↑
.info	27%	34% ↑	17%	21% ↑	25%	33% A ↑	34%	35% A	35%	44% ABCE ↑	27%	35% A ↑
.biz	17%	20% ↑	13%	13%	9%	11%	22%	21% AB	27%	34% ABCE ↑	17%	22% AB ↑
.mobi	8%	11% ↑	3%	6% ↑	3%	7% ↑	6%	8%	31%	32% ABCE	8%	11% ABC ↑
.pro	4%	7% ↑	2%	2%	3%	6% A ↑	3%	4% A	1%	4% A ↑	6%	9% ABCD ↑
.asia	4%	6% ↑	1%	1%	2%	2%	2%	3% A	1%	4% A ↑	6%	10% ABCD ↑
.tel	4%	7% ↑	2%	3%	4%	5% A	3%	4%	2%	6% A ↑	4%	9% ABCD ↑
.coop	2%	4% ↑	1%	2% ↑	5%	6% ACD	2%	3% A ↑	0%	2%	3%	5% ACD ↑

Letters indicate significantly higher than region. Region vs. Total Higher Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

AWARENESS OF GEOGRAPHICALLY TARGETED DOMAIN EXTENSIONS

By country, awareness of most geographically targeted extensions is quite high and many have improved over last year. Only .us (US) and .eu (Spain, UK, France, Italy, Germany) report moderate awareness in 2016.

2015

HIGH AWARENESS

- .mx (Mexico)
- .ca (Canada)
- .it (Italy)
- .tr (Turkey)
- .es (Spain)
- .pl (Poland)
- .uk (UK)
- .fr (France)
- .de (Germany)
- .za (South Africa)
- .ng (Nigeria)
- .vn (Vietnam)
- .cn (China)
- .jp (Japan)
- .kr (Korea)
- .ph (Philippines)
- .ru (Russia)
- .id (Indonesia)
- .in (India)
- .co (Colombia)
- .ar (Argentina)
- .br (Brazil)

MODERATE AWARENESS

- .us (United States)
- .eg (Egypt)

2016

HIGH AWARENESS

- .mx (Mexico) ↑
- .ca (Canada)
- .it (Italy)
- .tr (Turkey)
- .es (Spain)
- .pl (Poland) ↑
- .uk (UK)
- .fr (France)
- .de (Germany)
- .eu (Poland)
- .za (South Africa)
- .ng (Nigeria) ↑
- .eg (Egypt) ↑
- .vn (Vietnam) ↑
- .cn (China) ↑
- .jp (Japan)
- .kr (Korea) ↑
- .ph (Philippines) ↑
- .ru (Russia)
- .id (Indonesia) ↑
- .in (India) ↑
- .co (Colombia)
- .ar (Argentina) ↑
- .br (Brazil) ↑

MODERATE AWARENESS

- .us (United States)
- .eu (Spain, UK, France, Italy, Germany) (not asked 2015)

80% or more Aware

50%-79% Aware

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

GEOGRAPHICALLY TARGETED DOMAIN EXTENSIONS VISITED

Overall, awareness of the geographically targeted extensions is translating to reported visitation. However, visitation is particularly low for .us (US) and .eu (in UK and France). Compared to 2015, self-reported visitation has improved for about half of the extensions.

2015

HIGH VISITATION

- .mx (Mexico)
- .ca (Canada)
- .it (Italy)
- .tr (Turkey)
- .es (Spain)
- .pl (Poland)
- .uk (UK)
- .fr (France)
- .de (Germany)
- .za (South Africa)
- .ng (Nigeria)
- .vn (Vietnam)
- .cn (China)
- .jp (Japan)
- .kr (Korea)
- .ru (Russia)
- .in (India)
- .co (Colombia)
- .ar (Argentina)
- .br (Brazil)

MODERATE VISITATION

- .ph (Philippines)
- .id (Indonesia)
- .eg (Egypt)

LOW VISITATION

- .us (United States)

2016

HIGH VISITATION

- .mx (Mexico) ↑
- .ca (Canada)
- .it (Italy)
- .tr (Turkey)
- .es (Spain)
- .pl (Poland) ↑
- .uk (UK)
- .fr (France)
- .de (Germany)
- .za (South Africa)
- .ng (Nigeria) ↑
- .eg (Egypt) ↑
- .vn (Vietnam) ↑
- .cn (China) ↑
- .jp (Japan) ↑
- .kr (Korea) ↑
- .ph (Philippines) ↑
- .ru (Russia)
- .id (Indonesia) ↑
- .in (India) ↑
- .co (Colombia) ↑
- .ar (Argentina) ↑
- .br (Brazil) ↑

MODERATE VISITATION

- .eu (Poland, Italy, Germany, Spain)

LOW VISITATION

- .us (United States)
- .eu (UK, France)

75% or more have Visited (HIGH) | 40%-74% have Visited (MODERATE) | 35% or less have Visited (LOW)

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

DOMAIN EXTENSION TRUSTWORTHINESS

As would be expected, common extensions such as .com and .org are highly trusted across all regions.

By country (with one exception), a very high 90% or more trust their ccTLD as well. In the US, it's still high at 76%.

70% or more rated extension Very/Somewhat Trustworthy

NORTH AMERICA

General Extensions
- .com
- .org
- .net

Geographically Targeted Extensions
- .mx
- .ca
- .us

SOUTH AMERICA

General Extensions
- .com
- .org
- .net

Geographically Targeted Extensions
- .ar
- .co
- .br

EUROPE

General Extensions
- .com
- .org ↓
- .net

Geographically Targeted Extensions
- .pl
- .de
- .it
- .fr
- .es
- .uk
- .tr

AFRICA

General Extensions
- .com
- .org
- .net
- .info ↓

Geographically Targeted Extensions
- .ng
- .za
- .eg

ASIA

General Extensions
- .com
- .org
- .net

Geographically Targeted Extensions
- .id
- .ph
- .in
- .ru
- .vn
- .cn ↑
- .jp
- .kr

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Arrows indicate significantly higher/lower than wave 1 at a 95% confidence level.

WHAT MAKES DOMAIN NAME EXTENSIONS TRUSTWORTHY

When consumers are asked what makes an extension seem trustworthy as an open ended question, their responses focus on reputation and familiarity with the extension, oftentimes mentioning specific extensions.

NET categories are the roll-up of related sub-categories. Key subcategories are show for each NET

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Reputation (NET)	36%	36%	45% ACE (Higher)	32% (Lower)	42% ACE (Higher)	35%
Well known	24%	22%	24% C	19% (Lower)	29% AC (Higher)	25% C (Higher)
Dependable/Reliable	2%	2%	12% ACDE (Higher)	2%	1%	1% (Lower)
Specific Extensions (NET)	28%	27% C	27% C	20% (Lower)	32% C	30% C (Higher)
.com	13%	11% C (Lower)	13% C	7% (Lower)	19% ABC (Higher)	16% AC (Higher)
.org	6%	8% CE (Higher)	7% CE	3% (Lower)	10% CE (Higher)	5% (Lower)
Usage (NET)	24%	34% BCDE (Higher)	27% CDE	19% (Lower)	20%	22% C (Lower)
Familiar/I use extension	11%	16% BCDE (Higher)	10%	10%	8% (Lower)	11%
Website Origin (NET)	8%	8% D	8% D	12% ABDE (Higher)	4% (Lower)	7% D (Lower)
Saftey/Security (NET)	6%	5%	8% AE (Higher)	7% E	11% ACE (Higher)	4% (Lower)
Safety/Security/Padlock	5%	4%	7% E	6% E	10% ACE (Higher)	4% (Lower)

Mentions of 10% or greater shown.
Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

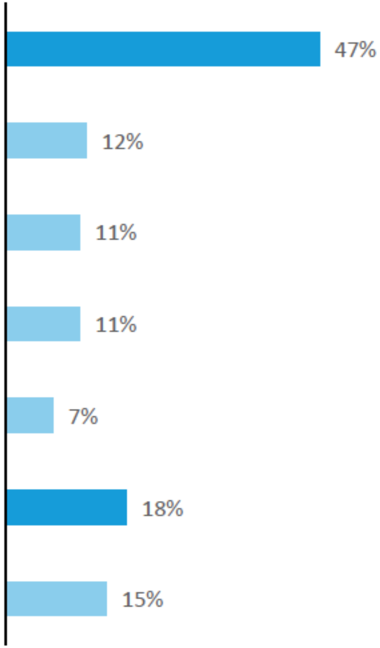
WHAT MAKES DOMAIN NAME EXTENSIONS TRUSTWORTHY

Reputation	Specific Extension	Usage	Website Origin	Safety/Security
Because it's already an old extension with a very good reputation. (LAC)	Its extension represents influential and authoritative agencies and organizations. (AP)	Experience of usage of these websites. These are official websites of organizations. (AP)	That it's from my country of origin. (LAC)	Security seal and large organizations use it. (LAC)
They belong to domains with a good reputation. (NA)	.com, probably, is the most common extension in the world, especially in the US and Europe, and possibly in Russia. (AP)	Used it several times and never had negative experiences. (Eur)	The country of origin, the type of organization or entity that offers it. (Eur)	Because it uses the latest technology for safety. (AP)
Its competitiveness, reputation and history give people positive impression. (AP)	The .com extension is the first one I knew of, international and the most famous. (Eur)	When it's used on the majority of sites. (LAC)	It originates from Poland or I know the extension. (Eur)	Because they are the most used by many people, so I think there is greater control of security. (LAC)

WHY WEBSITES HAVE DIFFERENT EXTENSIONS

While 1 in 5 consumers don't know why websites have different extensions, many others feel it's to properly identify and classify the domains or that it identifies its location or content.

NET categories are the roll-up of related sub-categories. Key subcategories are show for each NET

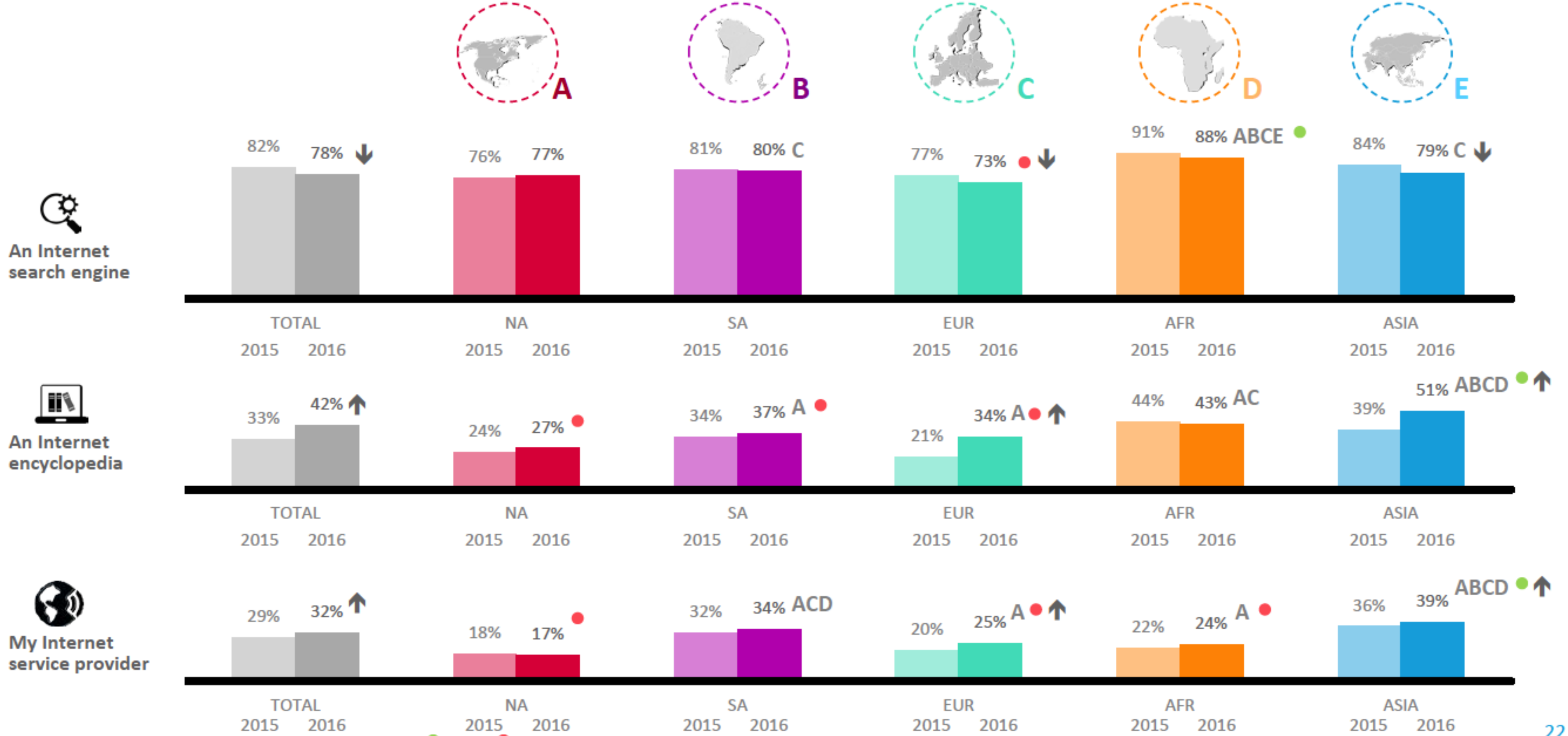


	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Identification (NET)	47%	51% E (Higher)	48%	49%	46%	45% (Lower)
To indicate country/different countries	12%	8% (Lower)	13% AE	23% ABDE (Higher)	10%	9% (Lower)
To differentiate/determine type of business/work/organization/fields	11%	14% BCE (Higher)	10%	8% (Lower)	16% BCE (Higher)	11% C
To differentiate between other sites/domains	11%	11%	11% C	8% (Lower)	8% (Lower)	13% CD (Higher)
To indicate location/area extensions	7%	9% E (Higher)	9% E (Higher)	10% E (Higher)	11% E (Higher)	4% (Lower)
Content (NET)	18%	17% C	27% ACE (Higher)	10% (Lower)	28% CE (Higher)	17% C
Different purposes/content/features of website	15%	13% C	21% ACE (Higher)	9% (Lower)	21% ACE (Higher)	15% C

Mentions of 10% or greater shown.
Letters indicate significantly higher than region. Region vs. Total: Higher, Lower

PREFERRED SOURCES FOR MORE INFORMATION

Internet search is by and large the primary means consumers would use to learn more about domain name extensions. But Internet encyclopedia and Internet provider are growing in popularity – notably in Europe and Asia.



Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

IMAGERY PERCEPTIONS OF LEGACY gTLDs

Consumers describe the common gTLDs in terms of functionality and trust - Useful, “informative”, “practical”, “helpful” and “trustworthy”. Compared to 2015 however, mentions of a couple of the more negative descriptors are on the rise: “technical” and “confusing”.

Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

gTLD RESTRICTIONS

While relatively few feel that strict purchase restrictions should be required on these gTLDs, consumer views are changing – fewer say 'no restrictions' while more say 'strict restrictions.'

	TOTAL	TOTAL	NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
Strict purchase restrictions should be required	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
.com	19%	28% ↑	13%	24% C 🔴 ↑	15%	26% C ↑	13%	19% 🔴 ↑	24%	36% ABCE 🟢 ↑	24%	30% AC 🟢 ↑
.info	16%	22% ↑	16%	25% CE 🟢 ↑	15%	24% CE ↑	13%	18% 🔴 ↑	18%	29% CE 🟢 ↑	16%	20% 🔴 ↑
.net	16%	23% ↑	12%	23% C ↑	13%	23% C ↑	10%	18% 🔴 ↑	21%	30% ABCE 🟢 ↑	18%	24% C 🟢 ↑
.org	25%	34% ↑	26%	40% CE 🟢 ↑	26%	39% CE 🟢 ↑	18%	26% 🔴 ↑	29%	40% CE 🟢 ↑	26%	33% C ↑
Some purchase restrictions should be required												
.com	40%	40%	38%	41% D	40%	36%	40%	44% BDE 🟢	34%	31% 🔴	41%	40% D
.info	49%	51% ↑	48%	46% 🔴	45%	45% 🔴	48%	52% BD	40%	42% 🔴	51%	54% ABD 🟢 ↑
.net	47%	49%	44%	48%	42%	45%	45%	51% BD	45%	42% 🔴	50%	49% D
.org	44%	43%	40%	37% 🔴	39%	32% 🔴	44%	48% ABD 🟢	37%	39% B	47%	46% ABD 🟢
No purchase restrictions should be required												
.com	41%	33% ↓	49%	35% E ↓	45%	37% E 🟢 ↓	47%	36% E 🟢 ↓	42%	34% ↓	35%	30% 🔴 ↓
.info	36%	28% ↓	37%	29% ↓	40%	31% E ↓	39%	30% E ↓	42%	30% ↓	32%	26% 🔴 ↓
.net	38%	28% ↓	44%	30% E ↓	45%	33% E 🟢 ↓	45%	31% E 🟢 ↓	33%	28%	32%	26% 🔴 ↓
.org	31%	23% ↓	34%	23% ↓	35%	29% ADE 🟢 ↓	38%	26% DE 🟢 ↓	34%	21% ↓	27%	21% 🔴 ↓

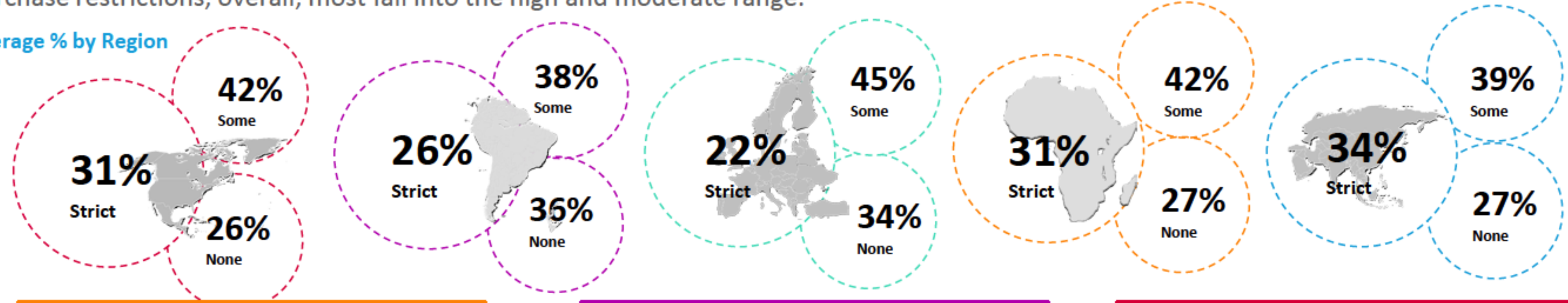
Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

EXPECTATIONS FOR gTLD RESTRICTIONS

Roughly one quarter of consumers favor strict purchase restrictions on the geo specific gTLDs. Of those who favor strict purchase restrictions, overall, most fall into the high and moderate range.

Average % by Region



HIGH

- .us (United States)
- .ca (Canada)
- .tr (Turkey)
- .za (South Africa)
- .ng (Nigeria)
- .ph (Philippines)
- .in (India)
- .vn (Vietnam)
- .kr (Korea)
- .cn (China)

MODERATE

- .mx (Mexico)
- .uk (UK)
- .de (Germany)
- .eg (Egypt)
- .id (Indonesia)
- .jp (Japan)
- .ru (Russia)
- .br (Brazil)
- .co (Colombia)
- .ar (Argentina)

LOW

- .pl (Poland)
- .it (Italy)
- .es (Spain)
- .fr (France)

30% or more say Strict restrictions required

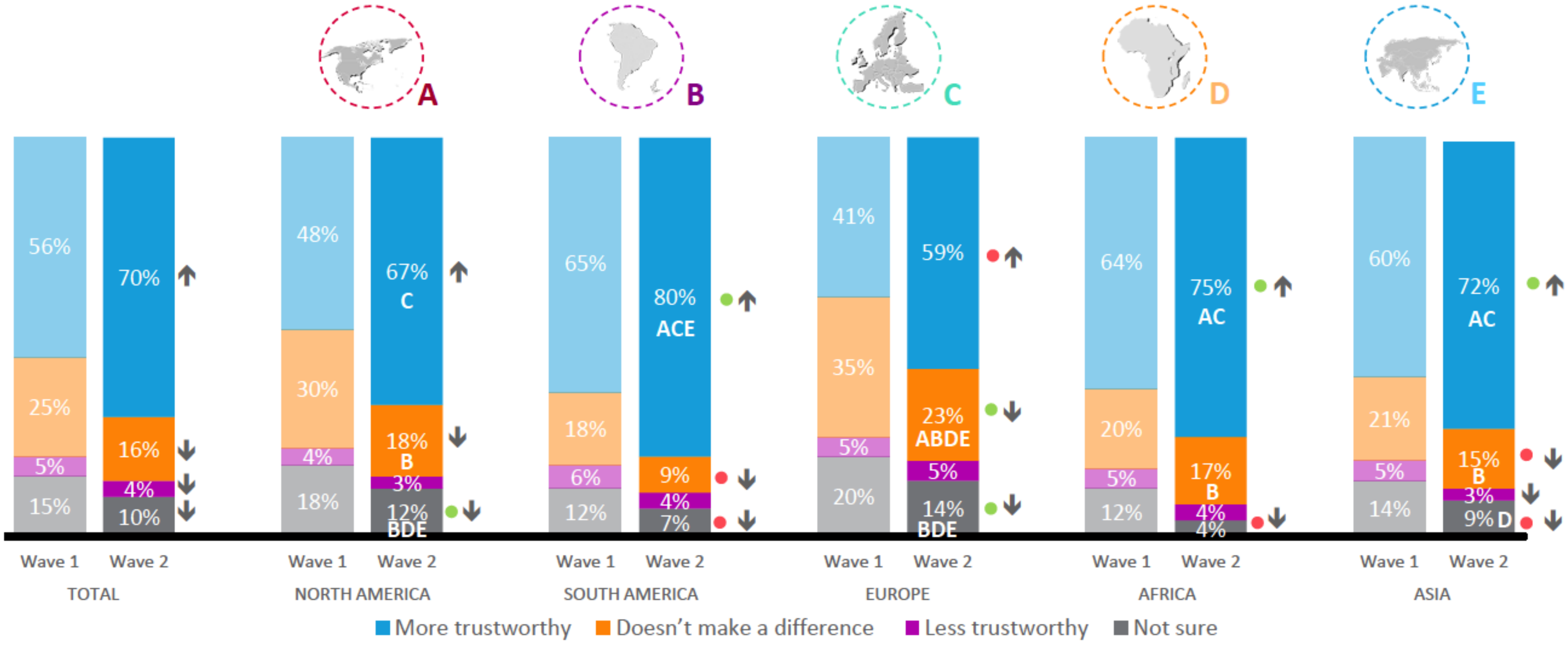
20%-29% say Strict restrictions required

Less than 20% say Strict restrictions required

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

IMPACT OF PURCHASE RESTRICTIONS ON TRUST

It is clear that having purchase restrictions or requirements do contribute to a sense of trust around the globe, especially among consumers in South America, Africa, and Asia. And this view is even stronger this year.



Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

ENFORCEMENT OF RESTRICTIONS

Supporting the consumers' desire for restrictions, 3 in 4 (or more) feel noted requirements below should be enforced.

% Yes	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Validation that the person or company registering the site **meets intended parameters**	82%	85% CE	81%	81%	82%	81%
Requirements for validated **credentials** related to the gTLD	80%	78% B	72%	78% B	78% B	82% ABC
Requirements for use of the **name** to be **consistent with** the **meaning** of the gTLD	79%	82% CD	78%	76%	76%	80% C
Requirements for local presence within specific city, country, or region for a domain related to that place	76%	75% B	68%	76% B	74%	77% B

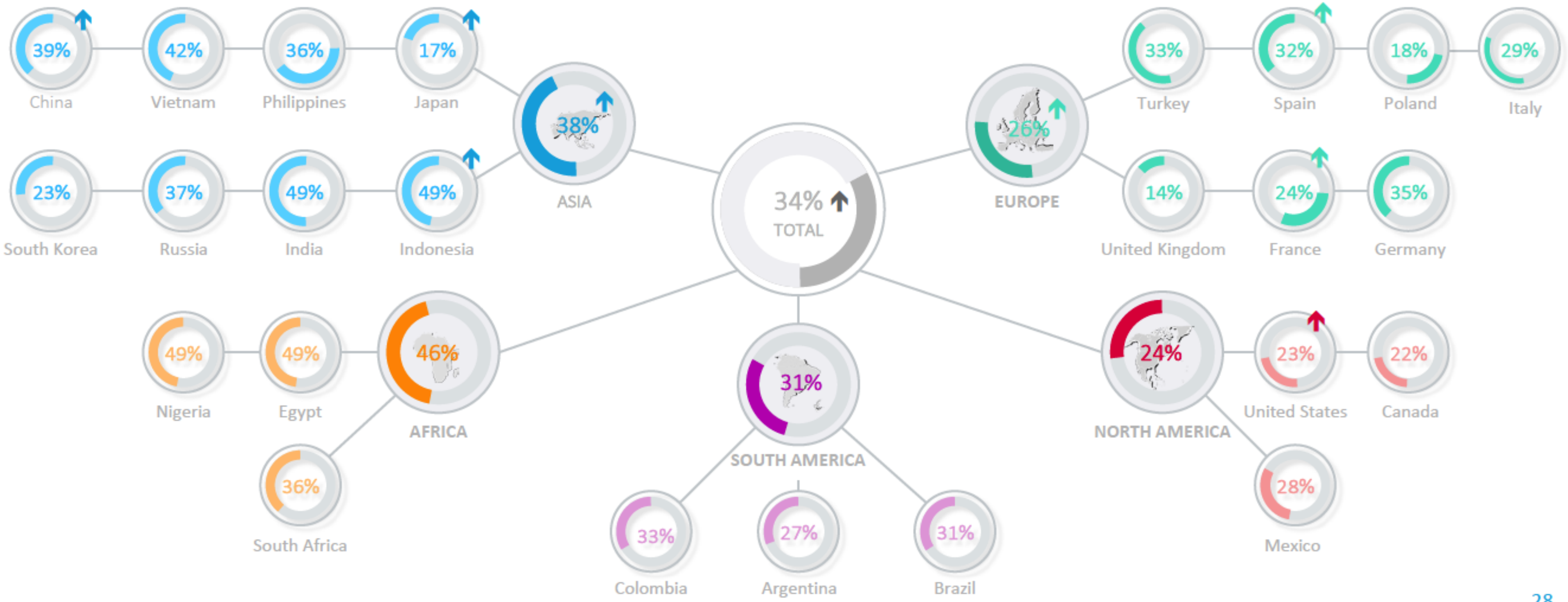
Letters indicate significantly higher than region. Region vs. Total Higher Lower

IDENTIFYING WEBSITE CREATORS

Consumers in Africa are far more likely to have tried to identify the registrant of a website than those in any other region, Nigeria and Egypt in particular. The practice is least prevalent among North Americans and Europeans.

Compared to last year, consumers are more likely to have tried to verify in a few regions: Asia (notably China, Japan, and Indonesia), Europe (Spain and France) and the US.

% Have Tried

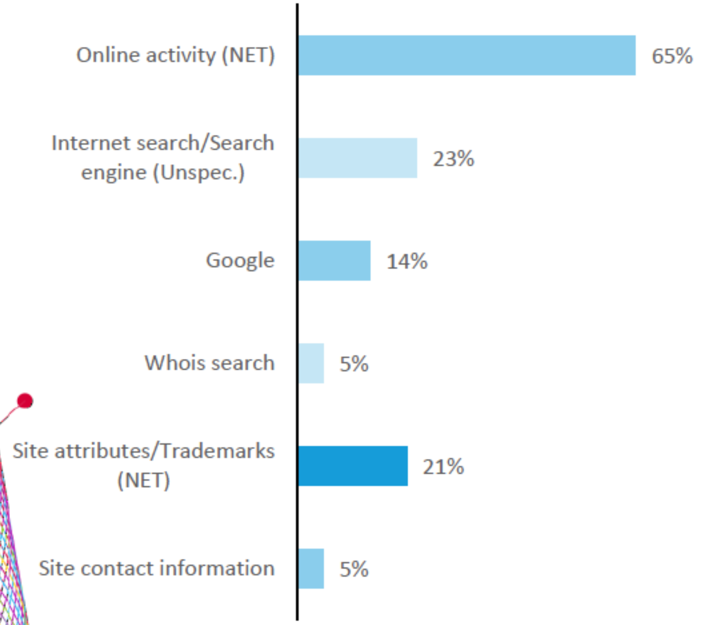


Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

SOURCES USED TO IDENTIFY WEBSITE CREATORS

Among those who tried to identify a website, the majority of consumers searched online for more info via some form of search.

NET categories are the roll-up of related sub-categories. Key subcategories are show for each NET



	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Online activity (NET)	65%	72% E	67%	75% AE	63%
Internet search/Search engine (Unspec.)	22%	29% E	25%	22%	22%
Google	18% E	19% E	14%	25% CE	11%
Whois search	9% BE	3%	11% BE	7% BE	4%
Site attributes/Trademarks (NET)	26% E	24%	27% E	21%	18%
Site contact information	10% E	6% E	11% E	6% E	3%

Mentions of 10% or greater shown.
Letters indicate significantly higher than region. Region vs. Total Higher Lower

SOURCES USED TO IDENTIFY WEBSITE CREATORS

Online Activity	Site Attributes/Trademarks
By using a Google search, for example using the key words "Who is the creator of Google site?". (AP)	Searching for trademarks or copyright. Using tools available on Google Analytics and informative pages about registration, hosting and domains. (Eur)
By looking at Internet search information to find out who hosts the site. (LAC)	Go to "contact us" or "about us" pages. (Africa)
By looking at the website information or, as necessary, by going to find the information through various Google Internet searches. (Eur)	Telephone contact and via a reliable site I've already accessed by asking about the site. (LAC)
By doing research using a search site or Internet encyclopedia. (AP)	1. Contact form provided on the website. 2. Telephone line that appears on it (provided that the call is local). (LAC)
Investigating on and tracking through the search engine. (NA)	The address in the address bar, the contact details on the website.(Eur)
By consulting the WHOIS registry and seeing in what name the domain is registered. (Eur)	I asked their social media contact person. (Africa)

HOW WEBSITE LEGITIMACY IS DETERMINED

While 1 in 5 consumers say they don't know how to determine if a website is legitimate, others say they can tell by doing research, seeing its appearance or content, by its domain name/extension, or safety measures in place such as antivirus software, security certificate, or alerts they receive.

NET categories are the roll-up of related sub-categories. Key subcategories are show for each NET

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Research (NET)	22%	23% C	19% C	14% ● Lower	27% BC ● Higher	25% BC ● Higher
Researching online/Internet searches	10%	15% CE ● Higher	12% CE	8% ● Lower	16% CE ● Higher	8% ● Lower
Appearance/Content (NET)	17%	20% CE ● Higher	22% CE ● Higher	16%	22% CE ● Higher	15% ● Lower
Content/Information on site	7%	8% C	13% ACE ● Higher	5% ● Lower	9% C	7% C
Domain/Name/Extension (NET)	14%	15% C	20% ACE ● Higher	11% ● Lower	17% C	14% C
Safety measures (NET)	14%	15%	19% ACE ● Higher	13%	20% ACE ● Higher	13% ● Lower
Don't know	18%	16%	18% D	25% ABDE ● Higher	12% ● Lower	17% D ● Lower

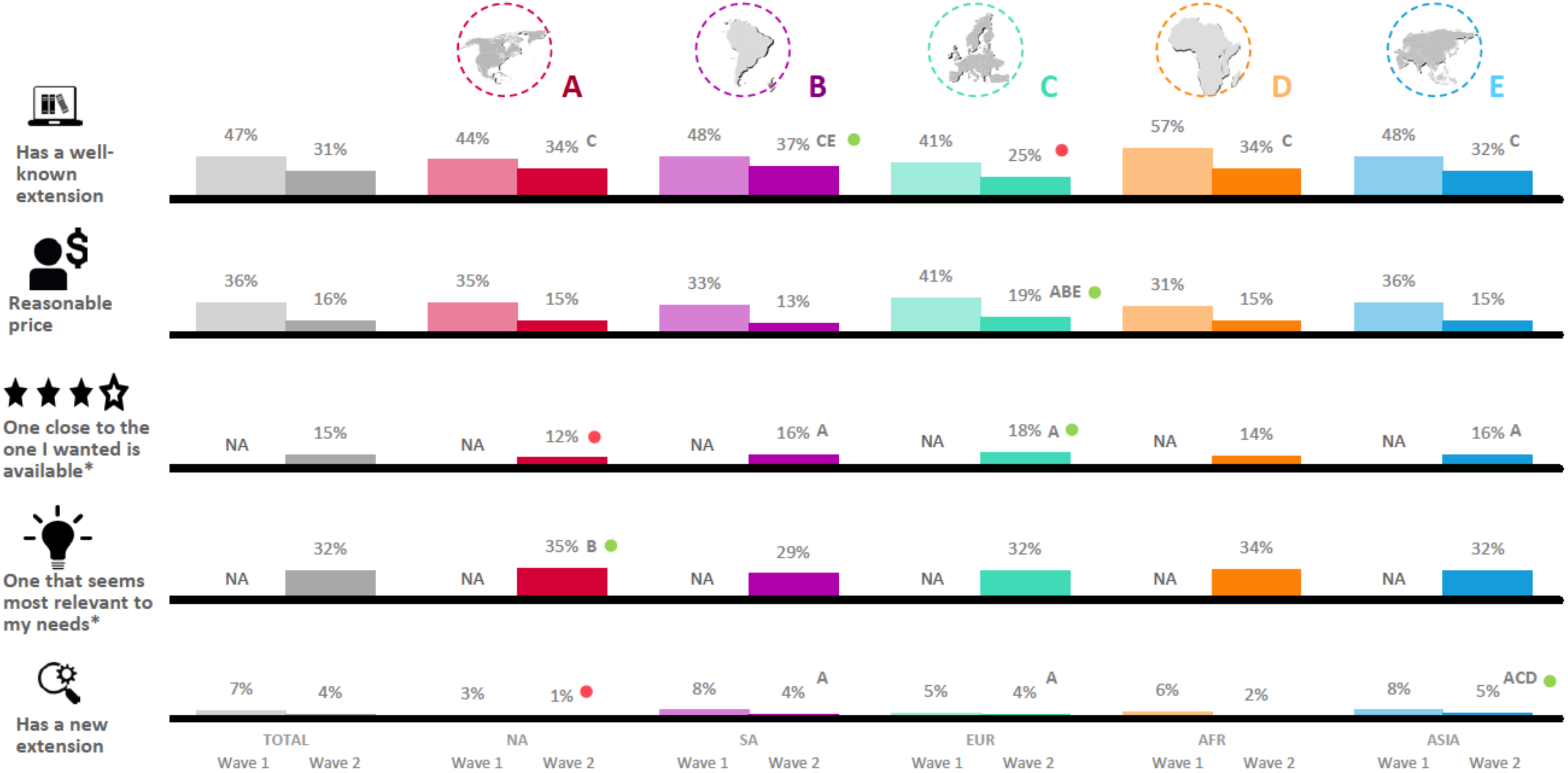
Mentions of 10% or greater shown.
Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

HOW WEBSITE LEGITIMACY IS DETERMINED

Research	Appearance/Content	Domain/Name/Extension	Safety Measures
I research other sources outside the Internet. (LAC)	You can see this from its content and appearance. Legitimate sites are often more presentable and look as if they were made by professionals.(AP)	By the domain and extension used on it and, if this is not sufficient, I use search forums. (LAC)	I look for the safety certificate. (Africa)
I will first research, both the website and the company, to see whether they can be trusted. (AP)	By looking at its appearance, domain, etc. (AP)	By the domain extension and the domain name. (Eur)	Install software that judges site safety on the computer I use. (AP)
Research on the Internet and reviews. (NA)	By the coherent and true content with regard to the site's owner. (LAC)	By the type of domain that is linked, .com, .net. (LAC)	The safety key on the link (Africa)

FACTORS IN gTLD PURCHASE

Having a well-known extension and one that seems most relevant are the main factors across the board in determining which gTLD to purchase. Compared to last year, consumers were less likely to cite having a well-known extension or price.



Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower *Added wave 2016

UNDERSTANDING OF AND EXPERIENCE WITH NEW gTLDs

KEY TAKEAWAYS – NEW gTLDs

This section is focused on consumer perceptions and experience with newer TLDs. It also explores levels of awareness and visitation, intent to visit and what affects this willingness.

1 **Awareness slowly improving; visitation not following suit**

For those new gTLDs that appeared in both waves of the survey, awareness has increased slightly. The pace is slow, only an average of two percentage points. However, given the targeted nature of many new gTLDs, widespread awareness may be less likely.

2 **New gTLDs gaining awareness more quickly outside of NA and EU**

It can also vary by country within region. Among the countries in the European region, the UK is particularly weak for the new gTLDs This also fits with sentiments within some regions that the original structure did not sufficiently meet the needs of the global Internet.

3 **Meaningful relationships—and enforcement—are expected**

In thinking about new gTLDs, consumers expect that the content of the site closely match the implied meaning of the domain name. And, compared to the questions in last wave about restrictions, there is an expectation of at least some level of enforcement will be made to ensure this alignment.

4 **Not as strong as .com, but making inroads**

When asked about the likelihood of viewing a website with a .com extension or a new gTLD, the .com versions consistently get higher scores, but the new gTLDs are acceptable to the majority.

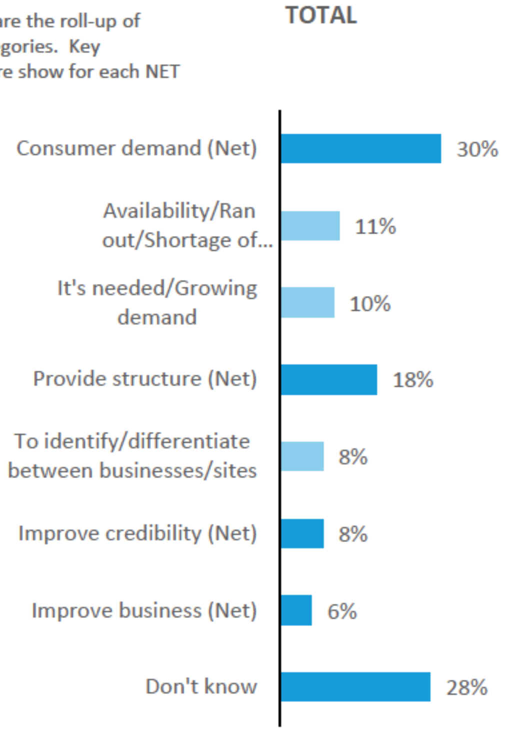
5 **Familiarity is the issue more than trust**

Preference for traditional extensions appears to be driven more by the positive effect of familiarity, not distrust of the new gTLDs. And, the actual effect may be somewhat overstated as people increasingly use search engine results to guide them and may not actually pay that much attention to the gTLD.

WHY NEW gTLDs HAVE BEEN CREATED

Nearly a third of consumers don't have an explanation for why new gTLDs have been created. Others say it's about consumer demand and providing structure to the Internet.

NET categories are the roll-up of related sub-categories. Key subcategories are show for each NET



	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Consumer demand (Net)	35% BCDE	24%	29% B	27%	31% B
Availability/Ran out/Shortage of...	17% BCDE	3%	11% B	10% B	12% B
It's needed/Growing demand	12%	9%	10%	11%	10%
Provide structure (Net)	20% C	22% CE	13%	20% C	18% C
To identify/differentiate between businesses/sites	7%	12% ACE	5%	8% C	8% C
Improve credibility (Net)	6%	12% ACE	7%	9%	8%
Improve business (Net)	5%	4%	4%	10% ABCE	7% ABC
Don't know	28% E	33% DE	36% ADE	26%	25%

Mentions of 10% or greater shown.
Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

WHY NEW gTLDs HAVE BEEN CREATED

Consumer Demand	Provide Structure	Improve Credibility	Improve Business
Because demand can't be fulfilled with only the American controlled domain names we've had up until now. (AP) As time has gone by, demand for Web pages increases. Out of concern, more must be created. (LAC) Because of the increased demand on websites. (Africa)	Better structure, recognizability/assigning companies to fields of activity. (Eur) Diversification of the structure and situation of the Internet. (AP) To revise the structure of current global Internet use at a deep level, will have a major influence on global Internet development. (AP)	To raise the degree of credibility. (AP) Because of the demand on the Internet and sites and to make sure of their credibility (Africa)	So that more people or companies can create their own pages for their businesses or services. (LAC) The continuous development of business and industry demand. (AP) Because there is demand and it's a business. I don't think it's due to saturation. (NA)

CRITERIA FOR VISITING WEBSITES WITH UNKNOWN EXTENSION

Consumers say they visit websites with unknown extensions based on usage (popular domain name or used site previously), site appeal or interest, and brand image (e.g., reputable, good reviews, recommendations).

NET categories are the roll-up of related sub-categories. Key subcategories are show for each NET

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Need based usage/redirected/popular	20%	19% C	22% C	14%	20% C	22% AC
Site appeal (NET)	19%	16%	24% AE	22% AE	24% AE	18%
Interesting	7%	7%	10% DE	9% DE	4%	6%
Out of curiosity	7%	4%	9% AE	10% AE	12% AE	5%
Content (NET)	17%	18% C	20% C	10%	27% ABCE	17% C
Information	11%	13% C	10% C	6%	16% BCE	11% C
Brand image (NET)	14%	17% CE	17% E	14%	15%	12%
Recommend/Asked to visit it	6%	8% E	12% ACDE	6%	6%	5%

Mentions of 10% or greater shown.
Letters indicate significantly higher than region. Region vs. Total Higher Lower

CRITERIA FOR VISITING WEBSITES WITH UNKNOWN EXTENSION

Usage	Site Appeal	Content	Brand Image
Usage of the website. (AP)	The website is appealing. (Eur)	Depending on the content. (LAC)	If they are reliable or a recognized brand backs them. (NA)
When I have no other choice but visit or use the websites, I feel like exploring them. (AP)	Unique, interesting, innovative, creative, trusted. (AP)	For its content, presentation, its reliability. (NA)	When the website brand is famous, trustworthy. (AP)
A lot of people use it and have reviewed it. (AP)	Curiosity for new sites. (Africa)	I clearly know its content and properties, and know about it. (AP)	A new domain name for a familiar brand. (AP)

REASONS FOR AVOIDING UNFAMILIAR DOMAIN EXTENSIONS

Concerns for security dominate the reasons for avoiding unfamiliar domain name extensions, followed by lack of familiarity or previous usage.

NET categories are the roll-up of related sub-categories. Key subcategories are show for each NET

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Security (NET)	29%	25% 🔴	29% C	22% 🔴	27% C	33% ACE 🟢
Viruses	13%	12% C	16% ACD 🟢	9% 🔴	11%	14% C 🟢
Not safe/secure	10%	6% 🔴	7% 🔴	9% A	9%	11% ABC 🟢
Lack of familiarity	16%	17% C	18% C	12% 🔴	16%	16% C
Site not common/Avoid it	10%	12% C 🟢	11% C	8% 🔴	9%	10% C
Brand image (NET)	13%	15% E	15% E	15% E	16% E	11% 🔴
It doesn't seem legitimate	5%	5% C	4%	3% 🔴	10% ABCE 🟢	5% C
Content (NET)	9%	13% CE 🟢	15% CE 🟢	4% 🔴	17% ACE 🟢	8% C 🔴
Site appeal (NET)	8%	11% E 🟢	10% E	10% E 🟢	8%	6% 🔴

Mentions of 10% or greater shown.
Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

REASONS FOR AVOIDING UNFAMILIAR DOMAIN EXTENSIONS

Security	Usage	Brand Image	Content	Site Appeal
Computer security software alerts me of risks. (AP)	For unfamiliarity, distrust. (LAC)	The type of images that it presents. (NA)	If the website's content is not relevant to me, and I'm not interested in that content. (AP)	Unfamiliar to me, lack of appeal and security. (Eur)
Data security if the site does not have a double asymmetric cryptography, for example. (Eur)	I don't actively use them. (AP)	The fear that a website may not be legitimate and that I may be robbed of my valuable personal information. (AP)	If there is content without an access source and if there is no information that adds to intellectual growth. (LAC)	Because it looks questionable to me or the extension or even the title of the website does not look right to me in its color, form, presentation, spelling, similarity to other websites that are more appealing and better written, and above all, safer. Furthermore I think that it is better to get information beforehand on an unknown extension before using it. (Eur)
For precaution. It may contain a virus or pages that I don't want to see. (NA)	I think I'd be concerned because it's not familiar. (AP)	I feel that foreign sites have a dangerous image. (AP)	Immoral content; reports about its users without consent; damages. (Africa)	

AWARENESS OF NEW gTLDs

For those new gTLDs measured in both waves, awareness is up slightly for most. While increased compared to last year, awareness is lowest in North America and Europe.

Among the new gTLDs added to the list this year, .news and .online have the highest level of awareness.

TOTAL AWARENESS BY NEW DOMAIN EXTENSION

	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Aware of any in both years**	46%	52% ↑	29%	38% ↑	54%	59% ACD	33%	45% A ↑	48%	52% AC	53%	58% ACD ↑
.news*	NA	33%	NA	22%	NA	34% AC	NA	25%	NA	39% AC	NA	37% AC
.email	28%	32% ↑	16%	22% ↑	39%	39% ACDE	22%	29% A ↑	31%	31% A	32%	34% AC
.online*	NA	30%	NA	17%	NA	37% ACE	NA	31% A	NA	36% A	NA	31% A
.link	24%	27% ↑	14%	16%	35%	36% ACE	13%	17% ↑	31%	31% AC	28%	31% AC ↑
.website*	NA	21%	NA	15%	NA	39% ACDE	NA	20% A	NA	24% A	NA	20% A
.site*	NA	20%	NA	13%	NA	29% ACE	NA	13%	NA	25% AC	NA	22% AC
.club	13%	16% ↑	5%	6%	11%	14% AC	7%	9% A ↑	12%	13% AC	17%	21% ABCD ↑

*Added in 2016 **2016 Awareness based on gTLDs shown in 2015

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Letters indicate significantly higher than region. Region vs. Total Higher Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

AWARENESS OF NEW gTLDs (CONT'D)

TOTAL AWARENESS BY NEW DOMAIN EXTENSION

	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
.space*	NA	15%	NA	11%	NA	23% ACDE	NA	12%	NA	18% AC	NA	15% AC
.guru	11%	12% ↑	6%	8%	15%	14% AC	4%	7% ↑	15%	17% ACE	13%	13% AC
.pics*	NA	11%	NA	8%	NA	10%	NA	7%	NA	15% ABC	NA	13% AC
.photography	9%	11% ↑	3%	6% ↑	12%	15% AC	6%	9% A ↑	9%	11% A	11%	12% AC
.top*	NA	11%	NA	2%	NA	8% A	NA	7% A	NA	5% A	NA	16% ABCD
.realtor	6%	6%	7%	8% BC	5%	2% ↓	2%	2%	4%	5% BC	7%	7% BC
.xyz	5%	9% ↑	2%	3%	5%	5% A	2%	7% A ↑	4%	9% AB ↑	7%	12% ABC ↑

*Added in 2016

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

AWARENESS OF NEW gTLDs – BY COUNTRY

Awareness varies widely by country. US and Canada are driving the lower North America numbers, UK is notably low in Europe, and Japan is lowest of any country in the Asia region.

While not shown, awareness of the new geographically targeted TLDs (.wang, .nyc, etc) is universally low: below 8% in all cases.

AWARENESS	TOTAL	NA	US	CA	MX	SA	CO	AR	BR	EUR	IT	TR	ES	PL	UK	FR	DE	AFR	NG	ZA	EG	ASIA	CN	VN	PH	JP	KR	RU	IN	ID
Aware of any below**	52%	38%	38%	30%	70%	59%	82%	57%	53%	45%	53%	66%	55%	48%	22%	38%	50%	52%	56%	39%	58%	58%	62%	62%	56%	37%	53%	67%	57%	70%
.news*	33%	22%	16%	22%	35%	34%	47%	30%	32%	25%	30%	36%	33%	32%	9%	20%	30%	39%	45%	36%	30%	37%	34%	44%	48%	17%	26%	45%	42%	59%
.email	32%	22%	14%	14%	49%	39%	57%	30%	37%	29%	43%	54%	42%	35%	7%	28%	25%	31%	28%	23%	45%	34%	38%	31%	27%	19%	28%	42%	34%	35%
.online*	30%	17%	9%	10%	43%	37%	57%	31%	32%	31%	26%	42%	36%	36%	7%	28%	45%	36%	40%	26%	38%	31%	28%	44%	31%	13%	24%	41%	38%	39%
.link	27%	16%	7%	10%	46%	36%	60%	32%	31%	17%	23%	39%	25%	21%	4%	13%	14%	31%	31%	20%	41%	31%	34%	32%	32%	19%	37%	31%	28%	41%
.website*	21%	15%	7%	8%	43%	39%	52%	29%	39%	20%	27%	40%	34%	26%	4%	20%	12%	24%	22%	21%	32%	20%	18%	27%	20%	10%	20%	14%	27%	34%
.site*	20%	13%	7%	9%	31%	29%	40%	22%	28%	13%	12%	33%	22%	10%	3%	17%	9%	25%	28%	17%	28%	22%	19%	39%	21%	10%	20%	18%	28%	38%
.club	16%	6%	4%	3%	15%	14%	17%	14%	13%	9%	10%	21%	9%	12%	2%	12%	6%	13%	16%	8%	13%	21%	27%	29%	14%	11%	18%	26%	17%	23%
.space*	15%	11%	5%	7%	29%	23%	46%	22%	17%	12%	17%	22%	18%	14%	2%	15%	8%	18%	26%	9%	10%	15%	17%	14%	16%	4%	12%	18%	18%	18%
.guru	12%	8%	6%	5%	17%	14%	38%	16%	7%	7%	8%	13%	10%	5%	5%	4%	9%	17%	28%	8%	5%	13%	8%	12%	21%	3%	7%	16%	26%	14%
.pics*	11%	8%	7%	4%	14%	10%	14%	12%	8%	7%	13%	11%	8%	7%	4%	7%	7%	15%	16%	14%	11%	13%	11%	9%	13%	5%	8%	9%	22%	14%
.photography	11%	6%	4%	3%	13%	15%	22%	6%	15%	9%	9%	20%	11%	17%	4%	6%	5%	11%	13%	9%	9%	12%	11%	13%	11%	5%	11%	13%	16%	21%
.top*	11%	2%	1%	2%	5%	8%	16%	2%	7%	7%	4%	12%	5%	17%	2%	6%	6%	5%	4%	2%	8%	16%	25%	14%	7%	9%	10%	20%	9%	10%
.xyz	9%	3%	2%	4%	3%	5%	9%	2%	5%	7%	4%	16%	6%	12%	7%	5%	4%	9%	10%	8%	6%	12%	11%	17%	11%	12%	9%	12%	11%	19%
.realtor	6%	8%	10%	12%	2%	2%	6%	1%	1%	2%	2%	6%	3%	0%	2%	2%	1%	5%	7%	6%	2%	7%	6%	4%	9%	2%	3%	5%	12%	4%

*Added 2016 **Significance 2015 vs. 2016 unable to be shown due to additional TLDs added in 2016
Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Green/red font indicate 2016 significantly higher/lower than 2016 at a 95% confidence level.

AWARENESS OF NEW gTLDs – GEO-TARGETED

Awareness of the geo-targeted gTLDs is quite low – particularly in North America, with the vast majority showing less than 20% awareness. A few standouts (20% or greater) in the other regions include .bogota, .Istanbul, .berlin, .cairo, toyko and .seoul. Further, comparing where possible to last year, awareness of 2 of China's 4 IDNs declined.

NORTH AMERICA

Geographically Targeted Extensions

.nyc (9%) (6%)
.toronto (8%)
.guadalajara (7%)

SOUTH AMERICA

Geographically Targeted Extensions

.bogota (24%)
.rio (7%)
.cordoba (4%)

EUROPE

Geographically Targeted Extensions

.istanbul (34%)
.berlin (23%) (18%)
.madrid (16%)
.warszawa (15%)
.london (12%) (16%)
.paris (12%)
.roma (6%)
.ovh (2%) (1%)

AFRICA

Geographically Targeted Extensions

.cairo (20%)
.capetown (16%)
.abuja (8%)

ASIA

Geographically Targeted Extensions

.toyko (23%)
.seoul (20%)
.hanoi (19%)
.mockba (18%)
.jakarta (14%)
.delhi (12%)
.wang (12%) (11%)
.manilla (11%)
.foshan (9%)
.xn_55qx5d(company) (7%) (9%) ↓
.xn-ses554g (network address) (5%) (10%) ↓

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level. (Gray percent=2015)

NEW gTLDs VISITED

7 in 10 consumers who are aware of at least one new gTLD say they have visited one of them. LAC and AP lead on visitation while North America and Europe are more moderate.
Compared to last year, self-reported visitation levels are down for .email and .link across nearly all regions.

VISITATION BY NEW DOMAIN EXTENSION

	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Visited of any below**	65%	50% ↓	55%	41% ↓	70%	54% AC ↓	49%	42% ↓	63%	48% ↓	70%	54% AC ↓
.news*	NA	29%	NA	19%	NA	25%	NA	21%	NA	33% ABC	NA	33% ABC
.email	38%	28% ↓	29%	22%	46%	37% ACDE ↓	33%	26% ↓	36%	27% ↓	39%	29% A ↓
.online*	NA	24%	NA	16%	NA	34% ACDE	NA	23% A	NA	25% A	NA	24% A
.link	26%	20% ↓	24%	14% ↓	34%	25% AC ↓	14%	13%	30%	23% AC	27%	22% AC ↓
.website*	NA	17%	NA	13%	NA	30% ACDE	NA	15%	NA	21% ACE	NA	16%
.site*	NA	14%	NA	10%	NA	21% ACE	NA	9%	NA	19% ACE	NA	14% AC
.club	12%	10%	7%	5%	8%	9% C	8%	5%	11%	8%	15%	14% ABCD

*Added in 2016 **2016 Visitation based on gTLDs shown in 2015

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

NEW gTLDs VISITED (CONT'D)

VISITATION BY NEW DOMAIN EXTENSION

	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
.space*	NA	8%	NA	7%	NA	13% ACE	NA	7%	NA	11%	NA	8%
.guru	10%	8% ↓	4%	5%	14%	9% AC	4%	5%	14%	12% AC	11%	8% AC ↓
.pics*	NA	7%	NA	4%	NA	5%	NA	4%	NA	7%	NA	8% ABC
.photography	9%	7% ↓	3%	6%	8%	8% D	8%	7% D	8%	3% ↓	10%	8% D ↓
.top*	NA	7%	NA	2%	NA	3%	NA	4% A	NA	2%	NA	10% ABCD
.realtor	5%	3% ↓	7%	5% BC	6%	1% ↓	2%	2%	2%	4% B	6%	4% BC ↓
.xyz	5%	7% ↑	1%	2%	5%	3%	1%	5% A ↑	5%	8% AB	6%	8% ABC ↑

*Added in 2016

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Letters indicate significantly higher than region. Region vs. Total Higher Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

VISITATION OF NEW gTLDS – BY COUNTRY

As was the case with awareness, self-reported visitation by country varies widely and follows the same country-by-country patterns.

While not shown, visitation of the new geographically targeted TLDs (.wang, .nyc, etc) is universally low; below 5% in all cases.

VISITATION	TOTAL	NA	US	CA	MX	SA	CO	AR	BR	EUR	IT	TR	ES	PL	UK	FR	DE	AFR	NG	ZA	EG	ASIA	CN	VN	PH	JP	KR	RU	IN	ID
Aware of any below**	**50%**	**41%**	**34%**	**34%**	**52%**	**54%**	**60%**	**39%**	**57%**	**42%**	**50%**	**63%**	**43%**	**51%**	**35%**	**40%**	**29%**	**48%**	**43%**	**40%**	**64%**	**54%**	**61%**	**51%**	**41%**	**30%**	**54%**	**53%**	**51%**	**68%**
.news*	29%	19%	16%	19%	23%	25%	28%	20%	25%	21%	21%	26%	27%	25%	14%	20%	17%	33%	40%	29%	23%	33%	30%	44%	44%	14%	28%	32%	37%	50%
.email	28%	22%	14%	10%	37%	37%	44%	23%	39%	26%	41%	50%	28%	25%	12%	27%	12%	27%	23%	20%	38%	29%	33%	30%	18%	13%	23%	32%	31%	32%
.online*	24%	16%	7%	11%	29%	34%	52%	23%	30%	23%	14%	30%	24%	23%	9%	17%	30%	25%	31%	22%	15%	24%	21%	33%	22%	10%	19%	25%	32%	30%
.link	20%	14%	3%	7%	30%	25%	33%	17%	24%	13%	11%	33%	13%	18%	2%	11%	6%	23%	21%	18%	32%	22%	24%	20%	24%	14%	28%	15%	17%	32%
.website*	17%	13%	7%	5%	24%	30%	40%	12%	32%	15%	14%	27%	19%	12%	7%	19%	8%	21%	20%	13%	27%	16%	13%	23%	10%	9%	11%	6%	23%	29%
.site*	14%	10%	5%	8%	16%	21%	22%	18%	21%	9%	5%	21%	9%	7%	7%	15%	3%	19%	20%	13%	20%	14%	12%	27%	14%	6%	15%	6%	15%	28%
.club	10%	5%	5%	3%	7%	9%	10%	6%	9%	5%	4%	14%	3%	2%	0%	7%	3%	8%	10%	7%	5%	14%	19%	14%	7%	9%	13%	16%	9%	12%
.space*	8%	7%	3%	3%	14%	13%	25%	8%	10%	7%	14%	14%	4%	7%	5%	8%	3%	11%	13%	9%	8%	8%	9%	6%	9%	3%	10%	7%	8%	10%
.guru	8%	5%	3%	4%	8%	9%	21%	9%	4%	5%	4%	9%	3%	4%	5%	3%	5%	12%	19%	4%	3%	8%	6%	4%	13%	2%	5%	7%	17%	7%
.photography	7%	6%	5%	3%	8%	8%	7%	3%	10%	7%	5%	13%	7%	14%	9%	3%	4%	3%	2%	7%	2%	8%	6%	9%	5%	3%	9%	8%	12%	8%
.top*	7%	2%	1%	1%	3%	3%	2%	0%	4%	4%	4%	7%	3%	7%	2%	5%	2%	2%	2%	2%	0%	10%	17%	7%	5%	8%	5%	8%	5%	6%
.xyz	7%	2%	1%	7%	1%	3%	2%	0%	4%	5%	2%	10%	6%	7%	7%	5%	3%	8%	7%	9%	9%	8%	9%	13%	6%	7%	6%	4%	6%	20%
.pics*	7%	4%	3%	1%	6%	5%	6%	3%	5%	4%	9%	7%	4%	4%	0%	4%	2%	7%	7%	7%	5%	8%	8%	3%	2%	6%	5%	3%	15%	7%
.realtor	3%	5%	7%	12%	1%	1%	0%	0%	1%	2%	4%	1%	0%	0%	5%	3%	1%	4%	4%	7%	3%	4%	4%	3%	6%	1%	1%	1%	6%	3%

*Added 2016 **Significance 2015 vs. 2016 unable to be shown due to additional TLDs added in 2016
Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Green/red font indicate 2016 significantly higher/lower than 2016 at a 95% confidence level.

VISITATION OF NEW gTLDs – GEOGRAPHIC EXTENSIONS

Very similar to awareness, visitation of the geographically targeted gTLDs is quite low – particularly in North America – with all but one (.Istanbul) with less than 20% awareness.

Further, comparing where possible to last year, visitation of 3 of China's 4 IDNs declined.

NORTH AMERICA

Geographically Targeted Extensions

.nyc (9%) (8%)
.toronto (5%)
.guadalajara (3%)

SOUTH AMERICA

Geographically Targeted Extensions

.bogota (17%)
.rio (5%)
.cordoba (2%)

EUROPE

Geographically Targeted Extensions

.istanbul (23%)
.london (16%) (16%)
.madrid (15%)
.warszawa (11%)
.paris (9%)
.berlin (9%) (6%)
.roma (5%)
.ovh (1%) (0%)

AFRICA

Geographically Targeted Extensions

.cairo (17%)
.capetown (7%)
.abuja (7%)

ASIA

Geographically Targeted Extensions

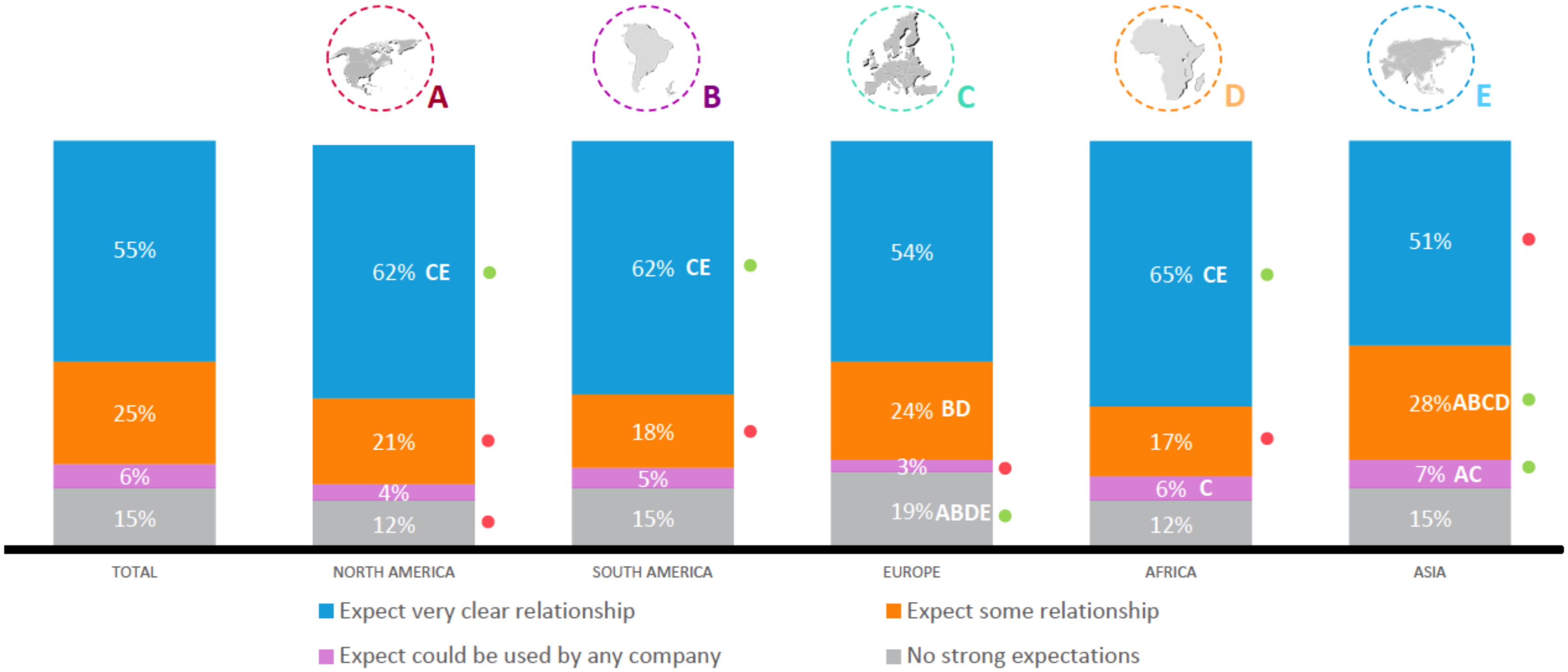
.seoul (18%)
.toyko (16%)
.hanoi (10%)
.jakarta (10%)
.mockba (9%)
.delhi (8%)
.wang (8%) (12%) ↓
.foshan (6%)
.manilla (4%)
.xn_55qx5d (company (3%) (10%) ↓
.xn-ses554g (network address) (3%) (12%) ↓

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level. (Gray percent=2015)

EXPECTED RELATIONSHIP OF REGISTERED SITES TO NEW gTLDs

More than half of consumers expect a very clear relationship between the content of the website and its extension. 8 in 10 expect very clear or some relationship between the two. This expectation is slightly weaker in Europe and Asia.

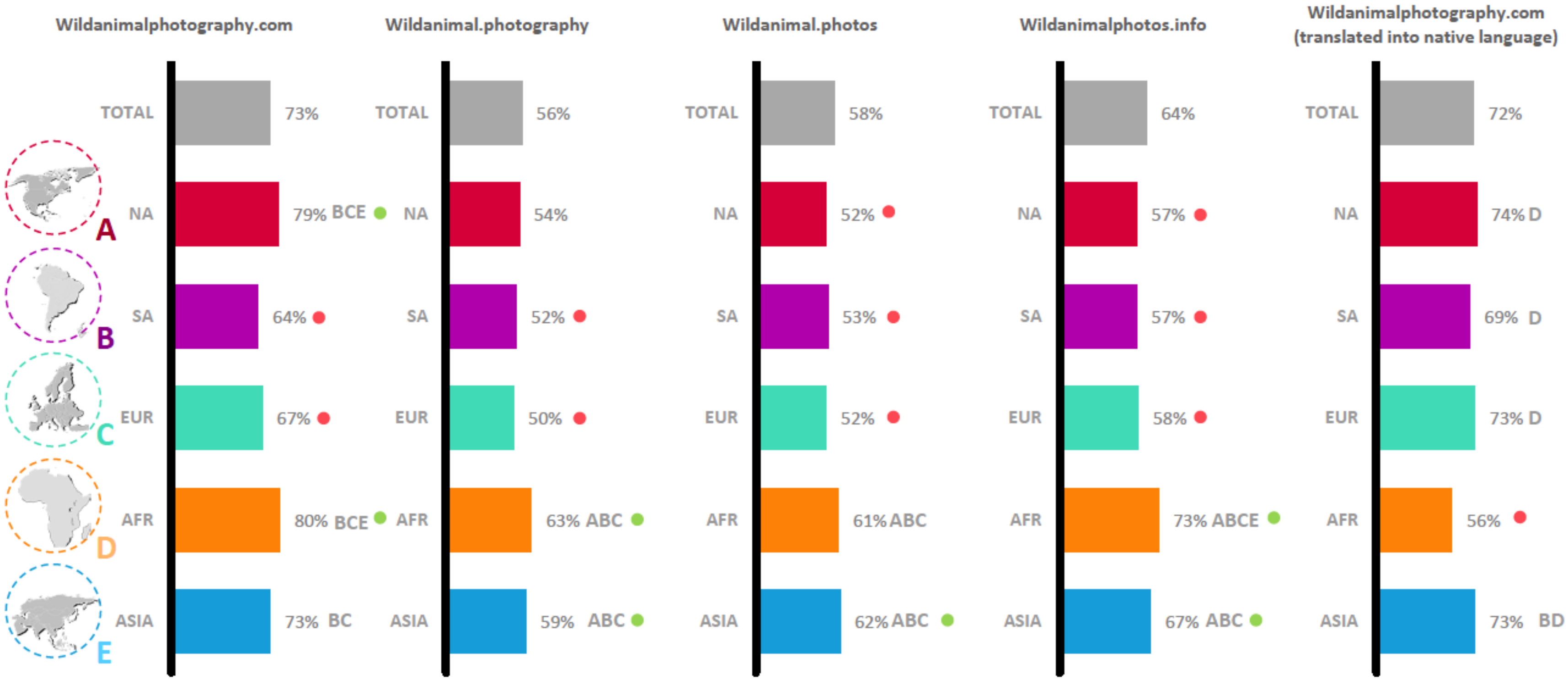


Letters indicate significantly higher than region. Region vs. Total Higher Lower

LIKELIHOOD TO VISIT gTLDs– INFO ON WILDLIFE PHOTOGRAPHY

Consumers are more likely to visit the .com versions (English or native language) of a wildlife photography website – notably so in North America and Africa over the other regions.

Top 2 Box (Very/Somewhat likely to visit sites)

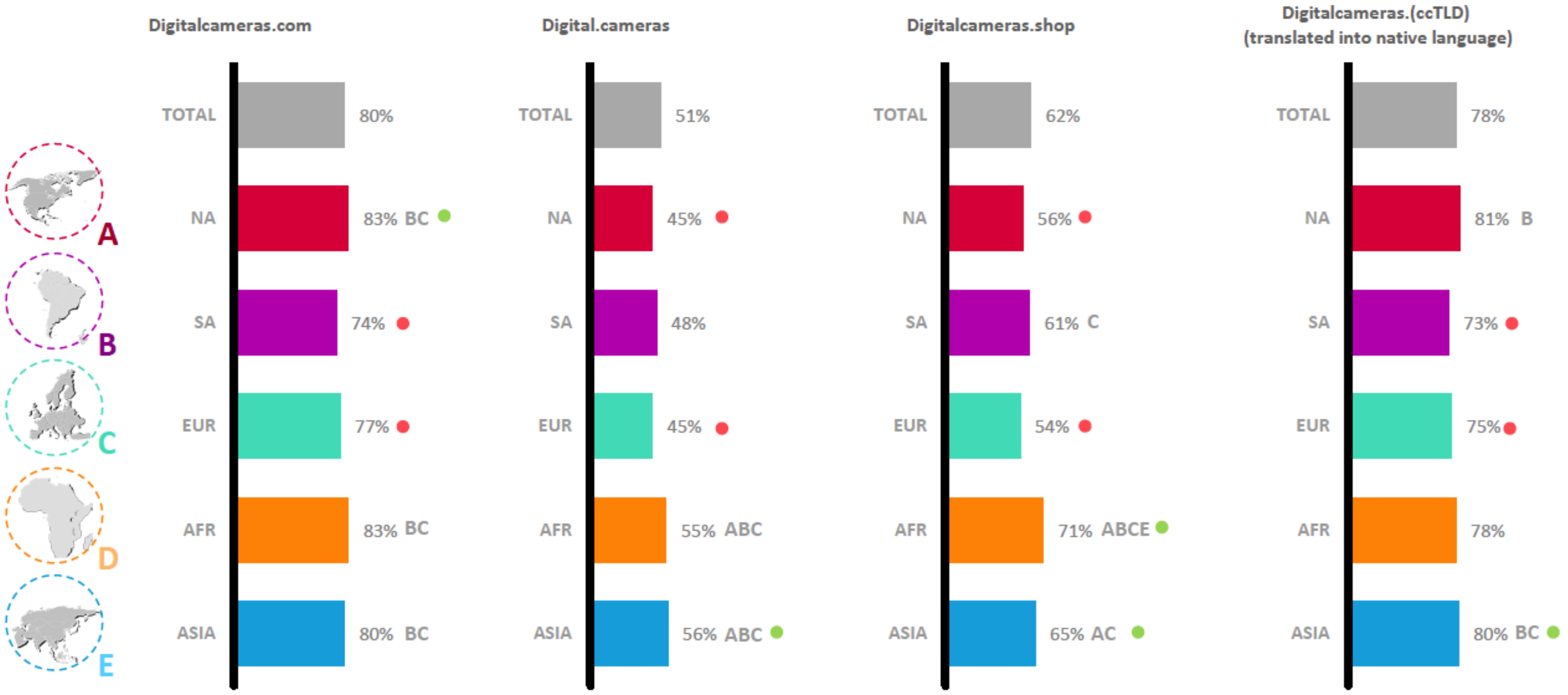


Letters indicate significantly higher than region. Region vs. Total Higher Lower

LIKELIHOOD TO VISIT WEBSITES – BUYING NEW CAMERA

This preference for .com holds true for versions of the digital photography ecommerce websites. Africa and Asia appear more open to new gTLDs. However, translating the website name and using the ccTLD instead of .com provides results very close to .com

Top 2 Box (Very/Somewhat likely to visit sites)

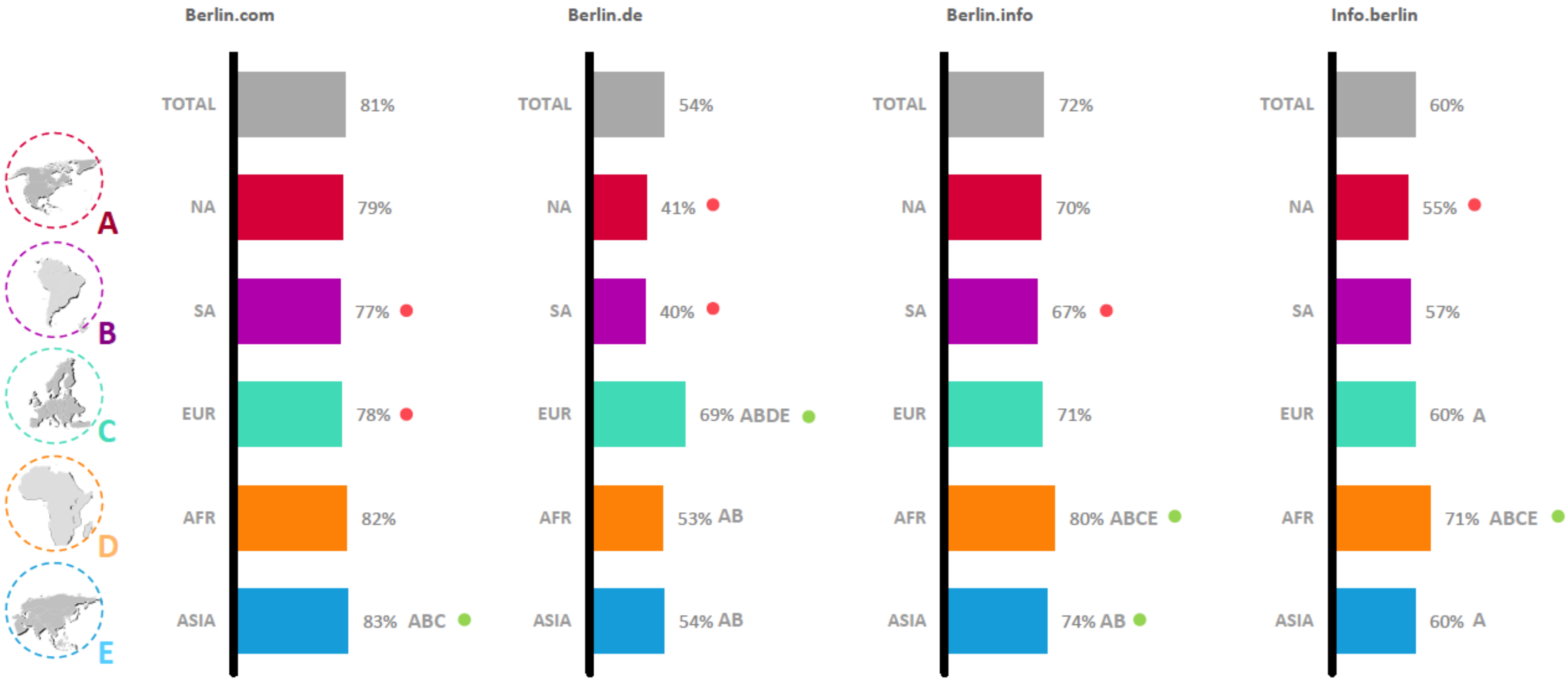


Letters indicate significantly higher than region. Region vs. Total Higher Lower

LIKELIHOOD TO VISIT WEBSITES – TRAVEL TO BERLIN

Consumers who would want to look for information on Berlin, Germany, would also be more inclined to visit the .com version of the website – followed by the .info version of the site. The ccTLD is more like to be visited from within Europe.

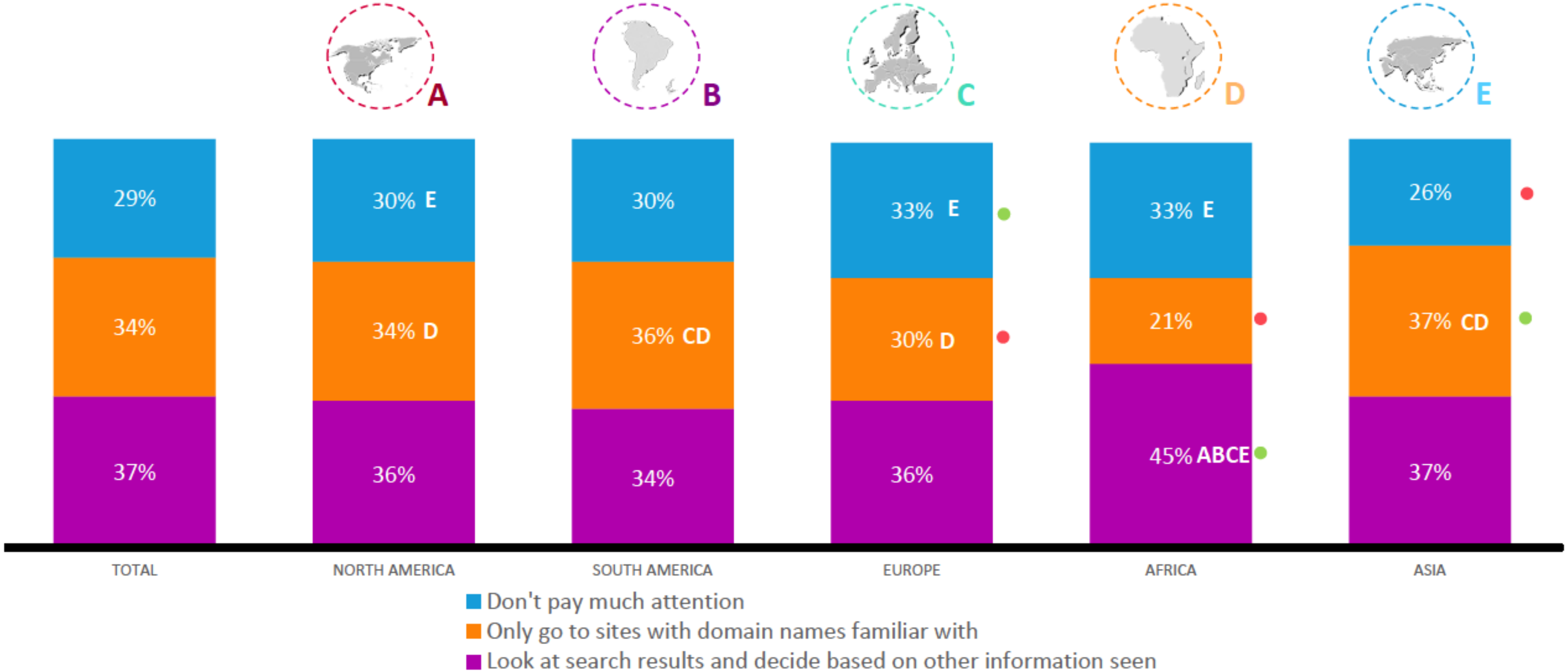
Top 2 Box (Very/Somewhat likely to visit sites)



Letters indicate significantly higher than region. Region vs. Total Higher Lower

ATTENTION PAID TO DOMAIN EXTENSION

Results are mixed as to how much attention consumers would pay to a domain extension. Overall, around two-thirds do not restrict themselves to familiar domains. Search results can have a sizeable impact.



Letters indicate significantly higher than region. Region vs. Total Higher Lower

NEW gTLD TRUSTWORTHINESS

Trust perceptions of the new gTLDs are divided, with about half of consumers reporting high levels of trust in most of the new gTLDs.   In all regions, .news is seen as the most trustworthy.

The majority of the new geographically targeted gTLDs, particularly those in Africa, are seen as trustworthy by about half of consumers as well.

50% or more rated extension Very/Somewhat Trustworthy

NORTH AMERICA

General Extensions

.news
.photography
.email
.realtor

Geographically Targeted Extensions

.toronto

SOUTH AMERICA

General Extensions

.news
.email
.website
.online
.link ↓
.site

Geographically Targeted Extensions

.bogota

EUROPE

General Extensions

.news
.online
.email
.website
.photography ↑

Geographically Targeted Extensions

.berlin
.madrid
.istanbul
.london
.warszawa

AFRICA

General Extensions

.news
.online
.email
.link
.website
.photography ↑
.pics
.site
.space

Geographically Targeted Extensions

.capetown
.cairo
.abuja

ASIA

General Extensions

.news
.email
.online
.link
.website
.photography ↑
.site
.club ↓
.pics
.space

Geographically Targeted Extensions

.jakarta
.seoul
.hanoi
.delhi
.foshan
.mockba

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

WHAT MAKES UNFAMILIAR EXTENSIONS FEEL TRUSTWORTHY

Relevant or appealing extensions help make consumers feel more trust with an unfamiliar domain name extension.

NET categories are the roll-up of related sub-categories. Key subcategories are show for each NET

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Extension appeal (Net)	17%	19% CD	18% C	13% 🔴	13% 🔴	18% CD 🟢
Information (NET)	11%	12% C	16% ACE 🟢	8% 🔴	14% CE 🟢	11% C
Content/Information provided	8%	8%	11% C	7% 🔴	11% C 🟢	8%
Reputation (NET)	11%	10%	13%	11%	10%	11%
Extension (NET)	11%	12% C	13% CE	8% 🔴	16% CE 🟢	10% C
Usage (NET)	11%	15% BCE 🟢	7% 🔴	6% 🔴	12% BC	11% BC

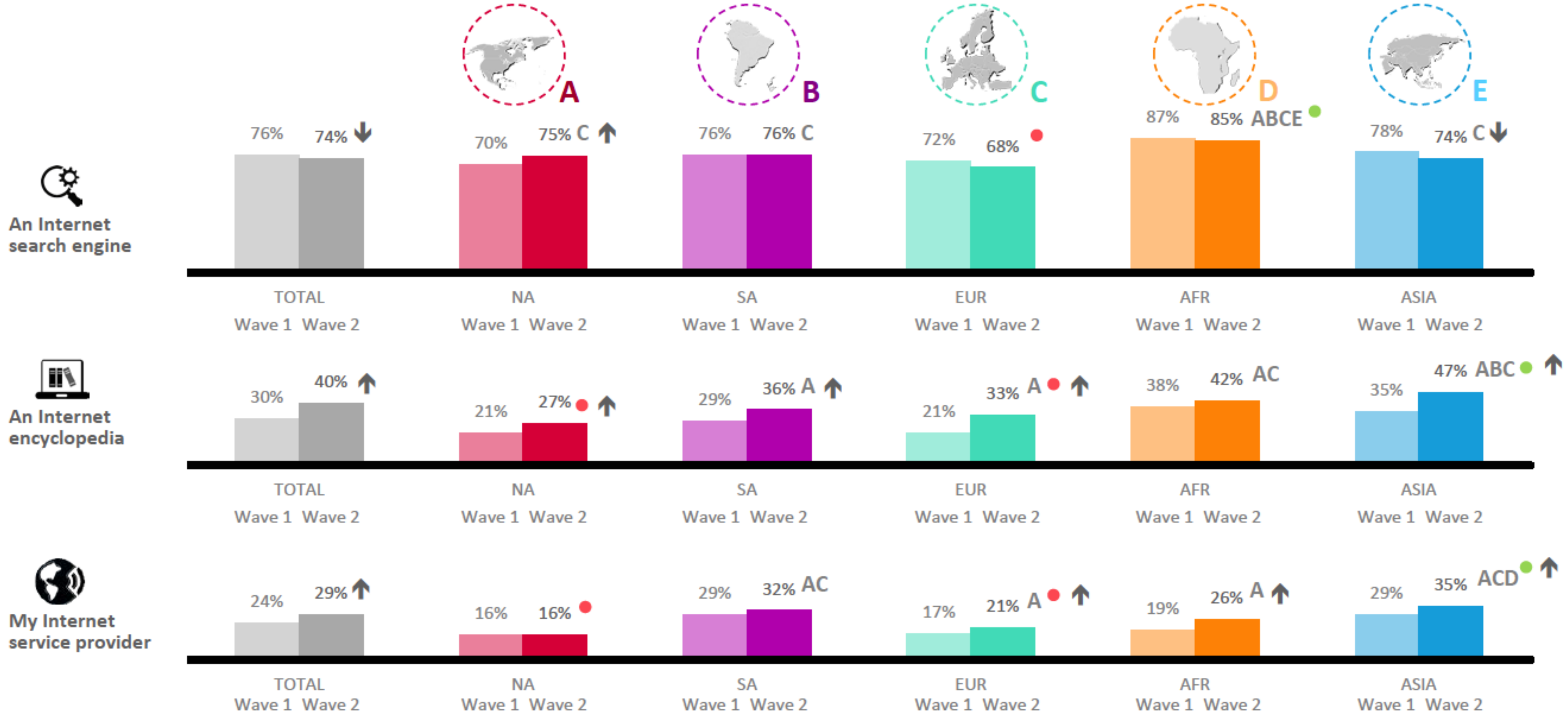
Mentions of 10% or greater shown.
Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

WHAT MAKES AN UNFAMILIAR EXTENSION FEEL TRUSTWORTHY

Extension Appeal	Information	Reputation	Extension	Usage
Matching of the extension and the subject of the website. (AP)	The information at the start of the page. (LAC)	A good reputation from the site. (LAC)	The domain extension name is a bit trustworthy; more easily identified when the format is convenient. (AP)	Site usage, the people. (AP)
Popularity of this extension. (AP)	The information contained in the search engine description. (NA)	If I look it up on the Internet and it didn't have a bad reputation. (AP)	The English letters and numbers before the extension. (AP)	Volume of usage. (AP)
Suitability of the extension to the website objective. (Eur)	The provided content; a good content usually takes away my discomfort about the domain. (AP)	Its reputation, the images on the website, the number of visitors. (Eur)	The extension being composed of a abbreviation of the domain. (Eur)	User visits, likes, site quality, interesting products or services. (LAC)

PREFERRED SOURCES FOR MORE INFORMATION ON NEW gTLDs

Internet search remains the dominant method for online populations to locate information about new gTLDs, although Internet encyclopedias and ISPs gain ground this year, particularly in Asia.

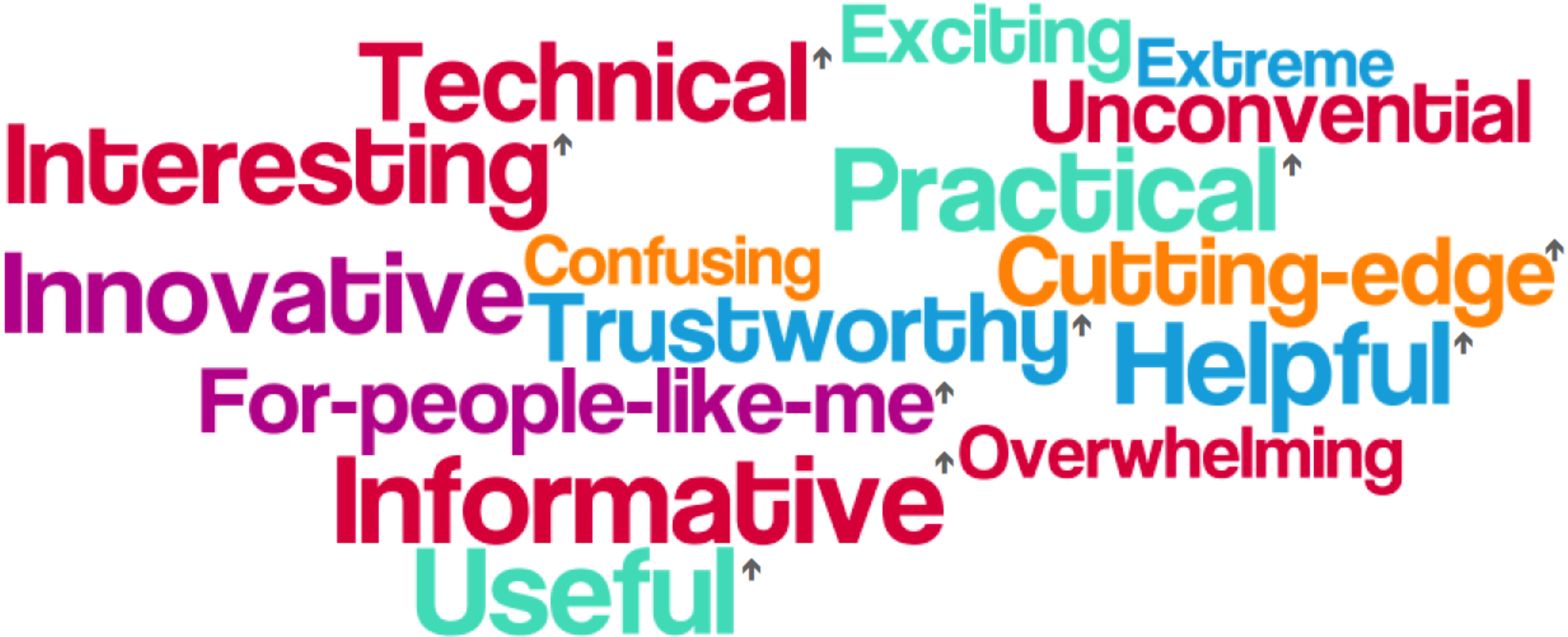


Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

IMAGE PERCEPTIONS OF NEW gTLDs

The majority of consumers see the new gTLDs as informative, useful, practical and helpful. Compared to 2015, use of these top descriptors has increased.

Negative descriptors – overwhelming, extreme and confusing – are much less likely than positive ones to be used as adjectives and 2016 results are stable to 2015.



Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

NEW gTLD RESTRICTIONS

Roughly half of consumers favor light purchase restrictions on the new gTLDs, but preference for strict purchase requirements is on the rise while there are fewer who feel there should be no restrictions. The geo-specific gTLDs (not shown) follow this pattern of roughly half the respondents showing preference for light restrictions.

Both LAC and North America are generally more prone to favor strict restrictions (with North America more likely to favor strict restrictions on sites like .realtor, .bank, .pharmacy and .builder).

Strict purchase restrictions should be required	TOTAL WAVE 1	TOTAL WAVE 2
.email	20%	29% ↑
.link	18%	22% ↑
.club	18%	23% ↑
.guru	18%	22% ↑
.photography	18%	22% ↑
.realtor	19%	27% ↑
.xyz	18%	21% ↑
.bank	NA	50%
.pharmacy	NA	42%
.builder	NA	28%

Some purchase restrictions should be required	TOTAL WAVE 1	TOTAL WAVE 2
.email	48%	46%
.link	49%	50%
.club	50%	53% ↑
.guru	48%	49%
.photography	50%	53% ↑
.realtor	49%	49%
.xyz	46%	44%
.bank	NA	36%
.pharmacy	NA	41%
.builder	NA	50%

No purchase restrictions should be required	TOTAL WAVE 1	TOTAL WAVE 2
.email	32%	24% ↓
.link	33%	28% ↓
.club	32%	25% ↓
.guru	34%	30% ↓
.photography	32%	24% ↓
.realtor	32%	24% ↓
.xyz	37%	35%
.bank	NA	14%
.pharmacy	NA	18%
.builder	NA	21%

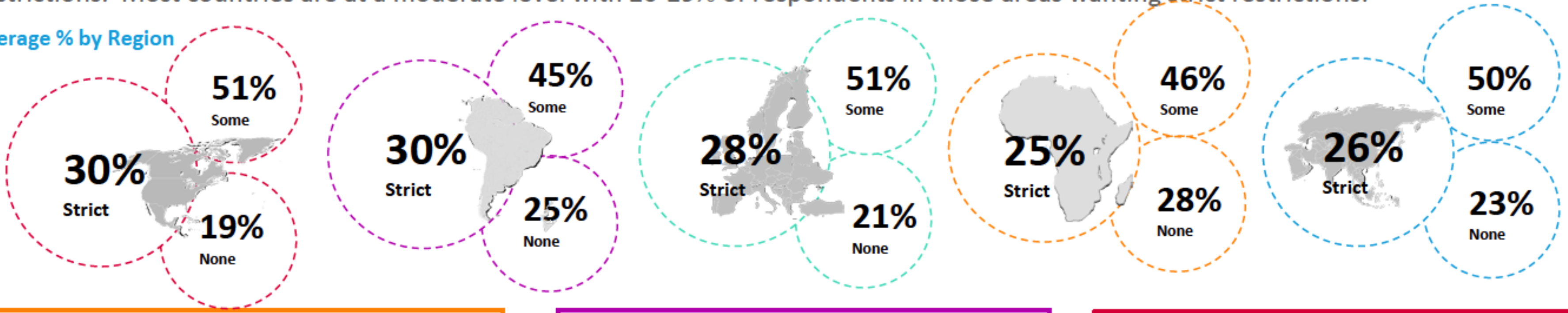
Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

NEW gTLD RESTRICTIONS

Roughly one quarter of consumers favor strict purchase restrictions on the geo specific new gTLDs and most favor at least some restrictions. Most countries are at a moderate level with 20-29% of respondents in those areas wanting strict restrictions.

Average % by Region



HIGH

- .toronto (Canada)
- .instanbul (Turkey)
- .paris (France)
- .capetown (South Africa)
- .manilla (Philippines)
- .seoul (Korea)
- .delhi (India)
- .bogota (Colombia)
- .rio (Brazil)

MODERATE

- .nyc (United States)
- .guadalajara (Mexico)
- .madrid (Spain)
- .warszawa (Poland)
- .berlin (Germany)
- .london (UK)
- .abuja (Nigeria)
- .cairo (Egypt)
- .Hanoi (Vietnam)
- .jakarta (Indonesia)
- .foshan (China)
- .tokyo (Japan)
- .mockba (Russia)
- .xn-55qx5d (Company)(China)
- .Cordoba (Argentina)

LOW

- .ovh (Germany)
- .roma (Italy)
- .wang (China)
- .xn-ses554g (Network Address) (China)

30% or more say Strict restrictions required

20%-29% say Strict restrictions required

Less than 20% say Strict restrictions required

Respondents were shown a list including a fixed set of TLDs and some targeted to the individual region.

TRUST AND EXPERIENCE WITH THE DOMAIN NAME SYSTEM

KEY TAKEAWAYS – DOMAIN NAME SYSTEM

This section explores findings related to perceptions of the domain name system compared to other technology-based industries.

1 Overall, trust levels have improved since 2015

The global total has improved against all of the 5 reference industries, wave over wave, by an average of just over 4 percentage points. Ratings from Africa and South America are the most stable, only showing improvement against ISPs.

2 Trust in the domain name system is highest relative to ISPs

The relative levels of trust compared to other industries is very similar to last wave. Nearly 50% trust the domain name system more than ISPs, while e-Commerce and web-based marketing companies are closer to the domain name industry's trust levels, with one in three respondents trusting the domain name system more.

3 Trust in restriction enforcement relatively strong

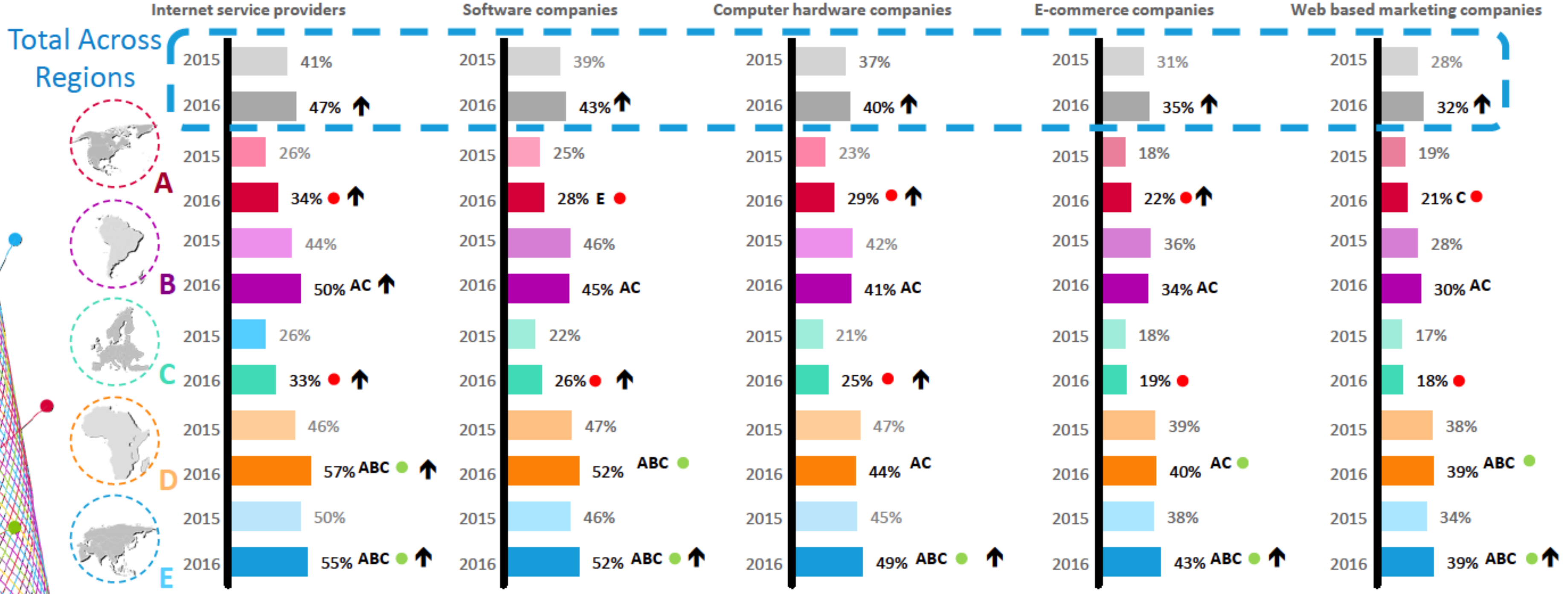
Globally, 70% feel either high to moderate levels of trust that restrictions will actually be enforced.

TRUST IN THE DOMAIN NAME INDUSTRY VS. OTHER INDUSTRIES

Overall, trust among consumers for the Domain Name industry is improved vs. 2015.

Africa and Asia, more so than the other regions, say they trust the domain name industry.

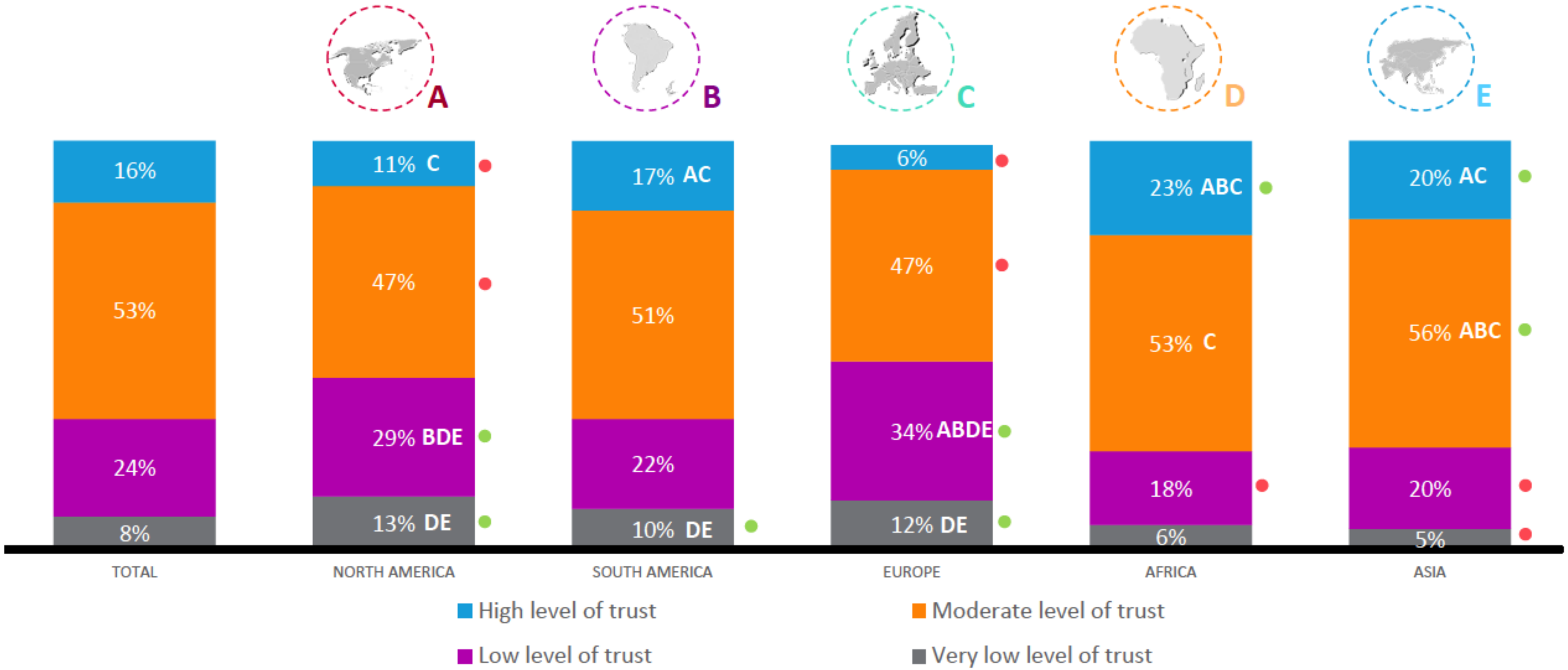
Top 2 Box (Trust **Domain Name Industry** much more/somewhat more)



Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

TRUST THAT RESTRICTIONS WILL BE ENFORCED

7 in 10 consumers feel high to moderate levels of trust that the restrictions will actually be enforced, although this is somewhat tempered in Europe and North America.

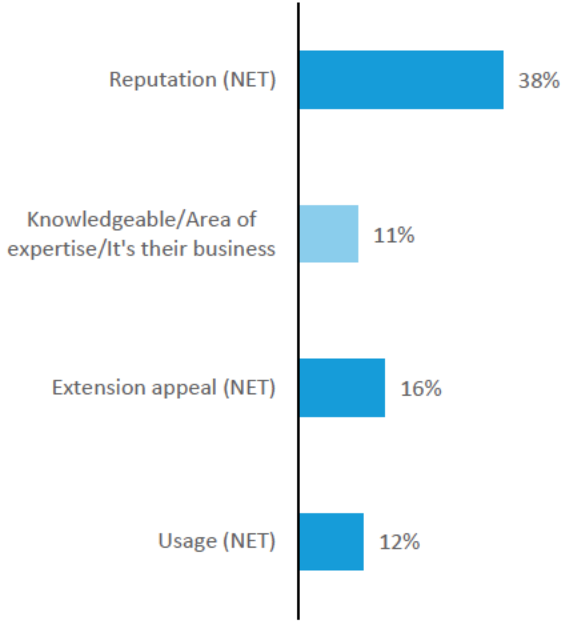


Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

WHY TRUST DOMAIN NAME INDUSTRY MORE THAN OTHERS

Reputation is the number one reason why consumers trust the domain name industry more than other industries.

NET categories are the roll-up of related sub-categories. Key subcategories are show for each NET



	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Reputation (NET)	40% E	46% E 🟢	42% E 🟢	41%	35% 🔴
Knowledgeable/Area of expertise/It's their business	13% E	14% E 🟢	15% E 🟢	13% E	8% 🔴
Extension appeal (NET)	11% 🔴	11% 🔴	13% 🔴	10% 🔴	20% ABCD 🟢
Usage (NET)	10%	12% C	8% 🔴	12% C	13% C 🟢

Mentions of 10% or greater shown.
Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

WHY TRUST DOMAIN NAME INDUSTRY MORE THAN OTHERS

Reputation	Extension Appeal	Usage
Because normally they are big companies, so their reputation and ethics are injured if they do something bad. They also have a bigger team to resolve problems. (Eur)	This extension is highly famous. (AP)	Because they come from trusted domain usage. (AP)
Because they care about their reputation. (Africa)	Because there is a correlation between the extension and the information they provide. (AP)	Easy to use. (AP)
It is their business so they protect their name and reputation. (AP)	Because they have to be responsible for the extensions they supply. (LAC)	For their seriousness and the quantity of users that use the domain names sector. (LAC)

WHY TRUST DOMAIN NAME INDUSTRY LESS THAN OTHERS

Reputation (including factors pertaining to transparency or honesty) along with usage and unfamiliarity are the top reasons cited for why consumers trust the domain industry less than other technology based industries.

NET categories are the roll-up of related sub-categories. Key subcategories are show for each NET

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Reputation (NET)	39%	40%	42%	38%	48% CE 🟢	37%
Untrustworthy/Less transparent/honest	8%	8%	8%	10%	6%	7%
Not legitimate/genuine	3%	3%	2%	2%	10% ABCE 🟢	3%
Usage (NET)	16%	18% C	16%	13%	16%	17%
Not familiar/Have not used	9%	12% BC 🟢	7%	7%	8%	10%
Domain Appeal (NET)	13%	13%	13%	8% 🔴	9%	16% CD 🟢
Safety/Security (NET)	11%	17% CE 🟢	16% CE 🟢	9%	13% E	7% 🔴
Not regulated/No background checks	5%	11% BCE 🟢	5%	4%	6%	3% 🔴

Mentions of 10% or greater shown.
Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

WHY TRUST DOMAIN NAME INDUSTRY LESS THAN OTHERS

Reputation	Usage	Domain Appeal	Safety/Security
Because I have never used it, and the reputation is not good. (AP)	It's that I find it unfamiliar and they don't cause confidence. (LAC)	Domains were created only to attract. (AP)	Anyone can misuse an Internet extension or name while the Internet provider, to a certain extent, is concerned for the user's safety, providing security suites. (LAC)
Because the mentioned companies at times have themselves a questionable reputation. (Eur)	The use is not very standardized. (AP)	Domain names need to have credibility on the market. (LAC)	The extent to which attention is paid to security, in relation to personal information. (AP)
I think the reputation of the domain name industry is worse now. (AP)	Use of data is not specified. (Eur)	Being able to get an advisor in house as needed is more appealing than doing everything virtually. (Eur)	It tends to play tricks and there is less security in that environment. (Eur)

REACHING THE INTENDED WEBSITE

KEY TAKEAWAYS – REACHING WEBSITES

This section focuses on general Internet behaviors, such as device usage, preference for accessing websites, and experience with URL shorteners and QR codes.

1 Navigation has not changed appreciably

For general navigation, we see an expected, gradual trend toward mobile devices, especially outside of NA and Europe. Beyond this, the dominant method for locating a web resource remains the search engine—little has changed here. Use of QR codes is up slightly, but frequency of use is still low.

2 But there are different pathways depending on the situation

It is when we look at specific activities on the web vs general information seeking that we see differences in behaviors. Apps, for example, are seen as the safest when people are looking to access personal information and often easier as well. Bookmarked sites are seen to be the faster way to get there for any purpose—information, shopping, etc.

3 Navigation shows some regional differences

The perceived value of apps is consistently seen to be higher in Africa than other regions. North Americans are most likely to feel that safety is found by typing the name into the browser. Europe is more likely to default to search engines or be unsure which method is safest, fastest or easiest.

URL shortening is an Internet technique in which a URL may be made substantially shorter in length and still direct to the required page.

A **QR code** consists of black dots arranged in a square grid on a white background, which can be read by an imaging device (such as a camera). Reading the QR code with your Smartphone takes you to a website or ad for more information.

DEVICES USED FOR INTERNET ACCESS

Roughly 7 in 10 consumers use laptops, desktops and smartphones to access the Internet, with smartphone (as well as tablet) usage increasing over the last year.
Smartphone use is less prevalent in North America and Europe compared to their regional counterparts.

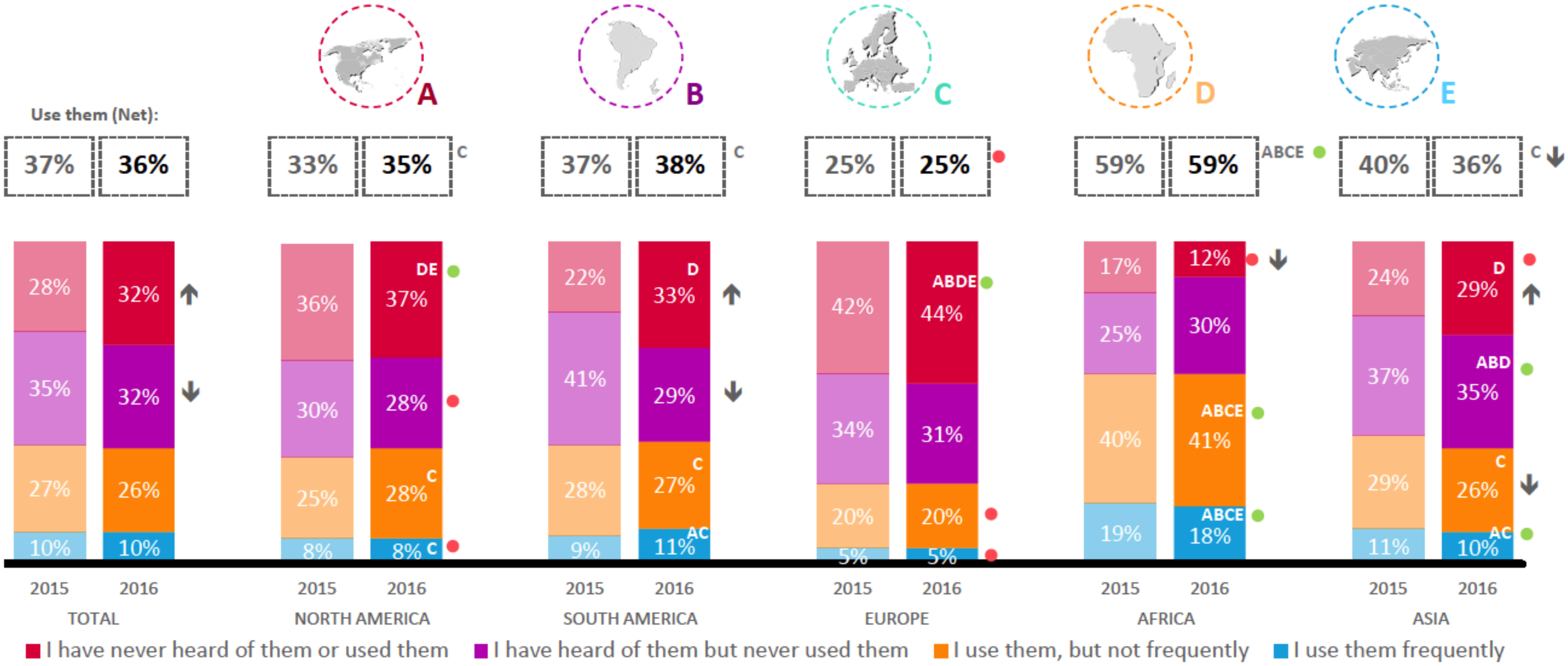
DEVICES USED

	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Laptop computer	74%	75%	72%	74%	72%	76%	74%	72%	80%	84% ABCE	73%	75%
Desktop computer	72%	70% ↓	64%	65%	79%	74% ACD	65%	63%	70%	61% ↓	75%	74% ACD
Smartphone	69%	73% ↑	58%	67% C ↑	72%	78% AC ↑	62%	61%	77%	82% ACE	73%	77% AC ↑
Tablet	44%	46% ↑	47%	50% BC	43%	42%	40%	43%	42%	47%	44%	46%
Other	1%	1%	1%	2% BE	1%	<1%	1%	1%	1%	1%	1%	1%

Letters indicate significantly higher than region. Region vs. Total Higher Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

URL SHORTENER USAGE

Usage of URL shorteners is consistent with last year and low overall, at least in part due to lack of awareness. Africa reports above average usage, with lower penetration in Europe, where respondents are more inclined to say they have never heard of them.



URL shortening is an Internet technique in which a URL may be made substantially shorter in length and still direct to the required page.

Letters indicate significantly higher than region. Region vs. Total Higher Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

REASONS FOR USING/NOT USING URL SHORTENER

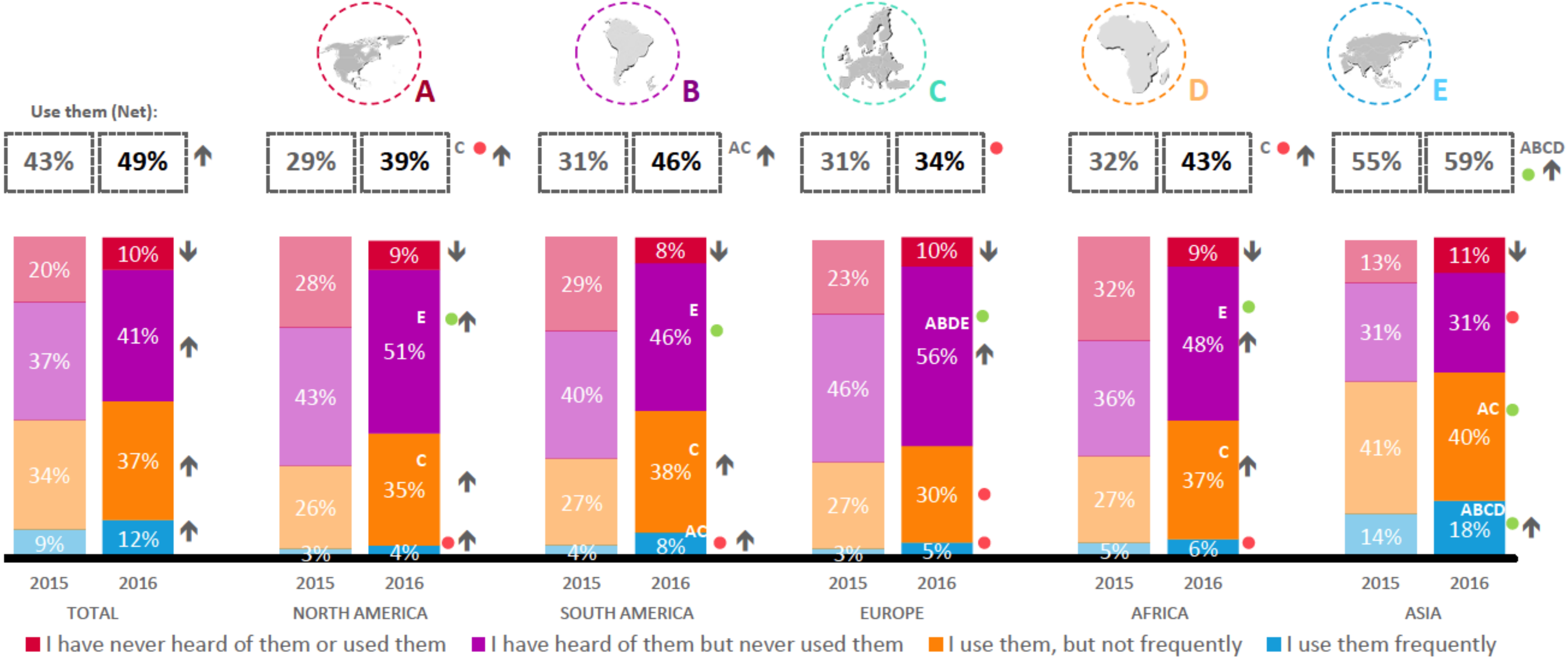
Convenience and time savings are key benefits to using URL shorteners, while lack of need is the main reason cited for non-use, followed by a lack of awareness and confusion.

	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Reasons for Using												
They are convenient	64%	64%	61%	54%	61%	51%	58%	63% AB	60%	57%	67%	70% ABCD ↑
They save me time	57%	49%	56%	40% ↓	44%	48%	54%	44% ↓	58%	46% ↓	59%	53% AC ↓
It's the latest thing	21%	25% ↑	7%	14% ↑	19%	22% A	8%	16% ↑	18%	21% A	28%	31% ABCD
Other	5%	8% ↑	11%	19% BCDE ↑	5%	7%	6%	8%	5%	11% E ↑	3%	5% ↑
Reasons for Not Using												
Never needed to	43%	39% ↓	35%	34%	49%	35% ↓	46%	41% A ↓	46%	48% ABE	43%	40% A ↓
Never heard of them	35%	30% ↓	48%	39% BDE ↓	32%	29% D	41%	35% DE ↓	34%	18% ↓	29%	26% D ↓
Confused about website I'm going to	21%	30% ↑	14%	24% ↑	16%	26% ↑	14%	24% ↑	14%	31% ↑	29%	34% ABC ↑
Don't trust them	8%	11% ↑	6%	13% C ↑	8%	9%	6%	9% ↑	11% C	10%	9%	12% C ↑
Don't like them	7%	8% ↑	5%	7%	7%	8%	5%	8% ↑	4%	6%	8%	8%

Letters indicate significantly higher than region. Region vs. Total Higher Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

EXPERIENCE WITH QR CODES

While QR code usage is low, it appears to be on the rise, with all regions increasing this year versus last except Europe. Consumers in Asia, particularly China, Vietnam, Japan and South Korea, are far more prone to the practice than the remaining regions.



A **QR code** consists of black dots arranged in a square grid on a white background, which can be read by an imaging device (such as a camera). Reading the QR code with your Smartphone takes you to a website or ad for more information.

Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

REASONS FOR USING/NOT USING QR CODES

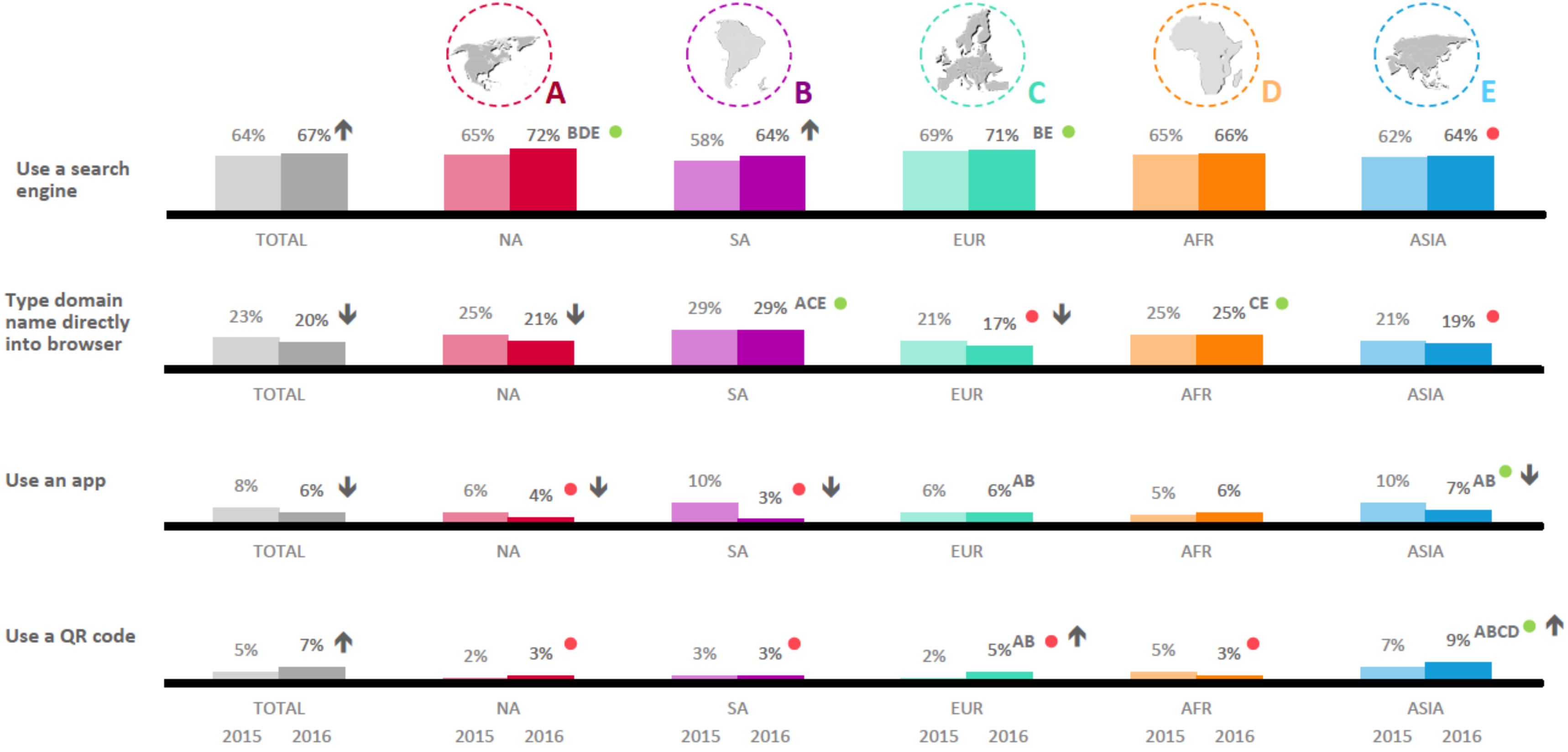
Similar to last year using QR codes is seen as a convenient time saver, but about a third of consumers are drawn to the novelty. Those that have not used QR codes see no need to do so.

	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Reasons for Using												
They are convenient	67%	68%	56%	52%	60%	46% ↓	60%	66% ABD	62%	51%	71%	73% ABCD
They save me time	51%	53%	43%	46%	49%	52%	50%	48%	55%	63% ABC	52%	55% AC
It's the latest thing	35%	33%	27%	19%	27%	37% AC ↑	21%	20%	34%	36% AC	39%	37% AC
Other	4%	5% ↑	10%	12% CDE	3%	8% E ↑	7%	5%	4%	6%	2%	3% ↑
Reasons for Not Using												
Never needed to	57%	66% ↑	54%	65% ↑	53%	72% E ↑	63%	68% E ↑	51%	69% ↑	58%	62% ↑
Never heard of them	26%	12% ↓	31%	10% ↓	35%	11% ↓	21%	9% ↓	36%	13% C ↓	23%	14% AC ↓
Don't like them	11%	13% ↑	8%	11%	9%	8%	13%	15% ABD	5%	9%	14%	15% ABD
Don't trust them	10%	12% ↑	6%	11% BD ↑	7%	6%	9%	11% BD	10%	6%	14%	15% ABCD
Other	5%	7% ↑	10%	10% CE	3%	8% ↑	6%	6%	5%	8%	3%	6% ↑

Letters indicate significantly higher than region. Region vs. Total Higher Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

PREFERRED WAY OF FINDING WEBSITES

Overall, the preferred way to find a website was and remains using a search engine. Few consumers prefer to use an app or QR code. Typing directly into the browser shows small but significant declines in three of five regions.



Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

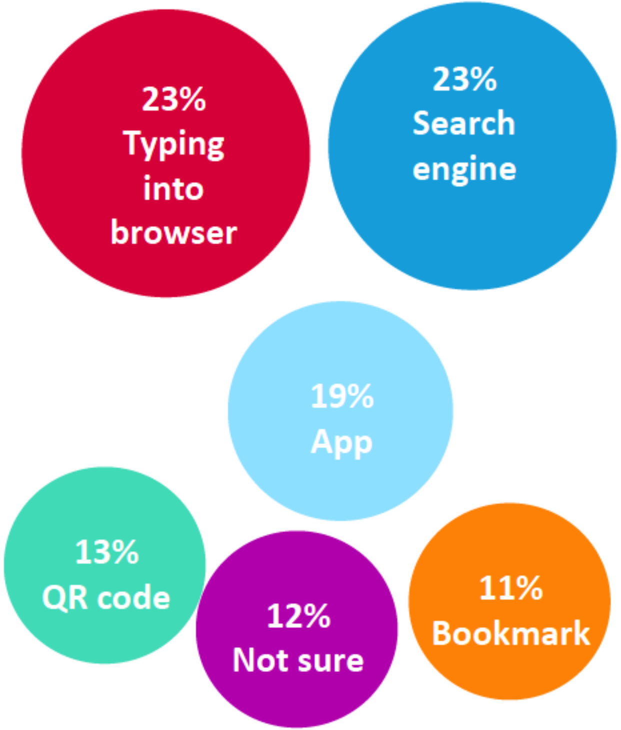
SAFEST WEBSITE ACCESS

Consumers feel the **safest** way to navigate to a website is either typing into a browser or using a search engine.
At the regional level, North America and South America are more likely to type into browser while Africa and Asia are more likely to use an app or QR code.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Typing domain name into a browser	27% DE	22%	24%	21%	22%
Finding via an Internet search engine	23%	19%	26% B	22%	23% B
Using an app	18% C	21% C	13%	24% AC	20% C
Accessing via a QR code	8%	16% AC	9%	15% AC	14% AC
Accessing via a bookmark	9%	10%	11%	10%	12%
Not sure	15% DE	12% DE	17% BDE	8%	9%

Letters indicate significantly higher than region. Region vs. Total Higher Lower

SAFEST ACCESS - TOTAL

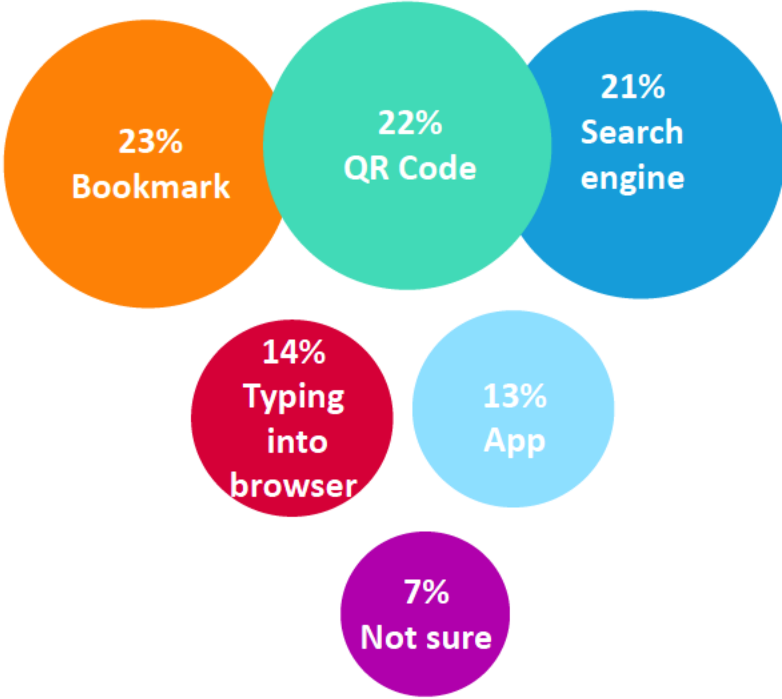


FASTEST WEBSITE ACCESS

But the **fastest** way to navigate to a website is via a bookmark, QR code, or search engine.
At the regional level, Asia is more likely to feel QR codes are the fastest way to navigate.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Accessing via a bookmark	24% CD	24% CD	20%	18%	24% CD
Accessing via a QR code	17%	15%	18%	19%	26% ABCD
Finding via an Internet search engine	20%	25% AE	22%	26% AE	19%
Typing domain name into a browser	15%	18% CE	12%	14%	14%
Using an app	14%	12%	15% E	18% BE	12%
Not sure	10% BDE	6%	13% BDE	4%	5%

FASTEST ACCESS - TOTAL



Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

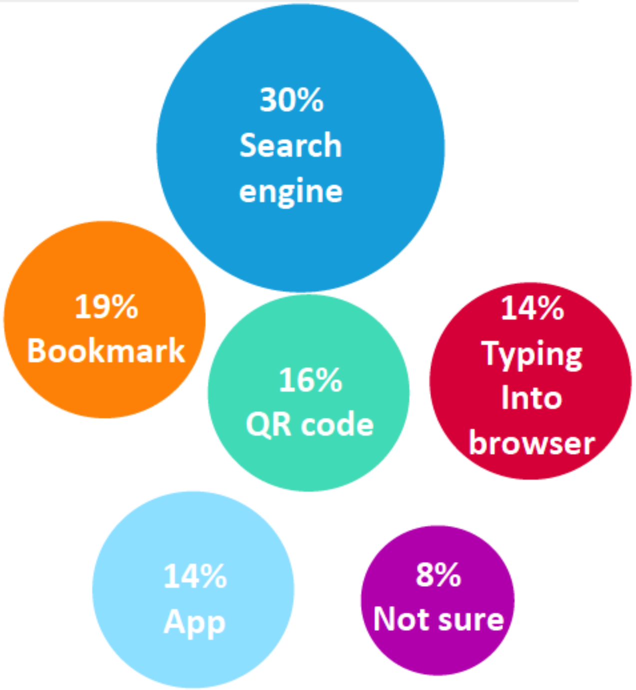
EASIEST WEBSITE ACCESS

And the **easiest** way to access a website is, by far, via search engine.
At the regional level, Asia more likely to feel QR codes are also the easiest way to navigate.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Finding via an Internet search engine	28%	31%	32%	30%	29%
Accessing via a bookmark	19% C	17%	15%	18%	21% BC
Accessing via a QR code	13%	12%	13%	12%	18% ABCD
Typing domain name into a browser	10%	18% ACE	12%	18% AC	14% A
Using an app	16% E	15% E	14%	18% E	12%
Not sure	12% BDE	7%	14% BDE	4%	6%

Letters indicate significantly higher than region. Region vs. Total Higher Lower

EASIEST ACCESS - TOTAL



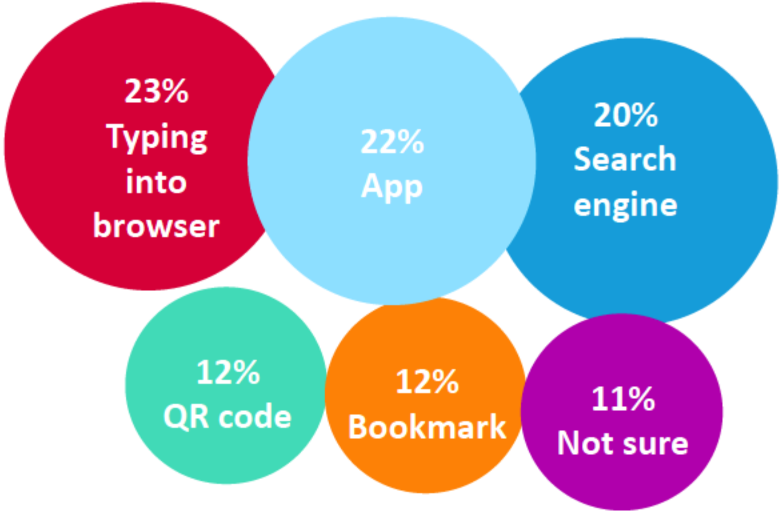
SAFEST WEBSITE ACCESS WHEN BUYING OVER THE INTERNET

When considering buying things over the Internet, consumers feel the **safest** ways to access are via typing into browser, using an app, or using a search engine. Compared to general way to access a website, using an app rises into top tier of safest ways when the online activity is purchasing something.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Typing domain name into a browser	29% BCDE 🟢	21%	25% E	21%	21% 🔴
Using an app	19% 🔴	26% AC 🟢	17% 🔴	29% ACE 🟢	23% AC 🟢
Finding via an Internet search engine	18%	18%	22% AD 🟢	16%	20%
Accessing via a QR code	7% 🔴	14% AC	7% 🔴	15% AC 🟢	14% AC 🟢
Accessing via a bookmark	11%	11%	12%	10%	13% 🟢
Not sure	16% BDE 🟢	10%	17% BDE 🟢	9%	9% 🔴

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

SAFEST ACCESS - TOTAL



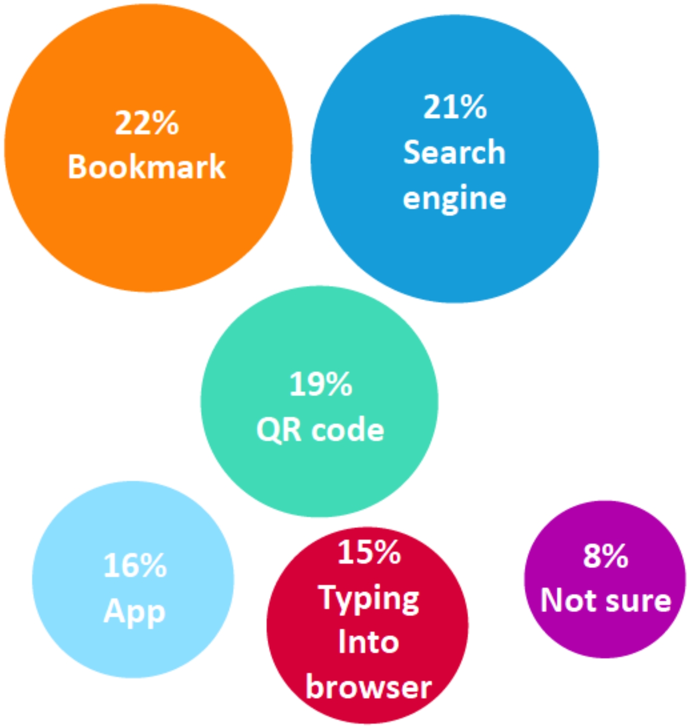
FASTEST WEBSITE ACCESS WHEN BUYING OVER THE INTERNET

The **fastest** way to access a website when **buying over the Internet** is via a bookmark or search engine, followed by QR codes.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Accessing via a bookmark	23% D	23% D	21%	16%	22% D
Finding via an Internet search engine	19%	23%	21%	26% ACE	21%
Accessing via a QR code	12%	12%	16% AB	15%	23% ABCD
Using an app	16%	15%	16%	20% E	15%
Typing domain name into a browser	17%	19% CE	14%	17%	14%
Not sure	12% BDE	7% E	13% BDE	6%	5%

Letters indicate significantly higher than region. Region vs. Total Higher Lower

FASTEST ACCESS - TOTAL



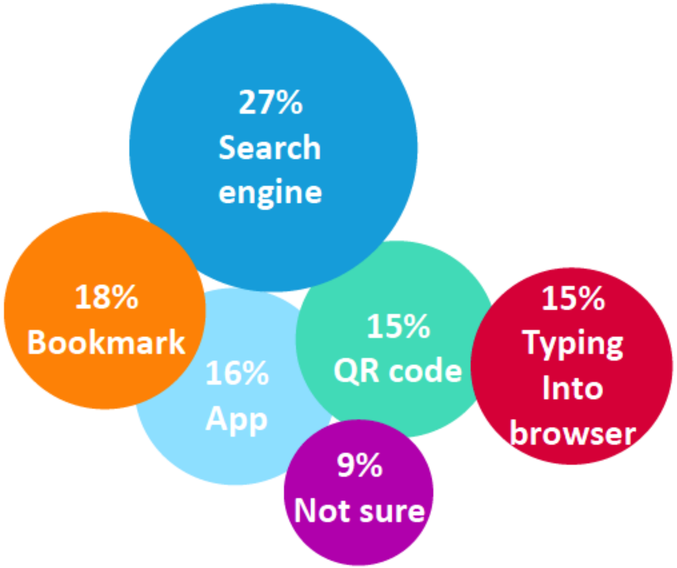
EASIEST WEBSITE ACCESS WHEN BUYING OVER THE INTERNET

As was the case with general access to a website, the **easiest** way to access a website **when buying** over the Internet is, again, via a search engine.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Finding via an Internet search engine	24% 🔴	31% A	29% A	28%	27%
Accessing via a bookmark	20% C	18% C	13% 🔴	16%	19% C 🟢
Using an app	17%	13%	14%	24% ABCE 🟢	15%
Accessing via a QR code	11% 🔴	10% 🔴	12% 🔴	11% 🔴	18% ABCD 🟢
Typing domain name into a browser	13%	18% AE 🟢	15%	14%	15%
Not sure	15% BDE 🟢	20% E	16% BDE 🟢	6% 🔴	6% 🔴

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

EASIEST ACCESS - TOTAL



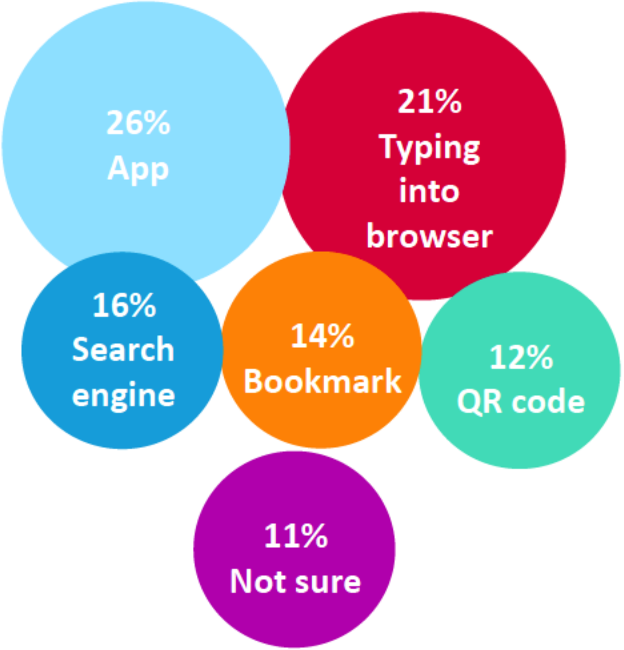
SAFEST WEBSITE ACCESS WHEN ACCESSING PERSONAL INFO

When accessing personal info, consumers feel the **safest** way is via an app, followed by typing into browser. Compared to ways to access a website when buying (or even accessing in general), using an app is more likely to be seen as the safest way when accessing personal info.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Using an app	26% C	29% C	21% 🔴	35% ACE 🟢	25% C
Typing domain name into a browser	24% E 🟢	24% E	22% E	23%	19% 🔴
Finding via an Internet search engine	11% 🔴	11% 🔴	19% ABD 🟢	13%	18% ABD 🟢
Accessing via a bookmark	16% D 🟢	13%	13%	10% 🔴	14% D
Accessing via a QR code	7% 🔴	13% AC	9% 🔴	13% AC	14% AC 🟢
Not sure	16% BDE 🟢	10% D	16% BDE 🟢	6% 🔴	9% 🔴

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

SAFEST ACCESS - TOTAL



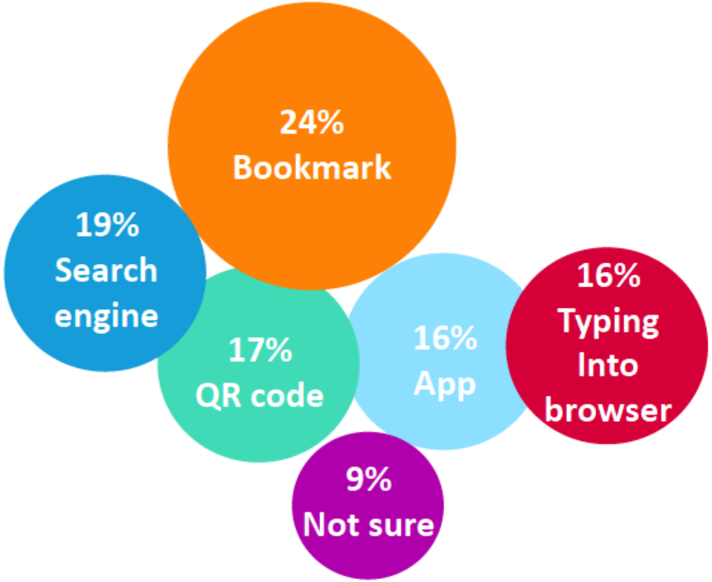
FASTEST WEBSITE ACCESS WHEN ACCESSING PERSONAL INFO

When accessing personal info, consumers feel the **fastest** way to access is via a bookmark.
Compared to general way to access a website or accessing a website when buying – search engine and QR code drop a bit as the fastest ways when accessing personal info.

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Accessing via a bookmark	27% CE	23%	22%	23%	23%
Finding via an Internet search engine	17%	20%	20%	21%	18%
Accessing via a QR code	10%	13%	14% A	12%	22% ABCD
Using an app	17%	16%	16%	21% CE	15%
Typing domain name into a browser	14%	20% ACE	15%	17%	15%
Not sure	14% BDE	8%	14% BDE	6%	6%

Letters indicate significantly higher than region. Region vs. Total Higher Lower

FASTEST ACCESS - TOTAL



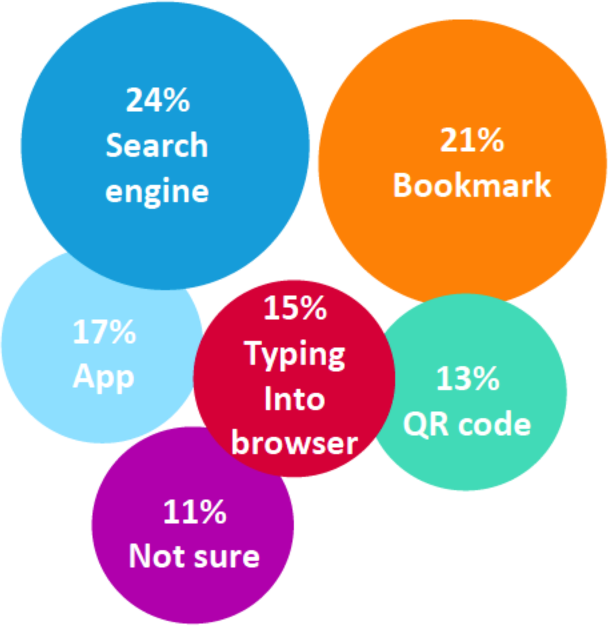
EASIEST WEBSITE ACCESS WHEN ACCESSING PERSONAL INFO

When accessing personal info, consumers feel the **easiest** way to access a website is either by search engine or by bookmark. Bookmark plays a bigger role in ease when it comes to personal info (although this is tempered a bit in Europe).

	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Finding via an Internet search engine	19%	27% A	26% A	23%	24% A
Accessing via a bookmark	23%	21%	19%	20%	22% C
Using an app	19% CE	16%	15%	23% BCE	15%
Typing domain name into a browser	14%	16%	15%	19% AE	14%
Accessing via a QR code	9%	8%	10%	9%	16% ABCD
Not sure	16% BDE	12% DE	15% DE	6%	8%

Letters indicate significantly higher than region. Region vs. Total Higher Lower

EASIEST ACCESS - TOTAL



ABUSIVE INTERNET BEHAVIOR AND CYBER CRIME

KEY TAKEAWAYS – INTERNET ABUSE & CYBER CRIME

This section focuses on awareness, experience with, and perceptions with regard to protection against abusive Internet behavior.

1 Reported fear levels seem relatively stable

While question wording was altered to focus on familiarity rather than just awareness of abuses, preventing direct trending, the results for measures like personal impact and fear are very similar to what was seen in the last wave, showing no strong increase nor decline.

2 Social media is the biggest perceived risk

Respondents are generally somewhat or very comfortable doing a wide range of tasks and providing various types of information online. They are most likely to be nervous about providing personal information over social media—one in three globally express strong discomfort. About one in four worry about banking on online medical information. Respondents in Africa are especially concerned about social media (nearly half) but less worried about online banking and health.

3 However, consumers are less comfortable providing personal information to a site using a new gTLD

Compared to .com or their ccTLD, comfort levels are much lower for the new gTLDs. Acceptance is lowest in Europe and the US, highest in Asia.

4 Bad behavior is still viewed as the law's responsibility

When asked who they would report an improperly run site to, responses center on various types of government regulatory bodies or law enforcement agencies, similar to last wave.

5 Taking steps to protect oneself online shows little change

In fact, for phishing, there is an actual decrease in preventative measures. And we see no strong trend to support that users are stopping Internet commerce or otherwise modifying their online behavior.

6 Anti Virus (AV) software is still expected to do more than it probably can

While we see decreases in the purchase (not necessarily use) of AV software to protect against some abuses, it is still the dominant response.

COMFORT WITH ONLINE BEHAVIORS

Consumers are most comfortable with searching for info or shopping online. Interestingly, consumers are least comfortable with using social media to talk about activities/family. Personal safety may be playing a role in consumers' reservations.

Searching for information	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Very comfortable	55%	66% CE	70% CE	49%	66% CE	50%
Somewhat comfortable	36%	29% B	18%	39% ABD	27% B	42% ABD
Not at all/not very comfortable	8%	4%	12% ADE	12% ADE	7%	8% A
Shopping online						
Very comfortable	40%	39% C	39%	34%	36%	43% ABCD
Somewhat comfortable	45%	46% B	40%	49% BE	47% B	43%
Not at all/not very comfortable	15%	15%	22% ACE	17% E	17%	13%
Banking online						
Very comfortable	36%	39% C	37%	33%	40% C	36%
Somewhat comfortable	40%	38% B	28%	39% B	39% B	43% AB
Not at all/not very comfortable	24%	23%	35% ACDE	27% DE	22%	21%
Accessing medical info						
Very comfortable	28%	29% C	35% ACE	23%	37% ACE	27% C
Somewhat comfortable	47%	43% B	34%	45% B	44% B	52% ABCD
Not at all/not very comfortable	25%	28% DE	31% DE	32% DE	19%	21%
Using social media to talk about activities/family						
Very comfortable	26%	31% CDE	36% CDE	22%	24%	25%
Somewhat comfortable	37%	33% B	27%	39% ABD	31%	40% ABD
Not at all/not very comfortable	37%	36%	37%	39%	45% ABCE	35%

Letters indicate significantly higher than region. Region vs. Total

HOW COMFORTABLE WITH DOING ACTIVITIES ON WEBSITE

Consumers are most comfortable providing personal info to either country-specific gTLDs or .com websites. For the new gTLDs, consumers tended to say 'not very comfortable' (versus not at all comfortable).

% Very/ Somewhat Comfortable

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Inputting email address						
ccTLD (for respondent's country)	93%	93%	92%	92%	91%	94% D
.com	92%	92% C	91% C	87%	93% C	94% ABC
New gTLD	48%	42% C	47% C	37%	50% AC	54% ABC
Inputting home address						
ccTLD	84%	87% CD	82%	81%	80%	86% BCD
.com	83%	82% C	82% C	75%	83% C	87% ABCD
New gTLD	44%	37%	41% C	33%	44% AC	50% ABCD
Inputting telephone number						
ccTLD	75%	72% C	73% C	66%	77% C	79% ABC
.com	75%	71% C	73% C	62%	81% ABC	81% ABC
New gTLD	40%	33% C	37% C	28%	45% ABC	47% ABC
Inputting financial information						
ccTLD	62%	60%	57%	58%	56%	66% ABCD
.com	62%	62% C	58% C	52%	62% C	67% ABC
New gTLD	36%	27%	32% AC	24%	38% ABC	44% ABCD
Inputting ID number						
ccTLD	61%	54%	58%	53%	64% AC	65% ABC
.com	59%	47%	59% AC	48%	67% ABC	66% ABC
New gTLD	34%	20%	31% AC	23%	36% AC	43% ABCD
Inputting healthcare information						
ccTLD	70%	64% C	69% C	56%	74% AC	75% ABC
.com	68%	60% C	68% AC	53%	75% ABC	75% ABC
New gTLD	40%	28%	38% AC	25%	46% ABC	49% ABC

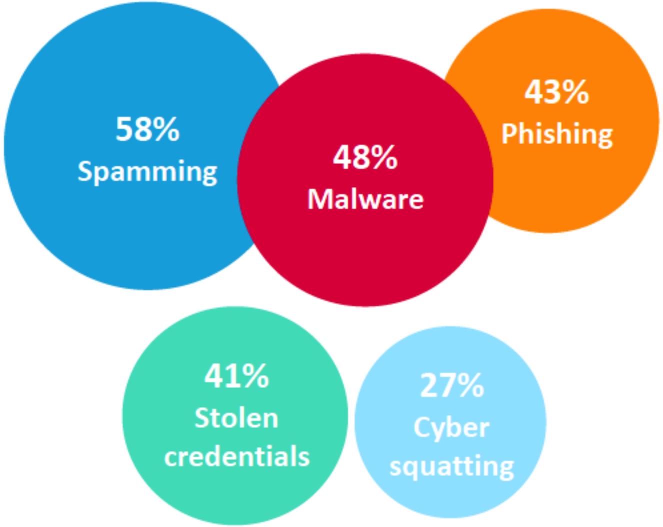
Letters indicate significantly higher than region. Region vs. Total

FAMILIARITY WITH TYPES OF ABUSIVE INTERNET BEHAVIOR

Roughly half of consumers are attuned to most abusive Internet behavior, with the exception of cyber squatting, which is more familiar in Africa and Asia (excluding Japan and South Korea).

% Extremely/ Very Familiar	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Spamming	62% CE	57% C	52%	67% BCE	58% C
Malware	49% C	45%	42%	60% ABCE	49% C
Phishing	45% B	32%	40% B	56% ABCE	44% BC
Stolen credentials	42% BC	35%	35%	55% ABCE	42% BC
Cyber squatting	20%	19%	21%	35% ABC	31% ABC

FAMILIARITY WITH TYPES OF ABUSIVE INTERNET BEHAVIOR – TOTAL



Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

SOURCES OF ABUSIVE INTERNET BEHAVIOR

Consumers generally consider organized groups and individuals equally to blame for Internet abuse. North America consumers are more likely than other regions to think individuals are to blame.

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Phishing						
Organized groups (Net)	66%	65% BD	54%	69% BD	51%	69% BD
Individuals (Net)	51%	61% BCDE	53% D	48%	42%	50% D
Don't know	15%	17% E	18% E	17% E	27% ABCE	12%
Spamming						
Organized groups (Net)	64%	66% BD	52%	66% BD	50%	67% BD
Individuals (Net)	51%	58% BCDE	49%	48%	49%	52%
Don't know	15%	17% E	18% E	18% E	20% E	12%
Cyber squatting						
Organized groups (Net)	62%	61% BD	47%	65% BD	52%	65% BD
Individuals (Net)	48%	55% BCDE	46%	45%	38%	48% D
Don't know	18%	20% E	25% E	20% E	27% CE	14%
Stolen credentials						
Organized groups (Net)	65%	65% BD	53%	68% BD	54%	68% BD
Individuals (Net)	51%	62% BCDE	50% D	50% D	41%	51% D
Don't know	15%	16% E	18% E	18% E	25% ABCE	12%
Malware						
Organized groups (Net)	66%	66% BD	54%	68% BD	55%	68% BD
Individuals (Net)	50%	57% BCDE	46%	49% D	40%	49% D
Don't know	16%	18% E	21% E	18% E	24% ACE	13%

Letters indicate significantly higher than region. Region vs. Total Higher Lower

COMMONALITY OF ABUSIVE INTERNET BEHAVIOR

Spamming, malware, and phishing are seen as the most common Internet abuses. Generally, respondents in Europe and Asia say these activities are less common.

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Spamming						
Very common	72%	79% CE (Higher)	80% CE (Higher)	70%	77% CE (Higher)	68% (Lower)
Somewhat common	20%	15% B (Lower)	10% (Lower)	18% B	16% B	24% ABCD (Higher)
Not at all/not very common	4%	2% (Lower)	4% A	4% A	5% A	5% A (Higher)
Malware						
Very common	59%	67% CE (Higher)	63% CE	54% (Lower)	68% CE (Higher)	56% (Lower)
Somewhat common	29%	26% (Lower)	21% (Lower)	31% ABD	21% (Lower)	32% ABD (Higher)
Not at all/not very common	7%	2% (Lower)	6% A	7% A	7% A	8% A (Higher)
Phishing						
Very common	51%	62% BCE (Higher)	48%	51%	60% BCE (Higher)	48% (Lower)
Somewhat common	34%	27% (Lower)	32% D	31% D	24% (Lower)	38% ACD (Higher)
Not at all/not very common	9%	5% (Lower)	10% A	10% A	9% A	9% A
Stolen Credentials						
Very common	43%	53% CE (Higher)	47% CE	38% (Lower)	53% CE (Higher)	40% (Lower)
Somewhat common	38%	35% (Lower)	33% (Lower)	38%	33% (Lower)	41% ABD (Higher)
Not at all/not very common	12%	7% (Lower)	11% A	15% AD (Higher)	10%	14% AD (Higher)
Cyber Squatting						
Very common	34%	40% CE (Higher)	40% CE	31%	48% CE (Higher)	31% (Lower)
Somewhat common	42%	39% B	30% (Lower)	38% (Lower)	37%	46% ABCD (Higher)
Not at all/not very common	16%	11% (Lower)	16% D	19% AD	8% (Lower)	17% AD (Higher)

Letters indicate significantly higher than region. Region vs. Total ● Higher ● Lower

PERSONAL IMPACT OF ABUSIVE INTERNET BEHAVIOR

Around 7 in 10 say they have been impacted by spamming, and over half by malware.

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Spamming						
Yes	70%	70% C	82% ACDE 🟢	65% 🔴	73% C	68%
No	23%	22% B	13% 🔴	26% AB 🟢	22% B	24% B 🟢
Not sure	8%	8%	5%	9% B	6%	7%
Malware						
Yes	57%	59% C	63% CDE 🟢	49% 🔴	53%	58% C
No	32%	29%	24% 🔴	38% ABE 🟢	33% B	32% B
Not sure	11%	12%	12%	13% E	14%	10% 🔴
Phishing						
Yes	31%	31%	29%	29%	28%	33% C 🟢
No	55%	53%	54%	58%	57%	54%
Not sure	14%	16% E	17% E	13%	15%	12% 🔴
Stolen Credentials						
Yes	20%	17% 🔴	17%	13% 🔴	18%	25% ABCD 🟢
No	66%	72% E 🟢	70% E	73% E 🟢	70% E	60% 🔴
Not sure	14%	12%	13%	14%	13%	15% A
Cyber Squatting						
Yes	17%	10% 🔴	18% AC	9% 🔴	18% AC	20% AC 🟢
No	67%	71% BE	61%	72% BE 🟢	66%	66%
Not sure	16%	19% E	21% E 🟢	19% E	17%	15% 🔴

Letters indicate significantly higher than region. Region vs. Total 🟢 Higher 🔴 Lower

FEAR OF BEING IMPACTED BY ABUSIVE INTERNET BEHAVIOR

Consumer fear is greatest around stolen credentials and malware, followed by phishing. North America exhibits muted fear compared to the other regions.

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Stolen Credentials						
Very Scared	52%	48% 🔴	61% ACE 🟢	49%	54%	53% A
Somewhat Scared	35%	35% B	27% 🔴	34% B	33%	36% B
Not Very/Not at all Scared	13%	17% E 🟢	12%	16% E 🟢	12%	12% 🔴
Phishing						
Very Scared	40%	28% 🔴	50% ACD 🟢	35% A 🔴	38% A	44% ACD 🟢
Somewhat Scared	39%	39%	33% 🔴	40% B	40%	40% B
Not Very/Not at all Scared	21%	33% BCDE 🟢	17%	25% BE 🟢	22% E	16% 🔴
Malware						
Very Scared	40%	29% 🔴	43% AC	35% A 🔴	40% A	44% AC 🟢
Somewhat Scared	42%	45% B	38%	45% B	42%	41%
Not Very/Not at all Scared	18%	25% BCDE 🟢	19%	20% E	19%	15% 🔴
Cyber Squatting						
Very Scared	28%	25%	39% ACE 🟢	25%	33% AC	28%
Somewhat Scared	39%	32% 🔴	40%	37%	40% A	40% A 🟢
Not Very/Not at all Scared	33%	43% BDE 🟢	22% 🔴	37% BDE 🟢	27% 🔴	32% B
Spamming						
Very Scared	22%	13% 🔴	21% A	17% 🔴	24% AC	26% ABC 🟢
Somewhat Scared	38%	33% 🔴	31% 🔴	38% B	33%	42% ABD 🟢
Not Very/Not at all Scared	40%	54% CDE 🟢	48% E 🟢	46% E 🟢	42% E	32% 🔴

Letters indicate significantly higher than region.   Region vs. Total 🟢 Higher 🔴 Lower

MEASURES TAKEN TO AVOID PHISHING

Less than half of consumers report purchasing antivirus software to avoid phishing, and prevalence of doing so is down in 2016. Further, only about a quarter are changing Internet habits in an attempt to protect themselves against phishing – and again this is down in 2016. Nearly one-quarter report doing nothing –most prevalent in North America, South America, and Europe.

MEASURES TAKEN TO AVOID PHISHING

Phishing	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Purchased antivirus software for my computer	50%	44%↓	53%	41% B ↓	44%	34% ↓	51%	44% B ↓	45%	39%	51%	47% ↓ ABD
Changed my Internet habits	29%	24%↓	27%	27% CE	34%	26%↓	25%	22%	37%	27%↓	29%	23%↓
Purchased an identity protection plan	11%	13%↑	9%	8%	8%	9%	6%	8% ↑	11%	11%	14%	17% ↑ ABCD
Stopped making purchases online	9%	10%	6%	6%	8%	6%	5%	6%	13%	10% ABC	11%	13%↑ ABC
Other	5%	6%	8%	7%	2%	6%	6%	7%	6%	7%	4%	6%
None	20%	23%↑	23%	29%↑ DE	23%	30% ↑ DE	25%	28% ↑ DE	16%	21%	16%	18%↑

Letters indicate significantly higher than region. Region vs. Total Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

MEASURES TAKEN TO AVOID SPAMMING

As was the case with phishing, few consumers report purchasing antivirus software in order to avoid spamming. A quarter report changing Internet habits in an attempt to protect themselves against spamming and another quarter report doing nothing.

MEASURES TAKEN TO AVOID SPAMMING

Spamming	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Purchased antivirus software for my computer	46%	41% ↓	49%	42% ↓	45%	40%	47%	43% D	42%	36%	46%	41% ↓
Changed my Internet habits	25%	24%	26%	26% C	30%	26% C	20%	20%	34%	34% ABCE	23%	24% C
Purchased an identity protection plan	9%	11% ↑	6%	7%	7%	6%	5%	7%	11%	10%	13%	15% ↑ ABCD
Stopped making purchases online	10%	8% ↓	7%	5%	8%	8% C	5%	5%	13%	7% ↓	11%	11% ↓ ABCD
Other	6%	8%	7%	7%	2%	7% ↑	7%	7% ↓	7%	9%	5%	8%
None	23%	24% ↑	25%	28% DE	23%	23%	29%	29% BDE	17%	20%	21%	21%

Letters indicate significantly higher than region. Region vs. Total Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

MEASURES TAKEN TO AVOID CYBER SQUATTING

As was the case in 2015, over a third of consumers report taking no action to avoid being affected by cybersquatting.

MEASURES TAKEN TO AVOID CYBERSQUATTING

Cyber Squatting	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Purchased antivirus software for my computer	41%	35% ↓	40%	34% B ↓	42%	29% ↓	40%	37% B	42%	31% ↓	42%	36% B ↓
Changed my Internet habits	18%	19%	18%	19% C	25%	25% ACE	14%	15%	27%	27% ACE	18%	18% C
Purchased an identity protection plan	10%	11% ↑	7%	6%	9%	7%	5%	7% ↑	12%	13% ABC	12%	15% ABC ↑
Stopped making purchases online	7%	8% ↑	5%	5%	5%	6%	4%	5%	11%	8% AC	8%	11% ABC ↑
Other	2%	5%	2%	4%	1%	5%	2%	6%	3%	5%	2%	6% A
None	36%	36%	43%	43% BDE	31%	37% DE ↑	44%	41% DE	26%	30%	33%	32%

Letters indicate significantly higher than region. Region vs. Total Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

MEASURES TAKEN TO AVOID STOLEN CREDENTIALS

Fewer consumers are taking steps to protect their credentials in 2016, with roughly 4 in 10 reportedly purchasing antivirus software and a quarter changing their Internet habits.

MEASURES TAKEN TO AVOID STOLEN CREDENTIALS

Stolen Credentials	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Purchased antivirus software for my computer	46%	42%↓	49%	36% ↓	40%	35%	44%	46% ABD	40%	33%	48%	45% ABD
Changed my Internet habits	24%	25%	27%	29% CE	29%	27% C	23%	21%	28%	32% CE	23%	23%
Purchased an identity protection plan	15%	16%	12%	14% C	13%	12%	8%	10%	16%	17% C	19%	20% ABC
Stopped making purchases online	10%	10%	8%	7%	9%	7%	5%	7%	14%	11% ABC	12%	12% ABC
Other	4%	6%	6%	6%	2%	5%	4%	6%	6%	8%	3%	6%
None	23%	22%	25%	27% DE	25%	27% DE	29%	26% DE	21%	20%	20%	18%

Letters indicate significantly higher than region. Region vs. Total Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

MEASURES TAKEN TO AVOID MALWARE

Six in ten consumers globally say they purchased antivirus software to avoid being affected by malware.

MEASURES TAKEN TO AVOID MALWARE

Malware	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Purchased antivirus software for my computer	61%	59%	66%	59% B ↓	54%	51%	61%	58% B	64%	66% ABCE	60%	59% B
Changed my Internet habits	23%	20%	25%	22% CE	27%	23% CE	20%	18%	25%	18% ↓	22%	19% ↓
Purchased an identity protection plan	10%	12%	8%	7%	9%	8%	6%	8%	11%	9%	13%	15% ↑ ABCD
Stopped making purchases online	7%	8% ↑	5%	4%	5%	5%	4%	6% ↑	6%	6%	8%	11% ↑ ABCD
Other	3%	5%	4%	6%	2%	4%	2%	6%	2%	4%	3%	5%
None	18%	17%	19%	19% DE	20%	22% DE	22%	19% DE	15%	13%	16%	14%

Letters indicate significantly higher than region. Region vs. Total Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

TAKEN ANY MEASURES TO AVOID ABUSIVE INTERNET BEHAVIORS

Consumers are most likely to take measures to avoid malware, followed by phishing, spamming, and stolen credentials. Consumers are least likely to take measures to avoid cyber squatting.

TAKEN ANY MEASURES TO AVOID ABUSIVE INTERNET BEHAVIORS

	Total		NORTH AMERICA (A)		SOUTH AMERICA (B)		EUROPE (C)		AFRICA (D)		ASIA (E)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Malware	82%	83%	81%	81%	80%	78%	78%	81%	85%	87% ABC	84%	86% BC
Phishing	80%	77% ↓	77%	71% ↓	77%	70% ↓	75%	72%	84%	79% ABC	84%	82% ABC ↓
Spamming	77%	76%	75%	72%	77%	77% AC	71%	71%	83%	80% AC	79%	79% AC
Stolen Credentials	77%	78%	75%	73%	75%	73%	71%	74%	79%	80% ABC	80%	82% ABC
Cyber Squatting	64%	64%	57%	57%	69%	63% A ↓	56%	59%	74%	70% ABC	67%	68% ABC

Letters indicate significantly higher than region. Region vs. Total Arrows indicate 2016 significantly higher/lower than 2015 at a 95% confidence level.

REPORTING SITE ABUSE

Many consumers are unsure of how they would report an improperly run site, particularly in North America and Africa. Consumers in South America are more inclined to contact the consumer protection agency or federal police than other regions.

PARTY TO REPORT SITE ABUSE TO

	TOTAL	NORTH AMERICA (A)	SOUTH AMERICA (B)	EUROPE (C)	AFRICA (D)	ASIA (E)
Consumer protection agency	31%	28%	39% ACE	28%	34%	31%
Local police	30%	22% D	34% AD	33% AD	16%	32% AD
Website owner/operator	24%	18%	20%	19%	26% ABC	29% ABC
National law enforcement/FBI	23%	19%	20% A	23% A	19% A	25% ABD
National intelligence agency/CIA	15%	9% C	15% AC	6%	20% ABC	18% AC
Federal police (non-US only)	14%	9%	32% ACDE	18% AE	15% AE	10%
ICANN	11%	4%	5%	6%	12% ABC	15% ABC
Private security companies	10%	8%	9% C	5%	13% ABC	12% AC
Interpol	9%	5%	10% AC	6%	12% AC	11% AC
Don't know	31%	44% BCDE	27%	29%	38% BCE	27%

Letters indicate significantly higher than region. Region vs. Total

Respondents were shown a fixed list of parties responsible for preventing abusive Internet behavior and some targeted to the individual region. ICANN was not defined to respondents and could be chosen as one of many options.

A LOOK AT THE TEENS

LEGACY gTLDs – ADULTS VS TEENS

Adults are more likely than teens to be aware, have visited, and trust some of the legacy gTLDs. And if more information is needed, teens are more likely to use an Internet encyclopedia and less likely to contact a service provider than adults.

Teens are less likely to expect restrictions on some of the common gTLDs and also less likely to expect restrictions will be enforced.

- In the US teens are more likely to have tried to find out who operates a website, opposite the pattern in Asia.

	ADULTS	TEENS
AWARENESS (%)		
.net	**88%**	85%
.org	**83%**	77%
.biz	**36%**	24%
VISITATION (%)		
.net	**76%**	70%
.org	**72%**	64%
.biz	**20%**	11%
TRUSTWORTHY (% Very/Somewhat)		
.net	**89%**	86%
.org	**87%**	85%
.pro	**43%**	39%
.coop	**39%**	33%
WHERE TO GO FOR MORE INFO(%)		
Internet encyclopedia	42%	**49%**
Service provider	**32%**	26%

	ADULTS	TEENS
EXPECTATIONS ON RESTRICTIONS (% None)		
.com	33%	**37%**
.info	28%	**34%**
.org	23%	**27%**
ENFORCE RESTICTIONS(%)		
Person/company validation	**82%**	72%
Credential validation	**80%**	71%
Name consistent w/ meaning	**79%**	72%
Local presence	**76%**	62%
TRIED TO FIND IDENTITY OF WEBSITE(%)		
US	24%	**44%**
ASIA	**38%**	30%

NEW gTLDs – ADULTS VS TEENS

Teens are more likely than adults to be aware of many of the new gTLDs (particularly in North America and Europe) but visitation rates are very similar.

However, teens are less likely to pay attention to the extension. Teen trust levels for some gTLDs are higher.

Teens simultaneously describe the new gTLDs as interesting, exciting, overwhelming and confusing.

And again they are less in favor of restrictions—they are more likely than adults to say there should be no strict strict requirements on the majority of the new gTLDs.

	ADULTS	TEENS
AWARENESS (%)		
.news	33%	**37%**
.email	32%	**39%**
.link	27%	**34%**
.website	21%	**25%**
.site	20%	**25%**
.pics	11%	**14%**
.top	11%	**13%**
Not aware of any	**38%**	32%
VISITATION (%)		
.link	20%	**25%**
.site	14%	**17%**
Pay attention to extension (%)		
Don't pay attention	29%	**37%**
TRUSTWORTHY (% Very/Somewhat)		
.email	62%	**69%**
.website	55%	**63%**
.site	51%	**56%**

	ADULTS	TEENS
WHERE TO GO FOR MORE INFO(%)		
Internet search	**74%**	69%
Internet encyclopedia	40%	**47%**
Service provider	**29%**	21%
ADJECTIVES FOR COMMON gTLDs (%)		
Interesting	64%	**70%**
Exciting	47%	**52%**
Overwhelming	41%	**45%**
Confusing	39%	**45%**
LEVEL OF RESTRICTIONS (% No strict)		
.email	24%	**28%**
.photography	24%	**31%**
.link	28%	**33%**
.guru	30%	**38%**
.realtor	24%	**30%**
.club	25%	**32%**
.xyz	35%	**41%**
.bank	14%	**21%**
.pharmacy	18%	**21%**
.builder	21%	**27%**

REACHING THE INTENDED SITE – ADULTS VS TEENS

Teens are more likely than adults to use smartphones to access the Internet and to use both shortened URLs and QR codes.

Teens are also more likely to feel an app is the safest way to make purchases or access personal info.

Adults tend to be more comfortable with online behaviors like searching, shopping, banking and accessing medical info while teens are, not surprisingly, more comfortable with social media.

Teens may simply lack experience with some of these online behaviors.

	ADULTS	TEENS
DEVICE USED TO ACCESS Internet (%)		
Smartphone	73%	**79%**
SHORTENED URLS (% TOP 2 BOX)		
Use them	36%	**41%**
WHY HAVEN'T USED THEM (%)		
Confusing	**30%**	25%
Don't like them	8%	**13%**
QR CODES (% TOP 2 BOX)		
Use them	49%	**54%**
WHY HAVEN'T USED THEM (%)		
Never needed to	**66%**	59%
Don't like them	13%	**17%**
WHY USED THEM (%)		
Convenient	**66%**	58%
SAFEST WAY TO NAVIGATE TO A WEBSITE TO MAKE PURCHASE (%)		
App	22%	**29%**
SAFEST WAY TO ACCESS PERSONAL INFO (%)		
App	26%	**33%**

	ADULTS	TEENS
COMFORT W/ ONLINE BEHAVIOR (% TOP 2 BOX)		
Search for info	**92%**	88%
Shop	**85%**	80%
Bank	**76%**	62%
Access medical info	**75%**	70%
Social media to talk about friends/family	63%	**71%**
COMFORT W/ ONLINE ACTIVITIES (% TOP 2 BOX)		
Email – legacy gTLD	**93%**	90%
Email – new gTLD	**48%**	42%
Financial info – new gTLD	36%	**43%**

ABUSIVE INTERNET BEHAVIOR AND CYBER CRIME – ADULTS VS. TEENS

Adults are more likely than teens to be familiar with abusive Internet behavior, to feel the source is more likely to be organized, and to feel it's more common, to have been affected, and to be scared.

Further, adults are more likely to use antivirus as the way to avoid abuse, while teens are more likely to stop making online purchases—however even among teens it is not a prevalent response.

	ADULTS	TEENS
FAMILIARITY (% TOP TWO)		
Spamming	58%	53%
Malware	48%	44%
Phishing	43%	35%
SOURCES OF ABUSE (% ORGANIZED)		
Phishing	66%	57%
Malware	66%	58%
Stolen credentials	65%	59%
Spamming	64%	58%
Cyber squatting	62%	52%
HOW COMMON (% TOP 2 BOX)		
Spamming	91%	88%
Malware	88%	81%
Phishing	85%	76%
Stolen credentials	82%	72%
BEEN AFFECTED (%)		
Spamming	70%	64%
Malware	57%	46%
Phishing	31%	24%

	ADULTS	TEENS
HOW SCARED (% TOP 2 BOX)		
Stolen credentials	87%	81%
Malware	82%	73%
Phishing	79%	83%
Spamming	60%	50%
MEASURES TO AVOID (% ANTIVIRUS)		
Phishing	44%	34%
Spamming	41%	32%
Cyber squatting	35%	28%
Stolen credentials	42%	32%
Malware	59%	51%
MEASURES TO AVOID (% STOPPED PURCHASING)		
Phishing	10%	13%
Spamming	8%	11%
Cyber squatting	8%	12%
Stolen credentials	10%	17%
Malware	8%	11%

P121866 ICANN Global Consumer Survey Outline 4/8/16

N=5,950 online consumers, 24 countries
15 minute but runs 25 minute online survey

<table>
<tr><td>Landing Page Title</td><td colspan="2">[Tell us your thoughts on website domain names]</td></tr>
<tr><td>Job no (Q19)</td><td colspan="2">[P121866]</td></tr>
<tr><td>LOI for ISQ section (Q229/1)</td><td colspan="2">[25] (minutes)</td></tr>
<tr><td>Sample source (Q75)
Default is 990. Only add code(s) here if you have sample <u>not</u> coming through the router. Please refer to the ppr site for a list of codes.</td><td colspan="2">1 HPOL
8 Toluna
9 AiP Empanel
990 Routed Non-HPOL sample
Q75/990 Survey Router Federated</td></tr>
<tr><td>HIpoints in the survey (Q77) (NOTE: HPOL ONLY)
In case of non-standard logic, please specify updated conditions here. Similarly, update values and logic if additional points amounts.</td><td colspan="2">100 [For Qualified (Q99/1)]
15 [All Others]</td></tr>
<tr><td>Digital Fingerprinting (Q9432)
If not using <u>any</u> type of DF, please change to OFF.</td><td colspan="2">On</td></tr>
<tr><td>Termination based on Digital Fingerprinting and Fraud Score
By default, surveys will terminate any respondents who fail both of these tests. This is mandatory for HPOL sample. For client sample or vendor sample, the termination of DF or Fraud Score can be turned off if desired.
To turn off termination based on DF or Fraud Score, indicate “Do Not Terminate DF” or “Do Not Terminate Fraud Score.”</td><td colspan="2">Terminate DF
Terminate Fraud Score</td></tr>
<tr><td>Mode of survey (Q148/Q149)
Modes for which the survey is designed, please indicate yes.</td><td>1 - Web
Yes</td><td>2 - CATI/COW</td></tr>
<tr><td>Thank You Pages
In case of custom thank you page needs, change to “Custom” and indicate at the end of the QNR the custom wording needs.</td><td colspan="2">Standard</td></tr>
<tr><td>Other notes OR use for client summary
Ex: [PN: DISPLAY NOT SURE AND REFUSED FOR PHONE/F2F ONLY UNLESS OTHERWISE NOTED]</td><td colspan="2">None</td></tr>
</table>

OVERVIEW:

Survey: Online, 15 mins but runs 25 minutes, HPOL and Vendor sample

Sample: HPOL and Vendor - Toluna, AiP, Empanel and Critical Mix

Target: Ages 15+, Lives In US, Canada, Mexico, Italy, Turkey, Spain, Poland, UK, France, Germany, China, Vietnam, Philippines, Japan, South Korea, Russia, India, Indonesia, Nigeria, South Africa, Egypt, Colombia, Argentina Or Brazil and Spends more than 5 hours per week using the Internet

Quotas: n=5950 (Teens 10% of total country quota)

1. US ADULTS (Q264/244, Q280/18+ AND Q625/1) [QUOTA = 450]
2. CANADA ADULTS (Q264/42, Q280/18+ AND Q625/1) [QUOTA = 180]
3. MEXICO ADULTS(Q264/157, Q280/18+ AND Q625/1) [QUOTA = 180]
4. ITALY ADULTS (Q264/123, Q280/18+ AND Q625/1) [QUOTA = 90]
5. TURKEY ADULTS (Q264/235, Q280/18+ AND Q625/1) [QUOTA = 90]
6. SPAIN ADULTS (Q264/215, Q280/18+ AND Q625/1) [QUOTA = 90]
7. POLAND ADULTS (Q264/189, Q280/18+ AND Q625/1) [QUOTA = 90]
8. UNITED KINGDOM ADULTS (Q264/243, Q280/18+ AND Q625/1) [QUOTA = 180]
9. FRANCE ADULTS (Q264/76, Q280/18+ AND Q625/1) [QUOTA = 180]
10. GERMANY ADULTS (Q264/85, Q280/18+ AND Q625/1) [QUOTA = 225]
11. CHINA ADULTS (Q264/48, Q280/18+ AND Q625/1) [QUOTA = 990]
12. VIETNAM ADULTS (Q264/249, Q280/18+ AND Q625/1) [QUOTA = 90]
13. PHILIPPINES ADULTS (Q264/187, Q280/18+ AND Q625/1) [QUOTA = 180]
14. JAPAN ADULTS (Q264/126, Q280/18+ AND Q625/1) [QUOTA = 315]
15. SOUTH KOREA ADULTS (Q264/214, Q280/18+ AND Q625/1) [QUOTA = 180]
16. RUSSIA ADULTS (Q264/196, Q280/18+ AND Q625/1) [QUOTA = 225]
17. INDIA ADULTS (Q264/116, Q280/18+ AND Q625/1) [QUOTA = 585]
18. INDONESIA ADULTS (Q264/117, Q280/18+ AND Q625/1) [QUOTA = 180]
19. NIGERIA ADULTS (Q264/174, Q280/18+ AND Q625/1) [QUOTA = 180]
20. SOUTH AFRICA ADULTS (Q264/193, Q280/18+ AND Q625/1) [QUOTA = 90]
21. EGYPT ADULTS (Q264/66, Q280/18+ AND Q625/1) [QUOTA = 90]
22. COLOMBIA ADULTS (Q264/51, Q280/18+ AND Q625/1) [QUOTA = 90]
23. ARGENTINA ADULTS (Q264/10, Q280/18+ AND Q625/1) [QUOTA = 90]
24. BRAZIL ADULTS (Q264/33, Q280/18+ AND Q625/1) [QUOTA = 315]
25. US TEENS 15-17 (Q264/244, Q280/15-17 AND Q625/1) [QUOTA = 50]
26. CANADA TEENS 15-17 (Q264/42, Q280/15-17 AND Q625/1) [QUOTA = 20]
27. MEXICO TEENS 15-17 (Q264/15-17, Q280/15-17 AND Q625/1) [QUOTA = 20]
28. ITALY TEENS (Q264/123, Q280/15-17 AND Q625/1) [QUOTA = 10]
29. TURKEY TEENS (Q264/235, Q280/15-17 AND Q625/1) [QUOTA = 10]
30. SPAIN TEENS (Q264/215, Q280/15-17 AND Q625/1) [QUOTA = 10]
31. POLAND TEENS (Q264/189, Q280/15-17 AND Q625/1) [QUOTA = 10]
32. UNITED KINGDOM TEENS (Q264/243, Q280/15-17 AND Q625/1) [QUOTA = 20]
33. FRANCE TEENS (Q264/76, Q280/15-17 AND Q625/1) [QUOTA = 20]
34. GERMANY TEENS (Q264/85, Q280/15-17 AND Q625/1) [QUOTA = 25]
35. CHINA TEENS (Q264/48, Q280/15-17 AND Q625/1) [QUOTA = 110]
36. VIETNAM TEENS (Q264/249, Q280/15-17 AND Q625/1) [QUOTA = 10]
37. PHILIPPINES TEENS (Q264/187, Q280/15-17 AND Q625/1) [QUOTA = 20]
38. JAPAN TEENS (Q264/126, Q280/15-17 AND Q625/1) [QUOTA = 35]
39. SOUTH KOREA TEENS (Q264/214, Q280/15-17 AND Q625/1) [QUOTA = 20]
40. RUSSIA TEENS (Q264/196, Q280/15-17 AND Q625/1) [QUOTA = 25]
41. INDIA TEENS (Q264/116, Q280/15-17 AND Q625/1) [QUOTA = 65]
42. INDONESIA TEENS (Q264/117, Q280/15-17 AND Q625/1) [QUOTA = 20]
43. NIGERIA TEENS (Q264/174, Q280/15-17 AND Q625/1) [QUOTA = 20]
44. SOUTH AFRICA TEENS (Q264/193, Q280/15-17 AND Q625/1) [QUOTA = 10]
45. EGYPT TEENS (Q264/66, Q280/15-17 AND Q625/1) [QUOTA = 10]
46. COLOMBIA TEENS (Q264/51, Q280/15-17 AND Q625/1) [QUOTA = 10]
47. ARGENTINA TEENS (Q264/10, Q280/15-17 AND Q625/1) [QUOTA = 10]
48. BRAZIL TEENS (Q264/33, Q280/15-17 AND Q625/1) [QUOTA = 35]

Deliverables:

- Coding: 10 open end and 6 other specify
  - Open ends to be coded: Q727, Q730, Q780, Q790, Q830x1, Q870, Q875, Q827, Q917, Q919
  - No other specify’ s will be coded
- Weighting: none unless needed
- 5 banners of cross tabs
- SPSS datafile

- Report (ppt)

SECTION 600: SAMPLE PRELOAD AND SCREENING QUESTIONS

BASE: ALL RESPONDENTS
Q616 – HIDDEN QUESTION (PRELOAD FOR COUNTRY)

244	US
42	CANADA
157	MEXICO
123	ITALY
235	TURKEY
215	SPAIN
189	POLAND
243	UK
76	FRANCE
85	GERMANY
48	CHINA
249	VIETNAM
187	PHILIPPINES
126	JAPAN
214	SOUTH KOREA
196	RUSSIA
116	INDIA
117	INDONESIA
174	NIGERIA
193	SOUTH AFRICA
66	EGYPT
51	COLOMBIA
10	ARGENTINA
33	BRAZIL
22	[BLANK]

BASE: ALL RESPONDENTS
Q620 – HIDDEN QUESTION (PRELOAD FOR LANGUAGE)

1	AMERICAN ENGLISH
2	SPAIN_SPANISH
3	PORTUGUESE (BRAZIL)
4	SIMPLIFIED CHINESE
5	FRENCH (FRANCE)
6	GERMAN
7	ITALIAN
8	JAPANESE
9	KOREAN
10	RUSSIAN
11	ARABIC
12	VIETNAMESE
13	TAGALOG
14	TURKISH
15	POLISH
16	LATAM_SPANISH
17	BRITISH ENGLISH
18	BAHASA

BASE: ALL RESPONDENTS

Q149 FINAL SURVEY MODE

[PROGRAMMER NOTE: CAPTURE CURRENT/FINAL MODE OF SURVEY]

1 WEB

2 CATI-COW

BASE: ALL RESPONDENTS

Q258 The progress bar below indicates approximately what portion of the survey you have completed.

Thank you for agreeing to take this survey. Our first few questions will help us to determine which questions to ask you.

In which country or region do you currently reside?

[PROGRAMMER: DISPLAY CODES IN ALPHABETICAL ORDER]

BASE: ALL RESPONDENTS

Q264 [HIDDEN QUESTION – FINAL COUNTRY QUESTION FOR SURVEY LOGIC]

[SEE MASTER DEMOGRAPHIC DOCUMENT FOR CODE FRAME]

[PN: Q268, Q271 AND Q270 PRESENTED ON SAME SCREEN.]

BASE: ALL RESPONDENTS

Q268 I identify my gender as…?

1 Male

2 Female

3 Other/refuse

BASE: ALL RESPONDENTS

Q271 In what month were you born?

1 January

2 February

3 March

4 April

5 May

6 June

7 July

8 August

9 September

10 October

11 November

12 December

BASE: ALL RESPONDENTS

Q270 In what year were you born? Please enter your response as a four-digit number (for example, 1977).

[RANGE: 1900 TO CURRENT YEAR-6]

|__|__|__|__|

BASE: ALL RESPONDENTS

Q280 [HIDDEN QUESTION - FINAL AGE FOR SURVEY LOGIC AND/OR QUOTAS]

(NOTE: CONSUMER QUESTIONNAIRE ONLY)

BASE: ALL RESPONDENTS AGES 15+ (Q280/15+)

Q600 How many hours per week do you spend using the Internet?

1 0 hours to less than 1 hour [TERMINATE]
2 1-4 hours [TERMINATE]
3 5-10 hours
4 11-15 hours
5 16-20 hours
6 More than 20 hours
7 Don't Know [TERMINATE]

BASE: ALL RESPONDENTS

Q625 HIDDEN QUESTION TO DETERMINE QUALIFICATION STATUS

GET CODE 1 (QUALIFIED) IF:

- AGE 15+ (Q280/15+)
- LIVES IN US, CANADA, MEXICO, ITALY, TURKEY, SPAIN, POLAND, UK, FRANCE, GERMANY, CHINA, VIETNAM, PHILIPPINES, JAPAN, SOUTH KOREA, RUSSIA, INDIA, INDONESIA, NIGERIA, SOUTH AFRICA, EGYPT, COLOMBIA, ARGENTINA OR BRAZIL (Q264/244, 42, 157, 123, 235, 215, 189, 243, 76, 85, 48, 249, 187, 126, 214, 196, 116, 117, 174, 193, 66, 51, 10, OR 33)
- SPENDS 5 OR MORE HOURS PER WEEK USING THE INTERNET (Q600/3-6)

GET CODE 2 FOR ALL OTHERS

1. QUALIFIED [QUOTA = 5950]
2. NOT QUALIFIED

BASE: ALL QUALIFIED (Q625/1)

Q630 QUOTA CHECK (DOES NOT APPEAR ON SCREEN)
CHECK QUOTA AT Q660

1 QUOTA CELL CLOSED
2 QUOTA CELL OPEN
3 QUOTA CELL NOT FOUND

BASE: ALL QUALIFIED (Q625/1 AND Q630/2-3)

Q640 COUNTRY QUOTAS

1. US ADULTS (Q264/244, Q280/18+ AND Q625/1) [QUOTA = 450]
2. CANADA ADULTS (Q264/42, Q280/18+ AND Q625/1) [QUOTA = 180]
3. MEXICO ADULTS(Q264/157, Q280/18+ AND Q625/1) [QUOTA = 180]
4. ITALY ADULTS (Q264/123, Q280/18+ AND Q625/1) [QUOTA = 90]
5. TURKEY ADULTS (Q264/235, Q280/18+ AND Q625/1) [QUOTA = 90]
6. SPAIN ADULTS (Q264/215, Q280/18+ AND Q625/1) [QUOTA = 90]
7. POLAND ADULTS (Q264/189, Q280/18+ AND Q625/1) [QUOTA = 90]
8. UNITED KINGDOM ADULTS (Q264/243, Q280/18+ AND Q625/1) [QUOTA = 180]
9. FRANCE ADULTS (Q264/76, Q280/18+ AND Q625/1) [QUOTA = 180]
10. GERMANY ADULTS (Q264/85, Q280/18+ AND Q625/1) [QUOTA = 225]
11. CHINA ADULTS (Q264/48, Q280/18+ AND Q625/1) [QUOTA = 990]
12. VIETNAM ADULTS (Q264/249, Q280/18+ AND Q625/1) [QUOTA = 90]
13. PHILIPPINES ADULTS (Q264/187, Q280/18+ AND Q625/1) [QUOTA = 180]
14. JAPAN ADULTS (Q264/126, Q280/18+ AND Q625/1) [QUOTA = 315]
15. SOUTH KOREA ADULTS (Q264/214, Q280/18+ AND Q625/1) [QUOTA = 180]
16. RUSSIA ADULTS (Q264/196, Q280/18+ AND Q625/1) [QUOTA = 225]
17. INDIA ADULTS (Q264/116, Q280/18+ AND Q625/1) [QUOTA = 585]
18. INDONESIA ADULTS (Q264/117, Q280/18+ AND Q625/1) [QUOTA = 180]
19. NIGERIA ADULTS (Q264/174, Q280/18+ AND Q625/1) [QUOTA = 180]
20. SOUTH AFRICA ADULTS (Q264/193, Q280/18+ AND Q625/1) [QUOTA = 90]
21. EGYPT ADULTS (Q264/66, Q280/18+ AND Q625/1) [QUOTA = 90]
22. COLOMBIA ADULTS (Q264/51, Q280/18+ AND Q625/1) [QUOTA = 90]
23. ARGENTINA ADULTS (Q264/10, Q280/18+ AND Q625/1) [QUOTA = 90]
24. BRAZIL ADULTS (Q264/33, Q280/18+ AND Q625/1) [QUOTA = 315]
25. US TEENS 15-17 (Q264/244, Q280/15-17 AND Q625/1) [QUOTA = 50]
26. CANADA TEENS 15-17 (Q264/42, Q280/15-17 AND Q625/1) [QUOTA = 20]
27. MEXICO TEENS 15-17 (Q264/157, Q280/15-17 AND Q625/1) [QUOTA = 20]
28. ITALY TEENS (Q264/123, Q280/15-17 AND Q625/1) [QUOTA = 10]
29. TURKEY TEENS (Q264/235, Q280/15-17 AND Q625/1) [QUOTA = 10]
30. SPAIN TEENS (Q264/215, Q280/15-17 AND Q625/1) [QUOTA = 10]
31. POLAND TEENS (Q264/189, Q280/15-17 AND Q625/1) [QUOTA = 10]
32. UNITED KINGDOM TEENS (Q264/243, Q280/15-17 AND Q625/1) [QUOTA = 20]
33. FRANCE TEENS (Q264/76, Q280/15-17 AND Q625/1) [QUOTA = 20]
34. GERMANY TEENS (Q264/85, Q280/15-17 AND Q625/1) [QUOTA = 25]
35. CHINA TEENS (Q264/48, Q280/15-17 AND Q625/1) [QUOTA = 110]

36. VIETNAM TEENS (Q264/249, Q280/15-17 AND Q625/1) [QUOTA = 10]
37. PHILIPPINES TEENS (Q264/187, Q280/15-17 AND Q625/1) [QUOTA = 20]
38. JAPAN TEENS (Q264/126, Q280/15-17 AND Q625/1) [QUOTA = 35]
39. SOUTH KOREA TEENS (Q264/214, Q280/15-17 AND Q625/1) [QUOTA = 20]
40. RUSSIA TEENS (Q264/196, Q280/15-17 AND Q625/1) [QUOTA = 25]
41. INDIA TEENS (Q264/116, Q280/15-17 AND Q625/1) [QUOTA = 65]
42. INDONESIA TEENS (Q264/117, Q280/15-17 AND Q625/1) [QUOTA = 20]
43. NIGERIA TEENS (Q264/174, Q280/15-17 AND Q625/1) [QUOTA = 20]
44. SOUTH AFRICA TEENS (Q264/193, Q280/15-17 AND Q625/1) [QUOTA = 10]
45. EGYPT TEENS (Q264/66, Q280/15-17 AND Q625/1) [QUOTA = 10]
46. COLOMBIA TEENS (Q264/51, Q280/15-17 AND Q625/1) [QUOTA = 10]
47. ARGENTINA TEENS (Q264/10, Q280/15-17 AND Q625/1) [QUOTA = 10]
48. BRAZIL TEENS (Q264/33, Q280/15-17 AND Q625/1) [QUOTA = 35]

BASE: QUALIFIED (Q640/1-48)

Q645 QUOTA CHECK (DOES NOT APPEAR ON SCREEN)
CHECK QUOTA AT Q670

1 QUOTA CELL CLOSED
2 QUOTA CELL OPEN
3 QUOTA CELL NOT FOUND

BASE: ALL RESPONDENTS

Q98 END OF SCREENER DISPOSITION STATUS OF RESPONDENT

QMS Over quota	1
Screener Not Qualified #1 Under Age	25
Screener Not Qualified #4 AGE/ NE 15+	28
Screener Not Qualified #2 Not US, CA, MX, IT, TU, SP, PO, UK, FR, DE, CH, VI, PH, JA, SK, RU, IN, NI, SA, EG, CO, AR, BR	26
Screener Not Qualified #3 Less than 5 hours in Internet (Q600/1-2,7)	27
Dispo term not specified	98
COMPLETE	99
DF Fail	996
Failed ISQ	998
Fraud Score Failure	997

BASE: ALL RESPONDENTS

Q99 SCREENER QUALIFICATION IDENTIFICATION QUESTION (DOES NOT APPEAR ON SCREEN)

1 SCREENER QUALIFIED RESPONDENTS, QUOTA OPEN [Q640/1]
3 SCREENER QUALIFIED RESPONDENTS, QUOTA CLOSED
6 NOT SCREENER QUALIFIED (Q640/2)

SECTION 700: UNDERSTANDING OF/EXPERIENCE WITH LEGACY GTLDS

[PN: DISPLAY Q700 AND Q701 ON THE SAME SCREEN]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q701 As you are probably aware, website domain names can have different suffixes or extensions. For example, some domain names end with .com, while other common extensions are .org or .net. For the website [INSERT WEBSITE FOR REGION], "[INSERT SECOND LEVEL DOMAIN FOR REGION]" is the domain name and "[INSERT TLD FOR REGION]" is the domain name extension.

[PN: FOR EACH REGION, USE THE CHART BELOW TO INSERT WEBSITE, SECOND LEVEL DOMAIN AND TLD IN THE QUESTION WORDING]

Region	Website	Second Level Domain	TLD
China	Google.cn	Google	.cn
Vietnam	Google.com.vn	Google	.com.vn
Philippines	Google.com.ph	Google	.com.ph
Japan	Google.co.jp	Google	.co.jp
South Korea	Google.co.kr	Google	.co.kr
Russia	Google.ru	Google	.ru
India	Google.co.in	Google	.co.in
Indonesia	Google.co.id	Google	.co.id
Nigeria	Google.com.ng	Google	.com.ng
South Africa	Google.com.za	Google	.com.za
Egypt	Google.com.eg	Google	.com.eg
Colombia	Google.com.co	Google	.com.co
Argentina	Google.com.ar	Google	.com.ar
Brazil	Google.com.br	Google	.com.br
Italy	Google.it	Google	.it
Turkey	Google.com.tr	Google	.com.tr
Spain	Google.es	Google	.es
Poland	Google.pl	Google	.pl
United Kingdom	Google.co.uk	Google	.co.uk
France	Google.fr	Google	.fr
Germany	Google.de	Google	.de
United States	Google.com	Google	.com
Canada	Google.ca	Google	.ca
Mexico	Google.mx	Google	.mx

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q700 Which of the following domain name extensions, if any, have you heard of? Please select **all** that apply.

MASTER LEGACY gTLD LIST; RANDOMIZE; MULTIPE RESPONSE

1 .biz
2 .com
3 .info
4 .mobi
5 .net
6 .org
7 .tel
8 .asia
9 .pro
10 .coop
11 [CHINA ONLY] .cn
12 [VIETNAM ONLY] .vn
13 [PHILIPPINES ONLY] .ph
14 [JAPAN ONLY] .jp
15 [SOUTH KOREA ONLY] .kr
16 [RUSSIA ONLY] .ru
17 [INDIA ONLY] .in
18 [INDONESIA ONLY] .id
19 [NIGERIA ONLY] .ng
20 [SOUTH AFRICA ONLY] .za
21 [EGYPT ONLY] .eg
22 [COLOMBIA ONLY] .co
23 [ARGENTINA ONLY] .ar
24 [BRAZIL ONLY] .br
25 [ITALY ONLY] .it
26 [TURKEY ONLY] .tr
27 [SPAIN ONLY] .es
28 [POLAND ONLY] .pl
29 [UNITED KINGDOM ONLY] .uk
30 [FRANCE ONLY] .fr
31 [GERMANY ONLY] .de
32 [UNITED STATES ONLY] .us
33 [CANADA ONLY] .ca
34 [MEXICO ONLY] .mx
36 [ITALY, SPAIN, POLAND, UK, FRANCE, GERMANY ONLY] .eu
35 I am not aware of any of these (ANCHOR)

BASE: HAS HEARD OF EXTENSIONS Q99/1 AND Q700/1-34,36 [TREND]

Q705 Have you personally visited websites with any of the following domain extensions? Please select all that you recall visiting.

[NOTE: ONLY SHOW THOSE HEARD OF IN Q700, IN SAME ORDER AS Q700]; [MULTIPLE RESPONSE]

1 .biz
2 .com
3 .info
4 .mobi
5 .net
6 .org
7 .tel
8 .asia
9 .pro
10 .coop
11 [CHINA ONLY] .cn
12 [VIETNAM ONLY] .vn
13 [PHILIPPINES ONLY] .ph
14 [JAPAN ONLY] .jp
15 [SOUTH KOREA ONLY] .kr
16 [RUSSIA ONLY] .ru
17 [INDIA ONLY] .in
18 [INDONESIA ONLY] .id
19 [NIGERIA ONLY] .ng
20 [SOUTH AFRICA ONLY] .za
21 [EGYPT ONLY] .eg
22 [COLOMBIA ONLY] .co
23 [ARGENTINA ONLY] .ar
24 [BRAZIL ONLY] .br
25 [ITALY ONLY] .it
26 [TURKEY ONLY] .tr
27 [SPAIN ONLY] .es
28 [POLAND ONLY] .pl
29 [UNITED KINGDOM ONLY] .uk
30 [FRANCE ONLY] .fr
31 [GERMANY ONLY] .de
32 [UNITED STATES ONLY] .us
33 [CANADA ONLY] .ca
34 [MEXICO ONLY] .mx
36 [ITALY, SPAIN, POLAND, UK, FRANCE, GERMANY ONLY] .eu

35 None of these above [PN: ALWAYS DISPLAY. ANCHOR, EXCLUSIVE]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q725 Please rate the following domain name extensions by how **trustworthy** you feel they are.

1 Very trustworthy	2 Somewhat trustworthy	3 Not very trustworthy	4 Not at all trustworthy

[PN: DISPLAY SCALE 4 TO 1] RANDOMIZE

1 .com
2 .net
3 .info
4 .org
29 .tel
30 .asia
31 .pro
32 .coop
5 [CHINA ONLY] .cn
6 [VIETNAM ONLY] .vn
7 [PHILIPPINES ONLY] .ph
8 [JAPAN ONLY] .jp
9 [SOUTH KOREA ONLY] .kr
10 [RUSSIA ONLY] .ru
11 [INDIA ONLY] .in
12 [INDONESIA ONLY] .id
13 [NIGERIA ONLY] .ng
14 [SOUTH AFRICA ONLY] .za
15 [EGYPT ONLY] .eg
16 [COLOMBIA ONLY] .co
17 [ARGENTINA ONLY] .ar
18 [BRAZIL ONLY] .br
19 [ITALY ONLY] .it
20 [TURKEY ONLY] .tr
21 [SPAIN ONLY] .es
22 [POLAND ONLY] .pl
23 [UNITED KINGDOM ONLY] .uk
24 [FRANCE ONLY] .fr
25 [GERMANY ONLY] .de
26 [UNITED STATES ONLY] .us
27 [CANADA ONLY] .ca
28 [MEXICO ONLY] .mx

[PN: DISPLAY Q727 AND Q730 ON THE SAME SCREEN]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NEW; CODED]

Q727 Thinking about an extension that you felt was more trustworthy, what about that domain name extension makes it seem trustworthy?
[MANDATORY TEXT BOX]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND; CODED]

Q730 To the best of your knowledge, why do websites have different extensions?
[MANDATORY TEXT BOX]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q750 If you wanted more information about one of the current domain name extensions, where would you go? Please select all that apply.

RANDOMIZE; MULTIPLE RESPONSE

1 An Internet search engine to find articles, posts or similar information
2 An Internet encyclopedia
3 My Internet service provider
4 Other (specify) ____________________ (ANCHOR)
5 Not sure (ANCHOR)

[PN: DISPLAY Q753 AND Q755 ON THE SAME SCREEN]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q753 What we have been describing as domain name extensions are officially known as **generic top-level domains**, or **gTLDs** for short. For example, .com, .net and .org are all gTLDs.

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q755 How well do each of the following adjectives describe common gTLDs such as .com, .org and .net?

1 Does not describe at all	2 Does not describe very well	3 Describes somewhat well	4 Describes very well

RANDOMIZE; REPEAT THE SCALE AT THE BOTTOM OF THE GRID

1 Innovative
2 Cutting edge
3 Extreme
4 Trustworthy
5 Unconventional
6 Practical
7 Technical
8 Confusing
9 Overwhelming
10 Useful
11 For people like me
12 Interesting
13 Exciting
14 Helpful
15 Informative

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q765 As you may know, people can purchase or register rights to a name using a gTLD for a purpose like creating a website (e.g., "yourwebsite.org"). This typically includes ensuring that the domain name is not already in use, providing information about the person or company registering to establish eligibility to register and then paying a fee.

What are your expectations about restrictions on purchasing/registering a domain using each of the following gTLDs?

1	2	3
No purchase restrictions should be required	Some purchase restrictions should be required	Strict purchase restrictions should be required

RANDOMIZE

1 .com
2 .net
3 .info
4 .org
5 [CHINA ONLY] .cn
6 [VIETNAM ONLY] .vn
7 [PHILIPPINES ONLY] .ph
8 [JAPAN ONLY] .jp
9 [SOUTH KOREA ONLY] .kr
10 [RUSSIA ONLY] .ru
11 [INDIA ONLY] .in
12 [INDONESIA ONLY] .id
13 [NIGERIA ONLY] .ng
14 [SOUTH AFRICA ONLY] .za
15 [EGYPT ONLY] .eg
16 [COLOMBIA ONLY] .co
17 [ARGENTINA ONLY] .ar
18 [BRAZIL ONLY] .br
19 [ITALY ONLY] .it
20 [TURKEY ONLY] .tr
21 [SPAIN ONLY] .es
22 [POLAND ONLY] .pl
23 [UNITED KINGDOM ONLY] .uk
24 [FRANCE ONLY] .fr
25 [GERMANY ONLY] .de
26 [UNITED STATES ONLY] .us
27 [CANADA ONLY] .ca
28 [MEXICO ONLY] .mx

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NEW]

Q767 We'd like to ask you another question about restrictions on registration of a gTLD. Do you feel each of the following restrictions should be enforced?

1 Yes
2 No

1. Requirements for validated credentials related to the gTLD (e.g., must be a licensed contractor to register a .builder domain)
2. Validation that the person or company registering the site meets intended parameters (e.g. must be involved in the pharmaceutical industry to register a .pharmacy domain
3. Requirements for local presence within a specific city, country, or region for a domain related to that place.
4. Requirements for use of the name to be consistent with the meaning of the gTLD (e.g., use of a .net name must be for network operations purposes)

[PN: DISPLAY Q770 AND Q780 ON THE SAME SCREEN]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q770 Does having purchase restrictions or requirements on a particular gTLD make it…?

ROTATE OPTIONS 1 AND 3

1 More trustworthy
2 Doesn't make a difference (ANCHOR HERE)
3 Less trustworthy
4 Not sure (ANCHOR HERE)

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND; CODED]

Q780 How do you determine whether a website is legitimate or not?

[TEXT BOX]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q785 Have you ever tried to identify who created a particular website?

1 Yes
2 No

BASE: TRIED TO IDENTIFY (Q785/1) [TREND; CODED]

Q790 What did you use to try and figure this out?

[TEXT BOX]

SECTION 800: UNDERSTANDING OF/EXPERIENCE WITH NEW GTLDS

[PN: DISPLAY Q801 AND Q830X1 ON THE SAME SCREEN]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q801 As you may or may not know, new domain name extensions are becoming available all the time. These new extensions are called new gTLDs.

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND; CODED]

Q830x1 To the best of your knowledge, why have new gTLDs been created?
[MANDATORY TEXT BOX]

[PN: DISPLAY Q870 AND Q875 ON THE SAME SCREEN]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NEW; CODED]

Q870 What criteria or situations might make you decide to visit websites with a domain name extension you have not seen before?
[MANDATORY TEXT BOX]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NEW; CODED]

Q875 What, if anything, might cause you to avoid a website with an unfamiliar domain name extension?
[MANDATORY TEXT BOX]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q800 Which of the following new gTLDs, if any, have you heard of? Please select all that apply.

MASTER NEW TLD LIST; RANDOMIZE; MULTIPLE RESPONSE; DISPLAY LIST IN 2 COLUMNS

1 .email
2 .photography
3 .link
4 .guru
5 .realtor
6 .club
7 .xyz
16 .top
17 .pics
18 .online
19 .space
20 .website
21 .news
22 .site
23 .toronto [ONLY IN CANADA]
24 .guadalajara [ONLY IN MEXICO]
25 .roma [ONLY IN ITALY]
26 .istanbul [ONLY IN TURKEY]
27 .madrid [ONLY IN SPAIN}
28 .warszawa [ONLY IN POLAND]
29 .paris [ONLY IN FRANCE]
30 佛山 [ONLY IN CHINA] (Foshan)
31 .hanoi [ONLY IN VIETNAM]
32 .manilla ONLY IN PHILIPPINES]
33 .tokyo [ONLY IN JAPAN]
34 .seoul [ONLY IN SOUTH KOREA]
35 .москва [ONLY IN RUSSIA]
36 .delhi [ONLY IN INDIA]
37 .jakarta [ONLY IN INDONESIA]
38 .abuja [ONLY IN NIGERIA]
39 .capetown [ONLY IN SOUTH AFRICA]
40 .cairo [ONLY IN EGYPT]
41 .bogota [ONLY IN COLOMBIA]
42 .cordoba [ONLY IN ARGENTINA]
43 .rio [ONLY IN BRAZIL]
8 .berlin [ONLY in Germany]
9 .ovh [ONLY in Germany]
10 .london [ONLY in UK]
11 .nyc [ONLY in US]
12 .wang [ONLY IN CHINA]
13 .xn—ses554g (Chinese for network address) [ONLY in China]
14 .xn—55qx5d (Chinese for company) [ONLY in China
15 I am not aware of any of these (ANCHOR)

BASE: HAS HEARD OF NEW EXTENSIONS (Q99/1 AND Q800/1-14, 16-43) [TREND]

Q805 Have you personally visited websites with any of the following new domain name extensions? Please select all that you recall having visited.

[NOTE: ONLY SHOW THOSE HEARD OF IN Q800, IN SAME ORDER AS Q800]

1	.email	
2	.photography	
3	.link	
4	.guru	
5	.realtor	
6	.club	
7	.xyz	
16	.top	
17	.pics	
18	.online	
19	.space	
20	.website	
21	.news	
22	.site	
23	.toronto [ONLY IN CANADA]	
24	.guadalajara [ONLY IN MEXICO]	
25	.roma [ONLY IN ITALY]	
26	.istanbul [ONLY IN TURKEY]	
27	.madrid [ONLY IN SPAIN}	
28	.warszawa [ONLY IN POLAND]	
29	.paris [ONLY IN FRANCE]	
30	佛山 [ONLY IN CHINA] (Foshan)	
31	.hanoi [ONLY IN VIETNAM]	
32	.manilla ONLY IN PHILIPPINES]	
33	.tokyo [ONLY IN JAPAN]	
34	.seoul [ONLY IN SOUTH KOREA]	
35	.москва [ONLY IN RUSSIA]	
36	.delhi [ONLY IN INDIA]	
37	.jakarta [ONLY IN INDONESIA]	
38	.abuja [ONLY IN NIGERIA]	
39	.capetown [ONLY IN SOUTH AFRICA]	
40	.cairo [ONLY IN EGYPT]	
41	.bogota [ONLY IN COLOMBIA]	
42	.cordoba [ONLY IN ARGENTINA]	
43	.rio [ONLY IN BRAZIL]	
8	.berlin	[ONLY in Germany]
9	.ovh	[ONLY in Germany]
10	.london	[ONLY in UK]
11	.nyc	[ONLY in US]
12	.wang	[ONLY IN CHINA]
13	.xn—ses554g (Chinese for network address)	[ONLY in China]
14	.xn—55qx5d (Chinese for company)	[ONLY in China
15	None of the above [PN: ALWAYS SHOW, ANCHOR, EXCLUSIVE]	

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NEW]

Q890 Think about accessing a website with one of the newer domain extensions (the part after the "dot"). If the domain name extension in question is descriptive of a service or item, would you expect that all websites using that domain extension have a direct relationship to it?

For example, if you go to .bank, would you expect to see registrations by banks across the globe? If you go to .paris do you expect to see domain names connected to the city of Paris? If you go to .film do you expect to see content related to films?

1. I would expect that there is a very clear relationship between the websites and the extensions—for example, .bank should only be related to banks
2. I would expect there to be some relationship, but it could include sites for entities that are not themselves banks
3. I expect that the extension could be used by just about any company that wanted to—for example, there could be a website called river.bank that might relate to fishing or flood control
4. I don't have any strong expectations, I'll probably just look at search results and figure it out

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NEW]

Q812 Assume you are looking for information about wildlife photography. How likely would you be to visit each of the following sites?

[CODES 1-4 FOR Q813 ARE NOT TO BE TRANSLATED THEY ARE TO REMAIN IN ENGLISH ONLY FOR ALL COUNTRIES, CODE 5 IS TO BE TRANSLATED FOR ALL LANGUAGES.]

Q813

1 Wildanimalphotography.com [SHOW IN ENGLISH ONLY FOR ALL COUNTRIES]
2 Wildanimal.photography [SHOW IN ENGLISH ONLY FOR ALL COUNTRIES]
3 Wildanimal.photos [SHOW IN ENGLISH ONLY FOR ALL COUNTRIES]
4 [Wildanimalphotos.info SHOW IN ENGLISH ONLY FOR ALL COUNTRIES]
5 Wildanimalphotography.com [TRANSLATE INTO NATIVE LANGUAGE FOR EACH COUNTRY; DO NOT SHOW FOR ENGLISH SPEAKING COUNTRIES: US, UK, India, South Africa, Canada and Nigeria (Q264/244, 243, 116, 193, 42, 174]

1 Very unlikely
2 Somewhat unlikely
3 Somewhat likely
4 Very likely
5 Not sure

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NEW]

Q826X1 And if you were looking to buy a new camera, how likely would you be to visit each of the following?

[PN: USE THE FOLLOWING LIST TO INSERT COUNTRY TLD FOR CODE 4 BELOW:]

COUNTRY	TLD
China	.cn
Vietnam	.vn
Philippines	.ph
Japan	.jp
South Korea	.kr
Russia	.ru
India	.in
Indonesia	.id
Nigeria	.ng
South Africa	.za
Egypt	.eg
Colombia	.co
Argentina	.ar
Brazil	.br
Italy	.it
Turkey	.tr
Spain	.es
Poland	.pl
United Kingdom	.uk
France	.fr
Germany	.de
United States	.com
Canada	.ca
Mexico	.mx

Q827

1 Digitalcameras.com
2 Digital.cameras
3 Digitalcameras.shop
4 Digitalcameras(INSERT COUNTRY TLD)[DO NOT SHOW FOR US]

1 Very unlikely
2 Somewhat unlikely
3 Somewhat likely
4 Very likely
5 Not sure

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NEW]

Q828 And, what if you were looking for information about Berlin, Germany or thinking about travelling there? How likely would you be to visit each of the following?

Q829

1 berlin.com
2 berlin.de
3 berlin.info
4 info.berlin

1 Very unlikely
2 Somewhat unlikely
3 Somewhat likely
4 Very likely
5 Not sure

[PN: DISPLAY Q880 AND Q823 ON THE SAME SCREEN]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NEW]

Q880 If you were conducting an internet search for information on a topic, how much attention do you pay to the domain extension (e.g. .com or .info)?

1 I don't pay much attention, I just look at the search result/link
2 I only go to sites with domain extensions I am familiar with
3. I look at the search results and decide based on other information I see

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q823 Which of the following would be most important to you in determining which gTLD to register your domain name under?
RANDOMIZE

1 Reasonable price
2 Has a well-known extension
3 Has a new extension
7 One that is close to the one I wanted and is available to register
6 One that seems most relevant to my needs
5 Other (specify) _________________(ANCHOR)

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q825 Please rate the following gTLDs by how **trustworthy** you feel they are.

[PN: DISPLAY SCALE CODES 4-1]; RANDOMIZE; REPEAT SCALE AT THE BOTTOM OF THE GRID

1 Very trustworthy	2 Somewhat trustworthy	3 Not very trustworthy	4 Not at all trustworthy

1 .email
2 .photography
3 .link
4 .guru
5 .realtor
6 .club
7 .xyz
16 .top
17 .pics
18 .online
19 .space
20 .website
21 .news
22 .site
23 .toronto [ONLY IN CANADA]
24 .guadalajara [ONLY IN MEXICO]
25 .roma [ONLY IN ITALY]
26 .istanbul [ONLY IN TURKEY]
27 .madrid [ONLY IN SPAIN}
28 .warszawa [ONLY IN POLAND]
29 .paris [ONLY IN FRANCE]
30 佛山 [ONLY IN CHINA] (Foshan)
31 .hanoi [ONLY IN VIETNAM]
32 .manilla ONLY IN PHILIPPINES]
33 .tokyo [ONLY IN JAPAN]
34 .seoul [ONLY IN SOUTH KOREA]
35 .москва [ONLY IN RUSSIA]
36 .delhi [ONLY IN INDIA]
37 .jakarta [ONLY IN INDONESIA]
38 .abuja [ONLY IN NIGERIA]
39 .capetown [ONLY IN SOUTH AFRICA]
40 .cairo [ONLY IN EGYPT]
41 .bogota [ONLY IN COLOMBIA]
42 .cordoba [ONLY IN ARGENTINA]
43 .rio [ONLY IN BRAZIL]
8 .berlin [ONLY in Germany]
9 .ovh [ONLY in Germany]
10 .london [ONLY in UK]
11 .nyc [ONLY in US]
12 .wang [ONLY IN CHINA]
13 .xn—ses554g (Chinese for network address) [ONLY in China]
14 .xn—55qx5d (Chinese for company) [ONLY in China

[PN: DISPLAY Q827 AND Q850 ON THE SAME SCREEN]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NEW; CODED]

Q827 Please assume that while browsing you see a website with a domain extension (the part after the "dot") that you do not recognize. What about this unfamilar domain name extension would make it feel trustworthy?

[MANDATORY TEXT BOX]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q850 If you wanted more information about one of the new gTLDs, where would you go? Please select all that apply.

RANDOMIZE; MULTLIPE RESPONSE

1 An Internet search engine to find articles, posts or similar information
2 An Internet encyclopedia
3 My Internet service provider/agency that provides my internet access
4 Other (specify) ___________________ (ANCHOR)
5 Not sure (ANCHOR)

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q855 How well do each of the following adjectives describe new gTLDs such as .email, .photography and .club?

1 Does not describe at all	2 Does not describe very well	3 Describes somewhat well	4 Describes very well

RANDOMIZE; DISPLAY SCALE AT THE BOTTOM OF THE GRID

1 Innovative
2 Cutting edge
3 Extreme
4 Trustworthy
5 Unconventional
6 Practical
7 Technical
8 Confusing
9 Overwhelming
10 Useful
11 For people like me
12 Interesting
13 Exciting
14 Helpful
15 Informative

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q865 Earlier we asked you about enforcing restrictions on who can register/purchase domains with specific extensions. What level of restrictions would you expect there to be on purchasing the following new gTLDs?

1 No purchase restrictions should be required	2 Some purchase restrictions should be required	3 Strict purchase restrictions should be required

1 .email
2 .photography
3 .link
4 .guru
5 .realtor
6 .club
7 .xyz
44 .bank
45 .pharmacy
46 .builder
23 .toronto [ONLY IN CANADA]
24 quadalajara [ONLY IN MEXICO]
25 .roma [ONLY IN ITALY]
26 .istanbul [ONLY IN TURKEY]
27 .madrid [ONLY IN SPAIN}
28 .warszawa [ONLY IN POLAND]
29 .paris [ONLY IN FRANCE]
30 佛山 [ONLY IN CHINA] (Foshan)
31 .hanoi [ONLY IN VIETNAM]
32 .manilla ONLY IN PHILIPPINES]
33 .tokyo [ONLY IN JAPAN]
34 .seoul [ONLY IN SOUTH KOREA]
35 .москва [ONLY IN RUSSIA]
36 .delhi [ONLY IN INDIA]
37 .jakarta [ONLY IN INDONESIA]
38 .abuja [ONLY IN NIGERIA]
39 .capetown [ONLY IN SOUTH AFRICA]
40 .cairo [ONLY IN EGYPT]
41 .bogota [ONLY IN COLOMBIA]
42 .cordoba [ONLY IN ARGENTINA]
43 .rio [ONLY IN BRAZIL]
8 .berlin [ONLY in Germany]
9 .ovh [ONLY in Germany]
10 .london [ONLY in UK]
11 .nyc [ONLY in US]
12 .wang [ONLY IN CHINA]
13 .xn—ses554g (Chinese for network address) [ONLY in China]
14 .xn—55qx5d (Chinese for company) [ONLY in China

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NO TREND]

Q910 And, how much do you trust that the restrictions on this new registration will actually be enforced?
[PN: DISPLAY SCALE CODES 1-4]

1 Very low level of trust	2 Low level of trust	3 Moderate level of trust	4 High level of trust

SECTION 900: TRUST/EXPERIENCE WITH THE DOMAIN NAME SYSTEM

[PN: DISPLAY Q901 AND Q915 ON THE SAME SCREEN]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q901 Now a few questions about the process for registering a domain name.

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q915 How much do you trust the domain name industry compared to these other industries?

Q916 RANDOMIZE

1 Internet service providers/the agency that provides my internet access
2 Web based marketing companies
3 E-commerce companies
4 Software companies
5 Computer hardware companies

1 Trust much less
2 Trust somewhat less
3 Trust the same
4 Trust somewhat more
5 Trust much more

BASE: TRUST OTHER INDUSTRIES MUCH/SOMEWHAT MORE (Q915/4,5 AND Q916/1-5) [NEW; CODED]

Q917 You said that you trust the domain name industry more than (insert options rated Q915/4,5; if Q916/1 is to be inserted, shorten the wording to display Internet service providers). Why do you trust the domain name industry more than these other industries?

[MANDATORY TEXT BOX]

BASE: TRUST OTHER INDUSTRIES MUCH/SOMEWHAT LESS (Q915/1,2 AND Q916/1-5) [NEW; CODED]

Q919 You said that you trust the domain name industry less than (insert options rated Q915/1,2; if Q916/1 is to be inserted, shorten the wording to display Internet service providers). Why do you trust the domain name industry less than these other industries?

[MANDATORY TEXT BOX]

SECTION 1000: REACHING THE INTENDED INFORMATION SUPPLIER

[PN: DISPLAY Q1001 AND Q1000 ON THE SAME SCREEN]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1)

Q1001 Now please think about how you use the internet and the process you use to locate websites you may want to visit.

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q1000 Which devices do you use to access the Internet? Please select all that apply.

MULTIPLE RESPONSE

1 Desktop computer
2 Laptop computer
3 Tablet
4 Smartphone
5 Other (specify)

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q1005 What is your experience with URL shorteners? URL shortening is an Internet technique in which a URL may be made substantially shorter in length and still direct to the required page. For example, the url http://www.doctorswithoutborders.org/support-us/corporate-support could be shortened to http://bit.ly/1Um526Q.

1 I have never heard of them or used them
2 I have heard of them but never used them
3 I use them, but not frequently
4 I use them frequently

BASE: NOT USED URL SHORTENERS (Q1005/1-2) [TREND]

Q1010 Why haven't you used URL shorteners?

RANDOMIZE
MULTIPLE RESPONSE

1 I have never heard of them
2 Confused about which website I'm going to
3 Never needed to
4 Don't like them
5 Don't trust them
6 Other (specify) (ANCHOR)

BASE: HAVE USED URL SHORTENERS (Q1005/3-4) [TREND]

Q1015 Why do you use URL shorteners?

RANDOMIZE
MULTIPLE RESPONSE

1 They are convenient
2 They save me time
3 It's the latest thing
4 Other (specify) ANCHOR

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q1020 What is your experience with QR codes? A QR code consists of black modules (square dots) arranged in a square grid on a white background, which can be read by an imaging device (such as a camera). Reading the QR code with your Smartphone takes you to a website or ad for more information. Here is an example—this is a QR code for http://www.doctorswithoutborders.org/support-us/corporate-support

1 I have never heard of them or used them
2 I have heard of them but never used them
3 I use them, but not frequently
4 I use them frequently

BASE: NOT USED QR CODES (Q1020/1-2) [TREND]

Q1025 Why haven't you used QR codes?

RANDOMIZE
MULTIPLE RESPONSE

1 I have never heard of them or seen them
2 Never needed to
3 Don't like them
4 Don't trust them
5 Other (specify) (ANCHOR)

BASE: HAVE USED QR CODES (Q1020/3-4) [TREND]

Q1030 Why do you use QR codes?

RANDOMIZE
MULTIPLE RESPONSE

1 They are convenient
2 They save me time
3 It's the latest thing
4 Other (specify) (ANCHOR)

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q1050 In general, what is your preferred way of finding websites now?

RANDOMIZE

1 Use a search engine
2 Type the domain name directly into my browser and see if it comes up
3 Use an app instead of going to websites themselves
4 Use a QR code
5 Other (specify) _________________[ANCHOR]

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NO TREND]

Q1036 Please think about looking for information about a topic on the internet. Which of these is the safest, which is the fastest, and which is the easiest way to navigate to a website that may have the information you are looking for?

RANDOMIZE
SINGLE RESPONSE
[PN: MAKE SAFEST, FASTEST AND EASIEST THE COLUMNS; ALLOW ONE RESPONSE PER COLUMN]

1 Using an app instead of going to the website itself—for example, an app provided by an airline or a bank
2 Accessing via a QR code
3 Typing the domain name into a browser
4 Finding via an Internet search engine
5 Accessing via a bookmark
6 Not sure (ANCHOR)

1 Safest
2 Fastest
3 Easiest

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NEW]

Q1055 Now think about buying things over the internet. Which of these are the fastest, easiest and safest way to get to the website you want to buy from?

RANDOMIZE
SINGLE RESPONSE
[PN: MAKE SAFEST, FASTEST AND EASIEST THE COLUMNS; ALLOW ONE RESPONSE PER COLUMN]

1 Using an app instead of going to a website—for example, an app provided by an airline or a bank
2 Accessing via a QR code
3 Typing the domain name into a browser
4 Finding via an Internet search engine
5 Accessing via a bookmark
6 Not sure (ANCHOR)

1 Safest
2 Fastest
3 Easiest

<u>BASE: ALL QUALIFIED RESPONDENTS (Q99/1)</u> [NEW]

Q1060 Lastly, think about a website you go to regularly and where you will access your personal information, like banking or healthcare information? Which of these is the safest, which is the easiest, and which is the fastest method?

RANDOMIZE
SINGLE RESPONSE
[PN: MAKE SAFEST, FASTEST AND EASIEST THE COLUMNS; ALLOW ONE RESPONSE PER COLUMN]

1 Using an app provided by the website owner—for example, an app provided by an airline or a bank
2 Accessing via a QR code
3 Typing the domain name into a browser
4 Finding via an Internet search engine
5 Accessing via a bookmark
6 Not sure (ANCHOR)

1 Safest
2 Fastest
3 Easiest

SECTION 1100: ABUSIVE BEHAVIOR / CYBER CRIME

<u>BASE: ALL QUALIFIED RESPONDENTS (Q99/1)</u> [NEW]

Q1140 Overall, how comfortable are you with each of the following online behaviors?

Q1141
1 Searching for information
2 Using social media to talk about your activities or family
3 Shopping online
4 Banking online
5 Accessing medical information online

1 Not at all comfortable
2 Not very comfortable
3 Somewhat comfortable
4 Very comfortable

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NEW]

Q1145 [FOR ALL COUNTRIES OTHER THAN US]: Please think about three websites. One has a .com domain extension, one has a [INSERT APPROPRIATE COUNTRY EXTENTION] and one has one of the new gTLDs like .club or .bank? How comfortable would you be doing each of these activities on each website?

[FOR US ONLY}: Please think about two websites. One has a .com domain extension and one has one of the new gTLDs like .club or .bank. How comfortable would you be doing each of these activities on each website?

[PN: SHOW EACH ACTIVITI ON A SEPARATE SCREEN WITH A GRID THAT HAS .COM, APPROPRIATE COUNTRY EXTENSION (SEE LIST BELOW) AND NEW gTLDs LIKE .CLUB OR .BANK AS THE THREE ROWS AND NOT AT ALL COMFORTABLE, NOT VERY COMFORTABLE, SOMEWHAT COMFORTABLE AND VERY COMFORTABLE AS THE COLUMNS.]

COUNTRY	TLD
China	.cn
Vietnam	.vn
Philippines	.ph
Japan	.jp
South Korea	.kr
Russia	.ru
India	.in
Indonesia	.id
Nigeria	.ng
South Africa	.za
Egypt	eg
Colombia	.co
Argentina	ar
Brazil	.br
Italy	.it
Turkey	.tr
Spain	.es
Poland	.pl
United Kingdom	.uk
France	.fr
Germany	.de
United States	.com
Canada	.ca
Mexico	.mx

Q1146

1 Inputting your email address
2 Inputting your home address
3 Inputting your telephone number
4 Inputting financial information (like a credit card or bank account number)
5 Inputting an ID number like a social security number, passport or government ID number
6 Inputting healthcare information, like inputting a list of prescription drugs you use, or your medical history

1 Not at all comfortable

2 Not very comfortable
3 Somewhat comfortable
4 Very comfortable

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NO TREND]

Q1100a How would you describe your familiarity with each of the following abusive internet behaviors?

RANDOMIZE

1 Phishing - The attempt to acquire sensitive information such as usernames, passwords, and credit card details by masquerading as a trustworthy entity in electronic communication.
2 Spamming - The use of electronic messaging systems to send unsolicited messages.
3 Cyber squatting – Registering or using a domain name with bad faith intent to profit from the goodwill of a trademark belonging to someone else.
4 Stolen credentials – When hackers steal personal information stored online such as usernames, passwords, social security numbers, credit cards numbers, etc.
5 Malware – Short for "malicious software", used to disrupt computer operations, gather sensitive information or gain access to private computer systems.

1 Never heard of
2 Just know the name
3 Somewhat familiar
4 Very familiar
5 Extremely familiar

BASE: FAMILIAR WITH ABUSIVE INTERNET BEHAVIOR (Q1100/1-5 AND Q1101/3-5) [NO TREND]

Q1105 What do you think are the source(s) for each type of abusive Internet behavior?

[ONLY DISPLAY THE BEHAVIORS FAMILIAR WITH IN Q1100/1-5 AND Q1101/3-5]
[RANDOMIZE IN SAME ORDER AS Q1100a]

Q1106
1 Phishing
2 Spamming
3 Cyber squatting
4 Stolen credentials
5 Malware

MULTIPLE RESPONSE
1 Individuals from my country
2 Individuals from outside my country
3 Organized groups from within my country
4 Organized groups from outside my country
5 Don't know [EXCLUSIVE]

BASE: FAMILIAR WITH ABUSIVE INTERNET BEHAVIOR (Q1100/1-5 AND Q1101/3-5) [NO TREND]

Q1115 How common do you feel each type of abusive Internet behavior is?

[ONLY DISPLAY THE BEHAVIORS FAMILIAR WITH IN Q1100/1-5 AND Q1101/3-5]
[RANDOMIZE IN SAME ORDER AS Q1100a]

Q1117
1 Phishing
2 Spamming
3 Cyber squatting
4 Stolen credentials

5 Malware

1 Not at all common
2 Not very common
3 Somewhat common
4 Very common
5 Don't know

BASE: FAMILIAR WITH ABUSIVE INTERNET BEHAVIOR (q1100/1-5 and Q1101/3-5) [NO TREND]

Q1120 Have you ever been affected by any of these types of abusive Internet behaviors?

[ONLY DISPLAY THE BEHAVIORS FAMILIAR WITH IN Q1100/1-5 AND Q1101/3-5]
[RANDOMIZE IN SAME ORDER AS Q1100a]

Q1121
1 Yes
2 No
3 Not sure

1 Phishing
2 Spamming
3 Cyber squatting
4 Stolen credentials
5 Malware

BASE: FAMILIAR WITH ABUSIVE INTERNET BEHAVIOR (Q1100/1-5 AND Q1101/3-5) [NO TREND]

Q1125 How scared are you of each of the following?

1 Not at all scared	2 Not very scared	3 Somewhat scared	4 Very scared

[ONLY DISPLAY THE BEHAVIORS FAMILIAR WITH IN Q1100/1-5 AND Q1101/3-5]
[RANDOMIZE IN SAME ORDER AS Q1100a]

1 Phishing
2 Spamming
3 Cyber squatting
4 Stolen credentials
5 Malware

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [TREND]

Q1130 What measures have you taken, if any, to avoid being affected by any of these types of abusive Internet behaviors? Please select all that apply.

RANDOMIZE
MULTIPLE RESPONSE

Q1131
1 Phishing
2 Spamming
3 Cyber squatting
4 Stolen credentials
5 Malware

1 Changed my Internet habits
2 Stopped making purchases online
3 Purchased antivirus software for my computer
4 Purchased an identity protection plan
5 Other (ANCHOR)
6 None (ANCHOR) (EXCLUSIVE)

[LOOP Q1135 FOR EACH Q1131 AND Q1130/5]

BASE: OTHER MEASURES TAKEN (Q1131/1-5 AND Q1130/5) [TREND]

Q1135 What other measures to avoid being affected by [INSERT Q1131 WHERE Q1130/5] have you taken?

INSERT TEXT BOX

BASE: ALL QUALIFIED RESPONDENTS (Q99/1) [NO TREND]

Q775 If you felt a website was being run improperly (for example, appears to be conducting illegal activity, appears to be a fake, etc.), who would you complain to? Please select all that apply.

MULTIPLE RESPONSE
RANDOMIZE

1 Contact the website owner/operator
5 Local police
6 Interpol
7 ICANN
8 Private security companies
9 Consumer protection agency
10 (US ONLY) FBI
11 (US ONLY) Intelligence agency like the CIA or NSA
12 (NON US ONLY) Federal police
13 (NON US ONLY) National law enforcement
14 (NON US ONLY) A national intelligence agency
15 Don't know [EXCLUSIVE]

SECTION 7: DEMOGRAPHIC QUESTIONS

BASE: ALL RESPONDENTS

Q308 [HIDDEN QUESTION - MANDATORY QUESTION SELECTION.]
[MULTIPLE RESPONSE]
[Need education, income, ethnicity and employment for all countries.]
[PN: IF ONLINE SURVEY, AGE 18+ (Q280/18+) AND US (Q264/244)PICK CODES 1, 3, 6, 8-13. IF HPOL SAMPLE GET CODES 15 AND 16 ALSO. IF ONLINE SURVEY, AGE 18+ (Q280/18+) AND NON_US (Q264/NE244)PICK CODES 1, 6, 8-11. IF HPOL SAMPLE GET CODES 15 AND 16 ALSO, IF ONLINE SURVEY, AGES 15-17 (Q280/15-) 17) AND US (Q264/244) PICK CODES 1, 3, 9-10, 12-13], IF ONLINE SURVEY, AGES 15-17 (Q280/15-) 17) AND NON US (Q264/NE244) PICK CODE 1]

01 GEOGRAPHICAL REGION (STATE/PROVINCE/REGION) (Q318)
03 ZIP/POSTAL CODE (Q326) [PN: Do not ask for any countries other than US.]
~~05 INTERNET USAGE (Q350)~~
06 **SINGLE** EMPLOYMENT (Q398, Q404, Q410) [PN: Do not ask for Vietnam and Philppines.]
08 EDUCATION (Q434-Q437)
09 SCHOOL LOCATION (Q440)
10 PARENTAL EDUCATION (Q444, Q446)
11 INCOME (Q450-Q466)
12 HISPANIC ORIGIN (Q474)
13 ETHNICITY (Q478-Q485)
15 SWEEPSTAKES (Q510-512, Q354, Q514)
16 SURVEY EVALUATION (Q516, Q518,Q522)
97 NONE E;

BASE: ALL RESPONDENTS

Q310 [HIDDEN QUESTION – OPTIONAL QUESTION SELECTION.]
[PN: IF AGES 18+ (Q280/18+) GET CODE 1 ONLY; IF AGES 15-17 (Q280/15-17) GET ONLY Q368 AND Q372 FROM CODE 1]
[MULTIPLE RESPONSE]
[DO NOT ASK Q364 FOR Q264/174 NIGERIA]

1 OPTIONAL BATCH 1 – HOUSEHOLD QUESTIONS (Q364(MARITAL STATUS), Q368 (# IN HH), Q372 (# OF CHILDREN IN HH))
2 OPTIONAL BATCH 2 – HOUSEHOLD QUESTIONS AND YEAR OF BIRTH OF CHILDREN (Q364(MARITAL STATUS), Q368(# IN HH), Q372 (# OF CHILDREN IN HH), Q376-Q381(AGE OF CHILDREN IN HH))
3 PLACEHOLDER
4 OPTIONAL BATCH 4 – EMPLOYMENT AND INVESTABLE ASSETS QUESTIONS (Q424(INDUSTRY),, Q428(PROFESSION), Q470(INVESTABLE ASSETS))
5 OPTIONAL BATCH 5 – SEXUAL ORIENTATION QUESTIONS (Q498, Q500, Q504)
6 OPTIONAL BATCH 6 - INTERNET CONNECTION (Q336-Q346)
7 OPTIONAL BATCH 7 - LANGUAGE FOR WEIGHTING (Q492)
8 OPTIONAL BATCH 8 - HOUSEHOLD TELEPHONES (Q358, Q360)
9 OPTIONAL BATCH 9 - SOCIAL CLASS (Q414, Q417, Q421)
10 OPTIONAL BATCH 10 - SPOKEN HH LANGUAGE (Q488-Q490)
99 NO OPTIONAL QUESTIONSE;

BASE: US AGE 15-17 (Q264/244 AND Q280/15-17)
QTEENINTUSE Overall, how often do you use the Internet?

1 Almost constantly
2 Several times a day
3 About once a day
4 Several times a week
5 Once a week
6 Less often

Custom Demos

BASE: ALL ARGENTINA RESPONDENTS (Q264/10)
QARREG In which region do you currently reside?

[PROGRAMMER: ALPHABETIZE LIST.]

1 Buenos Aires
2 Buenos Aires Province (including Gran Buenos Aires)
3 Santa Fe
4 Cordoba
5 Patagonia
6 Other [ANCHOR]

BASE: ALL SOUTH KOREA RESPONDENTS 18 OR OLDER (Q264/214 AND Q280/18+)
QKRINC Which of the following income categories best describes your total [INSERT LAST YEAR] <U>household</U> income before taxes?

1 Less than 10,000,000 Won
2 10,000,000 to 20,999,999 Won
3 21,000,000 to 29,999,999 Won
4 30,000,000 to 44,999,999 Won
5 45,000,000 to 74,999,999 Won
6 75,000,000 or more Won
7 Decline to answer

BASE: ALL SOUTH KOREA RESPONDENTS 18 OR OLDER (Q264/214 AND Q280/18+)
QKRBUY In the past 12 months, did you purchase any products or services over the Internet?

1 Yes
2 No

BASE: ALL SOUTH KOREA RESPONDENTS (Q264/214)
QKRREG1 In which region do you currently reside?

[PROGRAMMER: DISPLAY IN 2 COLUMNS GOING DOWN; ALPHABETIZE LIST.]

1 Seoul
2 Busan
3 Gyeonggi-do
4 Ulsan
5 Daejeon
6 Gwangjiu
7 Incheon
8 Daegu

9 Jeju-do
10 Chungcheongbuk-do
11 Gangwon-do
12 Chungcheongnam-do
13 Jeollabuk-do
14 Jeollanam-do
15 Gyeongsangnam-do
16 Gyeongsangbuk-do

BASE: ALL SOUTH KOREA RESPONDENTS (Q264/214)
QKRREG2 HIDDEN QUESTION FOR WEIGHTING – REGION CLASSIFICATION

[PROGRAMMER: IF QKRREG1/1 GET CODE 1. IF QKRREG1/2 GET CODE 2. IF QKRREG1/3 GET CODE 3. IF QKRREG1/4-8 GET CODE 4. IF QKRREG1/9-16 GET CODE 5.]

1 Seoul
2 Busan
3 Gyeonggi-do
4 All other metropolitan cities
5 All other provinces (do)

BASE: ALL INDIA RESPONDENTS 18 OR OLDER (Q264/116 AND Q280/18+**)**
QINED What is the highest level of education/literacy you have completed/obtained or the highest degree you have received?

1 No education
2 Less than primary
3 Primary but less than middle
4 Middle but less than matric
5 Matric but less than graduate
6 Graduate or above

BASE: ALL INDIA RESPONDENTS 18 OR OLDER (Q264/116 AND Q280/18+**)**
QININC2 Which of the following income categories best describes your total [INSERT LAST YEAR] <U>household</U> income before taxes?

1 Less than 120,000 rupees
2 120,000 rupees or more
3 Decline to answer

BASE: ALL INDIA RESPONDENTS 18 OR OLDER (Q264/116 AND Q280/18+**)**
QINSUB Which of the following best describes the area in which you live?

1 Metro
2 Non-metro

BASE: ALL INDIA RESPONDENTS 18 OR OLDER (Q264/116 AND Q280/18+**)**
QINBUY In the past month, did you purchase any products or services over the Internet?

1 Yes
2 No

BASE: ALL INDIA RESPONDENTS (Q264/116)
QINREG1 In which division do you currently reside?

[PROGRAMMER: DISPLAY IN 3 COLUMNS GOING DOWN; ALPHABETIZE LIST.]

1 Uttar Pradesh
2 Maharashtra
3 Bihar
4 West Bengal
5 Andhra Pradesh
6 Tamil Nadu
7 Madhya Pradesh
8 Rajasthan
9 Karnataka
10 Gujarat
11 Orissa
12 Kerala
13 Assam
14 Punjab
15 Haryana
16 Jharkhand
17 Chhattisgarh
18 Jammu and Kashmir
19 Uttaranchal
20 Himachal Pradesh
21 Tripura
22 Manipur
23 Meghalaya
24 Nagaland
25 Goa
26 Arunachal Pradesh
27 Mizoram
28 Sikkim
29 Delhi
30 Pondicherry
31 Chandigarh
32 Andaman and Nicobar Islands
33 Dadra and Nagar Haveli
34 Daman and Diu
35 Lakshadweep

BASE: ALL INDIA RESPONDENTS (Q264/116)
QINREG2 HIDDEN QUESTION FOR WEIGHTING – STATE SIZE CLASSIFICATION

[PROGRAMMER: IF QINREG1/1-15 GET CODE 1. IF QINREG1/16-28 GET CODE 2. IF QINREG1/29-35 GET CODE 3.]

1 Bigger State
2 Smaller State
3 Union Territories

BASE: ALL INDONESIA RESPONDENTS (Q264/117)
Q1500 In which province do you currently reside?

[PROGRAMMER: DISPLAY IN 3 COLUMNS GOING DOWN; ALPHABETIZE LIST.]

1 Irian Jaya Barat

2 Papua
3 Banten
4 Jakarta Raya
5 Jawa Barat
6 Jawa Tengah
7 Jawa Timur
8 Yogyakarta
9 Kalimantan Barat
10 Kalimantan Selatan
11 Kalimantan Tengah
12 Kalimantan Timur
13 Maluku
14 Maluku Utara
15 Bali
16 Nusa Tenggara Barat
17 Nusa Tenggara Timur
18 Gorontalo
19 Sulawesi Barat
20 Sulawesi Selatan
21 Sulawesi Tengah
22 Sulawesi Tenggara
23 Sulawesi Utara
24 Aceh
25 Bangka-Belitung
26 Bengkulu
27 Jambi
28 Kepulauan Riau
29 Lampung
30 Riau
31 Sumatera Barat
32 Sumatera Selatan
33 Sumatera Utara

BASE: ALL INDONESIA RESPONDENTS (Q264/117)
Q1502 HIDDEN QUESTION FOR WEIGHTING – REGION CLASSIFICATION

[PROGRAMMER: IF Q1500/1-2 GET CODE 1. IF Q1500/3-8 GET CODE 2. IF Q1500/9-12 GET CODE 3. IF Q1500/13-14 GET CODE 4. IF Q1500/15-17 GET CODE 5. IF Q1500/18-23 GET CODE 6. IF Q1500/24-33 GET CODE 7.]

1 Irian Jaya
2 Jawa
3 Kalimantan
4 Maluku
5 Nusa Tenggara
6 Sulawesi
7 Sumatera

BASE: ALL NIGERIA RESPONDENTS 18 OR OLDER (Q264/174 AND Q280/18+**)**
Q1580 What is your marital status?

1 Single, never married
2 Married (monogamous or polygamous)
3 Divorced
4 Separated
5 Widowed

6 Loosely coupled

BASE: ALL NIGERIA RESPONDENTS (Q264/174)
Q1503 In which state do you currently reside?

[PROGRAMMER: DISPLAY IN 3 COLUMNS GOING DOWN; ALPHABETIZE LIST.]

1 Lagos State
2 Ogun State
3 Oyo State
4 Osun State
5 Kogi State
6 Kwara State
7 Delta State
8 Ondo State
9 Edo State
10 Ekiti State
11 Anambra State
12 Abia State
13 Enugu State
14 Ebonyi State
15 Rivers State
16 Akwa Ibom State
17 Imo State
18 Cross River State
19 Bayelsa State
20 Borno State
21 Adamawa State
22 Taraba State
23 Yobe State
24 Kano State
25 Jigawa State
26 Bauchi State
27 Gombe State
28 Kaduna State
29 Katsina State
30 Sokoto State
31 Kebbi State
32 Zamfara State
33 Benue State
34 Niger State
35 Plateau State
36 Nassarawa State
37 Abuja Federal Capital Territory

BASE: ALL NIGERIA RESPONDENTS (Q264/174)
Q1504HIDDEN QUESTION FOR WEIGHTING – STATE CLASSIFICATION

[PROGRAMMER: IF Q1503/1-2 GET CODE 1. IF Q1503/3-6 GET CODE 2. IF Q1503/7-10 GET CODE 3. IF Q1503/11-14 GET CODE 4. IF Q1503/15-19 GET CODE 5. IF Q1503/20-23 GET CODE 6. IF Q1503/24-27 GET CODE 7. IF Q1503/28-32 GET CODE 8. IF Q1503/33-37 GET CODE 9.]

1 Postal Code Region 1
2 Postal Code Region 2

3 Postal Code Region 3
4 Postal Code Region 4
5 Postal Code Region 5
6 Postal Code Region 6
7 Postal Code Region 7
8 Postal Code Region 8
9 Postal Code Region 9

BASE: ALL NIGERIA RESPONDENTS 18 OR OLDER (Q264/174 AND Q280/18+ **)**

Q1585 Do you consider yourself…?

1 Hausa
2 Yoruba
3 Igbo/Ibo
4 Fulanji
5 Other
9 Decline to answer

BASE: ALL EGYPT RESPONDENTS (Q264/66)

Q1505 In which governorate do you currently reside?

[PROGRAMMER: DISPLAY IN 2 COLUMNS GOING DOWN; ALPHABETIZE LIST]

1 Ad Daqahlīyah
2 Al Buhayrah
3 Al Gharbīyah
4 Al Ismā`īlīyah
5 Kafr ash Shaykh
6 Dumyāt
7 Al Qalyūbīyah
8 Ash Sharqīyah
9 Al Minūfīyah
10 Al Qāhirah
11 Al Iskandarīyah
12 Būr Sa`īd
13 Al Uqsur
14 As Suways
15 Aswān
16 Asyūt
17 Al Minyā
18 Sūhāj
19 Qinā
20 Al Fayyūm
21 Al Jīzah
22 Banī Suwayf
23 Janūb Sīnā'
24 Matrūh
25 Shamal Sīnā'
26 Al Wādī al Jadīd
27 Al Bahr al Ahmar

BASE: ALL EGYPT RESPONDENTS (Q264/66)

Q1506 HIDDEN QUESTION FOR WEIGHTING – REGION CLASSIFICATION

[PROGRAMMER: IF Q1505/1-9 GET CODE 1. IF Q1505/10-14 GET CODE 2. IF Q1505/15-22 GET CODE 3. IF Q1500/23-27 GET CODE 4.]

1 Lower
2 City
3 Upper
4 Desert

BASE: ALL COLOMBIA RESPONDENTS 18 OR OLDER (Q264/51 AND Q280/18+)
Q4005 Which of the following income categories best describes your total 2015 household income before taxes?

01 Menos de $ 6,000.000 pesos colombianos
02 $ 6.001.000 a $ 12.000.000 pesos colombianos
03 $ 12.001.000 a $ 18.000.000 pesos colombianos
04 $ 18.001.000 a $ 24.000.000 pesos colombianos
05 $ 24.001.000 a $ 30.000.000 pesos colombianos
06 $ 30.001.000 a $ 36.000.000 pesos colombianos
07 $ 36.001.000 a $ 60.000.000 pesos colombianos
08 $ 60.001.000 a $ 84.000.000 pesos colombianos
09 $ 84.001.000 o mas pesos colombianos
99 Decline to answer

BASE: ALL COLOMBIAN RESPONDENTS (Q264/51)
QCOREG2 In which region do you live?

1 Central
2 Bogota
3 Pacifico Norte
4 Eje Cafetero
5 Andina Norte
6 Andina Sur
7 Pacifico Sur
8 Caribe
9 Orinoquia
10 Amazonia

BASE: ALL VIETNAM RESPONDENTS 18 OR OLDER (Q264/249 AND Q280/18+)
Q4010 What is your current education level?

No schooling	01
Some Kindergarten school	02
Complete Kindergarten school	03
Some Primary school (Grades 1-5)	04
Complete Primary school (Grades 1-5)	05
Some Lower Secondary school (Grades 6-9)	06
Complete Lower Secondary school (Grades 6-9)	07
Some Upper Secondary school (Grades 10-12)	08
Complete Upper Secondary school (Grades 10-12)	09
Some Professional Secondary school - Primary level	10

Complete Professional Secondary school - Primary level	11
Some Professional Secondary school - Intermediate level	12
Complete Professional Secondary school - Intermediate level	13
Some College	14
Complete College	15
Some University	16
Complete University	17
Some Post graduate degree	18
Complete Post graduate degree	19
Don't' Know/ REFUSED	99

BASE: ALL VIETNAM RESPONDENTS 18 OR OLDER (Q264/249 AND Q280/18+)

Q4015 What is your current occupation?

GOVERNMENT EMPLOYEE (THE GOVERNMENT'S ORGINIZATIONS OR STATE-OWN COMPANIES)	01
Senior government official	02
Middle government official	03
Low government official	04
Production Worker	05
NON-STATE SECTOR EMPLOYEE	06
Top level management	07
Middle management	08
Low manager	09
Executive/Officer	10
~~Production Worker~~	~~11~~
EMPLOYER (owners of companies/business establishments having 'employees' on a continuous basis)	12
Owner of a company/agency/farm (10 workers or higher)	13
Owner of a company/agency/farm (1- 9 workers)	14
OWN-ACCOUNT WORKER	15
Investor (real estate, stock,…)	16
Store owner/ individual establishment owner (not having "employees" on a continuous basis)	17
Farmer, logger, fisherman (agriculture, forestry and fishing)	18
Other self-employment (professional, freelancer, own-account driver, vendor, hawker,...)	19
PART-TIME/UNPAID FAMILY WORKER/ UNEMPLOYED	20
Student/ Apprentice	21
Housewife/househusband	22

Retired	23
Family workers	24
Unemployed	25
OTHERS (UNCLASSIFIABLE BY STATUS)	26
Don't Know/ REFUSED	99

BASE: ALL VIETNAM RESPONDENTS 18 OR OLDER (Q264/249 AND Q280/18+)

Q4020 What is your approximate net HOUSEHOLD monthly income from all income sources after tax, based on following scale?

You don't have to be exact, just indicate the approximate amount based on this list.

	Q24a Household Income	Q24b Household Expenditure	Q24c Personal Income	Q24d Personal Expenditure
150,000,000 VND or higher	01	01	01	01
75,000,000- 149,999,999 VND	02	02	02	02
45,000,000- 74,999,999 VND	03	03	03	03
30,000,000- 44,999,999 VND	04	04	04	04
15,000,000- 29,999,999 VND	05	05	05	05
7,500,000- 14,999,999 VND	06	06	06	06
4,500,000- 7,499,999 VND	07	07	07	07
3,000,000- 4,499,999 VND	08	08	08	08
1,500,000- 2,999,999 VND	09	09	09	09
1- 1,499,999 VND	10	10	10	10
No income/ expenditure	11	11	11	11
Don't Know/NA	12	12	12	12

BASE: ALL VIETNAM RESPONDENTS 18 OR OLDER (Q264/249 AND Q280/18+)

Q4025 BTS

RECORD SEC (SOCIO ECONOMIC CLASSIFICATION) PLEASE MATCH MONTHLY HOUSEHOLD INCOME FROM **Q4020** TO THE APPROPRIATE HOUSEHOLD INCOME BAND.	Code
Class A5 (150,000,000+)	01
Class A4 (75,000,000 - 149,999,999)	02
Class A3 (45,000,000 - 74,999,999)	03
Class A2 (30,000,000 - 44,999,999)	04
Class A1 (15,000,000 - 29,999,999)	05
Class B (7,500,000 - 14,999,999)	06

Class C (4,500,000 - 7,499,999)	07
Class D (3,000,000 - 4,499,000)	08
Class E (1,500,000 - 2,999,999)	09
Class F (1 - 1,499,999)	10

BASE: ALL VIETNAM RESPONDENTS (Q264/249)
Q4027 In what region do you live?

1 North East
2 Red River Delta
3 North Central Coast
4 South Central Coast
5 Central Highlands
6 South East
7 Mekong River Delta
8 North West

BASE: ALL PHILIPPINES RESPONDENTS 18 OR OLDER (Q264/187 AND Q280/18+)
Q4030 What is your highest educational attainment?

No schooling	01
Some elementary	02
Complete elementary	03
Some high school	04
Completed high school	05
Some vocational	06
Completed Vocational	07
Some college	08
Completed college/ Has degree	09
Some post graduate degree	10
Completed post graduate degree	11
Not know/Refused	12

BASE: ALL PHILIPPINES RESPONDENTS 18 OR OLDER (Q264/187 AND Q280/18+)
Q4035 At the present time, what is your occupation?

Professional, technical and kindred workers	01
Farmers and farm managers	02
Manager, officials and proprietors except farm	03
Clerical and kindred workers	04
Sales workers	05
Craftsmen, foremen and kindred workers	06
Service workers except private household workers	07
Private household workers	08
Laborers	09
Not gainfully employed	10

Housewife	11
Student	12
Refused	13
Pensioner	14
Others	15

BASE: ALL PHILIPPINES RESPONDENTS (Q264/187)

Q4036 Please select the area in which you live?

1 National Capital Region

2 Cordillera Administrative Region

3 Ilocos (Region I)

4 Cagayan Valley (Region II)

5 Central Luzon (Region III)

6 Southern Tagalog (Region IV)

7 Bicol (Region V)

8 Western Visayas (Region VI)

9 Central Visayas (Region VII)

10 Eastern Visayas (Region VIII)

11 Western Mindanao (Region IX)

12 Northern Mindanao (Region X)

13 Southern Mindanao (Region XI)

14 Central Mindanao (Region XII)

15 Autonomous Region in Muslim Mindanao

16 Caraga

BASE; ALL BRAZIL RESPONDENTS AND 21+ years of age (Q264/33 AND Q280/21+)

Q1507 What is the highest level of education you have completed or the highest degree you have received?

1 Nenhum
2 Alfabetização
3 Fundamental incompleto - fundamental I (1a. série a 4a.)
4 Fundamental incompleto - fundamental II (6a. série a 8a. série)
5 Fundamental completo
6 Ensino Médio
7 Superior
8 Pós-graduação (Mestrado, Doutorado ou Pós-doutorado)

BASE; ALL BRAZIL RESPONDENTS (Q264/33)

QBRREG1 In which state do you currently reside?

[PROGRAMMER: DISPLAY IN 2 COLUMNS GOING DOWN; ALPHABETIZE LIST]

1 Distrito Federal
2 Goiás
3 Mato Grosso
4 Mato Grosso do Sul
5 Acre
6 Amapá
7 Amazonas
8 Pará

9	Rondônia
10	Roraima
11	Tocantins
12	Alagoas
13	Bahia
14	Ceará
15	Maranhão
16	Paraíba
17	Pernambuco
18	Piauí
19	Rio Grande do Norte
20	Sergipe
21	Paraná
22	Rio Grande do Sul
23	Santa Catarina
24	Espírito Santo
25	Minas Gerais
26	Rio de Janeiro
27	São Paulo

BASE; ALL BRAZIL RESPONDENTS (Q264/33)
QBRREG2 HIDDEN QUESTION FOR WEIGHTING – REGION CLASSIFICATION

[PROGRAMMER: IF QBRREG1/1-4 GET CODE 1. IF QBRREG1 /5-11 GET CODE 2. IF QBRREG1 /12-20 GET CODE 3. IF QBRREG1/21-23 GET CODE 4. IF QBRREG1/24-27 GET CODE 5.]

1 Center-west
2 North
3 North-east
4 South
5 South-east

BASE: ALL MEXICAN RESPONDENTS AND 21+ YEARS OF AGE **(Q264/157 AND Q280/21+)**
Q1538 What is the highest level of education you have completed or the highest degree you have received?

1 No he estudiado
2 Primaria incompleta
3 Primaria completa
4 Secundaria incompleta
5 Secundaria completa
6 Carrera comercial
7 Carrera técnica
8 Preparatoria incompleta
9 Preparatoria completa
10 Licenciatura incompleta
11 Licenciatura completa
12 Diplomado/Maestría
13 Doctorado

BASE: ALL MEXICAN RESPONDENTS (Q264/157)
QMXREG In which state do you currently reside?
[PROGRAMMER: DISPLAY IN 3 COLUMNS GOING DOWN; ALPHABETIZE LIST.]

1 Aguascalientes
2 Baja California Norte
3 Baja California Sur
4 Campeche
5 Chiapas
6 Chihuahua
7 Coahuila
8 Colima
9 Distrito Federal
10 Durango
11 Guanajuato
12 Guerrero
13 Hidalgo
14 Jalisco
15 Mexico
16 Michoacán
17 Morelos
18 Nayarit
19 Nuevo León
20 Oaxaca
21 Puebla
22 Querétaro
23 Quintana Roo
24 San Luis Potosí
25 Sinaloa
26 Sonora
27 Tabasco
28 Tamaulipas
29 Tlaxcala
30 Veracruz
31 Yucatán
32 Zacatecas

BASE: ALL CHINESE RESPONDENTS AND 21+ YEARS OF AGE **(Q264/48 AND Q280/21+)**
Q1574 What is the highest level of education you have completed or the highest degree you have received?

1 High school or less
2 College
3 Bachelor degree
4 Post graduate

BASE: ALL TURKEY RESPONDENTS 18 OR OLDER (Q264/235 AND Q280/18+**)**
QTRED What is the highest level of education you have completed or the highest degree you have received?

1 Primary education
2 Middle school or junior high school
3 High school
4 University
5 Masters degree or doctorate
6 No schooling completed

BASE: ALL COLOMBIA RESPONDENTS 18 OR OLDER (Q264/51 AND Q280/18+)
QCOED What was the last year of schooling that you completed?

1 None
2 Pre-school
3 Primary
4 Secondary
5 Technical/Technology
6 University
7 Post Graduate
96 Other

BASE: ALL INDONESIA RESPONDENTS 18 OR OLDER (Q264/117 AND Q280/18+**)**
QIDED What is the highest level of education you have completed or the highest degree you have received?

1 No schooling
2 Some elementary school
3 Elementary school
4 Junior high school
5 High school or higher

BASE: ALL JAPAN RESPONDENTS 18 OR OLDER (Q264/126 AND Q280/18+**)**
QJPED What is the highest level of education you have completed or the highest degree you have received?

1 Less than high school
2 High school degree
3 Junior College degree
4 BA or University degree

BASE: ALL NIGERIA RESPONDENTS 18 OR OLDER (Q264/174 AND Q280/18+**)**
QNGED What is the highest level of education you have completed or the highest degree you have received?

1 No level completed
2 Completed FSLC (first school leaving certificate)
3 Completed MSLC (middle school leaving certificate)
4 Vocational/COMM

5 JSS/O'Level
6 Completed O'Level/SSS (senior secondary school)
7 Completed A'Level or higher
8 Other

BASE: ALL POLAND RESPONDENTS 18 OR OLDER (Q264/189 AND Q280/18+)
QPLED What is the highest level of education you have completed or the highest degree you have received?

1 Incomplete primary or no school education
2 Primary
3 Basic vocational
4 Secondary
5 Post-secondary
6 Tertiary

BASE: ALL RUSSIA RESPONDENTS 18 OR OLDER (Q264/196 AND Q280/18+)
QRUED What is the highest level of education you have completed or the highest degree you have received?

1 Incomplete secondary and lower
2 Secondary general
3 Secondary special
4 Incomplete higher
5 Higher (including postgraduate)

BASE: ALL SOUTH KOREA RESPONDENTS 18 OR OLDER (Q264/214 AND Q280/18+)
QKRED What is the highest level of education you have completed or the highest degree you have received?

1 Less than high school
2 High school graduate
3 College/University graduate
4 Post graduate degree

BASE; ALL BRAZIL RESPONDENTS 18 OR OLDER (Q264/33 AND Q280/18+)
QBRINC Which of the following income categories best describes your total [INSERT LAST YEAR] <U>household</U> income before taxes?

1 Less than 24,000 real
2 24,000 to 50,999 real
3 51,000 to 119,999 real
4 120,000 real or more
5 Decline to answer

BASE: ALL CHINESE RESPONDENTS 18 OR OLDER (Q264/48 AND Q280/18+)
QCNINC Which of the following income categories best describes your total <fontcolor=blue>monthly <U>household</U> income before taxes?

1 Less than 1000 RMB
2 1001-2000 RMB
3 2001-3000 RMB
4 3001-4000 RMB
5 4001-6000 RMB
6 6001-10,000 RMB
7 Over 10,000 RMB
99 Decline to answer

BASE: ALL SOUTH AFRICA RESPONDENTS (Q264/193)

QZAREG In which region do you currently reside?

[PROGRAMMER: ALPHABETIZE LIST.]

1 Free state
2 Gauteng
3 KwaZulu-Natal
4 Limpopo
5 Mpumalanga
6 Northern Cape
7 Northwest
8 Western Cape
9 Eastern Cape

[BEHIND THE SCENE] ISQ – IN SURVEY QUALITY METRICS

ISQ Metrics to be used (Q229) *Select which of the 5 ISQ metrics will be used. Codes 1 and 2 are on by default. Minimum LOI and Respondent Instruction are required for HPOL surveys.*	**[PN: SELECT CODES 1, 2]** 1 – MINIMUM LOI 2 – INCORRECT RESPONSE TO RESPONDENT INSTRUCTION 3 - STRAIGHT-LINE THROUGH GRID QUESTIONS 4 - LESS THAN 5 CHARACTERS AT OPEN-END RESPONSE 5 – ILLOGICAL RESPONSE TO SURVEY QUESTIONS 9 – NONE - NOT USING ISQ IN THIS SURVEY
LOI (Q230) and LOI check (Q231)	**LOI Check** = RE'S FOR THE LONGEST SURVEY PATH CONVERTED TO ESTIMATED LOI. THE MINIMUM ACCEPTABLE LOI IS 40% OF ESTIMATED LOI.] **PN: MINIMUM LENGTH = 0.4 x AVG LOI OF 15 MINS=6 MINS**
Respondent Instruction Test Result (Q232)	A STANDARD RESPONDENT INSTRUCTION QUESTION IS SHOWN BEFORE THE DEMOS IN THIS TEMPLATE AT Q9457
Straight-lining Grid Check (Q235) *Identify a grid question in the survey with a base of ALL QUALFIED RESPONDENTS. A grid with 15 attributes or more is recommended, but a grid with minimum of 5 attributes will work. This question checks for the same response across all attributes.*	**PN: Do not include Q235**
Incomplete Response at Open End (Q236) *Identify a mandatory open end question with a base of ALL QUALFIED RESPONDENTS. If the respondent provides less than a 5 character response, it will be flagged.*	[PN: CHECK FOR INCOMPLETE OE RESPONSE AT QXXX] **PN: Do not include Q236**
Illogical Choice Combination (Q238) *Identify 2 questions with a base of ALL QUALFIED RESPONDENTS that contain responses that contradict each other. Identify the contradicting questions & responses. Replace PN with "NONE" if not using this check.*	[PN – ILLOGICAL RESPONSE IF QXXX/X and QYYY/Y] **PN: Do not include Q238**
Quality Checks that Failed (Q239)	1 – MINIMUM LOI 2 – INCORRECT RESPONSE TO RESPONDENT INSTRUCTION 3 - STRAIGHT-LINE THROUGH GRID QUESTIONS 4 - LESS THAN 5 CHARACTERS AT OPEN-END RESPONSE 5 – ILLOGICAL RESPONSE TO SURVEY QUESTIONS
Number of Quality Checks Failed (Q240) *FM/RESEARCHER: MINIMUM ISQ FAILURES IS SET TO 2*	1 FAILED ONE **2 FAILED TWO** 3 FAILED THREE 4 FAILED FOUR 5 FAILED FIVE 6 FAILED NONE

[BEHIND THE SCENE] Final Disposition

BASE: ALL RESPONDENTS

Q59 STATUS OF RESPONDENT (LABELS ALSO USED IN ICW SAMPLE DISPOSITION REPORTS)

QMS Over quota	1
Screener Not Qualified #1 Under Age	25
Screener Not Qualified #4 AGE/ NE 15+	28
Screener Not Qualified #2 Not US, CA, MX, IT, TU, SP, PO, UK, FR, DE, CH, VI, PH, JA, SK, RU, IN, NI, SA, EG, CO, AR, BR	26
Screener Not Qualified #3 Less than 5 hours in Internet (Q600/1-2,7)	27
Dispo term not specified	98
COMPLETE	99
DF Fail	996
Failed ISQ	998
Fraud Score Failure	997

BASE: ALL RESPONDENTS

Q60 STATUS OF RESPONDENT (DOES NOT APPEAR ON SCREEN)

1 QUALIFIED RESPONDENTS, QUOTA OPEN (Q99/1)
3 QUALIFIED RESPONDENTS, QUOTA CLOSED (Q99/3)
6 NOT SCREENER QUALIFIED (Q99/6)
TBD NOT QUALIFIED – FAILED ISQ OR DF (Q59/??)
TBD NOT QUALIFIED

EXHIBIT KM-16

Searching With Google Chrome & Omnibox

Danny Sullivan on September 2, 2008 at 5:20 pm

Now that Google Chrome is live, I spent some time looking at the search features within it, especially to see — as I did recently with Internet Explorer 8 — whether Google was going to try to stack the deck in its own favor. Like Microsoft, Google's playing it straight. As for search features, I'm mixed on whether I like the new "Omnibox" feature that combines a browser's address bar and search box into one

single
area.

After doing the install, Chrome checks to see what the default search engine is for the browser you're currently using. Then it confirms if you want to stick with the default or choose a different search engine:

Unfortunately, the button text didn't come out well in the screenshot above. What's happened is that Chrome saw that Yahoo is the default I had set in Firefox, reports that it has seen this setting and asks if I want to keep it. The first button in this case says "Keep Yahoo! as the default search engine" while the second says "Change search engine."

Want to change? That only happens if you push the button. In other words, as with IE, nothing changes unless the users makes that happen.

Let's say we DO want to make a change. That brings up a new options window:

Where in the third section down, the default search choice is shown. Push the
Manage button in that area, and you get this:

As you can see, there are five search engines listed:

- Google
- Yahoo
- Live Search
- AOL
- Ask

Note that the screenshot above was made when I did my first installation of
Chrome, where I did NOT allow it to look at Firefox (because I still had Firefox
open at the time and couldn't close it due to other work — and Google was my
default in Firefox at the time).

When I did an uninstall and reinstalled with Firefox closed, I got that list above except Yahoo was listed first (I changed my Firefox default to see

what
would happen), then Google, Live Search, AOL and Ask were listed, then I got:

- Wikipedia
- Creative Commons
- Answer.som
- Amazon
- eBay

I think these extra search engines were listed because they are ones that are
shown in Firefox other than Live Search, which
[Firefox itself doesn't list]

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In short, if you were looking for Google to try and stick it to Microsoft, they don't. Live Search gets listed as an option, just as over on Internet Explorer, Google is listed as an option. Good behavior on behalf of both companies, thanks!

Somewhat related, if you go to Yahoo using Chrome, you get this:

Each of the search engines has a long history of trying to pull people away from particular browsers and/or toolbars (see Microsoft Live & Yahoo Push For Firefox Users, Plus Revisiting The IE7 Search Battle), and Yahoo's simply playing that game with its "Try Firefox 3" link — which leads to a custom version of Firefox offered by Yahoo. It's not a Chrome-specific message. I get the same thing when I go to Yahoo in Internet Explorer 8.

Back in the old days, browsers had an address bar but not a separate search box. Then we got toolbars that added dedicated search boxes to the browser, with the Google Toolbar probably being the most popular today. Eventually, Firefox especially popularized the idea that a browser should have a search box built into it. Many people use that, but clearly many people still do not — otherwise the change to put a search box right into Internet Explorer 7 last year should have made usage of Live Search rise to some degree — which didn't happen significantly.

I think those who've used to learn a built-in search box become heavy adopters, at least from what I've seen of my own behavior and looking at friends and family. So it's kind of scary that Google's playing with the separate search box by eliminating it.

Google has said that many people already use a browser's address bar to perform searches. This is a well-known fact that still lacks a convincing explanation or research into why it happens. Common reasons are:

- People are stupid and get confused
- People try it, and since most modern browsers let a search happen, they learn it works

So Google's decided it should go, so the separate search box is combined with the address bar in what it calls the "Omnibox." Enter a search term there, and you'll generate a search that hits your default search engine:

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In the example above, I started typing [cars] and I get a prompt to "Search Google for cars" as well as other options. Nice — and it's also nice that as you surf the web and visit other sites that have search boxes, Google learns you can do searches there and adds them to the options. For example:

After visiting eBay once, I was later able to type in [ebay transformers] and get an option to "Search ebay.com for transformers" after a list of related
searches I might want to try on Google. Similarly with Amazon:

After visiting Amazon once, I was later able to type in [amazon pokemon] and get an option to "Search Amazon.com for pokemon" after a list of related
searches I might want to try on Google.

Note how after the Amazon listing, it says "Keyword: amazon.com." That's actually the shortcut I should use to do a search and make Amazon come up at
the top of the list, to specifically search with it. For example, consider this:

See how I get a little button-like image that says "Search Live Search" that appears. This because I'd gone to Microsoft's Live.com site (which is Live Search), so the next time I entered "live.com" into the Omnibox, Google Chrome knew I wanted to search specifically with Live Search. And if I'd typed in Amazon.com followed by search words, that would have turned into an Amazon-specific search.

It took me a bit to figure this out, and it's kind of a pain having to type in effectively the entire URL of a site in order to search there. If I'm typing Amazon.com, then I might as well hit return and go there? Sure, I can definitely save time if I just put in my search terms as well, but I have a feeling that's going to be too power-userish for many users. But it's a nice feature, and we'll see how it goes.

Ultimately, I still kind of wish I had the dedicated search box. And for those who depend on the Google Toolbar, don't get your hopes up to see it any time soon. Google told us they're likely to develop some type of generic API for Chrome first, then bring the toolbar out.

That should be reassuring to those who are paranoid that Google wants Chrome just to spy on them. Google's Matt Cutts has a nice post that explains how practically nothing is sent back to the Google mothership from Chrome now. But I'm sure a toolbar will come — and that you'll get reporting back to Google eventually, all with the users consent, of course. Google's personalized search service depends too much on gather that surfing data for this to not be offered as an option.

ABOUT THE AUTHOR

Danny Sullivan

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Danny Sullivan was a journalist and analyst who covered the digital and search marketing space from 1996 through 2017. He was also a cofounder of Third Door Media, which publishes Search Engine Land, Marketing Land, MarTech Today and produces the SMX: Search Marketing Expo and MarTech events. He retired from journalism and Third Door Media in June 2017. You can learn more about him on his personal site & blog He can also be found on Facebook and Twitter.

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EXHIBIT KM-17

Internet Explorer 9: A getting started guide

The revamped browser warrants taking another look at Internet Explorer.

Ian Paul (PC World (US online)) on 16 March, 2011 01:32

Microsoft's Internet Explorer 9 officially launched late Monday and is ready for download here.

The new Web browser features a lot of interesting new tools such as taskbar shortcuts and dynamic jumplists, extensive HTML 5 support, hardware acceleration for improved graphics performance, and has a streamlined interface that puts more focus on the Web page and less on the browser window. Before you get started, here are a few quick tips to get you up and running with the best features IE9 has to offer.

Pin Your Sites

Internet Explorer 9 allows Windows 7 and Vista users to turn any Website you want into a Web app by installing it in your taskbar. If you use Google Docs or Office Live Web Apps, for example, a one-click option in your taskbar can be a real-time saver.

To get started, all you do is click on the tab you want to pin and drag it down to your taskbar. The site's icon will show up on your taskbar and you can click on it for quick access. A nice design touch for this feature is that IE9's navigation icons, such as the back button, will match the pinned site's color scheme.

Check Your Jumplists

If the site owner has enabled this feature, you can take advantage of dynamic jumplists in your pinned sites that let you quickly access specific Web pages.

Right-clicking on a pinned Facebook icon, for example, lets you quickly jump to your Newsfeed, Messages, Events, or your Friends List. The New York Times lists its top stories of the day as well as quick access to search, the Times' most popular stories, video, and the site's homepage.

Stop Your Trackers

IE9 offers you a way to stop sites from tracking your activity across the Web. To enable this feature click on the settings icon (the cog) in the right corner of your browser. Select Safety>Tracking

Protection and a new window will appear where you can activate the feature. Once enabled, tracking protection will automatically start blocking sites from monitoring you. You can also download predefined tracking lists here by clicking on "Add TPL" next to each list you'd like to add to your browser.

Set Your Search Provider

Similar to Google Chrome's Omnibox, IE9 lets you search directly in the URL address bar (called the One Box in IE) instead of in a separate search field.

By default, IE9 uses Bing as its search provider, but if you want to change this click on the settings icon (the cog) in the upper right corner of the browser window and select "Manage Add-Ons." Then in the pop-up window select "Search Providers" and then "Find more search providers" in the bottom left of the window. This will take you to the IE9 add-ons gallery where you can choose from a variety of search options including Bing, Google, Yahoo Search Suggestions, Wikipedia, Facebook, and many others. You can also create your own search provider by clicking here and following the instructions.

Once you add a search provider, you will see all your search options appear at the bottom of the drop-down menu when you search using the One Box. This lets you quickly switch between search providers if you want to search for a topic on Wikipedia, for example, and then switch back to your favorite search engine.

IE9 has a lot of new features to offer, so if you haven't taken a look at IE in awhile, you should check out the latest iteration of Microsoft's Web browser.

Connect with Ian Paul (@ianpaul) and Today@PCWorld on Twitter for the latest tech news and analysis.

Tags Microsoft browsers Google software applications microsoft internet explorer

EXHIBIT KM-18

What's New in Safari 6 and Why Dropping Windows is a Mistake

By Craig Buckler Programming August 6, 2012

Share:

Outside the Apple.com site, Safari rarely receives a mention on the web. It's a solid, dependable browser. Safari is the default on Mac OS and the only "real" browser on iOS. But it's never taken the world by storm despite being available on several platforms.

Safari 5 has been around since June 2010 and Safari 6 was launched with Mac OS X 10.8 Mountain Lion (more about that later). Let's look at the new features for users…

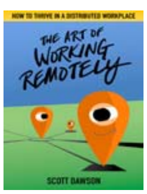
- **Unified Smart Search**
  Safari now matches Chrome and IE with a single address/search field. The bar analyzes bookmarks and history to determine where you want to go.
- **Enhanced Tab Functionality**
  Tab View provides a swipe-able list of tabs. Opened tabs are saved to iCloud so they're available on your Mac, iPad, iPhone and iPod.
- **Social Sharing**
  The Share button allows pages and links to be added to your reading list, bookmarks or sent to the web via email, Twitter or Facebook.
- **Improved Performance**
  Thanks to multi-core JavaScript processing and hardware acceleration.
- **Privacy Controls**
  Safari 6 adds the new "Do Not Track" feature.
- **Offline Reading List**
  Page content can be cached so you can continue reading when you don't have a net connection.
- **RSS has gone**
  I use RSS and you may too. We're in the minority and Apple has dropped the feature.

Craig Buckler

Craig is a freelance UK web consultant who built his first page for IE2.0 in 1995. Since that time he's been advocating standards, accessibility, and best-practice HTML5 techniques. He's created enterprise specifications, websites and online applications for companies and organisations including the UK Parliament, the European Parliament, the Department of Energy & Climate Change, Microsoft, and more. He's written more than 1,000 articles for SitePoint and you can find him @craigbuckler.

Popular Books

Visual Studio Code: End-to-End Editing and Debugging Tools for Web Developers



The Art of Working Remotely

Form Design Patterns

EXHIBIT KM-19

TECHNOLOGY

How Google's Autocomplete Was ... Created / Invented / Born

The origin of the service that taps into humanity's collective psyche

MEGAN GARBER AUGUST 23, 2013

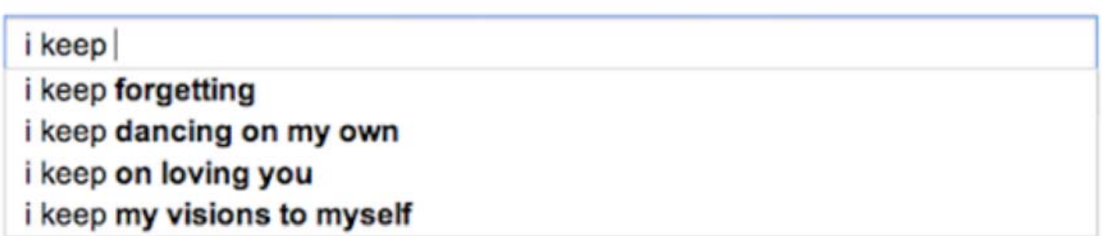
Autocomplete was created ... ***in 2004.***

Autocomplete was created ... ***by Google.***

Autocomplete was created ... ***by a guy named Kevin Gibbs.***

Autocomplete was created ... ***on a bus.***

Few things merge technology and philosophy as elegantly as autocomplete. The feature is not merely one of the microinteractions that subtly standardize our experience of the Internet; it's also a kind of meta-interaction -- one that puts the "world" in "World Wide Web." Type in a search query -- or type in, rather, part of a search query -- and you get a textual snapshot of humanity's collective psyche. You see your desires and wonderings and wanderings, measured against the desires and wonderings and wanderings of everyone else who has ever used Google. Sometimes, as a result of all this, you get sadness. Sometimes you get silliness. Sometimes you get poetry. But you always get insight.



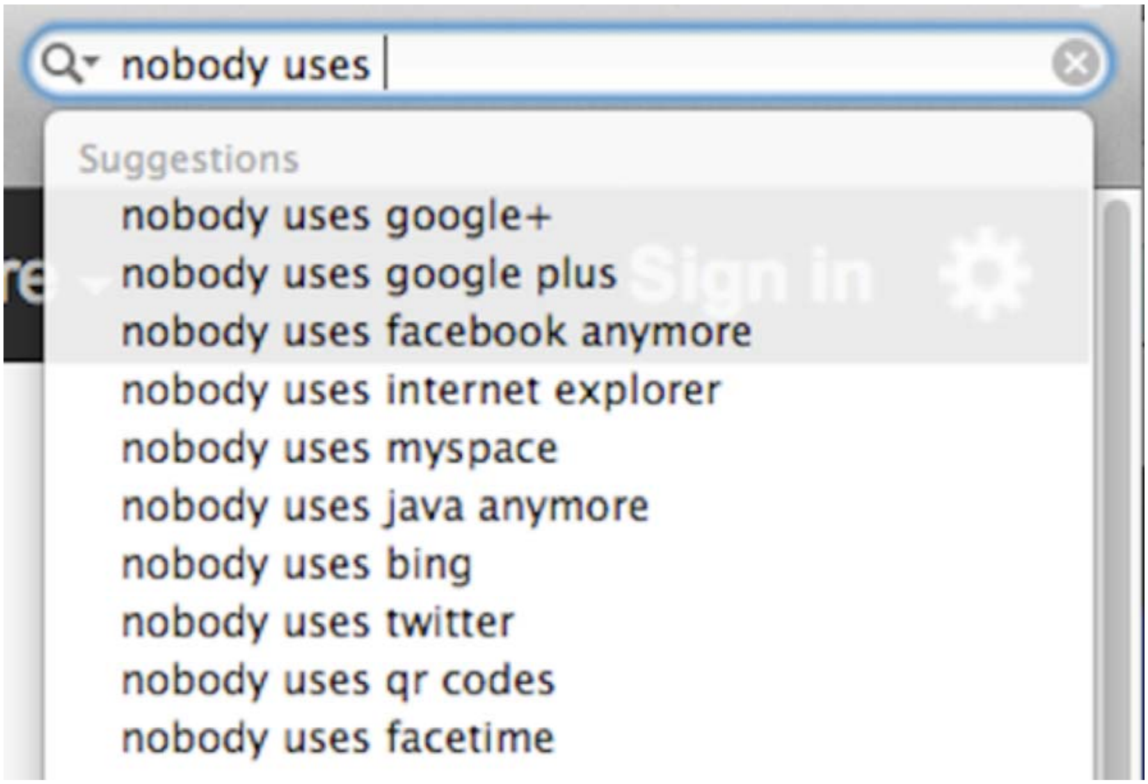
Google poetry, via autcomplete (Google Poetics)

The autocomplete function as we know it today, All Things D's Liz Gannes reports, had humble origins. The thing really was born on a bus -- a Google shuttle bus, to be precise, the kind that ferries Googlers between San Francisco and Mountain View. The kind that comes with built-in wifi. Kevin Gibbs, a Stanford grad and a former IBM engineer, had joined Google in part because he liked the shuttle service that the young company provided its employees. And he liked the 20 percent time, too: the flexibility Google used to offer its engineers to spend a fifth of their time working on projects of special interest to them.

The junior software engineer, it turned out, was interested in URL completion. He wanted to find a way to take advantage of the technological affordances of the time -- big data, JavaScript, the broadening consumer use of high-speed Internet -- to make web navigation more efficient. So Gibbs decided to spend his own 20 percent time working on a URL predictor. As a user typed a URL into a browser -- this was before Google helped to merge the URL and the web search into one interface -- Gibbs's system would analyze Google's enormous corpus of web content, and then autocomplete the options that remained. Type in "theatl--" in Gibbs's system today, say, and Google would complete the thing to "theatlantic.com."

Gibbs showed his new feature to his coworkers. And one of them -- Gibbs now can't recall who -- said, "That's cool, what if you did it for search?"

From there, Gannes reports, Google's internal infrastructure took over. Google's heads of search, including Jeff Dean and Rob Pike, began promoting Gibbs's work within the company. Marissa Mayer helped name the service, favoring "Google Suggest" over Gibbs's name ("Google Complete"). The feature launched on December 10, 2004 -- via a brief blog post -- as part of Google Labs. And from the beginning, both the efficiency and the sociology of the feature were evident. "We've found," Gibbs wrote in that post, that Google Suggest not only makes it easier to type in your favorite searches (let's face it -- we're all a little lazy), but also gives you a playground to explore what others are searching about, and learn about things you haven't dreamt of."



GOOGLE/*THE ATLANTIC*

Google Suggest would remain an opt-in feature for four more years, until, in 2008, Google made autocomplete the default search mode on both Google.com and the company's mobile apps, maps, and browsers. In 2010, Google expanded the feature to Google Instant. Facebook and many others now incorporate its logic into their own interfaces. We live in a world of autocomplete. We expect to learn about things that we haven't dreamt of. And we expect our computers to do the teaching.

Gibbs, for his part, sees the autocomplete feature he helped bring to life as a kind of technological inevitability. "I'm sure it would have happened if I hadn't done it," he told Gannes. "I think it's one of those history of invention things -- where there was one guy who developed it in Germany and one guy in Russia, and it turns out they were doing it in the same year. I haven't found my guy, but I think it was just an idea that was just so ripe to have happened." Gibbs, once Google Suggest was implemented, moved on to other projects -- and, in 2012, moved on from Google. He is now the co-founder of the mobile productivity startup Quip.

And he is appropriately philosophical about the appropriately philosophical feature he helped bring to life. "I don't feel when I look at a search box that it's something I did," Gibbs says of the service that translates humanity's psyche to the screen. "It feels like this is just how the world's supposed to work."

We want to hear what you think about this article. Submit a letter to the editor or write to letters@theatlantic.com.

EXHIBIT KM-20

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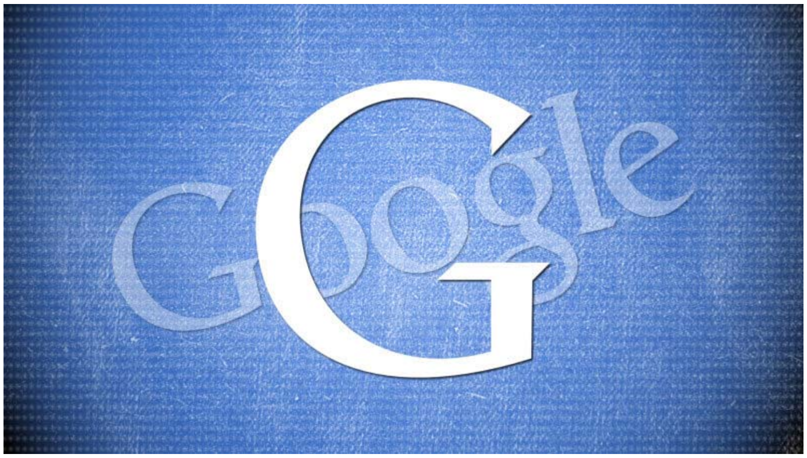
SEO MORE

Google Explains How It Handles The New Top Level Domains (TLDs)

Google has published the latest on how it handles TLDs -- the new ones, the old ones and the geo-specific ones.

Barry Schwartz on July 21, 2015 at 9:13 am



Google's John Mueller has just [published](#) on the Google Webmaster Central blog how Google handles the new top level domains (TLDs). John said Google is publishing this because of the questions and misconceptions the company has heard throughout the webmaster community.

In summary, there are no TLDs that Google finds preferential to others; they are all treated equally in rankings. There are some geo-specific TLDs that Google will default to a specific country and use that as an indicator that the website is more important in a specific geographic region. But all TLDs are treated equally.

Here are the FAQs Google published on this topic today:

Q: How will new gTLDs affect search? Is Google changing the search algorithm to favor these TLDs? How important are they really in search?
A: Overall, our systems treat new gTLDs like other gTLDs (like .com and .org). Keywords in a TLD do not give any advantage or disadvantage in search.

Q: What about [IDN](#) TLDs such as .みんな? Can Googlebot crawl and index them, so that they can be used in search?
A: Yes. These TLDs can be used the same as other TLDs (It's easy to check with a query like [site:**みんな**]). Google treats the Punycode version of a hostname as being equivalent to the unencoded version, so you don't need to redirect or canonicalize them separately. For the rest of the URL, remember to use UTF-8 for the path and query-string in the URL, when using non-ASCII characters.

Q: Will a .BRAND TLD be given any more or less weight than a .com?
A: No. Those TLDs will be treated the same as a other gTLDs. They will require the same geotargeting settings and configuration, and they won't have more weight or influence in the way we crawl, index, or rank URLs.

Q: How are the new region or city TLDs (like .london or .bayern) handled?
A: Even if they look region-specific, we will treat them as gTLDs. This is consistent with our handling of regional TLDs like .eu and .asia. There may be exceptions at some point down the line, as we see how they're used in

practice. See our help center for more information on multi-regional and multilingual sites, and set geotargeting in Search Console where relevant.

Q: What about real ccTLDs (country code top-level domains) : will Google favor ccTLDs (like .uk, .ae, etc.) as a local domain for people searching in those countries?
A: By default, most ccTLDs (with exceptions) result in Google using these to geotarget the website; it tells us that the website is probably more relevant in the appropriate country. Again, see our help center for more information on multi-regional and multilingual sites.

Q: Will Google support my SEO efforts to move my domain from .com to a new TLD? How do I move my website without losing any search ranking or history?
A: We have extensive site move documentation in our Help Center. We treat these moves the same as any other site move. That said, domain changes can take time to be processed for search (and outside of search, users expect email addresses to remain valid over a longer period of time), so it's generally best to choose a domain that will fit your long-term needs.

ABOUT THE AUTHOR

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Barry Schwartz

Follow @rustybrick

Barry Schwartz a Contributing Editor to Search Engine Land and a member of the programming team for SMX events. He owns RustyBrick, a NY based web consulting firm. He also runs Search Engine Roundtable, a popular search blog on very advanced SEM topics. Barry's personal blog is named Cartoon Barry and he can be followed on Twitter here.

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EXHIBIT KM-21

The Guardian

Can social media platforms replace a business website?

With more people than ever using their mobile phones to access the web, are Facebook and Twitter more important to businesses than websites?

Have emails had their day in the modern office?

Christopher Goodfellow

Mon 6 Oct 2014 04.57 EDT

Recruitment advertising agency andSoMe relies on Facebook and Twitter for its online presence after replacing its website with a holding image two and a half years ago. Co-founder Mark Rice says the move made a statement about the company, reflecting its shift from print to digital advertising and eventually social media: "If we are going to sell our expertise in social media to our clients, where better to do that than [on] the platforms that we're selling to them?"

The decision also made financial sense. Bespoke websites can cost thousands of pounds, so should small businesses abandon them to save time and money? Or does this strategy only work for certain niche industries?

Of course, you don't have to spend a fortune on a website. Free tools like content management system WordPress and hosting service Weebly can help. But they may require investments in additional plug-ins or support. Because social sites like Facebook, Pinterest and Twitter are easy to use, free and update automatically there's an opportunity for SMEs to save money on development and become more efficient.

andSoMe's staff spend less than an hour per day maintaining its social media presence (it has more than 2,000 followers on Twitter and 242 Facebook page likes). The move has also helped avoid formulaic trends in website design caused by the increasing use of mobile, says Rice.

However, while this approach may reduce costs, the functionality offered by social media platforms may not be enough for the majority of small businesses, particularly those that need to offer e-commerce, and websites can be important for establishing respectability.

Julie Hawker, chief executive of Cosmic, a not-for-profit organisation that provides small businesses with IT support and advice, says it's crucial to consider the return on time invested.

"There are certain types of businesses that can progress well and excel in their use of social media and are able to convert interest into sales. There are others where the anchoring and the core nuggets of content [on websites] are still vitally important," she advises.

Facebook: a starting platform

Entrepreneurs that have made a conscious decision to shift their online focus to social media while maintaining a website have found it a time-effective way to build an audience.

In its first incarnation Crafty Days Keep Sakes, which creates toys from old children's clothes, relied on Facebook to make sales and an online Google document to book orders and maintain a waiting list.

The business relaunched as Love Keep Create at the start of 2013, hiring staff, rebranding and investing in a website. However, the social focus remained and a third of website traffic was generated by Facebook during this new phase. Today its Facebook page has over 39,000 likes.

"Small businesses can't afford to ignore social media," says company director Nelly Whitaker. "Our particular business and our products work well on Facebook because it's something people really engage with. The emotional attachment is really high."

Creating a customer community

Love Keep Create's social content centres on product photos shared by customers and the staff, and baby-related articles. Whitaker says maintaining its social channels takes 15-20 hours per week. However, this often involves dealing with sales made through direct messages, which would have otherwise have been handled by email.

Twitter is widely used by small businesses to target specialist markets and promote products. The micro-blogging network started trialling an embedded buy button in the US in September. The UK launch date hasn't been announced yet, however, the development offers an insight into how social media functionality will be improved in the future.

Helen Lawson, co-founder of recently launched bereavement retail business Inspired Goodbyes, says Twitter is the company's core method of reaching its client base. Lawson estimates she invests an hour to an hour and a half in social media per day. This has included contacting attendees of an industry conference called the Ideal Death Show before the event to ensure their stand had a buzz and managing to set up a meeting with the Queen's undertaker.

Online sports nutrition and bodybuilding supplement retailer SNCDirect switched its focus to social media to address disappointing website traffic. "It's becoming more of an important part of our marketing mix. People in our industry rely on recommendations. That's where social works very well," says marketing manager Tom Bourlet.

Twitter and Pinterest have provided the biggest response in terms of generating traffic and conversions (SNCDirect has 20,000 followers on Twitter and 210 on Pinterest, and 1,600 Facebook likes). This meant investing in content that could be shared easily, such as workout routines like the 30-day squat challenge, which are posted as images, rather than writing content for the website. Bourlet says the change of focus led social referrals to move from 0.3% to 25.0% of site traffic in less than a year.

Maintaining time-management

However, while these platforms can provide opportunities to be more efficient, small businesses still need to ensure that time invested is used productively. Hawker warns it's difficult for SMEs to accurately measure the ROI from social media: "Can you identify a sale has taken place and track it back to social media not as the only reasons, but as one of the major elements in that? At the moment, we don't have anywhere near the sort of sophistication we need around measuring ROI specifically on social media. Some business can invest hugely in doing this, but the majority of our clients [who are SMEs] definitely couldn't."

Crucially, while social media is free and offers a great way to market a business, the functionality of these sites is limited and that is the biggest drawback.

"I wouldn't say it is right for all business, certain businesses need to have a traditional web presence because that's the market they're in. If you want to make a statement about yourself and the kind of business you want to attract, social could do that for you without losing anything you would get from a regular website," says Rice.

Even if you're going to reduce the development spend on a traditional website to invest more time in social media, rather than dropping it altogether, there's an opportunity to save time and money. This payback is increasing as these networks become more embedded in customers' buying habits and the move has paid dividends for businesses like Love Keep Create and SNCDirect.

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Topics

- Smarter working
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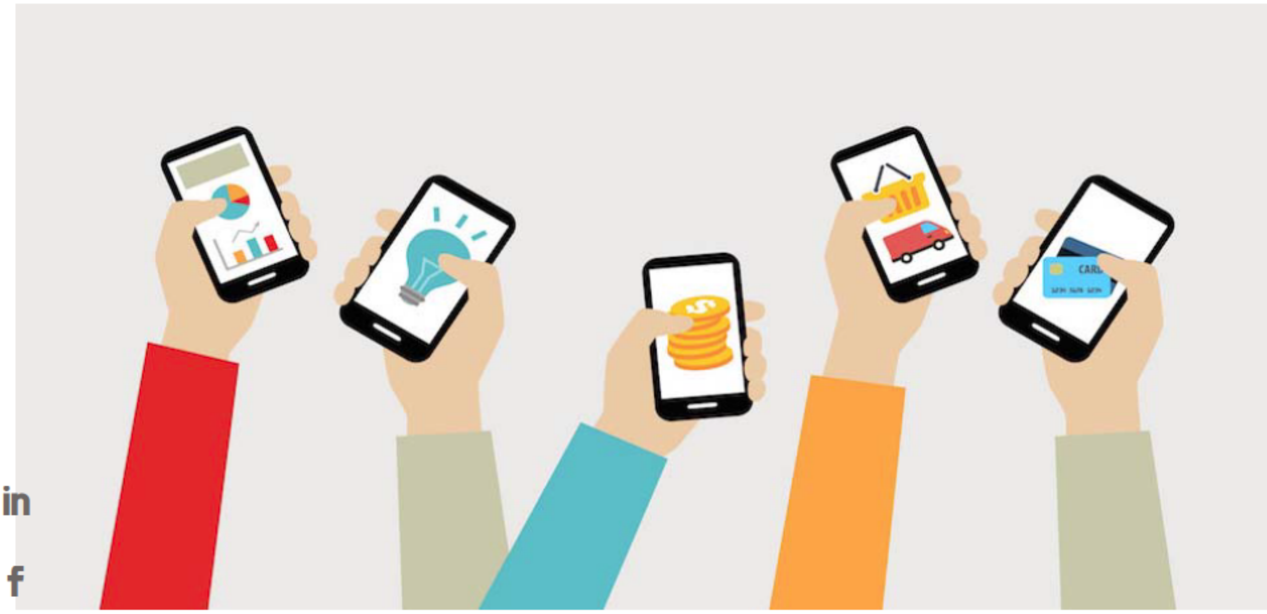
EXHIBIT KM-22

CX INSIGHTS

Will Mobile Apps Replace eCommerce Websites?



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CX INSIGHTS |  by : CASSANDRA MICHAEL | JULY 28, 2015 SHARE

3 min read

With 40% of all online retail sales in the UK coming directly from mobile (Source: Capgemini), any serious ecommerce player knows the value in having a mobile-responsive site. More and more ecommerce companies are taking their mobile strategy one step further by building apps to give their users a truly dedicated shopping experience. We're now at the point where websites, mobile responsive or not, may become obsolete for the ecommerce industry as companies make the move to an app-only experience.

Don't believe me? Well, India's ecommerce giant Flipkart have done just that.

The major etailer has announced its radical plan to shut down their website within a year and transition completely to a mobile app. Fashion site Myntra, which Flipkart acquired last year, has already abandoned its website in favour of an app.

This is a huge shift in the industry and many debate whether this decision will lead to a drop in sales and heavy reactions from Flipkart customers. This bold move though, clearly highlights that we are looking beyond the era of mobile responsive sites and heading full-throttle towards a fully optimised mobile experience.

Is Flipkart's gamble the start of a trend we will see other large retailers follow in the near future?

Debating parties claim that users should have the freedom to shop as they wish. Forcing them to download an app can lead to high drop off rates and users turning to competitive sites that offer a more flexible user experience. Why should a user consume data, phone memory and extra time in order to shop for your product? ONLY, if they are getting something very valuable in return.

When mobile apps are built and implemented well , the benefits can be significant. Below we outline just a few of the main ones you should consider:

The Benefits of mobile apps for Retailers

Increased versatility

Compared to mobile web, apps are far more responsive and have far fewer connectivity issues. Apps can also incorporate smartphone features such as GPS, Bluetooth, address book and the camera for product and credit card scanning.

Meeting cross channel customer demands

If you are among the top retail brands, customers often expect you to provide a mobile app alternative. And it seems that mobile apps are increasingly becoming the preferred way of interacting with brands among the majority of consumers. According to recent research from Weve, Vodafone, O2 and EE's joint mobile marketing network, 46% of 18- to 34-year-olds said mobile was their "first screen."

Personalising the shopping experience and boosting customer loyalty

Apps have introduced a new way for enhanced customer engagement – by sending personalised push notifications to your customers with news, relevant information and promos. The combination of push notifications and in-app rich messaging has created a truly powerful solution that has been proven to improve conversion, engagement and revenue.

Gathering meaningful data

Having a mobile app allows you to not only engage your customers, but to easily track and understand their behaviour. Retail-focused mobile analytics tools allow you to gather valuable information on just about every aspect of a user's interaction, helping brands make data-driven business decisions. Usabilla will be launching its Live for Apps product in Q2 2015, which allows companies to collect user feedback straight from their native apps.

Facilitating payments and check-out

Utilizing built-in smartphone features, payments are streamlined and can be made much more easily. The checkout process can be completed using internet banking apps, credit card scanning, digital wallets and more. A good example of how mobile payments are advancing is the fact that within the next year, UK retailers will be able to use the iPhone Touch ID to allow payment authentication via Apple Pay.

To conclude, if an app is designed with an optimal user experience in mind and provides clear benefits in comparison to a mobile site, loyal customers will select this as their preferred option. Retailers should leverage the fact that more and more transactions are completed via mobile devices and adapt their mobile strategy in order to meet customer expectation and boost customer loyalty.

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Our Pricing

No Markup, Ever

Tired of looking for the best deal on domains? Domain Cost Club Members are guaranteed at-cost pricing. Forget about promotional codes, crazy bundles, and discounted registration with poison-pill renewal fees. Register as many domains as you want, any time you want, at the exact same price it costs us and every other ICANN-accredited registrar. No markup, ever.

Member Pricing

Switch to Retail Pricing

Extension	Registration (first year)	Renewals* (per year)
.abogado	$25.00	$25.00
.ac	$32.88	$32.88
.academy	$10.00	$21.50
.accountant	$9.98	$1.98
.accountants	$15.00	$66.00
.actor	$10.00	$26.50
.adult	$75.00	$75.00
.agency	$2.50	$14.00
.ai*	$68.31	$68.31
.airforce	$21.50	$21.50
.apartments	$35.50	$35.50

Extension	Registration (first year)	Renewals* (per year)
.app	$12.00	$12.00
.archi	$10.00	$47.25
.army	$10.00	$21.50
.art	$5.00	$9.00
.associates	$10.00	$21.50
.attorney	$35.50	$35.50
.auction	$21.50	$21.50
.audio	$100.00	$100.00
.auto	$2,000.00	$2,000.00
.autos	$16.00	$50.00
.baby	$19.99	$50.00
.band	$10.00	$16.00
.bar	$1.50	$50.00
.bargains	$7.50	$21.00
.bayern	$22.71	$22.71
.beer	$20.00	$20.00
.best	$1.00	$15.00
.bet	$11.99	$11.99
.bid	$1.98	$1.98
.bike	$7.50	$21.50
.bingo	$35.50	$35.50
.bio	$10.00	$47.25
.biz	$12.63	$12.63
.black	$10.00	$36.75

Extension	Registration (first year)	Renewals* (per year)
.blackfriday	$100.00	$100.00
.blog	$5.00	$20.00
.blue	$4.00	$11.99
.boats	$25.00	$25.00
.bond	$700.00	$700.00
.boston	$10.00	$10.00
.boutique	$5.00	$21.50
.builders	$21.50	$21.50
.business	$5.50	$5.50
.buzz	$25.00	$25.00
.bz	$16.00	$16.00
.cab	$21.50	$21.50
.cafe	$7.50	$21.50
.cam	$1.25	$14.00
.camera	$35.50	$35.50
.camp	$36.00	$36.00
.capital	$7.50	$35.50
.car	$2,000.00	$2,000.00
.cards	$21.50	$21.50
.care	$10.00	$21.50
.careers	$35.50	$35.50
.cars	$2,000.00	$2,000.00
.casa	$7.50	$7.50
.cash	$4.00	$21.50

Extension	Registration (first year)	Renewals* (per year)
.casino	$10.00	$99.00
.catering	$21.50	$21.50
.cc	$8.00	$8.00
.center	$2.50	$14.00
.ceo	$70.00	$70.00
.charity	$21.50	$21.50
.chat	$10.00	$21.50
.cheap	$5.00	$21.00
.christmas	$30.00	$30.00
.church	$21.50	$21.50
.city	$4.00	$14.00
.claims	$10.00	$35.00
.cleaning	$35.50	$35.50
.click	$4.00	$7.00
.clinic	$35.50	$35.50
.clothing	$21.50	$21.50
.club	$8.95	$8.95
.co	$27.33	$27.33
.coach	$7.50	$35.50
.codes	$4.00	$35.50
.coffee	$6.00	$21.50
.college	$19.99	$45.00
.com	$7.85	$7.85
.community	$21.50	$21.50

Extension	Registration (first year)	Renewals* (per year)
.company	$5.50	$5.50
.computer	$10.00	$21.50
.condos	$35.00	$35.00
.construction	$21.50	$21.50
.consulting	$10.00	$21.50
.contractors	$21.50	$21.50
.cooking	$20.00	$20.00
.cool	$5.00	$21.50
.coupons	$10.00	$35.00
.credit	$6.00	$66.00
.creditcard	$99.00	$99.00
.cricket	$9.98	$9.98
.cruises	$35.00	$35.00
.cx	$22.00	$22.00
.dance	$7.50	$16.00
.date	$1.98	$1.98
.dating	$15.00	$35.50
.deals	$21.50	$21.50
.degree	$32.00	$32.00
.delivery	$5.00	$35.50
.democrat	$21.50	$21.50
.dental	$35.50	$35.50
.dentist	$35.50	$35.50
.desi	$12.00	$12.00

Extension	Registration (first year)	Renewals* (per year)
.design	$10.00	$33.00
.dev	$10.00	$10.00
.diamonds	$35.50	$35.50
.diet	$100.00	$100.00
.digital	$2.50	$21.50
.direct	$10.00	$21.50
.directory	$5.00	$14.00
.discount	$21.50	$21.50
.doctor	$10.00	$66.00
.dog	$5.00	$35.50
.domains	$21.50	$21.50
.download	$1.98	$1.98
.earth	$15.00	$15.00
.eco	$50.00	$50.00
.education	$14.00	$14.00
.email	$2.00	$14.00
.energy	$7.50	$66.00
.engineer	$21.50	$21.50
.engineering	$7.50	$35.50
.enterprises	$10.00	$21.50
.equipment	$14.00	$14.00
.estate	$5.00	$21.50
.eu	$5.75	$5.75
.events	$10.00	$21.50

Extension	Registration (first year)	Renewals* (per year)
.exchange	$7.50	$21.50
.expert	$4.00	$35.50
.exposed	$14.00	$14.00
.express	$5.00	$21.50
.fail	$21.50	$21.50
.faith	$4.98	$1.98
.family	$16.00	$16.00
.fan	$26.50	$26.50
.fans	$8.00	$8.00
.farm	$7.50	$21.50

Extension	Registration (first year)	Renewals* (per year)
.fashion	$20.00	$20.00
.finance	$10.00	$35.50
.financial	$10.00	$35.50
.fish	$21.50	$21.50
.fishing	$20.00	$20.00
.fit	$20.00	$20.00
.fitness	$5.00	$21.50
.flights	$20.00	$35.50
.florist	$21.50	$21.50
.flowers	$100.00	$100.00
.fm	$85.00	$85.00
.fo	$46.89	$46.89

Extension	Registration (first year)	Renewals* (per year)
.football	$14.00	$14.00
.forsale	$10.00	$21.50
.foundation	$4.00	$21.50
.fun	$1.99	$15.00
.fund	$4.00	$35.00
.furniture	$35.50	$35.50
.futbol	$8.50	$8.50
.fyi	$5.00	$14.00
.gallery	$14.00	$14.00
.game	$250.00	$300.00
.games	$13.00	$13.00
.garden	$20.00	$20.00
.gift	$13.33	$13.33
.gifts	$21.50	$21.50
.gives	$21.50	$21.50
.glass	$35.50	$35.50
.global	$50.00	$50.00
.gmbh	$21.50	$21.50
.gold	$5.00	$66.00
.golf	$2.50	$35.50
.graphics	$14.00	$14.00
.gratis	$14.00	$14.00
.green	$10.00	$50.00
.gripe	$21.50	$21.50

Extension	Registration (first year)	Renewals* (per year)
.group	$8.50	$8.50
.guide	$21.50	$21.50
.guitars	$100.00	$100.00
.guru	$4.00	$21.50
.haus	$10.00	$21.50
.healthcare	$35.50	$35.50
.help	$15.00	$20.00
.hiphop	$100.00	$100.00
.hockey	$35.50	$35.50
.holdings	$35.00	$35.00
.holiday	$35.50	$35.50
.homes	$8.00	$25.00
.horse	$20.00	$20.00
.host	$2.99	$65.00
.hosting	$250.00	$300.00
.house	$7.50	$21.50
.how	$20.00	$20.00
.icu	$1.00	$5.00
.id	$18.90	$18.90
.immo	$21.50	$21.50
.immobilien	$21.50	$21.50
.in	$8.33	$8.33
.inc	$2,000.00	$2,000.00
.industries	$21.50	$21.50

Extension	Registration* (first year)	Renewals* (per year)
.info	$3.00	$11.92
.ink	$10.00	$19.00
.institute	$5.00	$14.00
.insure	$35.50	$35.50
.international	$5.00	$14.00
.investments	$10.00	$66.00
.io	$33.88	$33.88
.irish	$5.00	$10.50
.ist	$12.00	$12.00
.istanbul	$15.00	$15.00
.jetzt	$14.00	$14.00
.jewelry	$35.50	$35.50
.juegos	$250.00	$300.00
.kaufen	$21.50	$21.50
.kim	$4.00	$11.99
.kitchen	$10.00	$35.50
.la	$31.00	$31.00
.land	$10.00	$21.50
.law	$69.00	$69.00
.lawyer	$35.50	$35.50
.lease	$35.00	$35.00
.legal	$35.50	$35.50
.lgbt	$10.00	$29.95
.life	$2.00	$21.00

Extension	Registration (first year)	Renewals* (per year)
.lighting	$14.00	$14.00
.limited	$21.50	$21.50
.limo	$36.00	$36.00
.link	$4.00	$7.00
.live	$2.00	$16.00
.loan	$1.98	$1.98
.loans	$10.00	$66.00
.lol	$20.00	$20.00
.london	$25.97	$25.97
.love	$20.00	$20.00
.ltd	$6.00	$14.00
.ltda	$2.00	$28.00
.luxe	$15.00	$15.00
.maison	$35.50	$35.50
.management	$14.00	$14.00
.market	$21.00	$21.00
.marketing	$5.00	$21.50
.mba	$10.00	$21.50
.me	$5.41	$10.81
.media	$7.50	$21.50
.memorial	$35.50	$35.50
.men	$1.98	$1.98
.miami	$12.00	$12.00
.mobi	$4.00	$14.25

Extension	Registration (first year)	Renewals* (per year)
.moda	$21.50	$21.50
.mom	$25.00	$25.00
.money	$5.00	$21.50
.monster	$0.99	$8.56
.mortgage	$32.00	$32.00
.motorcycles	$25.00	$25.00
.movie	$25.00	$200.00
.museum	$37.85	$37.85
.name	$6.60	$6.60
.navy	$21.50	$21.50
.net	$9.77	$9.77
.network	$2.50	$14.00
.news	$10.00	$16.00
.ninja	$5.00	$13.00
.nl	$5.45	$5.45
.nyc	$20.00	$20.00
.observer	$8.00	$8.00
.onl	$9.95	$9.95
.online	$2.99	$25.00
.ooo	$19.99	$19.99
.org	$6.93	$9.93
.organic	$10.00	$50.00
.page	$8.00	$8.00
.paris	$31.36	$31.36

Extension	Registration (first year)	Renewals* (per year)
.partners	$10.00	$35.50
.parts	$10.00	$21.50
.party	$1.98	$1.98
.pet	$4.00	$11.99
.photo	$15.00	$20.00
.photography	$7.50	$14.00
.photos	$6.00	$14.00
.pics	$15.00	$20.00
.pictures	$7.50	$7.50

Extension	Registration (first year)	Renewals* (per year)
.pink	$4.00	$11.99
.pizza	$7.50	$36.00
.plumbing	$35.50	$35.50
.plus	$5.00	$21.50
.poker	$10.00	$36.75
.porn	$75.00	$75.00
.press	$8.99	$49.00
.pro	$3.00	$12.09
.productions	$5.00	$21.50
.promo	$4.00	$11.99
.properties	$5.00	$21.50
.property	$50.00	$100.00
.protection	$2,000.00	$2,000.00

Extension	Registration (first year)	Renewals* (per year)
.pub	$21.50	$21.50
.pw	$1.99	$15.00
.racing	$4.98	$1.98
.realestate	$68.00	$68.00
.realty	$272.00	$272.00
.recipes	$5.00	$35.00
.red	$4.00	$11.99
.rehab	$21.50	$21.50
.reise	$66.00	$66.00
.reisen	$14.00	$14.00
.rent	$19.99	$45.00
.rentals	$5.00	$21.50
.repair	$5.00	$21.50
.report	$21.50	$21.50
.republican	$21.50	$21.50
.rest	$1.50	$25.00
.restaurant	$10.00	$35.50
.review	$4.98	$1.98
.reviews	$16.00	$16.00
.rich	$1,750.00	$1,750.00
.rip	$13.00	$13.00
.rocks	$2.50	$8.50
.rodeo	$5.00	$5.00
.run	$2.50	$14.00

Extension	Registration (first year)	Renewals* (per year)
.saarland	$16.22	$16.22
.sale	$10.00	$21.50
.salon	$36.00	$36.00
.sarl	$21.50	$21.50
.school	$21.50	$21.50
.schule	$14.00	$14.00
.science	$4.98	$1.98
.security	$2,000.00	$2,000.00
.services	$4.00	$21.00
.sex	$75.00	$75.00
.sexy	$15.00	$25.00
.sh	$32.88	$32.88
.shiksha	$11.55	$11.55
.shoes	$20.00	$35.50
.shop	$6.48	$25.92
.shopping	$21.00	$21.00
.show	$5.00	$21.50
.si	$19.95	$19.95
.singles	$5.00	$21.00
.site	$2.59	$20.00
.ski	$10.00	$31.50
.soccer	$14.00	$14.00
.social	$10.00	$21.50
.software	$10.00	$21.50

Extension	Registration (first year)	Renewals* (per year)
.solar	$35.50	$35.50
.solutions	$5.00	$14.00
.soy	$18.00	$18.00
.space	$1.99	$15.00
.srl	$2.00	$26.00
.st	$36.94	$36.94
.storage	$500.00	$500.00
.store	$4.99	$40.00
.stream	$1.98	$1.98
.studio	$16.00	$16.00
.style	$7.50	$21.50
.sucks	$199.00	$199.00
.supplies	$14.00	$14.00
.supply	$14.00	$14.00
.support	$6.00	$14.00
.surf	$20.00	$20.00
.surgery	$35.50	$35.50
.systems	$4.00	$14.00
.tattoo	$30.00	$30.00
.tax	$7.50	$35.50
.taxi	$7.50	$35.50
.team	$5.00	$21.50
.tech	$4.99	$35.00
.technology	$4.00	$14.00

Extension	Registration (first year)	Renewals* (per year)
.tel	$9.00	$9.00
.tennis	$35.50	$35.50
.theater	$35.50	$35.50
.theatre	$500.00	$500.00
.tienda	$35.50	$35.50
.tips	$7.50	$14.00
.tires	$66.00	$66.00
.today	$2.50	$14.00
.tools	$6.00	$21.50
.top	$6.22	$6.22
.tours	$5.00	$21.50
.town	$10.00	$21.50
.toys	$10.00	$35.50
.trade	$1.98	$1.98
.training	$10.00	$21.50
.travel	$20.00	$80.00
.tube	$20.00	$20.00
.tv	$25.00	$25.00
.university	$35.50	$35.50
.uno	$3.99	$15.00
.us	$6.50	$6.50
.vacations	$21.50	$21.50
.vegas	$39.95	$39.95
.ventures	$7.50	$35.50

Extension	Registration (first year)	Renewals* (per year)
.vet	$21.50	$21.50
.viajes	$35.00	$35.00
.video	$16.00	$16.00
.villas	$35.50	$35.50
.vin	$5.00	$35.50
.vip	$11.00	$11.00
.vision	$21.50	$21.50
.vodka	$20.00	$20.00
.vote	$50.00	$50.00
.voto	$50.00	$50.00
.voyage	$35.50	$35.50
.watch	$5.00	$21.50
.webcam	$4.98	$1.98
.website	$1.00	$15.00
.wedding	$20.00	$20.00
.wiki	$10.00	$19.00
.win	$1.98	$1.98
.wine	$5.00	$35.50
.work	$6.00	$6.00
.works	$3.00	$21.50
.world	$2.00	$21.00
.ws	$5.00	$19.00
.wtf	$2.50	$21.50
.在线	$200.00	$200.00

Extension	Registration (first year)	Renewals* (per year)
.移动	$10.99	$10.99
.中文网	$78.00	$78.00
.购物	$269.00	$269.00
.xxx	$75.00	$75.00
.xyz	$0.99	$8.00
.yachts	$25.00	$25.00
.yoga	$20.00	$20.00
.zone	$5.00	$21.50

* Renewal pricing is subject to wholesale pricing at the time of renewal.

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.fm, .ws, .fo, .cx, .la, .cc, .in, .eu, .sh, .tv, .us, .id, .co, .io, .si, .pw, .bz, .me, .ac, .st, .nl, .ai

Type a domain Search

Popular TLDs: .CLICK .LINK .XYZ .ME .REVIEW .COM .TRADE .PARTY .DOWNLOAD .WEBSITE | **Newest TLDs:** .STORE .GAME .MOM .FAMILY .AUTO .CAR | **All TLDs: Advanced Search Tool** (/web/20160617161212/https://www.domaincostclub.com/bulksearch.dhtml)

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Member Pricing

Switch to Retail Pricing

TLD	Registration (first year)	Renewal* (per year)	TLD	Registration (first year)	Renewal* (per year)	TLD	Registration (first year)	Renewal* (per year)
.academy	$20.00	$20.00	.expert	$33.00	$33.00	.photo	$20.00	$20.00
.accountant	$0.39	$0.69	.exposed	$13.00	$13.00	.photography	$13.00	$13.00
.accountants	$66.00	$66.00	.express	$20.00	$20.00	.photos	$13.00	$13.00
.actor	$25.00	$25.00	.fail	$20.00	$20.00	.pics	$13.33	$13.33
.adult	$7.85	$62.00	.faith	$0.39	$0.69	.pictures	$7.00	$7.00
.agency	$13.00	$13.00	.family	$7.50	$15.00	.pink	$9.95	$9.95
.airforce	$20.00	$20.00	.fans	$50.00	$50.00	.pizza	$33.00	$33.00
.apartments	$33.00	$33.00	.farm	$20.00	$20.00	.place	$20.00	$20.00
.army	$20.00	$20.00	.finance	$33.00	$33.00	.plumbing	$20.00	$20.00
.associates	$20.00	$20.00	.financial	$33.00	$33.00	.plus	$20.00	$20.00
.attorney	$25.00	$25.00	.fish	$20.00	$20.00	.poker	$29.95	$29.95
.auction	$20.00	$20.00	.fitness	$20.00	$20.00	.porn	$7.85	$62.00
.audio	$9.33	$9.33	.flights	$33.00	$33.00	.press	$10.99	$49.00
.auto	$2,000.00	$2,000.00	.florist	$20.00	$20.00	.productions	$20.00	$20.00
.band	$15.00	$15.00	.flowers	$17.67	$17.67	.properties	$20.00	$20.00
.bar	$50.00	$50.00	.football	$13.00	$13.00	.property	$20.00	$20.00
.bargains	$20.00	$20.00	.forsale	$20.00	$20.00	.pub	$20.00	$20.00
.best	$70.00	$70.00	.foundation	$20.00	$20.00	.racing	$0.39	$0.69
.bid	$0.39	$0.69	.fund	$33.00	$33.00	.recipes	$33.00	$33.00

.bingo	$33.00	$33.00	.futbol	$8.00	$8.00	.rehab	$20.00	$20.00
.biz	$9.49	$9.49	.fyi	$13.00	$13.00	.reisen	$13.00	$13.00
.black	$29.95	$29.95	.gallery	$13.00	$13.00	.rent	$45.00	$45.00
.blackfriday	$26.67	$26.67	.game	$300.00	$300.00	.rentals	$20.00	$20.00
.blue	$9.95	$9.95	.gift	$13.33	$13.33	.repair	$20.00	$20.00
.boutique	$20.00	$20.00	.gifts	$20.00	$20.00	.report	$13.00	$13.00
.builders	$20.00	$20.00	.gives	$20.00	$20.00	.republican	$20.00	$20.00
.business	$3.00	$13.00	.glass	$20.00	$20.00	.rest	$25.00	$25.00
.buzz	$25.00	$25.00	.global	$50.00	$50.00	.restaurant	$33.00	$33.00
.cab	$20.00	$20.00	.gold	$66.00	$66.00	.review	$0.39	$0.69
.cafe	$20.00	$20.00	.golf	$33.00	$33.00	.reviews	$15.00	$15.00
.camera	$20.00	$20.00	.graphics	$13.00	$13.00	.rip	$12.00	$12.00
.camp	$20.00	$20.00	.gratis	$13.00	$13.00	.rocks	$4.00	$8.00
.capital	$33.00	$33.00	.green	$50.00	$50.00	.run	$13.00	$13.00
.car	$2,000.00	$2,000.00	.gripe	$20.00	$20.00	.sale	$20.00	$20.00
.cards	$20.00	$20.00	.guide	$20.00	$20.00	.sarl	$20.00	$20.00
.care	$20.00	$20.00	.guitars	$20.00	$20.00	.school	$20.00	$20.00
.careers	$33.00	$33.00	.guru	$20.00	$20.00	.schule	$13.00	$13.00
.cars	$2,000.00	$2,000.00	.haus	$20.00	$20.00	.science	$0.39	$0.69
.cash	$20.00	$20.00	.healthcare	$33.00	$33.00	.services	$20.00	$20.00
.casino	$99.00	$99.00	.help	$13.33	$13.33	.sex	$7.85	$62.00
.catering	$20.00	$20.00	.hiphop	$13.33	$13.33	.sexy	$13.33	$13.33
.cc	$8.00	$8.00	.hockey	$33.00	$33.00	.shiksha	$9.95	$9.95
.center	$13.00	$13.00	.holdings	$33.00	$33.00	.shoes	$20.00	$20.00
.ceo	$70.00	$70.00	.holiday	$33.00	$33.00	.show	$20.00	$20.00
.chat	$20.00	$20.00	.host	$65.00	$65.00	.singles	$20.00	$20.00
.cheap	$20.00	$20.00	.hosting	$20.00	$20.00	.site	$1.99	$20.00
.christmas	$20.00	$20.00	.house	$20.00	$20.00	.soccer	$13.00	$13.00
.church	$20.00	$20.00	.immo	$20.00	$20.00	.social	$10.00	$20.00
.city	$13.00	$13.00	.immobilien	$20.00	$20.00	.software	$20.00	$20.00
.claims	$33.00	$33.00	.industries	$20.00	$20.00	.solar	$20.00	$20.00
.cleaning	$20.00	$20.00	.info	$8.76	$8.97	.solutions	$13.00	$13.00
.click	$1.99	$4.67	.ink	$19.00	$19.00	.space	$0.99	$6.00
.clinic	$33.00	$33.00	.institute	$13.00	$13.00	.store	$10.00	$40.00

.club	$8.05	$8.05	.international	$13.00	$13.00	.style	$20.00	$20.00
.coach	$33.00	$33.00	.investments	$66.00	$66.00	.supplies	$13.00	$13.00
.codes	$33.00	$33.00	.irish	$25.00	$25.00	.supply	$13.00	$13.00
.coffee	$20.00	$20.00	.jewelry	$33.00	$33.00	.support	$13.00	$13.00
.college	$45.00	$45.00	.juegos	$9.33	$9.33	.surgery	$33.00	$33.00
.com	$7.85	$7.85	.kaufen	$20.00	$20.00	.systems	$13.00	$13.00
.community	$20.00	$20.00	.kim	$9.95	$9.95	.tattoo	$20.00	$20.00
.company	$13.00	$13.00	.kitchen	$20.00	$20.00	.tax	$33.00	$33.00
.computer	$20.00	$20.00	.land	$20.00	$20.00	.taxi	$33.00	$33.00
.condos	$33.00	$33.00	.lawyer	$25.00	$25.00	.team	$20.00	$20.00
.construction	$20.00	$20.00	.lease	$33.00	$33.00	.tech	$7.99	$35.00
.consulting	$20.00	$20.00	.legal	$33.00	$33.00	.technology	$13.00	$13.00
.contractors	$20.00	$20.00	.lgbt	$29.95	$29.95	.tennis	$33.00	$33.00
.cool	$20.00	$20.00	.life	$20.00	$20.00	.theater	$33.00	$33.00
.coupons	$33.00	$33.00	.lighting	$13.00	$13.00	.tienda	$33.00	$33.00
.credit	$66.00	$66.00	.limited	$20.00	$20.00	.tips	$3.00	$13.00
.creditcard	$99.00	$99.00	.limo	$33.00	$33.00	.tires	$66.00	$66.00
.cricket	$0.39	$0.69	.link	$1.99	$6.67	.today	$13.00	$13.00
.cruises	$33.00	$33.00	.live	$7.50	$15.00	.tools	$20.00	$20.00
.dance	$15.00	$15.00	.loan	$0.39	$0.69	.tours	$33.00	$33.00
.date	$0.39	$0.69	.loans	$66.00	$66.00	.town	$20.00	$20.00
.dating	$33.00	$33.00	.lol	$2.00	$20.00	.toys	$20.00	$20.00
.deals	$20.00	$20.00	.love	$20.00	$20.00	.trade	$0.39	$0.69
.degree	$30.00	$30.00	.maison	$33.00	$33.00	.training	$20.00	$20.00
.delivery	$33.00	$33.00	.management	$13.00	$13.00	.tv	$20.00	$20.00
.democrat	$20.00	$20.00	.market	$20.00	$20.00	.university	$33.00	$33.00
.dental	$33.00	$33.00	.marketing	$20.00	$20.00	.vacations	$20.00	$20.00
.dentist	$25.00	$25.00	.mba	$20.00	$20.00	.vegas	$39.95	$39.95
.design	$33.00	$33.00	.me	$5.61	$11.23	.ventures	$33.00	$33.00
.diamonds	$33.00	$33.00	.media	$20.00	$20.00	.vet	$20.00	$20.00
.diet	$13.33	$13.33	.memorial	$33.00	$33.00	.viajes	$33.00	$33.00
.digital	$20.00	$20.00	.mobi	$12.00	$12.00	.video	$15.00	$15.00
.direct	$20.00	$20.00	.moda	$20.00	$20.00	.villas	$33.00	$33.00
.directory	$13.00	$13.00	.mom	$25.00	$25.00	.vision	$20.00	$20.00

.dog	$20.00	$20.00	.mortgage	$30.00	$30.00	.watch	$20.00	$20.00
.domains	$20.00	$20.00	.movie	$200.00	$200.00	.webcam	$0.39	$0.69
.download	$0.39	$0.69	.navy	$20.00	$20.00	.website	$1.00	$15.00
.education	$13.00	$13.00	.net	$8.21	$8.21	.wiki	$19.00	$19.00
.email	$3.00	$13.00	.network	$13.00	$13.00	.win	$0.39	$0.69
.energy	$66.00	$66.00	.news	$15.00	$15.00	.works	$20.00	$20.00
.engineer	$20.00	$20.00	.ninja	$12.00	$12.00	.world	$20.00	$20.00
.engineering	$33.00	$33.00	.onl	$9.95	$9.95	.ws	$5.00	$19.00
.enterprises	$20.00	$20.00	.online	$6.99	$25.00	.wtf	$20.00	$20.00
.equipment	$13.00	$13.00	.org	$9.05	$9.05	.xxx	$7.85	$62.00
.estate	$20.00	$20.00	.partners	$33.00	$33.00	.xyz	$0.22	$8.00
.events	$20.00	$20.00	.parts	$20.00	$20.00	.zone	$20.00	$20.00
.exchange	$20.00	$20.00	.party	$0.39	$0.69			

† All TLDs (except .WS) are subject to a mandatory $0.18 ICANN fee per year.

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EXHIBIT KM-24

Phase II Assessment of the Competitive Effects Associated with the New gTLD Program

Greg Rafert and Catherine Tucker[1]

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EXECUTIVE SUMMARY

This report was commissioned by ICANN to assess the extent to which the release of new gTLDs (the "New gTLD Program") has resulted in changes in competition in the domain name marketplace as part of ICANN's Affirmation of Commitments with the U.S. Department of Commerce. An initial report was published on September 28, 2015 (the "Phase I Assessment"), which established a baseline description of metrics that can be used to assess the competitive conditions in the marketplace for domain names. This subsequent report (the "Phase II Assessment") updates our measures of those metrics to assess the extent to which the New gTLD Program has affected competition in this marketplace over the past year.[2] While only one year has passed, we do observe some changes in the marketplace. It is important to note, however, that the New gTLD Program is still relatively new, and that top-level domains continue to be introduced. Therefore, there could be additional changes to the competitive environment in the future.

The metrics discussed in this report reflect economic theory related to measuring and evaluating competition and also reflect consultation with the Competition, Consumer Trust & Consumer Choice Review Team (the "CCT Review Team"). As a result, this report includes additional metrics that were not included in the Phase I Report.

In assessing how key metrics have changed over the past year, we find that:

- Average and median retail prices for registrations of legacy and new gTLDs, as well as retail mark-ups over wholesale prices, have declined since Phase I.[3]
- The overall price level of legacy TLD wholesale price caps continues to be lower than wholesale prices for new gTLDs.[4,5] In addition, we find effectively no change in wholesale price caps for legacy TLDs, nor wholesale price levels for new gTLDs, when comparing our Phase I and Phase II results. The presence of price caps on legacy TLDs may help to explain the absence of changes in legacy TLD wholesale prices.[6]
- There are noticeable changes in the set of entities included in the largest 15 registries and registrars ranked by total domain registrations as a result of entry by new gTLD registries and growth in registrations made by different registrars who register new gTLD domains. In addition, we observe declines in the share of gTLD registrations held by the top four, top eight, and top 15 registries and registrars between Phase I and Phase II.

[2] The Phase I Assessment was released for public comment on September 28, 2015 and is publicly available at https://www.icann.org/news/announcement-2-2015-09-28-en.

[3] Due to limitations on our ability to collect data on legacy TLD wholesale prices, we substitute for them with legacy TLD price caps (not the actual wholesale prices charged by registry operators of legacy TLDs).

[4] Since legacy TLD wholesale price caps are below the wholesale prices of new gTLDs, legacy TLD wholesale prices must also be below wholesale prices of new gTLDs.

[5] Legacy TLDs exclude ccTLDs.

[6] While a number of legacy TLDs have price caps that adjust relative to the previous year's price (and therefore do not necessarily bind the TLD to a specific price level), the presence of the cap may still limit the incentive for the TLD to change its price.

- There were changes in the new gTLD registration shares of registrars, with the largest registrar in the Phase I Assessment dropping out of the top 15 registrars (ranked by total domain registrations) and being replaced by a registrar whose share of new gTLD registrations increased by nearly 22 percent. We also observe that registrars located in China have become more prevalent among registrars with the largest shares of new gTLD registrations.
- We find the largest percentage growth in the number of registry operators in the Asian Pacific and European regions.
- New gTLDs continue to target registrants with a variety of interests, and the entry of new gTLDs within a given interest area is often associated with a decline in registration shares of other new gTLDs within the same interest area.
- The expansion of new gTLDs has continued since our Phase I Assessment; new gTLD registrations have increased from 3,483,064 registrations as of November 2014 to 16,570,035 registrations as of March 2016. New gTLD registrations accounted for approximately 2 percent of all gTLD registrations as of November 2014 and now account for 9 percent of all gTLD registrations. Overall domain registration levels have also increased since Phase I, since legacy TLD registrations have not declined and new gTLD registrations are growing.
- There continues to be no aggregate (worldwide) effect of new gTLD entry or registrations on legacy TLD registrations. This suggests that total TLD registrations have grown since the beginning of the New gTLD program, since legacy TLD registrations have not fallen and new gTLD registrations are growing. However, in analyzing the effect of the entry of regionally-specific TLDs (e.g., nyc), we typically observe a decline in new gTLD and legacy registrations after the entry of the regional TLD in the region relevant to that TLD. This suggests that regional TLDs may be viewed as substitutes for other new gTLDs and legacy TLDs.

While we are unable to draw conclusions about whether the New gTLD Program has caused a change in competition in the domain name marketplace, some of these changes in the past year are consistent with what one would expect to see in a marketplace with increased competition. For example, the decline in the share of new gTLD registrations attributable to the four and eight registries with the most registrations, and the observed volatility in the registration shares held by registry operators, could point to increased competition. The volatility in new gTLD registration shares made by registrars may also be indicative of increased competition; while there are multiple explanations for this volatility, one could observe movement in registration shares because of the entry of new registrars in the marketplace.

One might also expect that increased competition among new gTLD registry operators would result in lower new gTLD wholesale prices, which we do not observe. However, the decline in retail prices and markups since Phase I is consistent with increased competition among registrars. In making these observations, it is important to note that our price-based analyses are limited by available data. In particular, we would have liked to evaluate detailed transaction-level data to compare, for example, how prices of the same or similar second-level domain names differ across legacy TLDs and new gTLDs. However, we received no data from secondary market institutions in Phase I or Phase II.

Finally, in both our Phase I and Phase II Assessments, we found no aggregate (worldwide) effect of new gTLD entry or registrations on legacy TLD registrations. This is consistent with new gTLDs generally not being treated as substitutes for legacy TLDs. The observed impact of the entry of regionally-specific TLDs (e.g., nyc) on other TLD registration activity in the regional TLD's geographic area, suggests that regional TLDs may be viewed as substitutes for other new gTLDs and legacy TLDs. However, we do not have the necessary transaction-level data to fully analyze the substitutability of new gTLDs for legacy TLDs.

SECTION I – INTRODUCTION

We were retained by ICANN to assess the extent to which the New gTLD Program has resulted in increased competition in the domain name marketplace, and we have divided our work into two phases: an initial report published on September 28, 2015 (the "Phase I Assessment"), which established a baseline description of metrics that can be used to assess, in the future, the competitive conditions in the marketplace for domain names, and this subsequent report (the "Phase II Assessment"), which assesses the extent to which the New gTLD Program has affected competition in this marketplace over the past year.[7]

Since the Phase I Assessment, the domain registration space has continued to expand. As of March 2016, there were 955 new gTLDs available for registration and 16,570,035 domain registrations in new gTLDs. This represents a growth of 405 available new gTLDs available for registrations and 13,086,971 domain registrations in new gTLDs since November 2014.[8]

Our Phase II Assessment reveals how the competition metrics established in the Phase I Assessment have changed (or remained the same) as the New gTLD Program has continued in the past year. When interpreting these results one should note that the New gTLD Program continues to introduce new gTLDs. Therefore, the marketplace for domain names may continue to change as the program proceeds.

In this assessment, our principal findings are that:

- Average and median retail prices for registrations of legacy and new gTLDs, as well as retail mark-ups over wholesale prices, have declined since Phase I.[9]
- The overall price level of legacy TLD wholesale price caps continues to be lower than wholesale prices for new gTLDs.[10,11] In addition, we find effectively no change in wholesale price caps for legacy TLDs, nor wholesale price levels for new gTLDs, when comparing our Phase I and Phase II results. The presence of price caps on

[7] The Phase I Assessment was released for public comment on September 28, 2015 and is publicly available at https://www.icann.org/news/announcement-2-2015-09-28-en.
[8] Our Phase I Assessment relied on registration data available as of November 2014.
[9] Due to limitations on our ability to collect data on legacy TLD wholesale prices, we substitute for them with legacy TLD price caps (not the actual wholesale prices charged by registry operators of legacy TLDs).
[10] Since legacy TLD wholesale price caps are below the wholesale prices of new gTLDs, legacy TLD wholesale prices must also be below wholesale prices of new gTLDs.
[11] Legacy TLDs exclude ccTLDs.

legacy TLDs may help to explain the absence of changes in legacy TLD wholesale prices.[12]

- There are noticeable changes in the set of entities included in the largest 15 registries and registrars ranked by total domain registrations as a result of entry by new gTLD registries and growth in registrations made by different registrars who register new gTLD domains. In addition, we observe declines in the share of gTLD registrations held by the top four, top eight, and top 15 registries and registrars between Phase I and Phase II.
- There were changes in the new gTLD registration shares of registrars, with the largest registrar in the Phase I Assessment dropping out of the top 15 registrars (ranked by total domain registrations) and being replaced by a registrar whose share of new gTLD registrations increased by nearly 22 percent. We also observe that registrars located in China have become more prevalent among registrars with the largest shares of new gTLD registrations.
- We find the largest percentage growth in the number of registry operators in the Asian Pacific and European regions.
- New gTLDs continue to target registrants with a variety of interests, and the entry of new gTLDs within a given interest area is often associated with a decline in registration shares of other new gTLDs within the same interest area.
- The expansion of new gTLDs has continued since our Phase I Assessment; new gTLD registrations have increased from 3,483,064 registrations as of November 2014 to 16,570,035 registrations as of March 2016. New gTLD registrations accounted for approximately 2 percent of all gTLD registrations as of November 2014 and now account for 9 percent of all gTLD registrations. Overall domain registration levels have also increased since Phase I, since legacy TLD registrations have not declined and new gTLD registrations are growing.
- There continues to be no aggregate (worldwide) effect of new gTLD entry or registrations on legacy TLD registrations. This suggests that total TLD registrations have grown since the beginning of the New gTLD program, since legacy TLD registrations have not fallen and new gTLD registrations are growing. However, in analyzing the effect of the entry of regionally-specific TLDs (e.g., nyc), we typically observe a decline in new gTLD and legacy registrations after the entry of the regional TLD in the region relevant to that TLD, which suggests that regional TLDs may be viewed as substitutes for other new gTLDs and legacy TLDs.

SECTION II – THE MARKETPLACE FOR DOMAIN NAMES

In this section, we provide a brief overview of what types of changes we would expect to see in a marketplace that has experienced changes in competitive pressures. We then detail our methodological approach to assessing competitive effects in Section III and discuss our results in Section IV.

[12] While a number of legacy TLDs have price caps that adjust relative to the previous year's price (and therefore do not necessarily bind the TLD to a specific price level), the presence of the cap may still limit the incentive for the TLD to change its price.

An Economic Framework

As discussed in Section II of the Phase I Assessment in more detail, firms in a marketplace can compete on factors such as price, product and service attributes, marketing and promotion efforts, and ancillary services. Since firms can compete on price and non-price factors, it follows that these factors are often used to evaluate changes in competition. Although there is not by any means necessarily a causal link, a decrease in the prices charged to consumers, an increase in the quality of products offered, and/or an increase in the quality of other services provided by firms may reflect increased competition. Furthermore, an increase in the number of firms offering services or an increase in the production of a given good may be correlated with increased competition in some instances.

As such, our assessment of the effect of the New gTLD Program on competition in the marketplace for domain names focuses on the extent to which price and non-price factors have changed as new gTLDs, registries, and registrars have entered into (or in some cases, exited from) the marketplace. If, for example, competition has increased among registries or registrars, we may expect to see entry by new registry operators or registrars, or changes in which parties have significant domain registration activity. Additionally, if competition has increased among registry operators in the past year, we may see signs that wholesale prices have decreased or begun to converge; similarly, if competition among registrars has increased, we may observe signs that retail prices have decreased or begun to converge. We also investigate whether registration activity or changes in retail and wholesale prices in the past year differ between new gTLDs and legacy TLDs. Such changes among legacy TLDs may indicate that consumer demand for legacy TLDs is related to new gTLDs: for example, a decline in registrations of legacy TLDs while new gTLD registrations increased would be consistent with the possibility that consumers view new gTLDs as substitutes for legacy TLDs. However, we note that given that only one year has passed since our initial assessment and that the New gTLD Program continues to develop, one can expect that these measures of competition may continue to change in the future.

If firms choose to engage in price competition, consumers will typically benefit from the resulting lower prices. Other benefits, which are more difficult to observe than price, may also manifest as a result of competition; for example, competing firms may choose to develop new or different product offerings, therefore increasing the variety of choices consumers face, and potentially allowing for more personalized products and increases in consumer welfare. In the marketplace for domain names, the availability of a diverse selection of specialized gTLDs may be an example of welfare-enhancing product differentiation.

SECTION III – DATA COLLECTION AND METHODOLOGY

In this section, we describe our sample selection methodology and data collection process,[13] and conclude with a brief overview of the data we compiled for the Phase I and Phase II Assessments.

TLD Sample Construction

Given the large number of new gTLDs available at the time of the Phase I Assessment, we developed a methodology designed to sample new gTLDs that had generated the greatest registration activity (both historically and recently); we also included new gTLDs that overlapped with those new gTLDs in terms of target customer groups. The resulting sample for the Phase I Assessment included 109 new gTLDs, accounting for 81.4 percent of new gTLD registrations; we also included 14 legacy TLDs, the selection of which is described below.

In the Phase II Assessment, we added additional new gTLDs based on recent registration volume and/or overlap with the target consumer groups of new gTLDs included in our Phase I sample. We also expanded the representation of IDN TLDs (that is, new gTLDs whose string included non-ASCII characters such as ".綆动""). In total, we added 30 new gTLDs to our sample for the Phase II Assessment, resulting in a total of 139 new gTLDs, which accounted for 83.3 percent of new gTLD registrations. We also included 14 legacy TLDs.

Our sampling approach provides several benefits. First, the approach is objective and reproducible. Second, the use of registration volumes in guiding our sampling means that we are allowing consumers' decisions in the marketplace to determine the relevant sample.[14] And finally, by including those new gTLDs that may overlap in their target consumer groups, we include sets of new gTLDs in which one may observe more direct competition for particular customers.

Below, we describe our selection process in more detail for new gTLDs and legacy TLDs.

Sample Selection of New gTLDs and Legacy TLDs

For the Phase I Assessment, our selection process for new gTLDs consisted of three steps. First, in order to ensure that our sample contained only active, new gTLDs that were

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[13] Details that do not compromise the confidentiality of the registrars and registries have been provided. For example, registry wholesale prices for gTLDs are confidential, and as such, we do not identify wholesale prices for specific gTLDs. Furthermore, we do not report summaries of registry wholesale prices for gTLDs that could be used to infer the wholesale prices for specific gTLDs.

[14] Such an approach is often used in the specification of common economic indices. For example, the S&P 500 index consists of the largest 500 companies listed in the NYSE. If an individual wants to gauge the performance of the broader economy, looking at the S&P 500 will be much more informative than choosing a few random and possibly small companies.

available for purchase in Phase I, we eliminated any gTLD for which there were no monthly transaction reports available as of March 2015.[15]

Second, we selected from this group as follows.

- First, we included a set of new gTLDs based on total current registrations to account for historically popular new gTLDs.
- Second, we included a set of new gTLDs based on the number of registrations in the three months prior to sample selection to account for "popular" new gTLDs at the time of selection.
- Finally, given the resulting list above, we also included any new gTLDs that were similar to these new gTLDs in name and likely purpose. These similar new gTLD groups consist of new gTLDs with similar spellings or topic areas and are likely to have some overlap in their respective target groups of consumers (e.g., if .work had been included, other new gTLDs such as .careers, .career, and .jobs would be considered.)

The process described above generated a set of 109 new gTLDs that represents 81.4 percent of overall gTLD registration activity.

Third, the 109 selected new gTLDs were examined to confirm that the resulting sample included new gTLDs reflecting diversity with respect to geographic scope and "community" designations. Specifically, we verified that our list of 109 new gTLDs included:

- At least five IDN new gTLDs.
- At least five "community" new gTLDs, where "community" new gTLDs are determined based on the original new gTLD applications. "Community" new gTLDs are operated for the benefit of a clearly defined community. All applicants must substantiate their claim that they represent a well-defined community, and must submit written endorsements to this effect.[16] However, these applications are only evaluated if the new gTLD string is contested.

In Phase II, we expanded the sample of new gTLDs with the inclusion of 30 additional new gTLDs. Twenty-five additional new gTLDs were selected based on their registration activity and/or overlap with the target consumer groups of new gTLDs included in our Phase I sample. In particular, 17 were selected due to having the largest number of registrations as of October 2015, while eight were selected due to their overlap with the target consumer groups of our Phase I sample. We also expanded our sample of IDN new gTLDs by selecting the five IDN new gTLDs that were not included in our Phase I sample and had the most active registrations as of October 2015.

In addition, we also included all legacy TLDs that were available before the first new gTLD was released in October 2013, and that are currently available for purchase without certain

[15] Monthly transaction reports are submitted to ICANN by operating registries of legacy TLDs and new gTLDs, and detail the number of registrations and renewals for a TLD, for each registrar.

[16] These groups must also be of considerable size, and the members must also be aware that they belong to said group. "Shared characteristics" can be broadly defined, and includes professions, languages, and geographic locations. For more information, see ICANN Applicant Guidebook Section1.2.3.

registration restrictions. (We excluded legacy TLDs that were intended specifically for government entities, institutions, and organizations with restrictive registration requirements.) Based on the latter criterion, from the 22 legacy TLDs available, we limited our legacy TLD sample to those that did not have restrictive criteria that limited who could register domains: .com, .net, .org, .biz, .info, .name, .pro, .asia, .travel, .jobs, .mobi, .cat, .tel, and .xxx.[17]

Ultimately, our data requests and collection process included 109 new gTLDs and 14 legacy TLDs in Phase I, and 139 new gTLDs and 14 legacy TLDs in Phase II.

Registry and Registrar Selection

Since each TLD can only be operated by one registry operator, our sample of TLDs determined our list of registries from which to request data. Because a registry operator can operate multiple TLDs, our final list of registry operators that we contacted in Phase I consisted of 59 unique registry operators.[18] In Phase II, we contacted 65 unique registry operators.

While each TLD has a single registry operator, registrations in legacy TLDs and new gTLDs can be offered by more than one registrar. In Phase I, we selected a sample of 54 registrars associated with our selected TLDs to collect data from the registrars who account for the most domain registrations, and to also ensure that each TLD in our sample was offered by at least ten of the selected registrars.[19] In Phase II, we added registrars to our sample for any of the 30 new gTLDs that were added to our sample and were not represented by at least ten registrars in our Phase I registrar sample. In selecting these new registrars, we selected those with the most registrations of that TLD as of October 2015.[20] This resulted in a sample of 59 registrars.

Data Collection Methodology

Price and non-price data for the sample of registries and registrars were obtained through direct outreach to registries, review of registrars' publicly-available websites, and from ICANN. In Phase II, we also purchased registrar pricing data from Domain Name Prices, which provided us with registrar pricing data for registrars in and outside of our registrar sample.[21]

Registration Volumes

Publicly-available transaction reports for each TLD, which provide information on historical registration volumes, were collected from ICANN's website in Phase I at

[17] This criterion excluded .gov, .edu, .int, .mil, .aero, .coop, .post, and museum from our sample.
[18] The reduction in the number of operating registries (from the total number of TLDs) was primarily due to one registry that is the operating registry for many of the TLDs in our Phase I and Phase II samples.
[19] Some TLDs were offered by a total of fewer than ten registrars. In this case, all registrars offering the TLD were included in the registrar sample.
[20] For those TLDs that were provided by a total of fewer than ten registrars, all registrars offering the TLD were included in the registrar sample.
[21] Domain Name Prices collects registrar registration, renewal, and transfer prices from publicly available sources, as well as premium domain sales. See www.dnpric.es/services.

https://www.icann.org/resources/pages/reports-2014-03-04-en. Reports as of March 2016 were provided by ICANN in Phase II (and are also publicly available). These reports detail how many registrations of a given TLD each registrar was responsible for in each month.

We also received registration data from DomainTools that was extracted from WhoIs registration records. WhoIs data are generated at the time that a domain name is registered, and consist of the registered domain name, information about the registration (i.e., registration date), and information about the registrant (i.e., registrant name and location).[22] We received data from DomainTools summarizing the number of new registrations made by registrants in a given geographic location in each new gTLD and legacy TLD for each month from January 2014 through January 2016. These data were obtained for registrants in certain geographic areas related to regional TLDs to analyze the impact of the entrance of such TLDs on registration activity in legacy and new gTLDs. The geo-TLDs which are included in our analysis include: .berlin, capetown, .cologne, .hamburg, .london, .nyc, .quebec, .scot, .tokyo, and .vegas.

Sunrise and Wholesale Prices

Data regarding sunrise and regular wholesale prices were requested and collected directly from the operating registries. While some legacy TLD registries provided data, most data on historic legacy TLD wholesale prices are restricted to price caps (and not the actual wholesale prices charged by registry operators of legacy TLDs), which were collected from official price change correspondence between operating registries and ICANN.[23] Legacy TLD price change data are available at https://www.icann.org/resources/pages/correspondence.

Retail Prices

Requests for current and historical pricing data were sent to all registrars in our Phase I and Phase II samples. In Phase I, only six registrars, all from the Asia Pacific region, provided some form of historical data. These responsive registrars accounted for only 14 percent of registration volume of the new gTLDs being sampled and did not provide any regional geographic variation. The response in Phase II was similar, with only five registrars, all from the Asia Pacific region, electing to participate.

Given the lack of responses from registrars, we collected posted retail prices from the websites of registrars in our sample.[24] However, many registrars in our Phase I and Phase II samples (which were based on registration volumes of new gTLDs) did not offer publicly-

[22] "WHOIS Primer," ICANN, available at https://Whois.icann.org/en/primer.

[23] Some legacy gTLD wholesale price data are also available in public press releases, however those data are not available for all legacy gTLDs and there is no guarantee that those data are complete.

[24] In collecting retail prices from registrar websites, we first looked for available price-sheets, which describe what the price for a one-year registration is for different TLDs. If price sheets were unavailable, we manually searched for the exact domain "somethinggeneric.tld" (in Phase I) or "testsomethinggeneric.tld" (in Phase II) for each TLD in our sample that the registrar offered and recorded the retail price for a one-year registration. We only report and analyze list prices.

available pricing information.[25] As a result, we collected retail price information from 39 of the original 54 registrars in our sample in Phase I.[26] In Phase II, if available, we collected retail price data from Domain Name Prices for registrars and TLDs in our sample; when not available from Domain Name Prices, we manually collected retail price data from the websites of registrars. As a result, we collected retail price information from a total of 39 registrars in Phase II: 14 were available in the Domain Name Prices data and 25 were collected manually. Because our retail price data are limited to registrars with publicly available pricing, our analyses of retail prices may not be representative of the retail market for domain names if consulting registrars or other registrars without publicly available price information exhibit meaningfully different pricing patterns than those with public price information.

We recognize that our price data are limited; given detailed transaction-level data, one could compare, for example, how prices of the same or similar second-level domain names differ across legacy TLDs and new gTLDs. We also received no data from secondary market institutions in Phase I or Phase II; such data would have allowed for better investigation of how consumers value different domain names at legacy TLDs and new gTLDs. However, the paucity of this type of detailed data available to us makes such an exercise currently impossible.

Add-on Prices and Availability

Examples of add-on services offered by registrars include hosting, email, server, SSL, privacy, website builder, eCommerce, DNS, and forwarding services. Requests for add-on services and relevant prices were sent to registrars in both Phase I and Phase II, but none provided data. Therefore, in Phase I, we manually collected current add-on prices and availability from a sample of 35 registrar webpages.[27] Our Phase I results showed a large variety of add-on categories offered by registrars, with each registrar often offering multiple products with varying prices within each category. Due to the wide range of add-on products and prices, an update to our Phase I analysis was unlikely to illuminate any competitive effects of the New gTLD Program. In Phase II, we therefore limited our analysis to a smaller set of registrars with the intention of analyzing whether the marketplace for add-on services has changed in a meaningful way or not. For the Phase II study, we manually collected current add-on prices and availability from ten registrar webpages.[28]

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[25] Many registrars that did not offer publicly-available pricing data were consulting registrars and did not have websites where consumers could shop for individual domain names.
[26] Retail price information for one gTLD was unavailable.
[27] Prices were collected either from price lists or via manual searches. In the case of manual searches, "testsomethinggeneric.tld" was used across a set of TLDs to ensure add-on prices did not vary across TLDs within a registrar. No differences were observed in add-on prices across TLDs within the same registrar.
[28] Registrars were selected based on the number of registrations made during the period of December 2014 through October 2015. We selected the 10 registrars with the highest number of registrations during that period.

Summary of Data Collected

Tables 1A and 1B below outline general statistics regarding the number of TLDs from which we were able to obtain price and registration volume data in Phase I and Phase II, respectively.

Table 1A
Summary of Collected Phase I Data

		Legacy TLDs	New gTLDs	All TLDs
Total in Sample		**14**	**109**	**123**
Sunrise Prices	Number of TLDs with Available Data	5	82	87
	Percent of Total Registrations	0.0%	11.6%	0.3%
April 2015 Wholesale Prices	Number of TLDs with Available Data	10	78	89
	Percent of Total Registrations	99.6%	68.7%	98.9%
April 2015 Retail Prices	Number of TLDs with Available Data	14	108	122
	Average Number of Offering Registrars Across TLDs	20	22	21
	Collected Registrars' Percent of TLD Registrations	55.7%	62.8%	55.9%
Registration Volume Data	TLDs With Historical Registration Data	14	109	123

Notes:

[1] Percent of Total Registrations for Sunrise Prices reports the sunrise volume data for TLDs with pricing information in our sample as a fraction of all April registration volume for our full sample of TLDs.

[2] Percent of Total Registrations for April 2015 Wholesale Prices reports the wholesale volume data for TLDs with pricing information in our sample as a fraction of all April registration volume for our full sample of TLDs.

[3] Average Number of Offering Registrars Across TLDs reports, on average, legacy TLDs were offered by 20 registrars.

[4] Collected Registrars' Percent of TLD Registrations reports the retail volume data for TLDs with pricing information in our sample as a fraction of all April registration volume for our full sample of TLDs.

[5] Sunrise prices were not available for all TLDs due to a lack of a response from the registries.

[6] Wholesale prices were not available for all TLDs due to a lack of a response from the registries.

[7] Retail prices were not available either for lack of offering registrars or lack of available list price information.

Sources:

[1] Wholesale prices were provided by operating registries and official ICANN documentation.

[2] Retail prices were collected from registrar websites.

[3] Volume data were provided through Monthly Transaction Reports.

Table 1B
Summary of Collected Phase II Data

		Legacy TLDs	New gTLDs	All TLDs
Total in Sample		**14**	**139**	**153**
Sunrise Prices	Number of TLDs with Available Data	6	104	110
	Percent of Total Registrations	4.3%	82.5%	10.2%
March 2016 Wholesale Prices	Number of TLDs with Available Data	12	105	117
	Percent of Total Registrations	99.8%	45.5%	95.7%
March 2016 Retail Prices	Number of TLDs with Available Data	14	136	150
	Average Number of Offering Registrars Across TLDs	24	20	20
	Percent of Total Registrations	100.0%	99.0%	99.9%
	Collected Registrars' Percent of TLD Registrations	54.2%	44.1%	53.4%
Registration Volume Data	TLDs With Historical Registration Data	14	139	153

Notes:

[1] Percent of Total Registrations for Sunrise prices reports the share of March 2016 registrations of TLDs in our sample accounted for by TLDs for which Sunrise pricing data is available.

[2] Percent of Total Registrations for March 2016 Wholesale prices reports the share of March 2016 registrations of TLDs in our sample accounted for by TLDs for which current wholesale pricing data is available.

[3] Percent of Total Registrations for March 2016 retail prices reports the share of March 2016 registrations of TLDs in our sample accounted for by TLDs for which any retail pricing data is available.

[4] Collected Registrars' Percent of TLD Registrations reports the retail volume accounted for by registrars from whom pricing information was available for each TLD in our sample as a fraction of all March 2016 registration volume for our full sample of TLDs.

[5] Sunrise period and current wholesale prices were not available for all TLDs due to a lack of a response from the registries.

[6] Retail prices were not availablefor all TLDs either for lack of offering registrars or lack of available list price information.

[7] Average number of offering registrars across TLDs reports the average number of registrars from which retail pricing information was collected for each type of TLD.

Sources:

[1] Current and Sunrise period wholesale prices were provided by operating registries and official ICANN documentation.

[2] Retail prices were collected from registrar websites or provided by DNPric.es.

[3] Volume data were provided through monthly transaction reports.

As shown in Table 1A, we collected retail price information in Phase I for 123 TLDs (this includes legacy TLDs and new gTLDs), with TLDs being offered by 21 registrars on average. Wholesale price information was provided for 78 new gTLDs and 89 TLDs overall, which account for 69 percent and 99 percent, respectively, of registrations in our original sample.[29] Additionally, add-on list prices were collected from a total of 35 registrars. Finally, historical registration volume data were available for all legacy and new gTLDs.

As shown in Table 1B, we collected retail price information in Phase II for 150 TLDs, with TLDs being offered by 20 registrars on average. Wholesale price information was provided for 105 new gTLDs and 117 TLDs overall, which account for 46 percent and 96 percent of registrations in our TLD sample, respectively.[30] Add-on list prices were collected from a total of ten registrars.

SECTION IV – RESULTS

Summary of Results

This section summarizes how measures of price, registration volume, and other competition metrics have changed since our baseline measurements in Phase I. Specifically:

- We investigated how the new gTLD expansion increased the number of available TLDs over time. The expansion has continued since our Phase I Assessment; new gTLD registrations now account for 9 percent of all gTLD registrations.[31]
- We investigated how domain name registrations are distributed across registries and registrars. In Phase I we found that registration shares across registries and registrars, respectively, were more dispersed for new gTLDs as compared to legacy TLDs. That result persists in the Phase II results. We also observe noticeable movement in the set of the entities included in the largest 15 registries and registrars ranked by total domain registrations, as a result of the entry of new gTLD registries and growth in registrations made by different registrars who register new gTLD domains.
- We observe a noticeable decline in the share of gTLD registrations held by the top 4, top 8, and top 15 registries and registrars between Phase I and Phase II, with the top registry's share declining by 6.2 percent and the top registrar's share declining by 2.8 percent.[32]
- We note that there were considerable changes in the new gTLD registration shares of registrars, with the largest registrar in the Phase I Assessment dropping out of the top 15 registrars (as ranked by registration volume) and being replaced by a registrar whose share of new gTLD registrations increased by nearly 22 percent.

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[29] As noted above, we rely on price cap information as a substitute for legacy gTLD wholesale prices.

[30] As noted above, we rely on price cap information as a substitute for legacy gTLD wholesale prices.

[31] This is calculated as the total registrations reported in March 2016 monthly transaction reports for new gTLDs divided by the total number of registrations reported in March 2016 for new and legacy TLDs.

[32] Top registry and registrar are defined as the registry and registrar with the most registrations in any new gTLD as of November 2014.

Registrars located in China have become more prevalent among registrars with the largest shares of new gTLD registrations.

- We found that, in general, the share of new gTLD registrations attributable to the four or eight registries and registrars with the most registrations, respectively, is smaller than the share of legacy TLD registrations attributable to those registries and registrars, respectively. The share of new gTLD registrations attributable to the four or eight largest registries and registrars of new gTLDs, respectively, has declined in the year since our Phase I Assessment.[33]
- In Phase I, we found a significant amount of price dispersion. In Phase II, we continue to see considerable price dispersion. Although there has not been much change in wholesale price caps over the past year, retail prices and mark-ups for both new gTLDs and legacy TLDs have declined since Phase I.
- We investigated how our price-index values for legacy TLDs and new gTLDs have changed since the Phase I Assessment. In Phase I, we found that the overall price level for legacy TLDs was lower than that for new gTLDs. That result persists in Phase II. We find limited changes in the wholesale price indices and un-weighted retail price index, but see noticeable declines in the retail price index for both legacy TLDs and new gTLDs when the index is weighted by registration volume.[34]
- We investigated the extent to which new gTLDs have affected legacy TLD registrations. In Phase I, we did not identify any effect of new gTLD entry or registrations on legacy TLD registrations. That general result persists in Phase II, as legacy TLD registration activity does not appear to experience a systematic change in response to the New gTLD Program. As a result, total TLD registration has increased since the beginning of the New gTLD Program.
- We investigated the extent to which the entry of regionally-specific TLDs (e.g., .nyc) affected legacy and other new gTLDs. We typically observe a decline in new gTLD and legacy registrations after the entry of the regional TLD in the region relevant to that TLD, which suggests that regional TLDs may be viewed as substitutes for other new gTLDs and legacy TLDs.
- We find the largest percentage growth in the number of registry operators in the Asian Pacific and European regions.
- We find that new gTLDs continue to target registrants with a variety of interests, and the entry of new gTLDs within a given interest area is often associated with a decline in registration shares of other new gTLDs within the same interest area.
- We continue to observe considerable variation in the non-price characteristics of ancillary services offered by registrars.

In what follows, we first present a simple examination of how the number of TLDs has changed over time. We then examine whether there are any indications that the New gTLD Program has affected competition in the TLD marketplace based on changes in our Phase I Assessment baseline measurements.

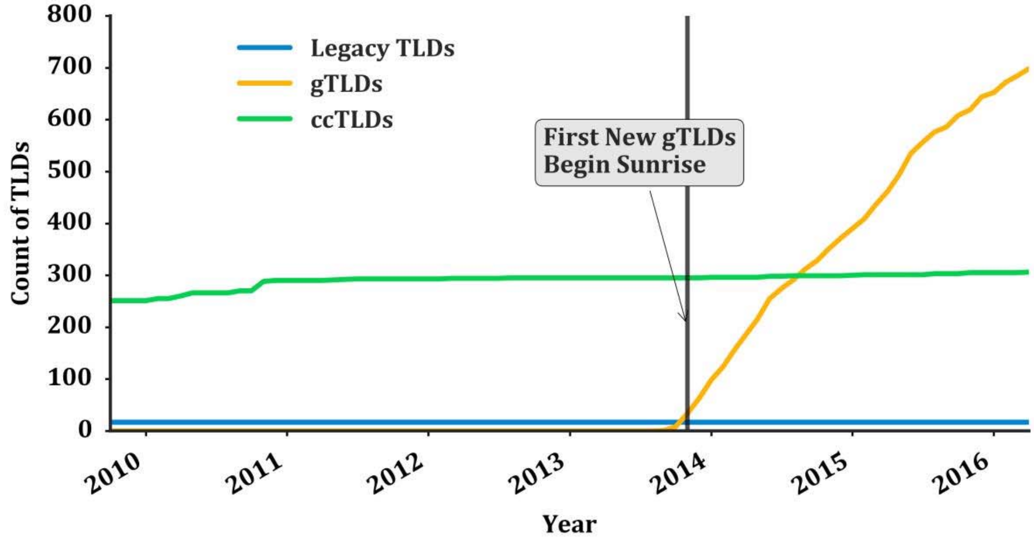
[33] Concentration is measured by the combined registration share held by the four and eight registries with the largest shares of new gTLD registrations.

[34] As discussed above, we rely on price cap data as a substitute for legacy TLD wholesale prices.

Number of Available TLDs Over Time

We first examine how the expansion of the New gTLD Program has affected the number of TLDs available to consumers; these data are plotted below in Figure 1.

Figure 1
Cumulative Number of Available Legacy TLDs and gTLDs (2009 – 2016)



Notes:
[1] The entrance for each gTLD is defined as the end of its Sunrise period.
[2] Only new gTLDs with non-zero registration volumes as of March 2016 are included as being publicly available.

Sources:
[1] Sunrise period dates are collected from ICANN's website; https://newgtlds.icann.org/en/program-status/sunrise-claims-periods
[2] ccTLD entrance dates were provided by ICANN.

Prior to the entry of the first new gTLDs, 14 legacy TLD domain names without certain restrictive registration requirements were available. The first new gTLDs were introduced in late 2013, and by the end of 2014, the number of available new gTLDs had increased to 428; in addition to the 14 available legacy TLDs, this resulted in a total of 442 gTLDs being available to consumers. As of March 2016, there are 955 available new gTLDs and 969 gTLDs including legacy TLDs.

Baseline Analyses

Given the available data, we focus on examining the distribution of prices and registration volumes across and within TLDs. In our Phase II Assessment, we are able to examine how these baseline measurements have changed over the course of one year.

Registration Distributions

We first examine the current distribution of domain name registrations. Tables 2A-2F below show the share of domain name registrations within legacy TLDs and new gTLDs for the top 15 registries as ranked by their share of registrations during the Phase I Assessment and the Phase II Assessment.

Table 2A shows the top 15 registries based on their share of all registrations as of *November 2014* (i.e., as they were ranked in the Phase I Assessment). As can be seen below, Verisign, which operates .com, .net, and .name, remains the largest registry and has slightly increased its share of legacy TLD registrations from 86.9 percent to 87.2 percent. However, most movement in registration shares occurred among all registrations rather than legacy registrations. This suggests that registration activity in the new gTLDs, rather than in legacy TLDs, is affecting overall registry shares of registrations. Table 2B shows the top 15 registries ranked by their share of all registrations as of March 2016. Comparing this list of registries to those in Table 2A, new registries that are associated with new gTLDs have entered the top 15 ranking, such as Jiangsu Bangning Science & Technology, First Registry, Rightside, and 6A Queensway, and Dotsite. (These registries had no registrations in the Phase I Assessment and do not operate legacy TLDs.)

Table 2A
Registry Operator Shares of All Registrations (Legacy and New gTLDs)
Top 15 Registry Operators by Share of All Registrations as of November 2014

	Number of TLDs Operated by Registry Operator			Share of Registrations					
				All TLDs			Legacy TLDs		
	Phase			Phase			Phase		
	I	II	Change	I	II	Change	I	II	Change
Verisign	3	16	13	85.5%	79.4%	-6.2%	86.9%	87.2%	0.3%
Public Interest Registry	1	6	5	6.7%	6.2%	-0.5%	6.8%	6.8%	0.0%
Afilias	4	18	14	4.0%	3.9%	-0.2%	4.1%	3.9%	-0.2%
Neustar	1	2	1	1.6%	1.3%	-0.3%	1.7%	1.4%	-0.2%
XYZ.COM	2	3	1	0.5%	1.5%	1.0%	0.0%	0.0%	0.0%
Donuts	52	186	134	0.4%	0.9%	0.5%	0.0%	0.0%	0.0%
Dot Asia Organisation	1	1	0	0.2%	0.1%	-0.1%	0.2%	0.1%	-0.1%
dot Berlin	1	1	0	0.1%	0.0%	-0.1%	0.0%	0.0%	0.0%
.Club Domains	1	1	0	0.1%	0.4%	0.3%	0.0%	0.0%	0.0%
Uniregistry	10	24	14	0.1%	0.5%	0.4%	0.0%	0.0%	0.0%
Telnic	1	1	0	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%
Registry Services Corporation	1	1	0	0.1%	0.2%	0.1%	0.1%	0.2%	0.1%
ICM Registry	1	4	3	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%
Real Estate Domains	1	1	0	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Zodiac	1	4	3	0.1%	0.6%	0.5%	0.0%	0.0%	0.0%
All Other Registry Operators				0.4%	4.8%	4.3%	0.1%	0.1%	0.0%

Notes:

[1] Registration volumes are collected from monthly transaction reports provided to ICANN by registry operators. Phase I registration shares are as of November 2014. Phase II registration shares are as of March 2016.

[2] Each TLD's registration volume was assigned to a registry operator as specified in the registry agreement with ICANN.

[3] Each TLD was then linked to a parent company registry operator, the total domains for each of its associated TLDs was summed, and registration shares were calculated based on these sums for all registry operators.

[4] Registry operators shown are the top 15 as ranked by share of all registrations as of November 2014.

Source:

[1] Registration data is obtained from monthly transaction reports provided to ICANN by registry operators as of November 2014 for Phase I shares and March 2016 for Phase II shares.

Table 2B

Registry Operator Shares of All Registrations (Legacy and New gTLDs)

Top 15 Registry Operators by Share of All Registrations as of March 2016

	Number of TLDs Operated by Registry Operator			Share of Registrations					
				All TLDs			Legacy TLDs		
	Phase			Phase			Phase		
	I	II	Change	I	II	Change	I	II	Change
Verisign	3	16	13	85.5%	79.4%	-6.2%	86.9%	87.2%	0.3%
Public Interest Registry	1	6	5	6.7%	6.2%	-0.5%	6.8%	6.8%	0.0%
Afilias	4	18	14	4.0%	3.9%	-0.2%	4.1%	3.9%	-0.2%
XYZ.COM	2	3	1	0.5%	1.5%	1.0%	0.0%	0.0%	0.0%
Neustar	1	2	1	1.6%	1.3%	-0.3%	1.7%	1.4%	-0.2%
Jiangsu Bangning Science & Technology	1	1	0	0.0%	1.0%	1.0%	0.0%	0.0%	0.0%
Donuts	52	186	134	0.4%	0.9%	0.5%	0.0%	0.0%	0.0%
Zodiac	1	4	3	0.1%	0.6%	0.5%	0.0%	0.0%	0.0%
Uniregistry	10	24	14	0.1%	0.5%	0.4%	0.0%	0.0%	0.0%
First Registry	0	1	1	0.0%	0.5%	0.5%	0.0%	0.0%	0.0%
.Club Domains	1	1	0	0.1%	0.4%	0.3%	0.0%	0.0%	0.0%
Rightside	9	39	30	0.1%	0.3%	0.2%	0.0%	0.0%	0.0%
6A Queensway	0	4	4	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%
Registry Services Corporation	1	1	0	0.1%	0.2%	0.1%	0.1%	0.2%	0.1%
Dotsite	0	1	1	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%
All Other Registry Operators				0.9%	3.0%	2.1%	0.5%	0.4%	0.0%

Notes:

[1] Registration volumes are collected from monthly transaction reports provided to ICANN by registry operators. Phase I registration shares are as of November 2014. Phase II registration shares are as of March 2016.

[2] Each TLD's registration volume was assigned to a registry operator as specified in the registry agreement with ICANN.

[3] Each TLD was then linked to a parent company registry operator, the total domains for each of its associated TLDs was summed, and registration shares were calculated based on these sums for all registry operators.

[4] Registry operators shown are the top 15 as ranked by share of all registrations as of March 2016.

Source:

[1] Registration data is obtained from monthly transaction reports provided to ICANN by registry operators as of November 2014 for Phase I shares and March 2016 for Phase II shares.

Tables 2C and 2D, below, rank the top 15 registries by new gTLD registrations as of November 2014 and March 2016, respectively. Table 2C shows that there has been a considerable decline in the registration shares of several new gTLD registries that were among the top 15 registries of new gTLDs in Phase I. Table 2D shows the top 15 registries by new gTLD registrations as of March 2016 and draws attention to the entry and growth of new registries among the top 15.

Table 2C

Registry Operator Shares of New gTLD Registrations

Top 15 Registry Operators by Share of New gTLD Registrations as of November 2014

	Number of New gTLDs Operated by Registry Operator			Share of New gTLD Registrations		
	Phase			Phase		
Registry Operators	**I**	**II**	**Change**	**I**	**II**	**Change**
XYZ.COM	2	3	1	28.4%	16.5%	-11.8%
Donuts	52	186	134	26.4%	10.0%	-16.4%
dot Berlin	1	1	0	6.1%	0.4%	-5.7%
.Club Domains	1	1	0	5.7%	4.6%	-1.2%
Uniregistry	10	24	14	5.6%	5.9%	0.3%
Real Estate Domains	1	1	0	3.4%	0.5%	-2.9%
Zodiac	1	4	3	3.3%	6.5%	3.2%
Rightside	9	39	30	3.2%	2.9%	-0.3%
NYC Department of Information Technology and Telecom	1	1	0	2.5%	0.5%	-2.0%
GMO Registry	1	4	3	2.4%	0.3%	-2.1%
OVH	1	1	0	2.2%	0.3%	-1.9%
Dot London Domains	1	1	0	2.1%	0.4%	-1.7%
NetCologne	2	2	0	1.4%	0.2%	-1.1%
Bayern Connect	1	1	0	1.0%	0.2%	-0.8%
Afilias	2	16	14	0.8%	3.5%	2.7%
All Other Registry Operators				5.7%	47.4%	41.7%

Notes:

[1] Registration volumes are collected from monthly transaction reports provided to ICANN by registry operators. Phase I registration shares are as of November 2014. Phase II registration shares are as of March 2016.

[2] Each TLD's registration volume was assigned to a registry operator as specified in the registry agreement with ICANN.

[3] Each TLD was then linked to a parent company registry operator, the total domains for each of its associated TLDs was summed, and registration shares were calculated based on these sums for all registry operators.

[4] Registry operators shown are the top 15 as ranked by share of new gTLD registrations only as of November 2014.

Source:

[1] Registration data is obtained from monthly transaction reports provided to ICANN by registry operators as of November 2014 for Phase I shares and March 2016 for Phase II shares.

Table 2D
Registry Operator Shares of New gTLD Registrations
Top 15 Registry Operators by Share of New gTLD Registrations as of March 2016

	Number of New gTLDs Operated by Registry Operator			Share of New gTLD Registrations		
	Phase			Phase		
Registry Operators	**I**	**II**	**Change**	**I**	**II**	**Change**
XYZ.COM	2	3	1	28.4%	16.5%	-11.8%
Jiangsu Bangning Science & Technology	1	1	0	0.5%	11.0%	10.5%
Donuts	52	186	134	26.4%	10.0%	-16.4%
Zodiac	1	4	3	3.3%	6.5%	3.2%
Uniregistry	10	24	14	5.6%	5.9%	0.3%
First Registry	0	1	1	0.0%	5.3%	5.3%
.Club Domains	1	1	0	5.7%	4.6%	-1.2%
Afilias	2	16	14	0.8%	3.5%	2.7%
Rightside	9	39	30	3.2%	2.9%	-0.3%
6A Queensway	0	4	4	0.0%	2.9%	2.9%
Dotsite	0	1	1	0.0%	2.1%	2.1%
Dot Science	0	1	1	0.0%	2.1%	2.1%
Dot Bid	0	1	1	0.0%	2.0%	2.0%
Elegant Leader	0	1	1	0.0%	1.9%	1.9%
Beijing Qianiang Wangjing Technology Development Co.	0	1	1	0.0%	1.8%	1.8%
All Other Registry Operators				26.1%	20.9%	-5.1%

Notes:

[1] Registration volumes are collected from monthly transaction reports provided to ICANN by registry operators. Phase I registration shares are as of November 2014. Phase II registration shares are as of March 2016.

[2] Each TLD's registration volume was assigned to a registry operator as specified in the registry agreement with ICANN.

[3] Each TLD was then linked to a parent company registry operator, the total domains for each of its associated TLDs was summed, and registration shares were calculated based on these sums for all registry operators.

[4] Registry operators shown are the top 15 as ranked by share of new gTLD registrations only as of March 2016.

Source:

[1] Registration data is obtained from monthly transaction reports provided to ICANN by registry operators as of November 2014 for Phase I shares and March 2016 for Phase II shares.

Table 2E
Registration Shares Across Registry Operators
Phase I and II Comparison
Ranked by Share of All Registrations as of November 2014

	Share of All Registrations (Legacy and New gTLD)		
	Phase		
	I	II	Change
Top Registry Operator	85.5%	79.4%	-6.2%
Top 4 Registry Operators	97.9%	90.7%	-7.1%
Top 8 Registry Operators	99.1%	93.3%	-5.8%
Top 15 Registry Operators	99.6%	95.2%	-4.3%

Notes:

[1] Registration volumes are collected from monthly transaction reports provided to ICANN by registry operators.

[2] Each TLD's registration volume was assigned to a registry operator as specified in the registry agreement with ICANN.

[3] Each TLD was then linked to a parent company registry operator, the total domains for each of its associated TLDs was summed, and registration shares were calculated based on these sums for all registry operators.

[4] Registry operators are ranked by share of all registrations across all TLDs as of November 2014.

Source:

[1] Registration data is obtained from monthly transaction reports provided to ICANN by registry operators as of November 2014 for Phase I shares and March 2016 for Phase II shares.

Table 2F

Registration Shares Across Registry Operators

Phase I and II Comparison

Ranked by Share of New gTLD Registrations as of November 2014

	Share of All New gTLD Registrations		
	Phase I	**Phase II**	**Change**
Top Registry Operator	28.4%	16.5%	-11.8%
Top 4 Registry Operators	66.6%	31.5%	-35.1%
Top 8 Registry Operators	82.1%	47.2%	-34.8%
Top 15 Registry Operators	94.3%	52.6%	-41.7%

Notes:

[1] Registration volumes are collected from monthly transaction reports provided to ICANN by registry operators.

[2] Each TLD's registration volume was assigned to a registry operator as specified in the registry agreement with ICANN.

[3] Each TLD was then linked to a parent company registry operator, the total domains for each of its associated TLDs was summed, and registration shares were calculated based on these sums for all registry operators.

[4] Registry operators are ranked by share of registrations across new gTLDs only as of November 2014.

Source:

[1] Registration data is obtained from monthly transaction reports provided to ICANN by registry operators as of November 2014 for Phase I shares and March 2016 for Phase II shares.

Table 2E above shows that the top four registries, as ranked by the share of *all registrations* as of November 2014, were responsible for 97.9 percent of all registrations in Phase I, and that this share has fallen slightly to 90.7 percent in Phase II. By contrast, Table 2F shows that the top four registries, as ranked by the share of *new gTLD registrations* as of November 2014, were responsible for 66.6 percent of all new gTLD registrations in Phase I, and that share has been cut roughly in half in Phase II. In general, the registration shares for new gTLDs are less concentrated compared to legacy TLDs and have continued to become less concentrated in the year since our Phase I Assessment.

Tables 3A through 3F below show a similar, though less pronounced, story for the largest 15 registrars by share of registrations. Table 3A shows that the top 15 registrars as of November 2014 are each generally responsible for a smaller share of all registrations in Phase II than they were in Phase I. Table 3B shows the top 15 registrars as of March 2016 based on all registrations. The registrars listed in Table 3B are largely the same as the registrars listed in Table 3A, showing that there has been less compositional change among the top 15 registrars than among the top 15 registries based on all registrations.[35] (See Tables 2A and 2B above.) Tables 3C and 3D, however, demonstrate that there has been a considerable change in the composition of the top 15 registrars ranked by new gTLD registrations since Phase I. Table 3C shows the top 15 registrars of new gTLDs in Phase I, and Table 3D shows the top 15 registrars of new gTLDs in Phase II. The difference in registrars listed in the two tables draws attention to the instability of new gTLD registration activity across registrars. These results are highlighted in Tables 3E and 3F. Table 3E shows small changes in the share of all registrations made by the largest 15 registrars as of November 2014;[36] Table 3F shows considerably large changes in the share of new gTLD registrations made by the largest 15 registrars of new gTLDs as of November 2014.

[35] Because legacy TLDs account for a large portion of all registrations, results that rank registrars by legacy TLD registrations are very similar to those shown in Tables 3A and 3B.

[36] Similar results not shown here are found for the largest 15 registrars based on legacy TLD registrations as of November 2014.

Table 3A
Registrar Shares of All Registrations (Legacy and New gTLD)
Top 15 Registrars Ranked by Share of All Registrations as of November 2014

	Share of All Registrations			Share of Legacy TLD Registrations			Share of New gTLD Registrations		
	Phase			Phase			Phase		
Registrar	**I**	**II**	**Change**	**I**	**II**	**Change**	**I**	**II**	**Change**
GoDaddy	32.0%	29.3%	-2.8%	32.3%	31.5%	-0.8%	14.8%	6.9%	-7.9%
eNom	7.4%	6.6%	-0.9%	7.5%	7.0%	-0.5%	5.4%	2.4%	-3.0%
Tucows	5.4%	4.5%	-0.8%	5.4%	4.9%	-0.5%	2.1%	1.2%	-0.9%
Network Solutions	5.0%	3.6%	-1.4%	4.8%	3.9%	-1.0%	15.3%	0.6%	-14.7%
1&1	3.8%	3.2%	-0.6%	3.8%	3.4%	-0.4%	4.3%	1.6%	-2.6%
PDR Ltd.	3.0%	2.9%	-0.1%	3.0%	3.0%	0.0%	0.8%	1.7%	0.9%
Wild West	2.4%	2.0%	-0.4%	2.4%	2.1%	-0.3%	0.3%	0.2%	-0.2%
GMO Internet	2.3%	2.4%	0.0%	2.3%	2.1%	-0.2%	5.3%	5.5%	0.1%
Register.com	1.8%	1.3%	-0.5%	1.8%	1.4%	-0.4%	0.3%	0.1%	-0.2%
Hichina Zhicheng Technology LTD	1.6%	3.0%	1.4%	1.6%	3.2%	1.6%	0.0%	0.1%	0.1%
Fastdomain	1.5%	1.3%	-0.2%	1.6%	1.4%	-0.1%	0.0%	0.0%	0.0%
Melbourne IT	1.5%	1.0%	-0.5%	1.5%	1.1%	-0.4%	0.0%	0.1%	0.1%
Domain.com	1.4%	1.2%	-0.2%	1.4%	1.3%	-0.1%	0.0%	0.0%	0.0%
XinNet Technology	1.3%	1.0%	-0.4%	1.2%	1.0%	-0.3%	6.6%	0.8%	-5.8%
OVH	1.2%	1.1%	-0.1%	1.2%	1.1%	-0.1%	2.4%	0.8%	-1.7%
All Other Registrars	28.4%	35.8%	7.4%	28.2%	31.6%	3.4%	42.3%	78.2%	35.9%

Notes:

[1] Registration volumes are collected from monthly transaction reports provided to ICANN by operating registries.

[2] Within a TLD, registration volumes were assigned to distinct registrars. Registrars are identified by their IANA ID.

[3] Registration volumes within a registrar were then summed, and registration shares were calculated based on these sums for all registrars.

[4] Registrars shown are the top 15 as ranked by share of all registrations as of November 2014.

Source:

[1] Registration data is derived from monthly transaction reports provided to ICANN by operating registries as of November 2014 for Phase I shares and March 2016 for Phase II shares.

Table 3B
Registrar Shares of All Registrations (Legacy and New gTLD)
Top 15 Registrars Ranked by Share of All Registrations as of March 2016

	Share of All Registrations			Share of Legacy TLD Registrations			Share of New gTLD Registrations		
	Phase			Phase			Phase		
Registrar	I	II	Change	I	II	Change	I	II	Change
GoDaddy	32.0%	29.3%	-2.8%	32.3%	31.5%	-0.8%	14.8%	6.9%	-7.9%
eNom	7.4%	6.6%	-0.9%	7.5%	7.0%	-0.5%	5.4%	2.4%	-3.0%
Tucows	5.4%	4.5%	-0.8%	5.4%	4.9%	-0.5%	2.1%	1.2%	-0.9%
Network Solutions	5.0%	3.6%	-1.4%	4.8%	3.9%	-1.0%	15.3%	0.6%	-14.7%
1&1	3.8%	3.2%	-0.6%	3.8%	3.4%	-0.4%	4.3%	1.6%	-2.6%
Hichina Zhicheng Technology LTD	1.6%	3.0%	1.4%	1.6%	3.2%	1.6%	0.0%	0.1%	0.1%
PDR Ltd.	3.0%	2.9%	-0.1%	3.0%	3.0%	0.0%	0.8%	1.7%	0.9%
Xiamen eName Technology	0.5%	2.6%	2.2%	0.5%	2.3%	1.8%	0.0%	6.3%	6.3%
Chengdu West Dimension Digital	0.4%	2.6%	2.3%	0.3%	0.4%	0.1%	2.9%	24.8%	21.9%
GMO Internet	2.3%	2.4%	0.0%	2.3%	2.1%	-0.2%	5.3%	5.5%	0.1%
Wild West	2.4%	2.0%	-0.4%	2.4%	2.1%	-0.3%	0.3%	0.2%	-0.2%
Register.com	1.8%	1.3%	-0.5%	1.8%	1.4%	-0.4%	0.3%	0.1%	-0.2%
Fastdomain	1.5%	1.3%	-0.2%	1.6%	1.4%	-0.1%	0.0%	0.0%	0.0%
Domain.com	1.4%	1.2%	-0.2%	1.4%	1.3%	-0.1%	0.0%	0.0%	0.0%
OVH	1.2%	1.1%	-0.1%	1.2%	1.1%	-0.1%	2.4%	0.8%	-1.7%
All Other Registrars	30.5%	32.5%	2.1%	30.2%	31.0%	0.8%	46.0%	48.1%	2.0%

Notes:

[1] Registration volumes are collected from monthly transaction reports provided to ICANN by operating registries.

[2] Within a TLD, registration volumes were assigned to distinct registrars. Registrars are identified by their IANA ID.

[3] Registration volumes within a registrar were then summed, and registration shares were calculated based on these sums for all registrars.

[4] Registrars shown are the top 15 as ranked by share of all registrations as of March 2016.

Source:

[1] Registration data is derived from monthly transaction reports provided to ICANN by operating registries as of November 2014 for Phase I shares and March 2016 for Phase II shares.

Table 3C
Registrar Shares of New gTLD Registrations
Top 15 Registrars Ranked by Share of New gTLD Registrations as of November 2014

	Share of New gTLD Registrations		
Registrar	**Phase I**	**Phase II**	**Change**
Network Solutions	15.3%	0.6%	-14.7%
GoDaddy	14.8%	6.9%	-7.9%
XinNet Technology	6.6%	0.8%	-5.8%
eNom	5.4%	2.4%	-3.0%
GMO Internet	5.3%	5.5%	0.1%
Psi USA	4.6%	0.5%	-4.2%
1&1	4.3%	1.6%	-2.6%
Uniregistrar	3.5%	2.6%	-0.9%
NameShare	3.4%	0.5%	-3.0%
United Domains	3.3%	0.9%	-2.4%
Chengdu West Dimension Digital	2.9%	24.8%	21.9%
OVH	2.4%	0.8%	-1.7%
Tucows	2.1%	1.2%	-0.9%
Mesh Digital	2.1%	0.8%	-1.4%
Crononag	1.7%	0.6%	-1.1%
All Other Registrars	22.2%	49.8%	27.6%

Notes:

[1] Registration volumes are collected from monthly transaction reports provided to ICANN by operating registries.

[2] Within a TLD, registration volumes were assigned to distinct registrars. Registrars are identified by their IANA ID.

[3] Registration volumes within a registrar were then summed, and registration shares were calculated based on these sums for all registrars.

[4] Registrars shown are the top 15 as ranked by share of new gTLD registrations as of November 2014.

Source:

[1] Registration data is derived from monthly transaction reports provided to ICANN by operating registries as of November 2014 for Phase I shares and March 2016 for Phase II shares.

Table 3D
Registrar Shares of New gTLD Registrations
Top 15 Registrars Ranked by Share of New gTLD Registrations as of March 2016

	Share of New gTLD Registrations		
Registrar	**Phase I**	**Phase II**	**Change**
Chengdu West Dimension Digital	2.9%	24.8%	21.9%
Paradise Registrars	0.2%	9.3%	9.0%
GoDaddy	14.8%	6.9%	-7.9%
Xiamen eName Technology	0.0%	6.3%	6.3%
GMO Internet	5.3%	5.5%	0.1%
Alibaba	0.0%	5.4%	5.4%
Namecheap	0.2%	4.6%	4.4%
West263 International	0.0%	2.8%	2.8%
Uniregistrar	3.5%	2.6%	-0.9%
eNom	5.4%	2.4%	-3.0%
PDR Ltd.	0.8%	1.7%	0.9%
Telecity Internal Registrar	0.0%	1.7%	1.7%
1&1	4.3%	1.6%	-2.6%
Nawang	0.1%	1.3%	1.2%
Tucows	2.1%	1.2%	-0.9%
All Other Registrars	60.3%	22.1%	-38.2%

Notes:

[1] Registration volumes are collected from monthly transaction reports provided to ICANN by operating registries.

[2] Within a TLD, registration volumes were assigned to distinct registrars. Registrars are identified by their IANA ID.

[3] Registration volumes within a registrar were then summed, and registration shares were calculated based on these sums for all registrars.

[4] Registrars shown are the top 15 as ranked by share of new gTLD registrations as of March 2016.

Source:

[1] Registration data is derived from monthly transaction reports provided to ICANN by operating registries as of November 2014 for Phase I shares and March 2016 for Phase II shares.

Table 3E
Registration Shares Across Registrars
Phase I and II Comparison
Ranked by Share of All Registrations (Legacy and New gTLD) as of November 2014

	Share of All Registrations (Legacy and New gTLD)		
	Phase I	**Phase II**	**Change**
Top Registrar	32.0%	29.3%	-2.8%
Top 4 Registrars	49.8%	43.9%	-5.9%
Top 8 Registrars	61.3%	54.4%	-6.9%
Top 15 Registrars	71.6%	64.2%	-7.4%

Notes:
[1] Registration volumes are collected from monthly transaction reports provided to ICANN by operating registries.
[2] Within a TLD, registration volumes were assigned to distinct registrars. Registrars are identified by their IANA ID.
[3] Registration volumes within a registrar were then summed, and registration shares were calculated based on these sums for all registrars.
[4] Registrars are ranked by share of all registrations across all TLDs as of November 2014.

Source:
[1] Registration data is derived from monthly transaction reports provided to ICANN by operating registries as of November 2014 for Phase I shares and March 2016 for Phase II shares.

Table 3F
Registration Shares Across Registrars
Phase I and II Comparison
Ranked by Share of New gTLD Registrations as of November 2014

	Share of All New gTLD Registrations		
	Phase I	**Phase II**	**Change**
Top Registrar	15.3%	0.6%	-14.7%
Top 4 Registrars	42.1%	10.7%	-31.4%
Top 8 Registrars	59.8%	20.8%	-39.0%
Top 15 Registrars	77.8%	50.2%	-27.6%

Notes:

[1] Registration volumes are collected from monthly transaction reports provided to ICANN by operating registries.

[2] Within a TLD, registration volumes were assigned to distinct registrars. Registrars are identified by their IANA ID.

[3] Registration volumes within a registrar were then summed, and registration shares were calculated based on these sums for all registrars.

[4] Registrars are ranked by share of all registrations across new gTLDs only as of November 2014.

Source:

[1] Registration data is derived from monthly transaction reports provided to ICANN by operating registries as of November 2014 for Phase I shares and March 2016 for Phase II shares.

Finally, the New gTLD Program allows culturally- or regionally-specific TLDs to be created. Table 4 below shows the number of registry operators which are based in each of ICANN's five regions,[37] and demonstrates an increase in the number of registry operators since Phase I, which is associated with the continuing entry of new gTLDs. In total, there are 125 new, active registry operators since Phase I, with the majority of growth occurring in Europe, Asia Pacific, and North America.

Table 4
Registry Operators Across Regions

	Number of Registry Operator Parent Companies		
Region	**Phase I**	**Phase II**	**Change**
Africa (AF)	2	2	0
Asia Pacific (AP)	29	61	32
Europe (EUR)	61	122	61
Latin America (LAC)	3	6	3
North America (NA)	30	59	29

Notes:

[1] The number of Phase I registry operator parent companies is the count of registry operator parent companies in each region that were operating at least one TLD as of April 2015. The number of Phase II registry operator parent companies is the count of registry operator parent companies in each region that were operating at least one TLD as of March 2016.

[2] Some registry operator parent companies are active in multiple regions. This analysis counts the same registry operator parent company operating in two separate regions as two separate entities. As of Phase I there were 121 unique registry operator parent companies. As of Phase II there were 244 unique registry operator parent companies.

[3] New gTLD start dates are used to determine whether a registry operator parent company was active as of Phase I or Phase II.

Sources:

[1] Registry Operators, parent companies, and locations were provided by ICANN.

[2] gTLD start dates are collected from ICANN's website; https://newgtlds.icann.org/en/program-status/sunrise-claims-periods

[37] When applicable, registry operators are identified with their parent company. Jurisdictions are based on those indicated in registry agreements.

Sunrise Price Distribution
All new gTLDs must have a Sunrise period of at least 30 days. As discussed earlier, the purpose of a Sunrise period is to allow trademark holders the opportunity to register domain names that match their trademarks prior to other parties. New gTLDs are required to have such a Sunrise period, whereas legacy TLDs could elect to have a Sunrise period or not. One perspective is this structure helps trademark holders in that it gives them priority in choosing domain names in the new gTLD. However, others have raised concerns that this structure allows registries to exploit trademark holders by charging high prices. An example lies in .sucks, which had publicly stated Sunrise prices of $2,499 per registration and was the cause of concern for some entities.[38,39,40]

Given these above concerns, we include a summary of Sunrise prices in our report to determine whether very high prices were observed in Phase II. Sunrise prices were provided by the TLD operating registry for five legacy TLDs and 82 new gTLDs in our sample for our Phase I Assessment. For our Phase II Assessment, we received additional Sunrise price data for one legacy TLD and 22 new gTLDs in our sample. Table 5 below provides data regarding the distribution of Sunrise prices (in USD) for legacy TLDs and new gTLDs from Phase I, and for those TLDs that were added to our sample in Phase II, and shows that the highest observed sunrise price in Phase II was equal to approximately $254.

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[38] The operating registry for .sucks provides its suggested pricing online, available at https://www.registry.sucks/products/.
[39] .sucks is not included in our sample of gTLDs.
[40] For example, see the article "Is the Owner of the .sucks Domain Extorting Brands and Celebrities", available at http://www.dailydot.com/technology/dot-sucks-domain-name-icann/

Table 5
Sunrise Price Distribution
Phase I and II Comparison – Adjusted for CPI Inflation

	Phase I Results		TLDs Incremental to Phase II	
	Legacy TLDs	New gTLDs	Legacy TLDs	New gTLDs
Average	$44.78	$150.64	$65.14	$153.77
Minimum	$7.78	$0.00	$65.14	$75.84
25th Percentile	$9.02	$80.90	$65.14	$76.09
Median	$22.62	$81.37	$65.14	$113.89
75th Percentile	$66.75	$81.53	$65.14	$252.64
Maximum	$117.73	$2,971.85	$65.14	$253.95
Number of Obs.	5	82	1	22

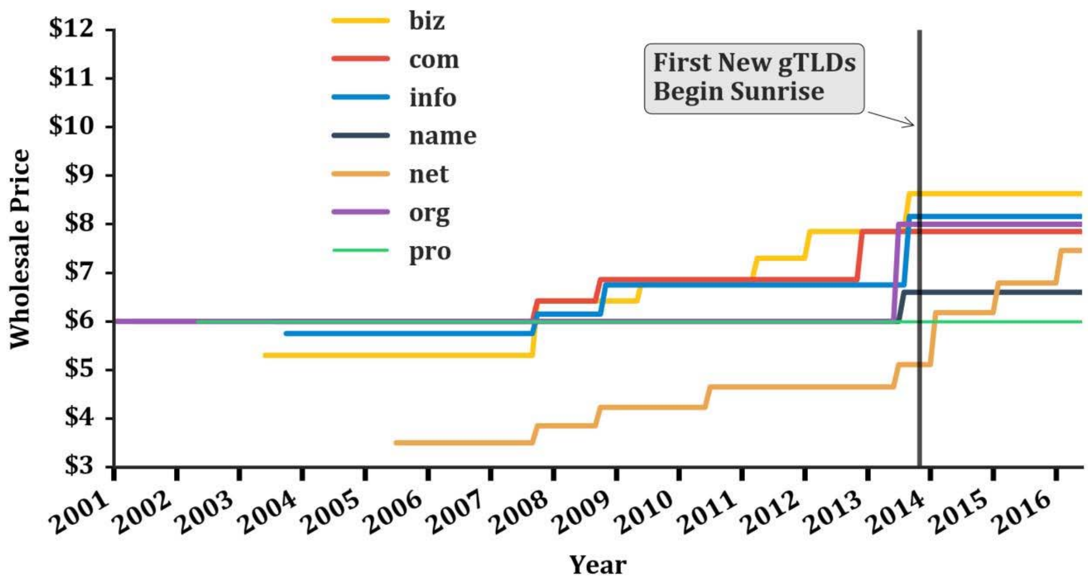
Notes:
[1] One-year registration prices are reported.
[2] Sunrise prices were not available for all TLDs either due to a lack of a response from the registries or lack of a one-year registration price.
[3] All prices are adjusted for CPI inflation between sunrise period and June 2016.

Sources:
[1] New gTLD sunrise price information was provided by operating registries.
[2] Sunrise price information for legacy TLDs was obtained from official ICANN documentation.
[3] CPI inflation figures from St. Louis Fed website; https://fred.stlouisfed.org/series/CPIAUCSL.

Wholesale Price Distribution
Figure 2 below shows historical wholesale price *caps* for the legacy TLDs .com, .net, .info, .org, .name, .pro, and .biz. These data are obtained from public price cap change correspondences between registries and ICANN and show that while price cap changes have been somewhat infrequent, they have trended upward over time. The graph also shows that the largest price cap change occurred in 2013 prior to the entry of the first new gTLDs for six of the seven legacy TLDs plotted below. While these data show legacy TLD price caps rather than actual wholesale prices, it should be noted that all seven legacy TLDs shown, with the exception of .com, have had price caps since 2013 (or earlier) that increase relative to the previous year's price; as a result, any increase in a legacy TLD's price cap can potentially be interpreted as the result of an increase in that TLD's wholesale price.[41] Therefore, Figure 2 allows us to roughly gauge whether these legacy TLDs raised wholesale prices after the entry of new gTLDs began; in doing so, we see that only .net has increased its price since the entry of the new gTLDs and appears to have done so annually.

[41] The price caps for .biz, .info, and .org, adjusted upwards in the second half of 2013 and became adjustable relative to the actual price charged on January 1, 2014. .name has had an adjustable price cap since June 2013, .net since July 2011, and .pro since January 2011. .com has had a fixed price cap since December 2012.

Figure 2
Historical Legacy Wholesale Price Caps (2001 – 2016)



Figures 3A and 3B plot the distribution of wholesale price caps and prices for all legacy TLDs and new gTLDs in our sample as of Phase I and Phase II, respectively; these figures suggest that there exists higher price dispersion among new gTLDs as compared to legacy TLDs in both Phase I and Phase II. Although our legacy wholesale price data are represented by price caps, the lack of dispersion among price caps also reflects a lack of dispersion among actual wholesale prices.[42]

In our discussions regarding price dispersion here, and elsewhere in the report, it is important to note several items. First, when comparing legacy TLDs to new gTLDs, we must keep in mind that legacy TLDs historically had greater restrictions on pricing.[43] Second, the presence or absence of price dispersion does not imply a lack of competition since price dispersion can occur for a variety of reasons. For example, price dispersion might be expected if firms or products have been able to differentiate themselves, perhaps by offering better quality, certain product features or characteristics, better customer service, or through persuasive advertising. In this situation, consumers likely view the alternatives as not very good substitutes, and firms will have some ability to set higher prices. Alternatively, price dispersion could be consistent with a situation where consumers face high search costs or lack complete information regarding pricing and availability.[44] At present, we are only able to quantify the extent to which price dispersion exists, and do not have the necessary data to explain why any observed price dispersion exists. Nonetheless,

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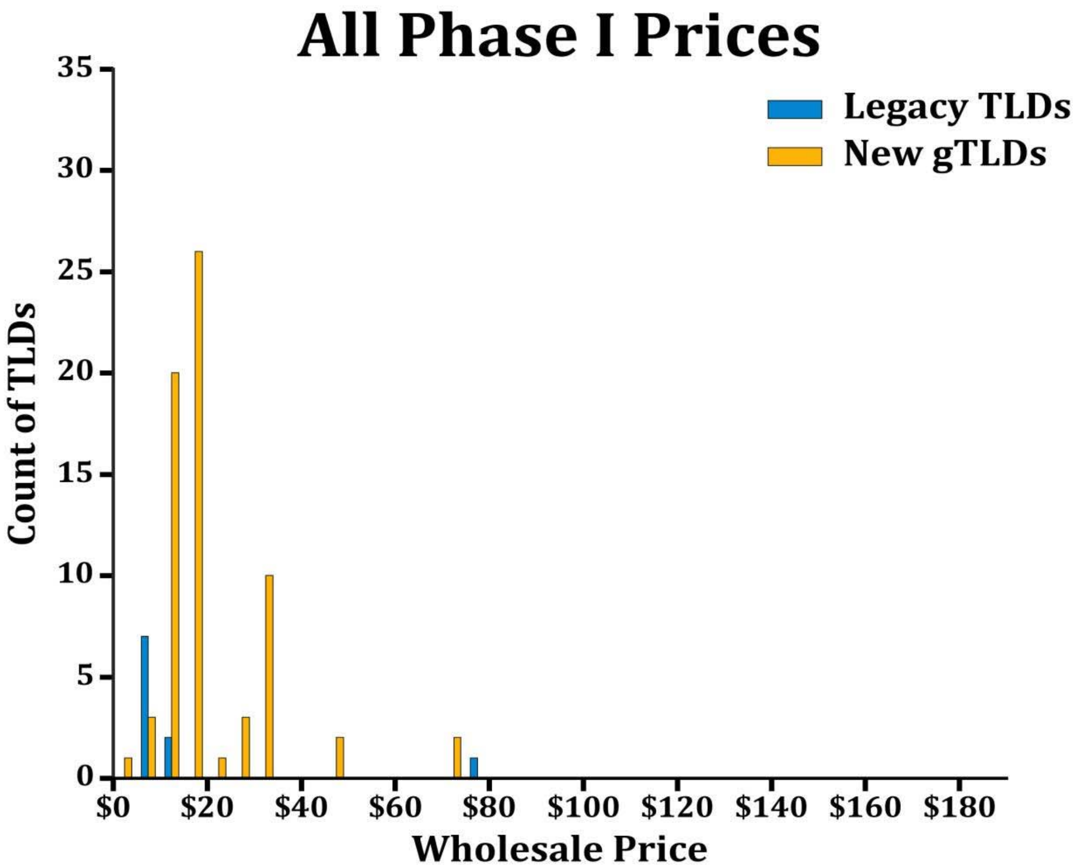
[42] Eight new gTLDs with wholesale prices below $1 are excluded from this analysis. If those TLDs were included in the analysis, we would continue to find larger price dispersion among new gTLDs than legacy TLDs.

[43] To the extent that we see legacy TLD price caps below the wholesale prices of new gTLDs, we know that legacy TLD wholesale prices must also be lower than the wholesale prices of new gTLDs.

[44] Economic search costs are associated with the time and money that a consumer spends searching for his or her purchase options.

we include a discussion of price dispersion among our analyses because it is a useful way to describe the distribution of prices that we observe in the marketplace. Ultimately, much richer data (such as transaction-level data) is needed to thoroughly examine the underlying causes.

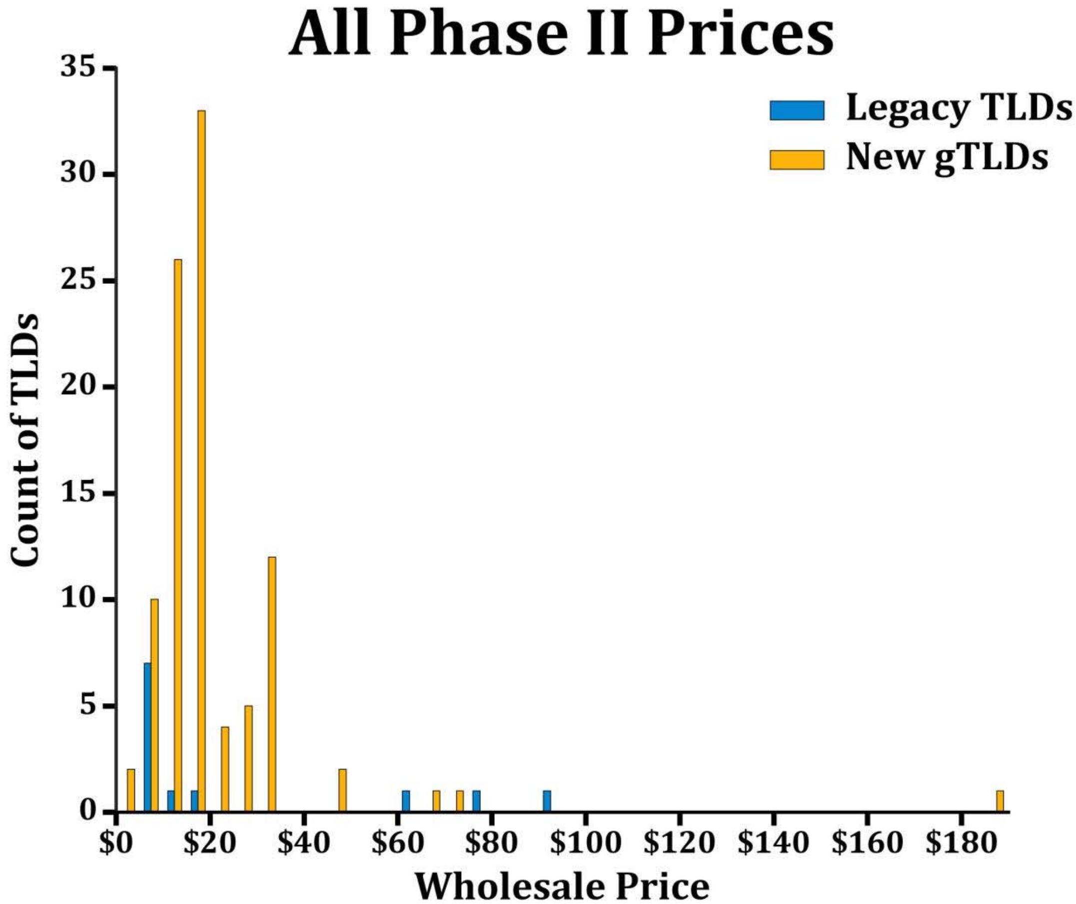
Figure 3A
Phase I Wholesale Price Caps for Legacy TLDs and Wholesale Prices for New gTLDs



Notes:
[1] Wholesale prices are as of April 2015.

Sources:
[1] Legacy wholesale price information were obtained from official price change correspondences between operating registries and ICANN.
[2] New gTLD wholesale prices were provided by registry operators.
[3] Eight new gTLDs with wholesale prices below $1 are excluded from this analysis.

Figure 3B
Phase II Wholesale Price Caps for Legacy TLDs and Wholesale Prices for New gTLDs



Notes:
[1] Wholesale prices are as of April 2016.

Sources:
[1] Legacy wholesale price information were obtained from official price change correspondences between operating registries and ICANN.
[2] New gTLD wholesale prices were provided by registry operators.
[3] Eight new gTLDs with wholesale prices below $1 are excluded from this analysis.

Table 6 summarizes the distribution of wholesale prices for TLDs in our sample. (We note that legacy wholesale price data are proxied for by legacy wholesale price cap information.) The first set of columns shows the Phase I wholesale price distribution of legacy TLDs and new gTLDs in our Phase I sample based on the data available during the Phase I Assessment. The middle set of columns allows us to compare the Phase I and Phase II wholesale prices of legacy TLDs and new gTLDs for which we received wholesale pricing in both study phases. And, the last set of columns shows the Phase II wholesale price distribution of legacy TLDs and new gTLDs for which we received wholesale price data in Phase II but not in Phase I. (These TLDs are either new additions to our Phase II TLD sample or the registry operator did not provide data during the Phase I Assessment.)

The middle set of columns illustrates a slight increase in the average wholesale price cap of legacy TLDs since Phase I (from $16.09 to $16.72) and a slight decline in the average wholesale price of new gTLDs since Phase I (from $21.87 to $21.46); however, these differences are not statistically significant. (The median legacy TLD wholesale price cap increases from $8.08 to $9.23, from Phase I to Phase II, while the median new gTLD price remains unchanged.) We also do not see a meaningful change in the price dispersion of new gTLDs or legacy TLDs between Phase I and Phase II, with largely similar minimums, 25th, 50th, and 75th percentiles, and maximums.[45]

Table 6Phase I and Phase II Wholesale Price Distribution

	Phase I Results		TLDs with Prices Recorded in Both Phase I and Phase II: Legacy TLDs		TLDs with Prices Recorded in Both Phase I and Phase II: New gTLDs		Phase II Price for TLDs Incremental to Phase II	
	Legacy TLDs	New gTLDs	Phase I Price	Phase II Price	Phase I Price	Phase II Price	Legacy TLDs	New gTLDs
Average	$16.09	$20.91	$16.09	$16.72	$21.87	$21.46	$78.50	$24.08
Minimum	$6.00	$1.00	$6.00	$6.60	$1.00	$5.00	$62.00	$6.00
25th Percentile	$6.79	$13.00	$6.79	$7.85	$13.00	$13.00	$62.00	$12.00
Median	$8.08	$20.00	$8.08	$9.23	$20.00	$20.00	$78.50	$20.00
75th Percentile	$14.08	$20.26	$14.08	$12.00	$24.35	$25.20	$95.00	$25.00
Maximum	$80.00	$74.67	$80.00	$80.00	$74.67	$74.00	$95.00	$190.00
Number of Obs.	10	74	10	10	68	68	2	29

Notes:

[1] One-year registration prices are reported. Wholesale prices for Phase I are as of April 2015. Wholesale prices for Phase II are as of April 2016.

[2] Wholesale prices were not available for all TLDs either due to a lack of a response from the registries or lack of a one-year registration price.

[3] TLDs with prices recorded in both Phase I and Phase II include all TLDs for which registries provided a wholesale price in both Phase I and Phase II.

[4] TLDs incremental to Phase II include TLDs for which registries never provided a price as part of Phase I or TLDs that were added as part of the Phase II TLD sample.

[5] One TLD with a wholesale price of zero is excluded from this analysis because it carries the Spec 9 exemption with ICANN.

[6] Eight TLDs with wholesale prices below $1 are excluded from this analysis.

[7] The median price difference between Phase I and Phase II is not statistically significant at the .05 level for legacy TLDs or new gTLDs. Statistical significance is determined using a bootstrapped analysis of median price differenecs between Phase I and Phase II.

Source:

[1] Wholesale price information was provided by registry operators.

Retail Price Distribution

Figures 4A and 4B plot the distribution of retail prices for all legacy TLDs and new gTLDs in our sample as of Phase I and Phase II, respectively; these figures also suggest that there exists higher price dispersion among new gTLDs as compared to legacy TLDs in both Phase I and Phase II.[46]

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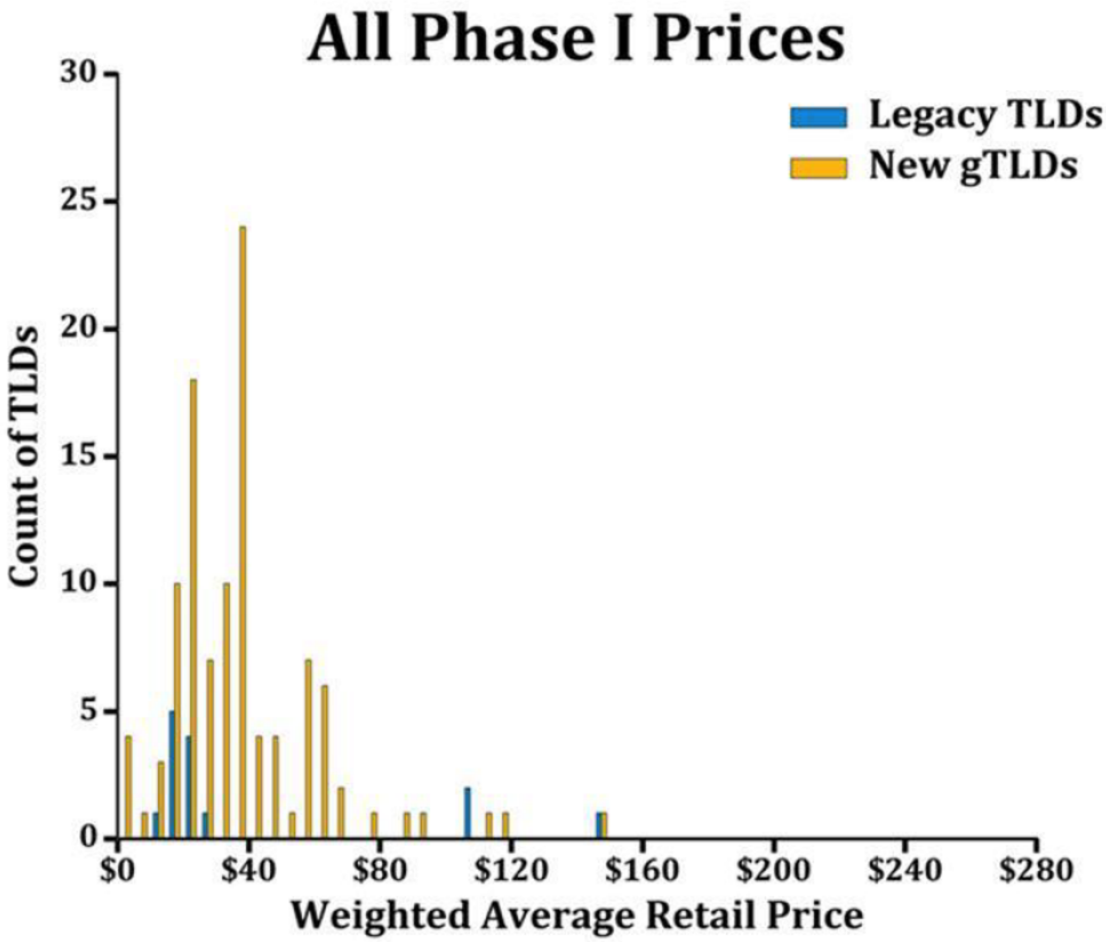
[45] Eight new gTLDs with wholesale prices below $1 are excluded from this analysis. If those TLDs were included in the analysis, we would continue to find minimal changes in the average and median prices of TLDs with price information available in Phase I and Phase II. The average Phase II retail price for new gTLDs incremental to Phase II would decrease to $19.48, and the median price for that set of TLDs would decrease slightly to $15.

[46] To be consistent with our analyses of wholesale prices, we exclude eight new gTLDs with wholesale prices less than $1 from our analyses of retail prices and markups. Inclusion of these TLDs in our analyses of retail prices does not have a meaningful impact on the results. These new gTLDs are excluded from the pricing and markup analyses because they exhibit extreme markup values due to their very low wholesale prices.

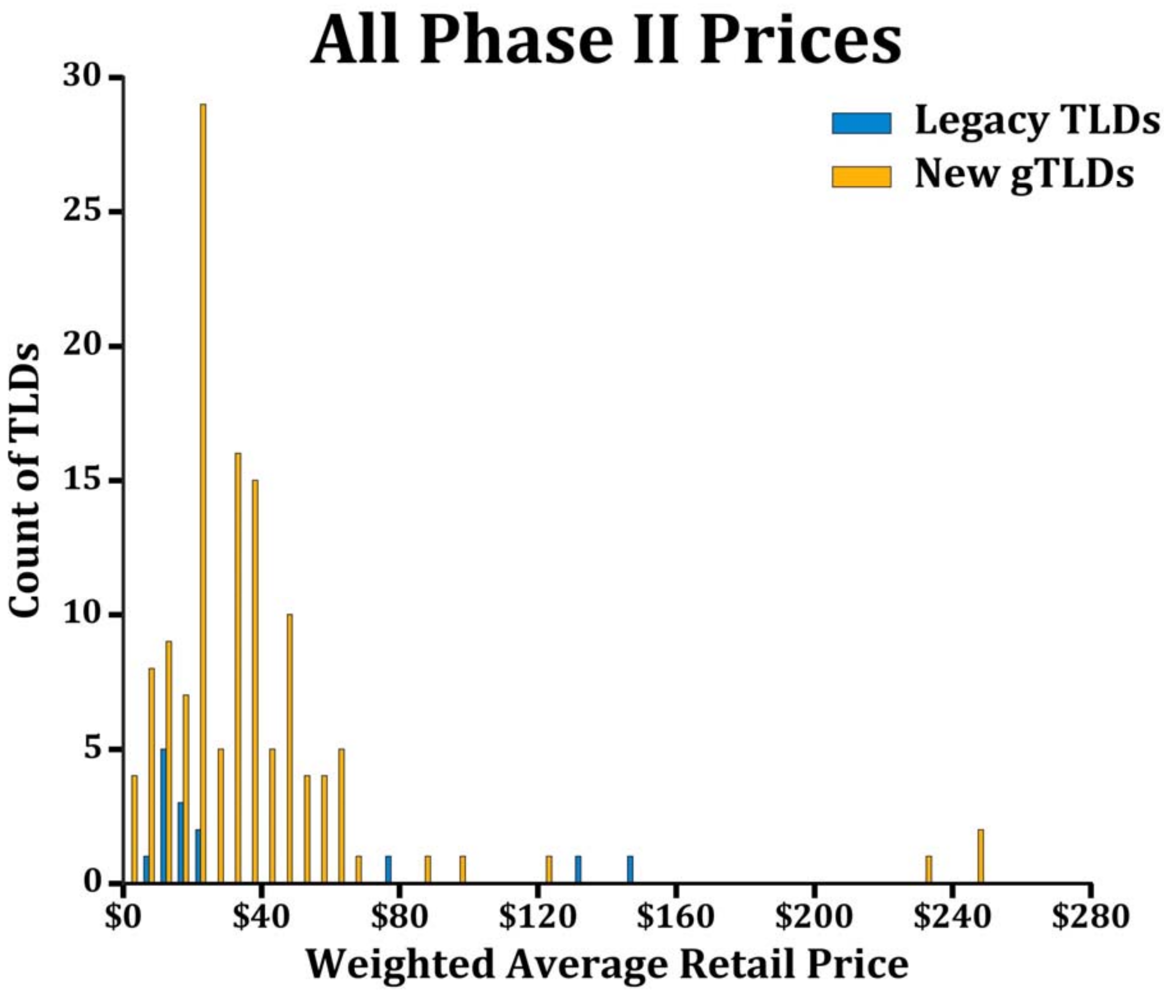
Figure 4A
Phase I Weighted Average Retail Price Distribution for Legacy and New gTLDs



Notes:
[1] Weighted average retail price is calculated as the average of retail prices weighted by the share of registrations accounted for by each registrar from which retail pricing data were collected. Registrations and retail prices for Phase I weighted average prices are as of April 2015.
[2] Eight new gTLDs with wholesale prices below $1 are excluded from this analysis.

Sources:
[1] Retail prices were collected from registrar websites or provided by DNPric.es.
[2] Registration volume data were obtained from monthly transaction reports provided to ICANN by operating registries.

Figure 4B
Phase II Weighted Average Retail Price Distribution for Legacy and New gTLDs



Notes:
[1] Weighted average retail price is calculated as the average of retail prices weighted by the share of registrations accounted for by each registrar from which retail pricing data were collected. Registrations for Phase I weighted average prices are as of March 2016. Retail prices are as of June 2016.
[2] Eight new gTLDs with wholesale prices below $1 are excluded from this analysis.

Sources:
[1] Retail prices were collected from registrar websites or provided by DNPric.es.
[2] Registration volume data were obtained from monthly transaction reports provided to ICANN by operating registries.

Table 7 below summarizes the distribution of retail prices for TLDs in our sample.[47] The first set of columns shows the Phase I retail price distribution of legacy TLDs and new gTLDs, the middle set of columns allows us to compare the Phase I and Phase II retail prices of legacy TLDs and new gTLDs, and the last set of columns shows the Phase II retail price distribution of legacy TLDs and new gTLDs for which we collected retail price data in Phase II but not in Phase I. Similar to wholesale prices, new gTLDs have higher retail prices than legacy TLDs (based on comparing medians so as to control for the influence of outliers). Focusing on the TLDs with prices available in both Phase I and Phase II, we observe a decline in the average retail price of legacy TLDs since Phase I (from $41.34 to $37.62) and a decline in the average retail price of new gTLDs since Phase I (from $37.87 to $33.35). In comparing changes in median prices from Phase I to Phase II, which helps to control for the impact of outliers, we find that the median legacy TLD retail price declined from $20.75 to $16.19 and that the median new gTLD retail price declined from $35.06 to $31.73.[48]

Table 7
Phase I and Phase II Weighted Average Retail Price Distribution

	Phase I Results		TLDs with Prices Recorded in Both Phase I and Phase II				Phase II Price for TLDs Incremental to Phase II	
			Legacy TLDs		New gTLDs			
	Legacy TLDs	New gTLDs	Phase I Price	Phase II Price	Phase I Price	Phase II Price	Legacy TLDs	New gTLDs
Average	$41.34	$37.87	$41.34	$37.62	$37.87	$33.35	N/A	$69.89
Minimum	$14.34	$3.68	$14.34	$7.89	$3.68	$2.11	N/A	$3.18
25th Percentile	$17.08	$23.90	$17.08	$13.81	$23.90	$21.31	N/A	$13.41
Median	$20.75	$35.06	$20.75	$16.19	$35.06	$31.73	N/A	$24.92
75th Percentile	$25.34	$41.81	$25.34	$22.47	$41.81	$41.86	N/A	$60.16
Maximum	$147.69	$146.57	$147.69	$148.89	$146.57	$124.90	N/A	$420.31
Number of Obs.	14	106	14	14	106	106	N/A	23

Notes:

[1] Phase I Retail Prices are as of April 2015. Phase II retail prices are as of June 2016.

[2] Weighted averages across registrars of one-year registration prices are reported. Prices are weighted by the share of registrations accounted for by each registrar from which retail pricing data were collected. Registrations for Phase I weighted average prices are as of April 2015. Registrations for Phase II weighted average prices are as of March 2016.

[3] Only prices from registrars that were able to be linked to an IANA Registrar ID are included in this analysis.

[4] Retail prices were not available for all TLDs either due to a lack of available information or lack of a one-year registration price.

[5] TLDs with prices recorded in both Phase I and Phase II include all TLDs for which retail prices were available in both Phase I and Phase II.

[6] TLDs incremental to Phase II include TLDs for which retail prices were not available in Phase I or TLDs that were added as part of the Phase II sample

[7] Eight TLDs with wholesale prices below $1 are excluded from this analysis.

Source:

[1] Retail prices were collected from registrar websites or provided by DNPric.es.

[2] Registration volumes were collected from monthly transaction reports provided to ICANN by operating registries.

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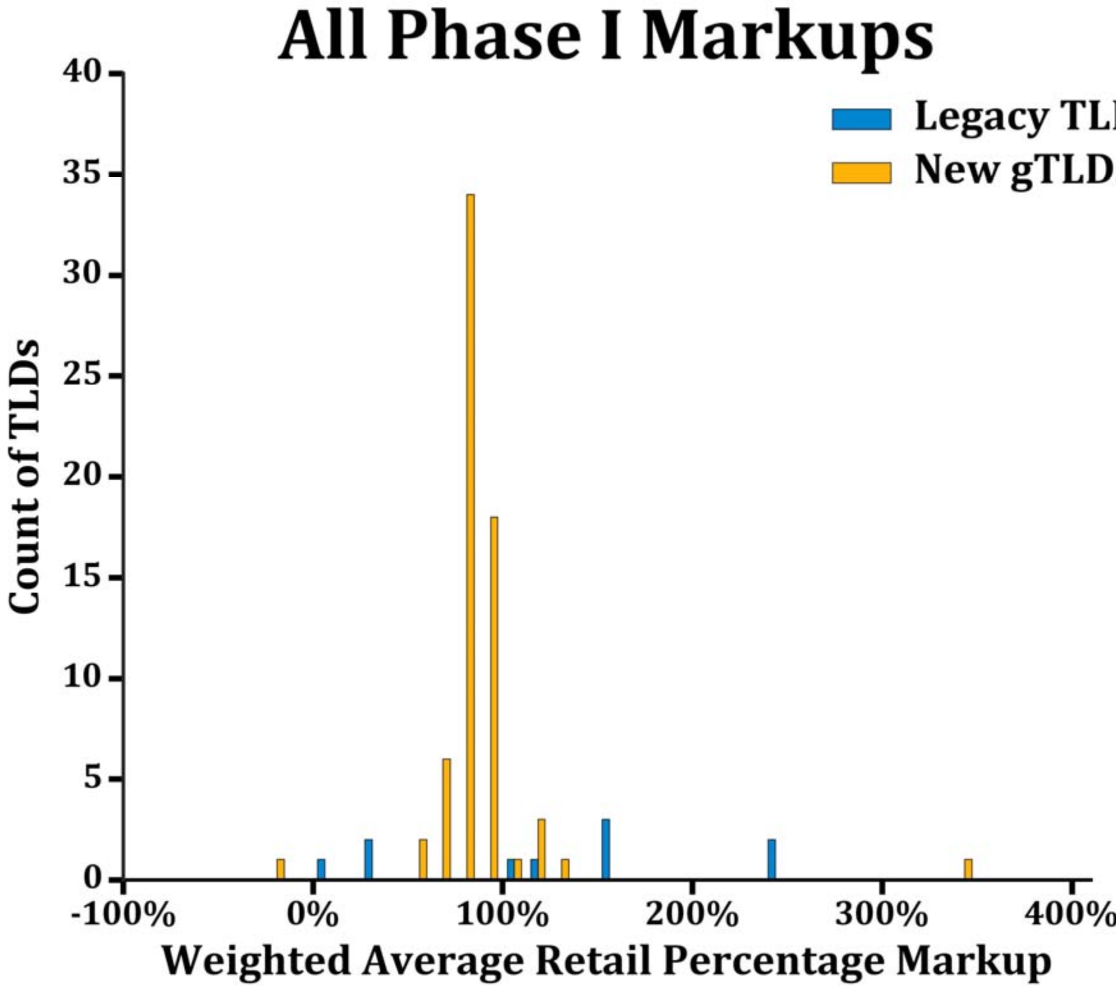
[47] We calculate the average retail price for each TLD weighted by registrations. Our retail price data are as of April 2015 and June 2016 for Phase I and Phase II, respectively, and our registration volume data are from April 2015 and March 2016, respectively. To the extent that retail prices and/or registration activity changed considerably between March 2016 and June 2016, our results may not reflect the true distribution of retail prices or markups. However, we expect that any extreme changes in prices or registration activity are unlikely to be large enough to impact our results in a meaningful way.

[48] Eight new gTLDs with wholesale prices below $1 are excluded from this analysis. If those TLDs were included in the analysis, we would continue to find minimal changes in the average and median prices of TLDs with price information available in Phase I and Phase II. The average Phase II retail price for new gTLDs incremental to Phase II would decrease to $58.50, and the median price for that set of TLDs would decrease slightly to $23.51.

Retail Markups

Combining the data on wholesale and retail prices, Figures 5A and 5B below plot the distribution of retail markups: the percentage increase in retail price compared to wholesale price. (We note that legacy wholesale price data are proxied for by legacy wholesale price cap information.) As shown, legacy TLDs in Phase I typically had a higher markup as compared to new gTLDs; in Phase II, the distributions of legacy TLD and new gTLD mark-ups are more similar. It should be noted, that legacy TLD markups may be understated in this analysis since legacy TLD wholesale prices are being measured by legacy TLD price caps: wholesale prices may be lower than the reported wholesale price cap, making actual legacy TLD markups larger than those shown in this analysis. Below, Table 8 provides summary statistics for the distribution of retail markups across legacy TLDs and new gTLDs. For TLDs with markup data recorded in both Phase I and Phase II, we see that average and median markups have declined in the past year.

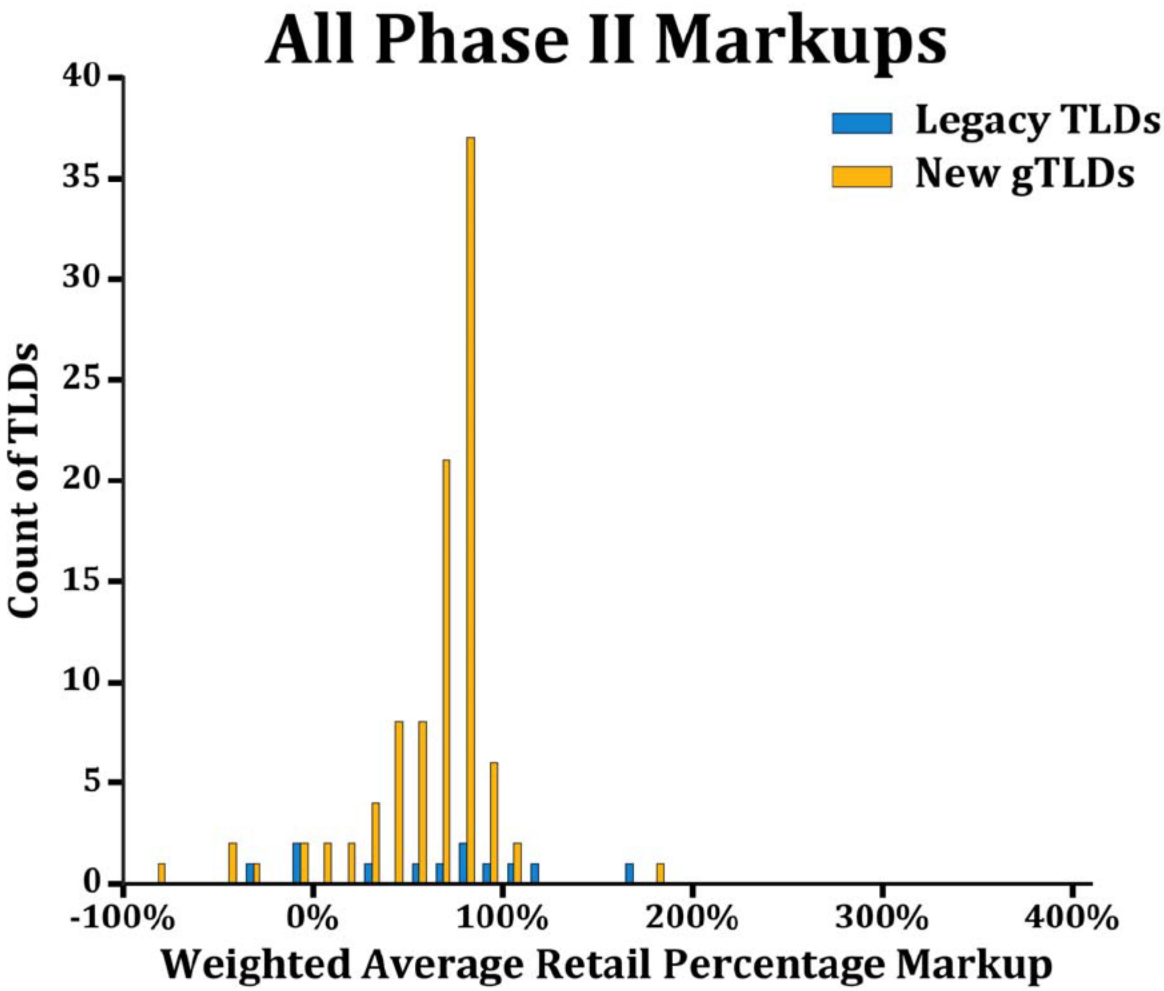
Figure 5A
Phase I Average Retail Percentage Markup for Legacy and New gTLDs



Notes:
[1] Wholesale and retail prices for Phase I retail markups are as of April 2015.
[2] Retail markup is calculated as (weighted average retail price – wholesale price) / wholesale price. Weighted average retail price is calculated as the average of retail prices weighted by the share of registrations accounted for by each registrar from which retail pricing data were collected. Registrations for Phase I weighted average prices are as of April 2015.
[3] Eight new gTLDs with wholesale prices below $1 are excluded from this analysis.

Sources:
[1] Legacy wholesale price information were obtained from official price change correspondences between operating registries and ICANN.
[2] New gTLD wholesale prices were provided by registry operators.
[3] Retail prices were collected from registrar websites.
[4] Registration volume data were obtained from monthly transaction reports provided to ICANN by operating registries.

Figure 5B
Phase II Average Retail Percentage Markup for Legacy and New gTLDs



Notes:
[1] Wholesale prices for Phase II retail markups are as of April 2016. Retail prices for Phase II retail markups are as of June 2016.
[2] Retail markup is calculated as (weighted average retail price – wholesale price) / wholesale price. Weighted average retail price is calculated as the average of retail prices weighted by the share of registrations accounted for by each registrar from which retail pricing data were collected. Registrations for Phase I weighted average prices are as of April 2015. Registrations for Phase II weighted average prices are as of March 2016.
[3] Eight new gTLDs with wholesale prices below $1 are excluded from this analysis.

Sources:
[1] Legacy wholesale price information was obtained from official price change correspondences between operating registries and ICANN.
[2] New gTLD wholesale prices were provided by registry operators.
[3] Retail prices were collected from registrar websites.
[4] Registration volume data were obtained from monthly transaction reports provided to ICANN by operating registries.

Table 8
Retail Markup Distribution
Phase I and II Comparison

	Phase I Results		TLDs with Prices Recorded in Both Phase I and Phase II				Phase II Markup for TLDs Incremental to Phase II	
			Legacy TLDs		New gTLDs			
	Legacy TLDs	New gTLDs	Phase I Markup	Phase II Markup	Phase I Markup	Phase II Markup	Legacy TLDs	New gTLDs
Average	125%	92%	125%	66%	96%	71%	41%	49%
Minimum	2%	-34%	2%	-37%	-20%	-44%	25%	-84%
25th Percentile	37%	78%	37%	-2%	78%	67%	25%	30%
Median	135%	85%	135%	76%	85%	74%	41%	55%
75th Percentile	162%	89%	162%	111%	89%	81%	57%	83%
Maximum	243%	639%	243%	170%	639%	186%	57%	95%
Number of Obs.	10	74	10	10	68	68	2	29

Notes:

[1] Phase I wholesale and retail prices are as of April 2015. Phase II wholesale prices are as of April 2016. Phase II retail prices are as of June 2016. One-year registration prices are reported. Prices were not available for all TLDs either due to a lack of available information or lack of a one-year registration price.

[2] Markup percentage is calculated by subtracting the wholesale price from the weighted average retail price weighted and dividing the difference by the wholesale price. Weighted average retail price is calculated as the average of retail prices weighted by the share of registrations accounted for by each registrar from which retail pricing data were collected. Registrations for Phase I weighted average prices are as of April 2015. Registrations for Phase II weighted average prices are as of March 2016.

[3] TLDs with prices recorded in both Phase I and Phase II include all TLDs for which both retail prices and wholesale prices were collected in both Phase I and Phase II.

[4] TLDs incremental to Phase II includes TLDs that were added as part of the Phase II TLD sample or TLDs for which operating registries did not provide a wholesale price during Phase I.

[5] One TLD with a wholesale price of zero is excluded from this analysis because it carries the Spec 9 exemption with ICANN.

[6] Eight new gTLDs with wholesale prices below $1 are excluded from this analysis.

Sources:

[1] Retail prices were collected from registrar websites or provided by DNPric.es.

[2] Wholesale price information was provided by operating registries.

[3] Registration volumes were collected from monthly transaction reports provided to ICANN by operating registries.

Wholesale Price Index

The expansion of new gTLDs has created a market with hundreds of TLD options for consumers. As shown in the above analyses, these TLDs vary substantially in price. A price index is a mathematical way to summarize the distribution of prices in a manner that also accounts for differences in registration volume. As prices and registration patterns change over time, monitoring this index value can help summarize changes in the overall price level for domain name registrations.

In Phase I, we calculated both weighted and un-weighted wholesale price index values for the overall set of TLDs as well as for legacy TLD and new gTLDs separately. (We note that legacy wholesale price data are proxied for by legacy wholesale price cap information.) We calculate both weighted and un-weighted index values: the un-weighted index value treats each TLD the same, whereas the weighted index value places more importance on TLDs with higher registration volumes.[49] This information is provided below in Table 9. Once again, when comparing the overall legacy TLD wholesale price to new gTLDs, we note that many legacy TLDs had historical price caps, as well as different start-up costs compared to

[49] The weighted-price index value first calculates a weighted average retail price for each TLD, where the weights are determined by each registrar's registration volume of the TLD. Then, we take the average of these registrar-weighted average prices across all relevant TLDs, weighting each by their total domain registrations. As noted above, we exclude TLDs with extremely low wholesale prices from the analysis.

new gTLDs, both of which may be influencing their current prices relative to new gTLDs. We also again note that legacy TLD prices are measured based on price caps, and may overstate the wholesale price of legacy TLDs. New gTLDs, in contrast to legacy TLDs, are not subject to price caps. For legacy TLDs and new gTLDs with wholesale price information available in both Phase I and Phase II, we see a decline in the weighted price of new gTLDs, while legacy prices have largely remained the same. As discussed earlier, a decline in wholesale prices is consistent with increased competition in the domain name marketplace.

Table 9
Legacy TLD Wholesale Price Cap and gTLD Wholesale Price Index Values
Phase I and II Comparison

	Phase I Results		TLDs with Prices Recorded in Both Phase I and Phase II				Phase II Prices for TLDs Incremental to Phase II	
			Legacy TLD Prices		New gTLD Prices			
	Legacy TLDs	New gTLDs	Phase I	Phase II	Phase I	Phase II	Legacy TLDs	New gTLDs
Simple Average Wholesale Price	$16.09	$20.91	$16.09	$16.72	$21.87	$21.46	$78.50	$24.08
Weighted Average Wholesale Price	$7.82	$13.30	$7.82	$7.92	$17.82	$15.38	$69.06	$15.46
Number of Obs.	10	74	10	10	68	68	2	29

Notes:

[1] Simple average price is the simple average of all available wholesale prices within each category. Weighted average wholesale price is the average of all available wholesale prices weighted by each TLD's share of registrations as of April 2015 for Phase I and March 2016 for Phase II.

[2] One-year registration prices are used. Phase I wholesale prices and registrations are as of April 2015. Phase II wholesale prices are as of April 2016 and registrations are as of March 2016. Wholesale prices were not available for all TLDs either due to a lack of a response from the registries or lack of a one-year registration price.

[3] TLDs with prices recorded in both Phase I and Phase II include all TLDs for which registries provided a wholesale price in both Phase I and Phase II.

[4] TLDs incremental to Phase II include TLDs for which registries never provided a price as part of Phase I or TLDs that were added as part of the Phase II TLD

[5] One TLD with a wholesale price of zero is excluded from this analysis because it carries the Spec 9 exemption with ICANN.

[6] Eight new gTLDs with wholesale prices below $1 are excluded from this analysis.

Sources:

[1] Retail prices were collected from registrar websites or provided by DNPric.es.

[2] Wholesale price information was provided by operating registries.

[3] Registration volumes were collected from monthly transaction reports provided to ICANN by operating registries.

Retail Price Index

In Phase I, we calculated retail price-index values for the overall set of TLDs as well as for legacy TLD and new gTLDs separately. For each TLD, we collected price observations from 39 registrars, and the index values were created from those price observations. We calculate both weighted and un-weighted index values: the un-weighted index value treats each TLD price observation the same, whereas the weighted index value places more importance on TLDs and registrars with higher registration volumes.[50] The end result, shown in Table 10 below, shows a decline in retail both weighted and un-weighted retail prices; this decline is most noticeable for the weighted new gTLD price index. In addition, we find that price declines are greater for new gTLDs than for legacy TLDs. As above, a decline in retail prices is consistent with increased competition among registrars.

[50] The weighted-price index value weights each TLD by its total domain registrations. The un-weighted index values are higher for both legacy TLDs and gTLDs as compared to their respective weighted index values, reflecting the fact that lower-priced legacy TLDs have a larger number of registrations than more expensive TLDs. As noted above, we exclude TLDs with wholesale prices below $1 from the analysis.

Table 10
Legacy TLD and gTLD Retail Price Index Values
Phase I and II Comparison

	Phase I Results		TLDs with Prices Recorded in Both Phase I and Phase II				Phase II Price Index for TLDs Incremental to Phase II	
			Legacy TLD Price Indices		New gTLD Price Indices			
	Legacy TLDs	New gTLDs	Phase I	Phase II	Phase I	Phase II	Legacy TLDs	New gTLDs
Un-Weighted Index Value	$41.34	$37.87	$41.34	$37.62	$37.87	$33.35	N/A	$69.89
Weighted Index Value	$17.45	$26.90	$17.45	$14.82	$26.90	$11.09	N/A	$36.92
Number of Obs.	14	106	14	14	106	106	N/A	23

Notes:

[1] The weighted price index value first calculates a weighted average retail price for each TLD, where each retail price is weighted by the registration volume of the the registrar from which the retail price was collected. The un-weighted index value the simple average of the weighted average retail price across TLDs. The weighted index value is the weighted average across TLDs of the weighted average retail price weighted by each TLD's share of all registrations.

[2] One-year registration prices are used. For Phase I price indices, prices and registrations are as of April 2015. For Phase II price indices, retail prices are as of June 2016 and registrations are as of March 2016.

[3] TLDs with prices recorded in both Phase I and Phase II include all TLDs for which a retail price was collected in both Phase I and Phase II.

[4] TLDs incremental to Phase II include TLDs that were added as part of the Phase II TLD sample.

[5] Eight new gTLDs with wholesale prices below $1 are excluded from this analysis.

Sources:

[1] Retail prices were collected from registrar websites or provided by DNPric.es.

[2] Registration volumes were collected from monthly transaction reports provided to ICANN by operating registries.

Add-On Prices and Availability

In our Phase I Assessment, we analyzed the presence of competition across non-price dimensions by evaluating registrar pricing and offering of add-on services. We found that there is a large variety of add-on categories registrars offer, and within an add-on category, a registrar may offer multiple products, each varying in price. Hosting, email, and server-related products were the most frequently offered.

Within each add-on category, we noted that some add-on categories had very little price dispersion (e.g., forwarding), while other categories have a large amount of variation. One possible explanation is that add-ons with lower price dispersion are add-ons where customers tend to be more sensitive to and well-informed about the pricing. However, without detailed transaction information from multiple registrars, we cannot investigate if hypotheses such as this are likely to be correct. In Phase II, we confirmed that registrar add-on services continue to have a large amount of variation, making it difficult to conduct an analysis of how registrars price similar comparable services. The diversity of add-on service offerings from registrars potentially reflects differentiation across registrar services in the retail domain name marketplace. As discussed in our overview of the marketplace for domain names, the availability of a diverse set of services is one way for sellers in a marketplace to compete along a non-price dimension.

Registration Shares

In Phase I, we defined several groups of new gTLDs that are similar, either in name and/or in their likely target consumers. For example, .career, .careers, .jobs, and .work might constitute such a group. As discussed in Section III, such groups were included as part of our sample construction process. After selecting new gTLDs based on total and recent registration volume, related new gTLDs were then added. For each proposed group, we ran domain name searches on two large-volume registrar websites[51] and recorded which new gTLDs were included in the "Suggested Domain Name" list immediately following the search. Every new gTLD in the groupings below had at least one other group member displayed as a suggested domain name alternative. For our Phase II Assessment, we have expanded on our TLD groups based on new gTLDs that have become available since our Phase I Assessment.

For each new gTLD in a group, Table 11 below shows its share of registrations within its corresponding group as of March 2016 and the number of months it has been available. We see that ten of the 15 TLD families listed that had new gTLDs in Phase I have experienced entry by a new gTLD in the past year. Of those ten families, eight experienced a decrease in the registration shares of the largest pre-existing new gTLDs in the same family. The entry of a new gTLD in ten of 15 TLD families suggests that new gTLDs that are focused at different types of registrants continue to be introduced to the marketplace. In addition, the finding that registration shares decreased in eight of ten TLD families that experienced entry by a new gTLD suggests those entries could have pro-competitive effects on other new gTLDs within those families: for example, when a new gTLD enters a TLD family and attracts registrants (associated with a decline in the registration share of pre-existing new gTLDs within that family), registry operators and registrars offering pre-existing new gTLDs in that TLD family may need to reduce prices in order to compete with the new gTLD entrant.

[51]Specifically, we ran the checks using GoDaddy and 101 Domain.

Table 11
TLD Groups – Registration Shares

TLD Family	TLD	Registration Share: Phase I	Registration Share: Phase II	Registration Share: Difference (Phase II - Phase I)	Months Available: Phase I	Months Available: Phase II
Beer	pub	37.8%	59.0%	21.2%	10	21
Beer	bar	22.5%	25.4%	2.9%	9	20
Beer	beer	39.6%	15.6%	-24.1%	7	18
Car	auto	N/A	35.9%	N/A	N/A	2
Car	car	N/A	32.7%	N/A	N/A	2
Car	cars	N/A	31.4%	N/A	N/A	2
Deals	kaufen	28.1%	28.7%	0.6%	10	21
Deals	deals	21.8%	24.3%	2.5%	7	18
Deals	discount	13.4%	14.2%	0.8%	8	19
Deals	gratis	11.6%	11.9%	0.3%	8	19
Deals	cheap	13.1%	11.0%	-2.1%	12	23
Deals	bargains	10.1%	8.3%	-1.8%	12	23
Deals	qpon	1.9%	1.7%	-0.2%	11	22
Dental	dental	74.5%	68.1%	-6.3%	8	19
Dental	dentist	25.5%	31.9%	6.3%	4	15
Education	academy	32.8%	26.0%	-6.8%	13	24
Education	education	29.3%	23.7%	-5.6%	13	24
Education	training	28.0%	21.4%	-6.5%	13	24
Education	college	N/A	9.7%	N/A	N/A	6
Education	school	N/A	8.9%	N/A	N/A	10
Education	university	6.7%	5.9%	-0.8%	9	20
Education	schule	2.5%	2.5%	-0.1%	8	19
Education	degree	0.7%	1.9%	1.2%	3	14
Expert/Consulting	expert	70.1%	62.8%	-7.4%	11	22
Expert/Consulting	consulting	29.9%	37.2%	7.4%	10	21
Finance	loan	N/A	90.4%	N/A	N/A	7
Finance	bank	N/A	2.4%	N/A	N/A	9
Finance	finance	23.0%	1.9%	-21.2%	7	18
Finance	financial	17.3%	1.3%	-16.0%	9	20
Finance	loans	15.8%	1.1%	-14.7%	7	18
Finance	investments	16.2%	1.1%	-15.1%	8	19
Finance	credit	14.3%	1.0%	-13.3%	8	19
Finance	mortgage	13.4%	0.9%	-12.5%	6	17
Global	world	29.1%	38.8%	9.7%	3	14
Global	global	32.6%	31.1%	-1.5%	7	18
Global	international	38.3%	25.9%	-12.4%	13	24
Global	earth	N/A	4.2%	N/A	N/A	4
Help	review	N/A	19.5%	N/A	N/A	8
Help	guru	28.7%	18.0%	-10.7%	15	26
Help	help	10.0%	13.6%	3.6%	5	16
Help	solutions	14.9%	12.6%	-2.3%	13	24
Help	tips	14.4%	9.6%	-4.7%	14	25
Help	expert	11.4%	7.6%	-3.8%	11	22
Help	wiki	4.3%	5.5%	1.2%	11	22
Help	reviews	5.6%	4.7%	-0.9%	11	22
Help	support	5.8%	4.5%	-1.2%	13	24
Help	guide	3.9%	3.5%	-0.5%	7	18
Help	how	1.0%	0.8%	-0.2%	3	14
Home	realtor	43.2%	32.2%	-11.0%	6	17
Home	property	17.8%	18.0%	0.2%	5	16
Home	casa	1.3%	8.4%	7.1%	2	13
Home	house	6.5%	6.5%	0.0%	13	24
Home	rentals	5.9%	4.9%	-1.0%	11	22
Home	immo	4.6%	4.8%	0.2%	4	15
Home	properties	5.1%	4.7%	-0.4%	11	22
Home	estate	5.7%	4.7%	-1.0%	14	25
Home	rent	N/A	3.8%	N/A	N/A	6
Home	immobilien	3.8%	3.5%	-0.3%	12	23
Home	forsale	2.4%	3.4%	1.0%	3	14

TLD Family	TLD	Registration Share Phase I	Registration Share Phase II	Registration Share Difference (Phase II - Phase I)	Months Available Phase I	Months Available Phase II
Home	haus	1.3%	1.5%	0.2%	9	20
Home	apartments	N/A	1.3%	N/A	N/A	10
Home	condos	1.2%	1.0%	-0.2%	11	22
Home	lease	0.7%	0.7%	0.0%	9	20
Home	maison	0.6%	0.5%	-0.1%	11	22
Jobs	work	29.9%	65.4%	35.4%	2	13
Jobs	jobs	59.5%	29.4%	-30.1%	101	112
Jobs	careers	9.5%	4.6%	-4.9%	14	25
Jobs	career	1.1%	0.7%	-0.5%	8	19
Legal	lawyer	50.0%	38.0%	-12.0%	6	17
Legal	legal	15.3%	23.5%	8.2%	1	12
Legal	attorney	34.7%	23.4%	-11.3%	6	17
Legal	law	N/A	15.1%	N/A	N/A	6
Medical	care	43.9%	45.5%	1.7%	8	19
Medical	healthcare	24.1%	26.2%	2.1%	6	17
Medical	clinic	22.7%	20.4%	-2.3%	8	19
Medical	surgery	9.3%	7.9%	-1.4%	8	19
Photography	photography	47.9%	34.5%	-13.3%	14	25
Photography	pics	8.7%	21.1%	12.3%	12	23
Photography	photo	16.3%	17.6%	1.3%	12	23
Photography	photos	17.1%	12.9%	-4.2%	14	25
Photography	studio	N/A	5.8%	N/A	N/A	5
Photography	pictures	4.9%	4.4%	-0.4%	9	20
Photography	camera	5.1%	3.6%	-1.5%	14	25
Science and Technology	science	85.2%	70.8%	-14.3%	2	13
Science and Technology	tech	N/A	19.7%	N/A	N/A	8
Science and Technology	technology	9.4%	5.2%	-4.2%	14	25
Science and Technology	software	2.2%	2.0%	-0.2%	4	15
Science and Technology	computer	1.8%	1.0%	-0.8%	13	24
Science and Technology	engineering	1.0%	0.7%	-0.3%	9	20
Science and Technology	engineer	0.4%	0.5%	0.1%	5	16
Travel	travel	47.8%	42.5%	-5.3%	109	120
Travel	reisen	11.3%	11.6%	0.3%	9	20
Travel	vacations	12.1%	10.7%	-1.3%	11	22
Travel	tours	N/A	10.6%	N/A	N/A	9
Travel	voyage	9.7%	7.6%	-2.0%	14	25
Travel	cruises	5.9%	5.4%	-0.5%	11	22
Travel	flights	5.7%	4.8%	-0.9%	11	22
Travel	reise	3.6%	3.5%	-0.1%	8	19
Travel	viajes	4.0%	3.1%	-0.8%	12	23

Notes:

[1] Registration shares are as of April 2015 for Phase I and March 2016 for Phase II.

[2] TLDs are grouped into families that consist of TLDs with similar topic areas and are likely to have a large overlap in their respective target groups of consumers.

[3] Registration share is calculated as the percent of volume the TLD represents compared to the total registrations within its family grouping.

[4] Months available is calculated as the number of months from the beginning of each TLD's general availability until April 2015 for Phase I and March 2016 for Phase II.

Sources:

[1] Registration volumes are collected from monthly transaction reports provided to ICANN by operating registries.

[2] General availability of new gTLDs is collected from https://newgtlds.icann.org/en/program-status/sunrise-claims-periods.

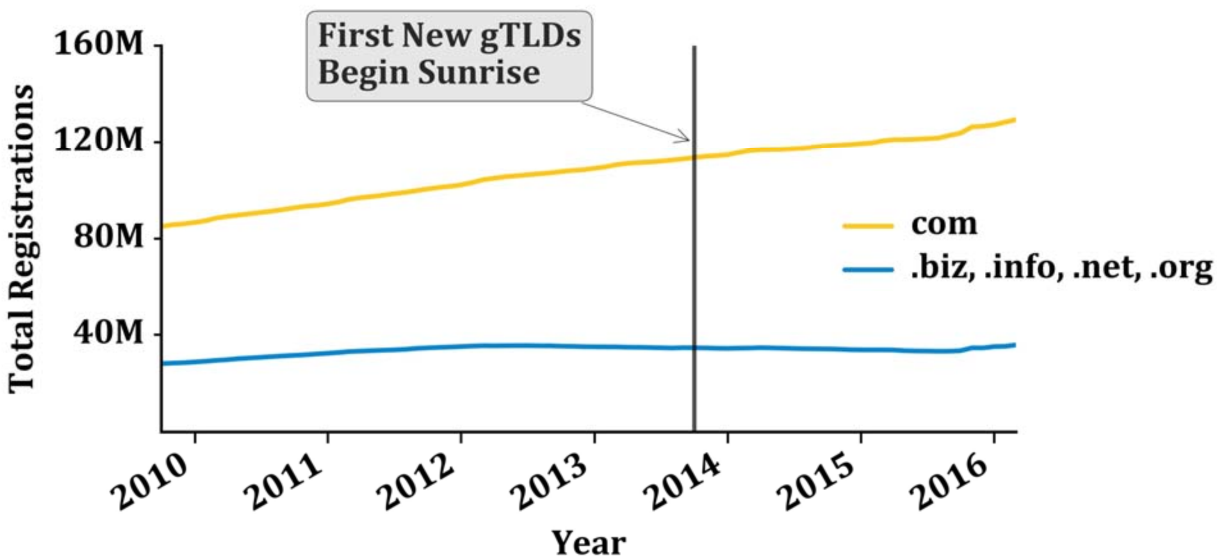
[3] General availability of legacy TLDs is identified as the first available monthly transaction report for each TLD from https://www.icann.org/resources/pages/registry-reports/#j.

Effects on Legacy TLD Registration Volumes

Registration Volumes

If consumers view new gTLDs as substitutes for legacy TLDs, one might expect that the release of new gTLDs would lower the registrations, rate of registrations, or renewals seen in legacy TLDs. On the other hand, if consumers do not view them as substitutes, we might not expect to see any changes in legacy TLD registrations. Using data from monthly transaction reports submitted to ICANN by registry operators, Figure 6 below shows total (cumulative) registrations for the top five legacy TLDs over time. The chart contrasts the largest legacy TLD in terms of registrations (.com), against the next four largest TLDs (.biz, .info, .net, and org).

Figure 6
Historical Legacy Registration Volumes (2010 – 2016)

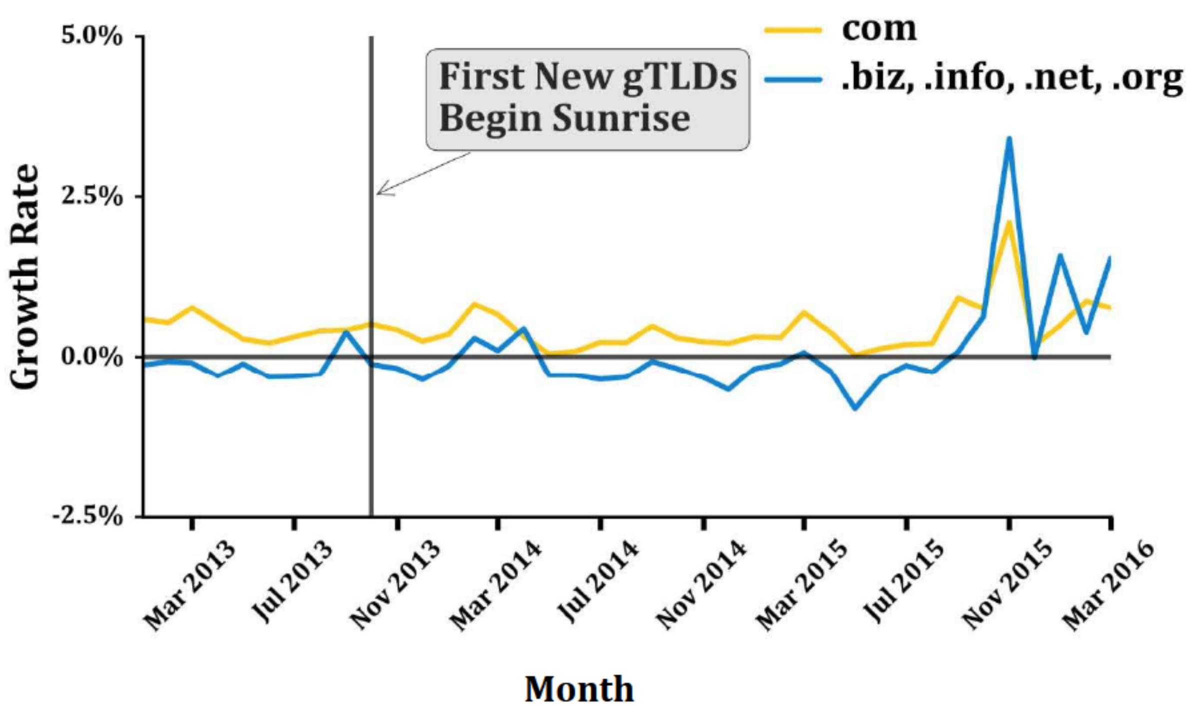


Note:
[1] Top five legacy TLDs by volume are included.

Sources:
[1] Registration volume data were obtained from March 2016 monthly transaction reports provided to ICANN by operating registries.
[2] New gTLD entrance dates collected from ICANN's website; https://newgtlds.icann.org/en/program-status/sunrise-claims-periods

As we saw in the Phase I Assessment, no clear effects are revealed in the above graph – legacy TLDs appear to be continuing to follow their previous registration trends. One possible explanation for this result is multi-year registrations have remained active in the past year even though they may not be renewed in the future (i.e., those registrations may shift to new gTLDs in the future). We therefore also present alternative measure of registration activity: growth rates. Figure 7 below plots monthly growth rates for each of the above five legacy TLDs with .biz, .info, .net, and .org again grouped together.

Figure 7
Legacy TLD Registration Growth Rates



Notes:
[1] Growth rates are calculated as total registration count in month n less total registration count in month n – 1 divided by total registration count in month n – 1.
[2] Top five legacy TLDs by volume are included.

Sources:
[1] Registration volume data were obtained from March 2016 monthly transaction reports provided to ICANN by operating registries.
[2] New gTLD entrance dates collected from ICANN's website; https://newgtlds.icann.org/en/program-status/sunrise-claims-periods

From this graph, we see that the growth rates of these legacy TLDs generally do not appear to have been affected by the entry of new gTLDs. There is a large uptick in legacy TLD growth rates in November 2015, however, the general trend since the entrance of the new gTLDs has been steady rates close to zero.

While we see that growth rates and registration trends for legacy TLDs do not yet suggest any reduction in registrations related to the New gTLD Program, it is important to note that since legacy TLD registrations have not fallen and new gTLD registrations are growing, overall registration activity has increased since the date on which new gTLDs first entered. As such, output, where output is measured by the total number of registrations, has increased.

It is possible that the introduction of new gTLDs affects legacy registration rates differently across regions and countries. In Table 12, we examine how regional TLDs that are targeted at registrants from certain geographic areas (e.g., .nyc) affect registrations made in legacy TLDs and other new gTLDs. Table 12 shows the average monthly registration counts in new gTLDs and legacy TLDs, respectively, for geographic areas associated with several regional TLDs that began their general availability period in 2014. Across nearly all regions, we observe a decline in new registrations after the entry of a relevant regional TLD, which suggests that regional TLDs may be viewed as substitutes for other new gTLDs and legacy TLDs. Although these results are suggestive, they do not measure a causal relation between the entry of a geo-TLD and changes in registrations of other TLDs.

Table 12
Change in Average Monthly Registration by TLD Type After the Entry of a Regional TLD

Regional TLD[1]			New gTLDs				Legacy			
gTLD	Region	Entry Date[2]	Before[3]	After[4]	Abs. Change	% Change	Before[3]	After[4]	Abs. Change	% Change
.berlin	Berlin	3/18/2014	140.0	5.3	-134.7	-96.2%	136	127	-9	-7%
.capetown	Capetown	11/4/2014	5.0	2.8	-2.2	-43.6%	44	31	-14	-31%
.cologne	Cologne	8/26/2014	106.6	18.4	-88.2	-82.7%	1,623	364	-1,259	-78%
.hamburg	Hamburg	8/27/2014	16.1	3.3	-12.8	-79.5%	85	70	-15	-17%
.london	London	9/9/2014	26.9	9.0	-17.9	-66.7%	314	261	-53	-17%
.nyc	New York City	10/8/2014	14.9	7.8	-7.1	-47.5%	418	357	-61	-15%
.quebec	Quebec	11/18/2014	7.5	5.0	-2.5	-33.7%	179	167	-12	-7%
.scot	Edinburgh	9/23/2014	3.6	1.9	-1.6	-45.5%	25	18	-7	-29%
.scot	Glasgow	9/23/2014	5.2	2.4	-2.8	-54.4%	22	18	-5	-21%
.tokyo	Tokyo	7/22/2014	2.9	11.5	8.6	299.2%	22	109	87	389%
.vegas	Las Vegas	8/14/2014	12.4	4.1	-8.3	-66.9%	218	191	-27	-12%

Notes:

[1] Regional TLD refers to the region-specific gTLD assigned to a given area. Regional TLDs are matched to areas based on a correspondence between a city name and the regional TLD name (e.g., City of New York = .nyc).

[2] Regional TLD Entry Date refers to a given regional TLD's general availability date.

[3] Figures in the "Before" column refer to the average number of TLD registrations of legacy and new gTLDs, respectively, before the general availability date of the area's regional TLD.

[4] Figures in the "After" column refer to the average number of TLD registrations of legacy and new gTLDs, respectively, after the general availability date of the area's regional TLD.

[5] This analysis only includes TLDs in city-level regions with registration data before and after the general availability date of the area's regional TLD.

Source:

[1] Monthly data on new registrations by TLD and region from January 2014 to January 2016 were provided by DomainTools.

SECTION V – CONCLUSIONS

Our Phase II Assessment describes how the competition metrics established in the Phase I Assessment have changed (or remained the same) as the New gTLD Program has expanded in the past year. As only one year has passed since our initial assessment and the New gTLD Program continues to introduce new gTLDs, the marketplace for domain names will continue to change in the future. It should also be noted that our analyses are descriptive in nature and do not measure the causal impact of the New gTLD Program on competition.

While we are unable to draw conclusions about whether the New gTLD Program has caused a change in competition in the domain name marketplace, we have observed some changes in the past year that are consistent with what one would expect to see in a marketplace with increased competition. For example, we see a decline in the share of new gTLD registrations attributable to the four and eight registries with the most registrations. We also see volatility in the registration shares held by registry operators. This may be due to the entry of new gTLDs being offered by new registry operators or general volatility in the marketplace. Consistent with the first explanation, we see that when new gTLDs enter the marketplace, there is a decline in the registration shares of other new gTLDs within the same topic or subject area. One might also expect that increased competition among new gTLD registry operators would result in lower new gTLD wholesale prices, which we do not observe.

We observe similar volatility in new gTLD registration shares made by registrars, with the largest registrar in the Phase I Assessment dropping out of the top 15 registrars ranked by total domain registrations and being replaced by a registrar whose share of new gTLD registrations increased by nearly 22 percent. Registrars located in China have also become more prevalent among registrars with the largest shares of new gTLD registrations. We also observe that retail prices and markups have declined since Phase I, consistent with increased competition.

We also have evaluated how the entry of new gTLDs is related to the registration activity of other TLDs, such as legacy TLDs. Since legacy TLD registrations have not fallen and new gTLD registrations are growing, total TLD registration has increased since the beginning of the New gTLD Program. In both our Phase I and Phase II Assessments, we found no aggregate (worldwide) effect of new gTLD entry or registrations on legacy TLD registrations: registrations of legacy TLDs continued to follow the same pattern before and after the beginning of the New gTLD Program. This is consistent with new gTLDs generally not being treated as substitutes for legacy TLDs. We then analyzed if the entry of regionally-specific TLDs (e.g., nyc) is related to other TLD registration activity by registrants in the regional TLD's geographic area. We typically observe a decline in new gTLD and legacy registrations after the entry of the regional TLD in the region relevant to that TLD, which suggests that regional TLDs may be viewed as substitutes for other new gTLDs and legacy TLDs. We however do not have sufficient data to fully analyze the substitutability of new gTLDs for the legacy TLDs.

EXHIBIT KM-25

FORM CD-451
(REV. 12-14)

U.S. DEPARTMENT OF COMMERCE

GRANT X COOPERATIVE AGREEMENT

AMENDMENT TO FINANCIAL ASSISTANCE AWARD

AWARD NUMBER
NCR-92-18742

CFDA NO. AND NAME
11.- National Telecommunications and Information Administration

PROJECT TITLE

RECIPIENT NAME
VeriSign, Inc.

AMENDMENT NUMBER
35

STREET ADDRESS
12061 Bluemont Way

EFFECTIVE DATE
October 26, 2018

CITY, STATE ZIP
Reston, Virginia 20190-5684

EXTEND PERIOD OF PERFORMANCE TO
(IF APPLICABLE)
November 30, 2024

COSTS ARE REVISED AS FOLLOWS:	PREVIOUS ESTIMATED COST	ADD	DEDUCT	TOTAL ESTIMATED COST
FEDERAL SHARE OF COST	$0.00	$0.00	$0.00	$0.00
RECIPIENT SHARE OF COST	$0.00	$0.00	$0.00	$0.00
TOTAL ESTIMATED COST	$0.00	$0.00	$0.00	$0.00

REASON(S) FOR AMENDMENT

The Department and Verisign have mutually agreed to certain modifications to the Cooperative Agreement as set forth in the Special Award Condition. Except as modified by this Amendment, the terms and conditions of the Cooperative Agreement, as previously amended, remain unchanged.

This Amendment Document (Form CD-451) signed by the Grants Officer constitutes an Amendment of the above-referenced Award, which may include an obligation of Federal funding. By signing this Form CD-451, the Recipient agrees to comply with the Amendment provisions checked below and attached, as well as previous provisions incorporated into the Award. If not signed and returned without modification by the Recipient within 30 days of receipt, the Grants Officer may unilaterally withdraw this Amendment offer and de-obligate any associated funds.

X SPECIAL AWARD CONDITIONS

LINE ITEM BUDGET

OTHER(S)

SIGNATURE OF DEPARTMENT OF COMMERCE GRANTS OFFICER
SCOTT MCNICHOL Digitally signed by SCOTT MCNICHOL Date: 2018.10.26 11:52:09 -06'00'

DATE
10/26/2018

TYPED NAME, TYPED TITLE, AND SIGNATURE OF AUTHORIZED RECIPIENT OFFICIAL
D. James Bidzos, CEO

DATE
10/26/18

Award Number: NCR 92-18742
Federal Program Officer: Vernita Harris
Employee Identification Number: 943221585
Dun & Bradstreet No.: 883894040

Award ACCS Information

Award Contact Information

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Special Award Conditions NCR-92-18742

Amendment Thirty-Five (35)

WHEREAS, pursuant to Amendment 34, the Department has reviewed whether to extend the term of the Cooperative Agreement and has determined that it is in the public interest to extend the Cooperative Agreement on the terms set forth herein;

WHEREAS, the parties agree that Verisign shall continue to operate the .com registry in a content neutral manner and will participate in ICANN processes that promote the development of content neutral policies for the operation of the Domain Name System (DNS);

WHEREAS, the Department finds that ccTLDs, new gTLDs, and the use of social media have created a more dynamic DNS marketplace;

WHEREAS, given the more dynamic DNS marketplace, the Department has determined that it is appropriate to amend the Cooperative Agreement to provide pricing flexibility for the registration and renewal of domain names in the .com registry;

WHEREAS, the parties have agreed to clarify that it was, and remains, the intention of the parties that the vertical integration restriction on Verisign's ability to own a registrar apply only to the .com registry and not to the other services offered by Verisign;

WHEREAS, the Department has reviewed the regulatory oversight necessary to ensure the security, stability and resiliency of the .com registry and to ensure that .com domain name registrations are offered at reasonable prices, terms and conditions;

WHEREAS, given this regulatory review, the Department has determined it is appropriate to remove certain unnecessary and burdensome regulations while still maintaining sufficient oversight by retaining the Department's approval authority for changes to the .com Registry Agreement for the following critical terms of the .com Registry Agreement: pricing; vertical integration; renewal or termination; functional and performance specifications; and the Whois Service;

THEREFORE, Verisign and the Department agree as follows:

1. **Content Neutral Operations**. The parties agree that Verisign will operate the .com registry in a content neutral manner and that Verisign will participate in ICANN processes that promote the development of content neutral policies for the operation of the DNS.

2. **Pricing Flexibility**. In recognition that ccTLDs, new gTLDs, and the use of social media have created a more dynamic DNS marketplace, the parties agree that the yearly price for the registration and renewal of domain names in the .com registry may be changed in accordance with the following:

   a. Without further approval by the Department, at any time following the Effective Date of this Amendment 35, Verisign and ICANN may agree to amend Section 7.3(d)(i) (Maximum Price) of the .com Registry Agreement to permit Verisign in each of the last four years of every six year period, beginning two years from the Effective Date of this Amendment 35 (i.e., on or after the anniversary of the Effective Date of this Amendment 35 in 2020-2023, 2026-2029, and so on) to increase the Maximum Price charged by Verisign for each yearly registration or renewal of a .com domain name up to seven percent over the highest Maximum Price charged in the previous calendar year.

   b. Section 2 of Amendment 32 which implemented the prior pricing restrictions is hereby deleted.

3. **Vertical Integration**.. The parties hereby clarify that the restrictions on Verisign's ownership of any ICANN-accredited registrar(s) were, and remain, intended to apply solely to the .com registry and therefore Verisign and ICANN may agree to amend the .com Registry Agreement to clarify its terms in accordance with the following:

   a. Without further approval by the Department, at any time following the Effective Date of this Amendment 35, Verisign and ICANN may amend Section 7.1(c) (Restrictions on Acquisition of Ownership or Controlling Interest in Registrar) of the .com Registry Agreement to provide that the ownership restriction therein relates solely to the .com TLD and does not prevent Verisign from owning a registrar except as to .com.

4. **Continued Department Oversight**. The Department has determined it is appropriate to remove certain unnecessary and burdensome regulations while still maintaining sufficient oversight by retaining the Department's approval authority for certain changes to the .com Registry Agreement in accordance with the following:

   a. Department approval was previously required for changes to certain terms of the .com Registry Agreement defined as "Designated Terms" under Section 1.B.2.A(ii) of Amendment 19, as amended by Section 2 of Amendment 30 which is hereby deleted in its entirety, as well as, all references to "Designated Terms" in Amendment 30.

b. The parties agree that the following terms are the sole terms in the .com Registry Agreement that require the prior written approval of the Department:
   i. Removal of the Maximum Price restriction under Section 7.3(d)(i) (Maximum Price) of the .com Registry Agreement, which by way of clarification will continue to be subject to Section 3(a) of Amendment 32 setting forth the standard and process for removal;
   ii. Any change to Section 7.3(d) of the .com Registry Agreement which sets forth the Maximum Price restrictions (other than as agreed as set forth in Section 2 (Pricing Flexibility) in this Amendment 35);
   iii. Any change to Section 7.1(b) (Registry Operator Shall Not Act as Own Registrar) and 7.1(c) (Restrictions on Acquisition of Ownership or Controlling Interest in Registrar) of the .com Registry Agreement, which set forth the vertical integration restrictions on Verisign owning or acting as a registrar, respectively (other than as agreed as set forth in Section 3 of this Amendment 35);
   iv. Any changes to the security, stability and resiliency posture of the .com TLD as reflected in the functional and performance specifications under Section 3.1(d)(ii) or Appendix 7 (Functional and Performance Specifications) of the .com Registry Agreement;
   v. Any change to the conditions for renewal or termination under Sections 4.2 (Renewal), 4.3 (Failure to Perform in Good Faith) or 6.1 (Termination by ICANN) of the .com Registry Agreement;
   vi. Any changes to the Whois Service under Sections 3.1(c)(v) (Whois Service) or Appendix 5 (Whois Specification), except as such changes are mandated by ICANN through Temporary or Consensus Policies.

c. The Department's approval of any amendment to the .com Registry Agreement, or the renewal, extension, continuation or substitution of the .com Registry Agreement, shall not be required unless Verisign seeks to change a term identified in Section 4(b)(i)-(vi) of this Amendment 35, except as already approved under Sections 2 and 3 of this Amendment 35.

d. Upon application by Verisign for approval of such change or changes identified in Section 4(b) of this Amendment 35, the Department shall consult with Verisign in any evaluation of its application. The Department shall issue a written decision explaining its reasons for granting or denying, in whole or in part, such application within ninety (90) days after submission of its application, or within 90 days after receipt of any additional materials requested by the Department to evaluate the application, whichever date is later. If the Department determines that additional time is needed to complete its review, then the parties shall agree to an extension of time for six months or such other reasonable time as the Department and Verisign may agree. After receiving any written notice of failure to approve, Verisign shall be entitled to confer with the Department. After conferring with the Department, Verisign may propose for the Department's approval one or more new or revised proposals. The Department's review of an initial application or new or revised proposals shall: (x) for applications to change pursuant to Section 4(b)(i) above, be in accordance with the standard set forth in Amendment 32, Section 3(a); (y) for applications to make any other changes as set forth in Sections 4(b)(ii)-(vi) above, be made by determining whether such change or changes are reasonably necessary to promote the public interest in consideration with the business necessity of the requested change. Any review and approval by the Department of any request under this Section shall not be unreasonably withheld. The Department's pending approval for any change to the .com Registry Agreement under Section 4 of this Amendment 35 shall not prevent Verisign and ICANN from entering into an amendment to the .com Registry Agreement, for its renewal, extension, continuation or substitution, without such change.

5. **Miscellaneous.** The following provisions are intended to ensure that the parties' intent in this Amendment 35 is reflected consistently throughout the Cooperative Agreement.

   a. As the parties have agreed to the standard of review for any proposed changes to the .com Registry Agreement requiring the Department's approval in Sections 4(b)(i) and 4(d) of this Amendment 35, the parties hereby delete the last sentence of Section I.B.2.A(iii) of Amendment 19, as amended by Section 2 of Amendment 30 that set forth the conflicting standard of approval being in the Department's sole discretion.

   b. As the parties have agreed to the timeframe for review of any proposed changes to the .com Registry Agreement in Section 4(b) of this Amendment

35, the parties hereby delete Section 3(b) of Amendment 32, which set forth the timeframes for evaluation of an application to remove pricing restrictions.

c. As the parties have identified the sole terms in the .com Registry Agreement that require the Department's prior written approval, the parties hereby revise Section 1.B.2.A(iv) of Amendment 19, as amended by Section 2 of Amendment 30, to apply solely to those terms identified in Section 4(b) of this Amendment 35.

d. As the parties have addressed the renewal of the .com Registry Agreement and because the Department's recognition of ICANN is no longer relevant, Section 1.B.9(ii) and (iii) of Amendment 19, as amended by Section 3 of Amendment 30, are hereby deleted.

6. **Expiration Date**.

a. Section 1.B.10 of Amendment 19, Expiration Date, as amended by Section 4 of Amendment 32 is amended as follows:

"The current term of the Cooperative Agreement shall continue through November 30, 2024, and shall automatically renew for six-year terms, unless the Department provides Verisign with written notice of non-renewal within one hundred twenty days (120) prior to the end of the then current term ("Expiration Date"). Notwithstanding anything in the Cooperative Agreement to the contrary, the Department and Verisign agree that: (i) upon expiration or termination of the Cooperative Agreement, neither party shall have any further obligation to the other and nothing shall prevent Verisign from operating the .com TLD pursuant to an agreement with ICANN or its successor; and (ii) neither party may amend the Cooperative Agreement without the mutual written agreement of the other."

b. Section 2 of Amendment 34 is hereby deleted.

7. **Antitrust Immunity**. The Department's approval of this Amendment 35 is not intended to confer federal antitrust immunity on Verisign with respect to the .com Registry Agreement.

8. **No Other Amendment**. Except as modified by this Amendment 35, the terms and conditions of this Cooperative Agreement, as previously amended, remain unchanged.

EXHIBIT KM-26

Expert roundup: What’s next for the new TLDs in 2016?

2016-01-04

Happy new year! Looking back at 2015 it was an exciting year for the new top level domains (TLDs) such as .club, .link and .london. We reached 11M domain registrations, hundreds of new TLDs were released, celebrities and businesses adopted these new web addresses and the aftermarket sales increased. It can be discussed whether the new domain extensions had their break-through year. Personally I think there was immense progress on 2014, when it comes to awareness and usage, but I'm sure that there is a lot more to come. So what will happen with the new TLDs in 2016?

16 industry experts discuss the new TLDs in 2016

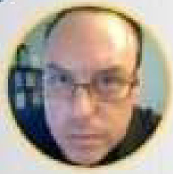
This post will try to answer the question. We asked 16 leading industry experts to share their predictions for what's to come. We delve into various topics from the boom in the Chinese domain market to the development (or lack of) of the dot brands.

We got some great answers from a wide area of expertise ranging from representatives from the new TLD registries (Donuts, Neustar, Rightside, DotClub, DotBuzz, Dot Ski, Dot Tickets, nic.br), domain registrars (101Domain, Blacknight Solutions), domain investors (Konstantinos Zournas) and consultants in the fields of domain names, branding and SEO (Bill Hartzer, Joseph Peterson, Jean Guillon, Kathy Nielsen, Christa Taylor).

The experts' seven new tld topics for 2016

Seven big topics were identified during the conversations. You can check some of the best quotes in the following infographic. In the following I have extracted some of the many quotes to give you an easy overview. For an in-depth analysis of all the topics read the full interviews after this section.

What's next for the new TLDs in 2016?



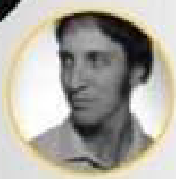
"No brand has yet truly stepped up and embraced their .Brand web address...I'll stick my neck out and predict that in 2016 we'll finally see that happen"

Jeff Sass, *.CLUB Domains*

"In 2016, Google will move from google.com to search.google. From gmail.com to mail.google, calendar.google.com to calendar.google"

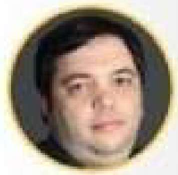
Sean Ottey, *Rightside*

THE CHINESE DOMAIN MARKET



"Aftermarket prices for domains in China will reach a plateau or even correct downward at some point during 2016...New TLDs will be hit much harder than established extensions"

Joseph Peterson



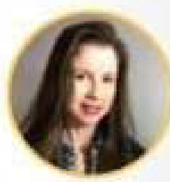
"...All of a sudden Chinese investors get all interested in a TLD, and not because of specific business development targeted at China"

Rubens Kuhl, *nic.br*

MARKETING AND AWARENESS

"In 2016, I strongly believe we will start to see ads using new domain names in the street of Europe"

Jean Guillon, *Jovenet Consulting*



"New gTLDs that bundle additional services such as an 'easy setup' website will boost traction while cultivating further growth"

Christa Taylor, *DotTBA*

"Some of the industry will be shifting to a more commercial focus from the previously held policy and technical concerns"

Tony Kirsch, *Neustar*

"New models will emerge and gain traction, more specific and targeted to the industries and niches they represent"

Kathy Nielsen, *DigitalStrategies.Marketing*

NEXT ROUND

"We still won't know when round 2 will begin"

Rob Rozicki, *Dot Ski*

THE NUMBERS GAME

"I could easily see us reaching the 25M registrations in 2016"

Bill Hartzer, *Globe Runner*

"New top level domain registrations soar toward 100 million as mass brand adoption, development and education efforts gain traction"

Bill Doshier, *DotStrategy*

1. Acquisitions in the domain industry

In 2015 we started to see the industry consolidate with a couple of huge acquisitions: Afilias bought 101Domain, Neustar acquired AusRegistry and CentralNic took over Instra. The experts agree: "Expect more deals in 2016". "In 2016 I suspect we'll see one or two new TLD registries fail and be acquired by either one of the portfolio applicants or a big backend operator such as Afilias or Neustar" (Michele Neylon). "Verisign will start buying new gTLD registries" (Rob Rozicki). "Most new TLDs have unsupportable business models and economics, and we will see the first wave of consolidation as registries start going bust and getting snapped up by the stronger players" (Gary Fisher). "I anticipate additional consolidation in the domain name industry" (Mason Cole). "In 2016, industry consolidation occurs through numerous registry acquisitions" (Bill Doshier).

2. New TLD launches

We're still waiting for some of the most anticipated TLDs: .shop, .blog, .app, .web.... They will appear in 2016 according to the experts. Especially .web has been followed with interest, since this is Rick "The Domain King" Schwarz' favourite in the new TLD space.

"Highly contended new TLDs should enter general availability during 2016" (Michele Neylon). "I believe remaining gTLDs in contention will sell for record amounts" (Mason Cole). "I'm on record as saying that .web will be a great new gTLD, so I suppose I should stick with that as my prediction for top release in 2016" (Joe Alagna). ".Web is a good extension but the future of New gTLDs does not depend on .web and .web is not going to be a game changer...The New gTLD program is about more options and better left.right combinations. I would prefer credit.cards over creditcards.web any day of the year" (Konstantinos Zourna

3. The future of Dot Brands

Barclays Bank went all-in and skipped their .com for Dot Brand in 2015. They can now be found at Home.Barclays. There were small bleeps from other dot brand owners, but nothing as significant. Will 2016 be the year of Dot Brand? Answers were very disperse, but many believed that something big will happen. "Many of the big brands finally unveil more public uses of their extensions and it'll be fun to see what they come up with" (Michele Neylon). "No brand has yet truly stepped up and embraced their .Brand web address as a highly visible call to action in major ad campaign. That's the move that has the potential to be a real "twerking moment" for our industry, and I'll stick my neck out and predict that in 2016 we'll finally see that happen" (Jeffrey Sass). "I predict we'll see a greater volume of brands moving to use their TLDs as they recognise the value of owning their own digital ecosystem" (Tony Kirsch). "I think that you'll see many more sites go live with .brands as their marketing departments catch up to the value of short, catchy domains for landing pages and campaigns" (Rob Rozicky). "I suspect that we'll see at least two dozen launch their Dot Brand TLDs during 2016" (Bill Doshier). "Luxury trademarks who invested so much money in their .BRAND will "wake up" and start to demonstrate their capacity to innovate using their new domain names" (Jean Guillon). "In 2016, Google will move from google.com to search.google. From gmail.com to mail.google. calendar.google.com to calendar.google" (Sean Ottey). "I'm sure we'll see many of the dot brand applicants forwarding to their primary sites this year but I have a feeling that true adoption is going to take much more time" (Joe Alagna). "In the brand arena, financial organisations will keep being the early adopters, but in 2016 we will probably see media groups (BBC, NHK etc.) start moving as well" (Rubens Kuhl). ".Brands will begin to launch at a faster pace and be more public with their use of new domains" (Kathy Nielsen).

4. The Chinese domain market

The Chinese domain boom was under the radar until Michael Berkens on the 27th Oct. published the post I Spend Over 2 Hours a Day Answering Offers From China. From that day on the Chinese domain market went crazy, especially when it comes to .com domains. However we also saw a surge in new TLD registrations. What impact will the Chinese market have on new TLDs in 2016? "I’ll predict that in 2016 China remains a very strong and important market for .CLUB and other new domain extensions" (Jeffrey Sass). "Aftermarket prices for domains in China will reach a plateau or even correct downward at some point during 2016, preceded by a deceleration in the pace of speculative registrations. In a downturn, new TLDs will be hit much harder than established extensions" (Joseph Peterson). "In 2016, I could see the Chinese domain investors continuing to invest in more domains, especially in certain new gTLD domains" (Bill Hartzer). "I have no doubt that the Chinese domain awakening will continue throughout the coming year" (Joe Alagna). "2016 will feature some instances of the China unknown where all of sudden Chinese investors get all interested in a TLD, and not because of specific business development targeted at China" (Rubens Kuhl). "A few TLDs seem to be surfing this Chinese wave – notably .TOP, .WIN, .WANG, .XYZ, and .CLUB. Crucially, those are now the top 5 nTLDs by volume. That said, those counts are swollen with near-free giveaways, which at full price may not be renewed" (Joseph Peterson).

5. New TLD marketing and awareness

It's acknowledged that there still is a huge awareness gap in the market, when it comes to the new TLDs. Will 2016 be the year when everyone goes all-in on marketing the new extensions? "Some of the industry shifting to a more commercial focus from the previously held policy and technical concerns" (Tony Kirsch). "I expect to see more new domains in print, online and in broadcast media" (Mason Cole). "Strong TLDs that are easily understood by registrants or have been sufficiently promoted so registrants recognize the TLD will continue to grow and receive the greatest, and most deserved, benefits from industry growth...New gTLDs that bundle additional services such as an ‘easy setup’ website will boost traction while cultivating further growth." (Christa Taylor). "In 2016, I strongly believe we will start to see ads using new domain names in the street of Europe" (Jean Guillon). "New models will emerge and gain traction, more specific and targeted to the industries and niches they represent" (Kathy Nielsen). "Registries will increasingly seek out promising online projects and offer to back them. That will mean branding them with premium nTLDs for the sake of co-promotion – possibly even support beyond a free domain" (Joseph Peterson).

6. What about the next round of nTLD applications?

When will ICANN open up the window for the next round of applications? "We still won't know when round 2 will begin" (Rob Rozicki). "ICANN announces top level domain registry application round two is postponed spurring a malady referred to as RHAA" (Bill Doshier).

7. The numbers game

2.5M registrations at the end of 2014. 11M at the end of 2015. How many new TLD registrations at the end of 2016? "I could easily see us reaching the 25M registrations in 2016" (Bill Hartzer). "I suspect that we'll see double digit growth in the new gTLD space in 2016" (Joe Alagna). "I predict that by the end of the 2016 the 80/20 rule will apply with the top 20% of new gTLDs receiving 80% of both revenues and registration volumes" (Christa Taylor). "New top level domain registrations soar toward 100 million as mass brand adoption, development and education efforts gain traction" (Bill Doshier).

Predictions from the domain industry insiders

Michele Neylon, CEO and founder at Blacknight Solutions

In 2016 I suspect we’ll see one or two new TLD registries fail and be acquired by either one of the portfolio applicants or a big backend operator such as Afilias or Neustar. That’s assuming of course that the registry(s) in question is viable under a revamped marketing plan and focus. To date some of the new TLD operators have made some very strange assumptions about how their TLDs would be adopted and what price point the market would bear. We’ve also seen that many of TLD operators haven’t been investing in marketing their extensions with the exception of .club and one or two others. The end result of these false assumptions and lack of investment has been lacklustre adoption by the public. Some of the more highly contended new TLDs should enter general availability during 2016. Domain extensions like .blog and .app are more likely to garner attention from mainstream media and the general public than many of the existing domain choices on the market. Being able to offer a .blog domain name to a business or individual is an easy sell, as the domain extensions speaks to its purpose. A lot of big brands have acquired their own TLDs. Up until now most of them have done very little with them, with the exception of Sony and one or two others. 2016 could be the year that many of the big brands finally unveil more public uses of their extensions and it’ll be fun to see what they come up with. I don’t, however, think that big brands are going to switch all of their online presence over to new TLDs. What we should see is a greater usage of new TLDs for specific campaigns and scenarios. Whether this will have an impact *on the wider usage and adoption of new TLDs is hard to say, though it definitely won't have a negative impact.*

Konstantinos Zournas, domain investor at OnlineDomain.com

It seems that the latest domain name buying spree from Chinese buyers has taken over the whole domain name industry. The whole .com vs New gTLDs debate has been put a bit to the side with domain investors focusing on "liquid" domains, shorts and numerics, wholesale prices and portfolio sales. But the Chinese phenomenon has taken over New gTLDs as well with a lot of .club numeric domain names being registered and many registry and secondary market sales happening in the past 2 months. The Sold.Domains website is reporting all these public New gTLD domain sales. Rick Schwarz has been vocal lately mostly praising .web and not paying attention to most of the other New gTLDs except those with high numbers. Although he makes some valid points I don't fully agree with him. .Web is a good extension but the future of New gTLDs does not depend on .web and .web is not going to be a game changer. .Web is contested and it is more than certain that the high auction price paid for the extension will lead to more reserved domain names and more expensive renewals. The New gTLD program is about more options and better left.right combinations. I would prefer credit.cards over creditcards.web any day of the year. Even if .cards has 5,000 domain name registrations and .web has 500,000 or 1 million after its first year. The number of New gTLD domain name registrations does not determine the future of the New gTLD program. But it might determine the future of a few small registries. .Brands will help with a boost in awareness and credibility that the New gTLDs are lacking at the moment. The whole New gTLD program is not about finding the next .NET or the top 5 most registered extensions. It is about finding good domains that work no matter what the extension is. Even in New gTLDs most of the good or average domain names are either gone in seconds after launch or reserved by the registry. The domain name industry should focus on building a New gTLD secondary market that is easy to understand by end users, is centralized and has enough good options for people to choose from.

Kathy Nielsen, founder of DigitalStrategies.Marketing

I've been very fortunate over the past several years to have participated in the planning and introduction of several new TLDs from a variety of angles and with greatly varying business objectives and goals. 2016 is going to be an easy year for predictions, the only difficult part is to narrow it to just three. I'll give it a shot, here are my picks.

1. *.Brands will begin to launch at a faster pace and be more public with their use of new domains. Brands that missed out on the first round will certainly take notice and start to investigate their own participation in round 2.*
2. *Overall, registrations of new gTLDs will continue to grow exponentially, registries will continue to focus on promotions that encourage development and usage of domains and that will lead to more new gTLD sites going live and being used publically. Increased use results in increased public awareness.*
3. *New models will emerge and gain traction, more specific and targeted to the industries and niches they represent. These are not always very visible to us in the domain name industry*

as these registries are not marketing via the traditional domain name marketing channels. They are highly focused within their industries, reaching out, educating and showing the value they can provide directly to the end user. They are not focused on getting on the front page of the biggest registrars and marketing to a mass, generic audience. Theses industry focused TLDs very specifically and methodically define their audience and methods to reach them directly. Overall, the increased visibility will support a confidence with consumers - website visitors. With every public story of a new .brand in use or major company using a new TLD, the public perception and awareness should grow in a positive way. The alphabet.xyz story went a long way to support the new gTLDs in 2015 and almost everyone I asked, outside the industry, was aware of this naming story. There is still a long way to go and I believe we're in the very early stages, but new domains are starting to make a dent and will only go up from here! What will be the successful launch formula in 2016? Keep it simple. Your biggest ally in a launch is your reseller channel. Unless you have a built in audience of customers that will buy from you without question, and you can easily reach them, you will rely heavily on your reseller channel. It's not a one stop play. Resellers are not the only piece that you need. You must define your TLDs value to the consumer, and let them know what that value means to them. Without the registry marketing, directly or indirectly through your registrar partners, your domains will likely sit on the shelf. Let me step back briefly to address a point. I've talked to many new registries over the years that think it is easy to reach their ideal customer and sell directly. I can tell you that it is not. It is extremely difficult. I'm sure there are registries that have innovative models and can pull this off, but I just want to say that this is one of the biggest misconceptions I've seen with new registry launches. If your TLD has open registration policies, you need to work with and support your registrar partners. They are your global reach. Create a simple plan, then focus on that plan 100%. If you do not plan well, or try to accomplish a million different things with a complex plan, you will waste a lot of time, be scattered and your message will likely come across the same. Plan smart, know your target audience and simply focus. Words from my extremely well respected former colleague.

Jeff Sass, CMO at .CLUB Domains LLC

*When looking forward to 2016 (relative to the continued introduction of hundreds of new domain extensions), one thing remains clear. It is definitely a marathon and those who thought that new domains would sprint to success are having to re-think their approach to the race. 2015 was a great year and a lot of progress was made, but in some respects there were also not too many changes from 2014. In particular, the "dot Brands" continue to move very slowly and take baby steps, rather than dive headfirst into active, promoted use of their new domain extensions. Barclays Bank has been a leader. Sony experimented with **AssistMoneypenny.***

***Sony** and there are a few other examples here and there, but no brand has yet truly stepped up and embraced their .Brand web address as a highly visible call to action in major ad campaign. That's the move that has the potential to be a real "twerking moment" for our industry, and I'll stick my neck out and predict that in 2016 we'll finally see that happen. Ending the year with over 11 million registrations across the board is great progress, especially with the year-end burst of activity from China for a number of extensions, including .CLUB. The demand for .CLUB from China pushed us ahead of our 2015 goals both in registration numbers and premium name sales. We invested heavily to build relationships and a brand in China over the past two years, and when* *the market opened up this year for short names and numerics we were ready. We also benefit from the fact that the word "Club," in English, is widely used and maintains its meaning in China (and globally). In 2016 we expect the demand in China to continue, but there will also potentially be a shift as registries begin to receive government approval for websites to be hosted in mainland China using their extensions. We expect .CLUB to be among the first Western registries to obtain such approval, and that will open up opportunities for small businesses and entrepreneurs to begin using new domain names and increase the value for domain investors while opening a broader marketplace. With that in mind, I'll predict that in 2016 China remains a very strong and important market for .CLUB and other new domain extensions. Lastly, there are still a number of potentially high profile new domain extensions that should come to market in 2016, and it will be interesting to see what happens when much anticipated names like .Shop, .App, and .web are put to use. They will be entering a market that, while certainly still in its infancy, has grown up a lot since the first waves of new extension releases. In particular, registrars are not as backlogged by weekly new releases. Merchandising methods are evolving, as are pricing models. Many different approaches to Sunrise and Landrush, and premium name sales have been tried, with varying results. If in 2014 we were newborns, and in 2015 we were infants, perhaps in 2016 we'll become toddlers and truly start taking our first big steps forward.*

Joseph Peterson, Branding Consultant and writes about expired domains at DomainNameWire

2016 will be a year of reassessment, of taking stock and cutting losses, of drawing conclusions, of sifting the wheat from the chaff. By now we have a sense for how the market will use these new domain endings, how much it wants them, and how slowly it absorbs them. New nTLDs may try the same tactics old nTLDs employed during their launches – but with diminishing returns. Been there, done that. Domain investors as well as mainstream consumers are more discerning than before, given 2 years of experience. Frankly, domainers are tired of the parade of new TLDs, bored by lack of progress. Disagree? Then ask them! Quality > Quantity. As that realization begins to sink in, the domain industry will set about marketing TLDs more judiciously – planting them where they'll thrive instead of scattering them indiscriminately upon the wind. Registries have wasted as much as 2 years selling nTLDs to domain speculators for the sake of short-term growth. If they're to succeed in the future, however, they'll need to convince entrepreneurs not domainers and see to it that quality domains are placed with the best projects. That means a perpendicular change of direction. Pessimistic as this sounds, I think nTLDs deserve to succeed more than they have done; and I expect to see them embraced during 2016 more than ever. Granted, my expectations are quite modest compared to registry claims. Nevertheless, I've made 6 optimistic predictions at the end of this write up.Year of the Goat Within the domain industry during the latter half of 2015, the nTLD program had its thunder stolen by an unprecedented surge in the Chinese domain market. Nobody saw it coming. Indeed, English keywords and European city names comprise a disproportionately large percentage of the new TLDs, indicating that the establishment had anticipated demand from the West but had neglected or misunderstood China. Yes, multiple extensions released since the beginning of 2014 do target China – utilizing Chinese characters, in fact. But to the dismay of these registries especially, Chinese domain buyers have persisted in using the Latin alphabet. Worse still, the Chinese have been hungriest for legacy suffixes – .COM, of course, but also .NET and even .CC. As a result, Verisign reported 4.1 million new .COM / .NET domains midway through its 4th quarter. A few TLDs seem to be surfing this

Chinese wave – notably .TOP, .WIN, .WANG, .XYZ, and .CLUB. Crucially, those are now the top 5 nTLDs by volume. That said, those counts are swollen with near-free giveaways, which at full price may not be renewed. And even a rate of 11 million nTLD domains accumulated over the course of 2 years begins to look like a snail's pace beside the giant stride taken by full-priced .COM / .NET in a single month. It's as if nTLD registries planned a party; but most of their invited guests went instead to another soiree, thrown by an unheard of host. Am I gloating? No, hardly. I would even characterize the recent situation in China as unsustainable and unstable. But let me emphasize: Something went right for the Chinese sector – something the nTLD program has been struggling to get right in the West … and has so far failed at. Buried in this story of China are some important lessons for registries aiming at Western markets. 2 Years of Backwards Perceived reliable value is what matters. Sounds like a no brainer, doesn't it? But registries in a hurry to rack up domain registrations have missed the point. Value comes in 2 flavours: market value (which is what domain investors seek) and recognizable brand value (which is what entrepreneurs care about). The two march in tandem. Whichever TLDs are visibly used by a large number of quality brands, those are the TLDs with appreciable market value. In the long run, those are also the TLDs with enduring domain populations. Yet we've seen registries put the cart before the horse, tampering with registration volume directly through under-the-table schemes and $1 promotions that encourage domainer speculation but scarcely even aim at end-user adoption. They've been racing against one another to claim headlines in the domain blogosphere, attempting to secure a large number of renewal subscriptions regardless of customer quality. In practice, this has meant targeting a domainer audience, while shirking the hard work of cultivating mainstream audiences. That's understandable. Domainers are more accessible, fewer, require less convincing, and buy more domains per person than bona fide end users. For short-term profit, they're the obvious target. Many registries are operated by domainers who feel most comfortable marketing to their own community. Therefore they've plucked the low-hanging fruit and sown few seeds for future growth. Two years in, Frank Schilling still talks about an indefinitely far off future in which nTLD brands abound. Well, selling that dream of a future to domainers comes at the expense of putting nTLDs to use in the present. That's just 1 prominent example of a CEO concentrating on the reseller audience he's familiar with rather than cultivating end users. (They arrive unsolicited in order to buy premium domains, right?) Uniregistry is not alone in adopting this posture. Registries ought to be catalysts, encouraging the best online projects to adopt their TLD and add to its brand value. That would in turn elevate the TLD's market value, which incentivizes domain resellers to act as evangelists. Domainers would then find end users primed to adopt the TLD after seeing the success of earlier brands. In general, this hasn't happened. Perhaps 2016 will see a change for the better. FatigueWhen the Chinese domain market burst into flower during 2015, the seeds had been sown years earlier and taken root as prominent websites. In that sudden blossoming, domain investors worldwide felt a sense of excitement justified by a new opportunity for fast, large, easy sales. Bloggers finally had something to talk about other than first-day registration performance for the latest .HORSE trotting out of the gate. Let's face it, the industry was bored by the nTLD program after a year or 2 of repetitious rollouts and slower-than-expected end-user adoption. Domain investors, exhausted by the lack of sales, had begun to look elsewhere. Registries had tapped into their easiest customer base, domainers; and, after 2 years of experimenting in the red, domainers were tapping out. Recent nTLD growth has been driven by frothy China-focused speculation. Many observers, myself included, believe this may prove no more solid than a bubble. Obviously, the exuberant buyouts of numerics and "CHIPs" in TLD after TLD cannot continue indefinitely. At some point, the trend will fizzle out. Registries can't be blamed for making the *most of this sudden craze among domainers, but it's no substitute for a long-term strategy. Without end users to sell to, domainers will ultimately drop whatever has been registered so far. Quality > Quantity The question of how many nTLD domains will be registered by the end of 2016, interesting as it may be, is of more concern to registries and registrars than to my registrant clients – the people actually buying domain names. Sure, we can all guess. But pulling numbers out of thin air isn't my style; building a predictive model on a foundation of data, girded in definite assumptions – that would be. Without such a model, I see no real value in my forecast. Unless we discuss renewal rates for each individual TLD, timing of new TLD rollouts, variations in price structure, and the size of each TLD's plausible name space, then we have no basis for an estimate. Where volume is concerned, by far the 2 most important factors are (1) sale-price giveaways and (2) registry self-reservations. During the past 2 years, many new TLDs were offered at deeply discounted prices – often under $1 or even absolutely free. We also saw certain registries indirectly buy up large numbers of their own merchandise. Either they stuffed domains into customer accounts in order to inflate registration numbers, as we saw with .XYZ; or else they stocked up on inventory in order to conceal lack of demand and raise prices, which is the habit of Uniregistry. I stress these 2 factors because they affect registration volumes greatly yet arbitrarily. We cannot predict the whims of companies. Tomorrow some TLD might suddenly grow by half a million if domains are forcibly inserted in people's accounts. Tomorrow North Sound Names might cease to act as Uniregistry's left hand, or it might register a million items. Tomorrow AlpNames might discontinue its dirt-cheap specials on TLDs from Famous Four Media; or it might (theoretically) go further and grant renewals under $1 on .SCIENCE, causing those to be renewed rather than drop. Such actions swing the numbers up or down so drastically that forecasting registration volume is almost a lost cause. Certainly, the numbers mean less than we expected they would 2 years ago. We ought to look at registration volume for particular nTLDs rather than an aggregate all nTLDs. The latter can only mislead us by concealing genuine success stories under a mound of market manipulation. A TLD ought to be judged in the context of its own price history, in light of its own age, and relative to the ideal size of its own name space. The same bare number of 100,000 would be a dismal failure for .WEB but an astonishing feat for a niche TLD like .CRICKET. Gaming the system only works for a short while. Eventually domainers catch on and disregard talk of volume because heavily manipulated numbers correlate badly with their investment return. Many end users do care about TLD popularity. But to the extent that registration volume matters, that's mainly a conservative argument steering us toward established suffixes like .COM / .ORG / .NET and local ccTLDs. In any case, consumers tend to gauge TLD popularity – appropriately enough – by the websites they've actually visited and not by claims about vast numbers of unseen domains. That's common sense. During 2014 or 2015, consumers might have believed they were about to be left behind by the "New TLD revolution". But after 2 years of hyperbole from the domain industry, 2 years in which new extensions promised to be game changers, the game hasn't changed. Henceforward, nTLDs must be sold on their merits; and end users marketing quality brands must lead the way. Predictions 1. nTLD domains will feature more prominently in the expired domain market. This will occur naturally as renewal dates pass by, coordination between registries and market places improves, and domainers learn what to watch for. Currently my weekly articles at DomainNameWire rarely include nTLD domains because notable auctions simply aren't happening. By year's end, I think it will be a rare week that doesn't show at least 1 nTLD result. I predict we'll see at least half a dozen 4-figure expired domains during 2016. New TLD registrations spike initially, but such interest is short-lived. Later, the expired domain market tells us all which domains are being abandoned and which remain resilient.*

What cannot be sold at auction in this way holds no wholesale value among domainers, and that doesn't bode well for retail prospects. Attention will turn to the expired market. After all, a year of second thoughts means far more than Day 1's hasty optimism. 2. Registries will increasingly seek out promising online projects and offer to back them. That will mean branding them with premium nTLDs for the sake of co-promotion – possibly even support beyond a free domain. While the registry may attempt to portray such deals as sales, what matters most is seeing the TLD in action. 3. As reported on DNJournal, nTLD sales by domainers (as opposed to registries) will triple the figures of 2014 and 2015 combined. 4. Aftermarket prices for domains in China will reach a plateau or even correct downward at some point during 2016, preceded by a deceleration in the pace of speculative registrations. In a downturn, new TLDs will be hit much harder than established extensions. As growth in this sector slows, domainers will return to nTLDs to look for opportunities. Registries that can point to end-user adoption and aftermarket sales will stand out. While I'm at it, here are a couple of private milestones that will (for me) represent a turning point in consumer awareness: 5. One of my clients will finally launch a new brand using an nTLD domain based on my recommendation, instead of insisting on .COM as most do. 6. For the first time, a client will hire me to negotiate the acquisition of an nTLD domain rather than to a .COM to match their earlier nTLD purchase.

Tony Kirsch, Head of Professional services at Neustar

With a high volume of recent delegations and some big names moving already to activate their TLDs, 2016 is shaping up to be the year of the .brand. I predict we'll see a greater volume of brands moving to use their TLDs as they recognise the value of owning their own digital ecosystem. The unprecedented access to data and the ability to evolve thinking around branding and digital marketing is already prompting many brands to begin planning for their TLD's rollout, as well as creating interest and pressure in a second round amongst those who missed out in the first instance. Outside of this, I predict the domain name industry will start to gain wider, mainstream media coverage; as well as seeing some of the industry shifting to a more commercial focus from the previously held policy and technical concerns. Read also Tony's extensive post at CircleID called 2016 Predictions: What to expect for the next year in new TLDs.

Rob Rozicki, co-founder of Dot Ski

Here are three predictions for 2016 when it comes to the new top level domains:

1. *We still won't know when round 2 will begin.*
2. *Verisign will start buying new gTLD registries.*
3. *Registration prices will rise. I don't think we'll reach 20 Million registrations by the end of 2016. Most TLDs that drive volume are already registered so there is not much left that can cause significant early volumes. We've also seen that unless a registry goes with a bargain bucket launch price the average volume of registrations at launches has been going steadily down. However we will see consistent growth in 2016 as new gTLDs drop the "new" and just become part of the domain ecosystem. Its not impossible to reach 20M in 2016 but I think it would also require registrars to put everything they have learnt on marketing and selling TLDs in their funnels into practice. I don't think there will be many (who will do as Barclays*

Bank and drop .com for their dot brand). I do however think that you'll see many more sites go live with .brands as their marketing departments catch up to the value of short, catchy domains for landing pages and campaigns. I think those TLDs that have really tried hard to lay the right ground work in marketing and awareness will succeed. People are waking up to the world past .com and if you've done this right work to be in front of your target customers, success is not far behind. Chinese investors are great at showing a bump in numbers or for catchy premium name headlines but I'm not sure how much quality they bring to the space. To all be successful we need usage of new gTLDs on the internet. The more usage, the more exposure and the bigger the growth. I don't think there is anything concrete that will impact growth, I think that registries need to focus on building their TLDs. Simplicity if the winning launch strategy (for a nTLD registry). Over complication has a really negative impact on launches. Keeping it simple for the user and registrar will make them more attractive.

Gary Fisher, co-founder and co-CEO at Accent Media Limited (The .tickets registry)

1. *I believe we'll see the first breakthrough brand with a new TLD in much the same way as amazon.com showed the potential for .coms in the mid 90s. My money is on broadway.tickets!*

2. *Most new TLDs have unsupportable business models and economics, and we will see the first wave of consolidation as registries start going bust and getting snapped up by the stronger players.*

Bill Hartzer, Senior Strategist at SEO agency Globe Runner

In 2016, I could see the Chinese domain investors continuing to invest in more domains, especially in certain new gTLD domains. This investment will drive more US domain investors to reconsider their investments, and perhaps start investing in more new gTLD domains. We'll see more companies start to move their websites away from .com for a better, more descriptive new gTLD domain. And finally, I predict that we'll see more digital marketers finally realize that recommending that their clients move to a better, more descriptive new gTLD domain (away from a lengthy dot com). They'll start to realize that the right new gTLD is better for branding, and better for SEM and SEO.

I could easily see us reaching the 25M registrations in 2016, especially as we'll see more brands start to move to their own Dot Brand domain. Once we see major brands start to use and promote their own Dot Brand domain, consumers will start to "hear about" and embrace the new gTLDs. The average consumer doesn't even know that the new gTLD exist yet, and I think Dot Brand is going to be the turning point to tip it over the edge, making new gTLDs more "household names" like .COM, .NET, and .ORG are. There are several hundred Dot Brand applicants that have been approved, and it's just a matter of time before they start using and promoting their Dot Brand. I won't make any predictions as to which ones will be launching their Dot Brand in 2016, but I suspect that we'll see at least two dozen launch their Dot Brand TLDs during 2016. In the case of .tickets, a premium pricing strategy works because of the particular industry and market. The *tickets industry as a whole is very competitive, and .tickets was perfect for that industry. With other new gTLDs, a certain industry hasn't been tied to the TLD, so it's made it more difficult to sell domains and get those domain owners to launch websites. I believe the key to having a successful new gTLD is encouraging website development. I believe a successful launch formula involves getting in front of your ideal domain buyer, not domain investors. Domain buyers who are actually going to move their site to a new domain on that nTLD or develop a new site on that domain. Once actual sites are being built and they start to be visible in an industry, others in the same industry, as well as competitors, will want to follow suit. The key to having a successful launch is connecting with domain buyers and explaining the benefits of owning a new gTLD domain.*

Sean Ottey, Technical Evangelist at Rightside

THE NEW WEB - Domains are more available and more descriptive now with the new domain extensions. Now it is time to make them more user-friendly and configurable by a larger part of the population. The 90's thinking of "a domain is a name for a server" is simply not true anymore. With many households starting up their own private network, naming of nodes, computers, routers, watches, toaster, etc. will come to the forefront of the populace in general. THE RISKY PREDICTION - In 2016, Google will move from google.com to search.google. From gmail.com to mail.google. calendar.google.com to calendar.google.

Mason Cole, VP Communications & Industry Relations, Donuts Inc.

First, you'll see new uses for domain names. As more businesses adopt new gTLDs, you'll see innovative ways of putting the names to use, plus expanded usage in marketing and advertising. I expect to see more new domains in print, online and in broadcast media. Second, there still are several gTLDs in contention, and some of them are potentially very valuable. I believe remaining gTLDs in contention will sell for record amounts. Third, I anticipate additional consolidation in the domain name industry. We've already seen some of this in recent months -- Neustar acquiring AusRegistry, for example, and CentralNic acquiring Instra -- and I think we'll see more of that in 2016 as the industry sorts itself out. Finally, I observe that new gTLDs have breathed new life into the domain business at a time it was leveling off. I recall 2013 as a somewhat flat year in terms of investor interest in the industry, but we now see record attendance at NamesCon, ICANN and other industry events. This has been reflected in company valuations since then -- for example, pure-play registrar GoDaddy and pure-play registry Verisign are at record high share prices. 2016 will also be a record year for policy activity as we ramp into the new year.

Jean Guillon, New gTLD Consultant at Jovenet Consulting

In 2016, I strongly believe we will start to see ads using new domain names in the street of Europe. We already see some in the US but they are relatively rare in Europe. As a person watching new gTLD figures on a daily basis, there are TLDs I am confident that will see their registration figures increase but some will probably die. I am pretty much impressed by the capacity of some Registries to install their domain names on the market and it appears that .CLUB is the best at demonstrating this, in China in particular: not only they sell their domain names but *they keep having new ideas in their pocket to be on top of the race. As an investor, I'd definitively want to team up with them for Round 2 of the ICANN new gTLD program.*

I also like to predict that luxury trademarks who invested so much money in their .BRAND will "wake up" and start to demonstrate their capacity to innovate using their new domain names.

I am confident city TLDs will see their registration volumes increase too: geo TLDs are the best opportunity for local businesses. I am not against ".com" and 2016 is far too early to say that it is the end of this extension but many ".com" owners that I meet tell me: "hey, I didn't know about these new domain names but I definitely need mine"; so I guess new gTLDs are a fashion that will take time to install but...it will install.

Joe Alagna, V.P. Channel Development at 101domain.com

I suspect that we'll see double digit growth in the new gTLD space in 2016. Awareness of new gTLDs is still very low. Applicants have been focused on acquisition and contention resolution in 2015 so in 2016, we should see a lot more investment in awareness. There will also be the effect of usage in the marketplace to grow awareness. As more and more end users build sites on vertically oriented gTLDs others will follow. I would venture to say that we may even double the number of registrations by the end of 2016. Although I believe that there is a great case for dot-brand type usage, I think that the adoption is going to take longer than many expect. There will likely be some that will waver between convictions; should we go to our new brand-based gTLD or should we wait? These applicants are the largest in the world and have comprehensive .com websites where so many considerations will come into play. I'm sure we'll see many of them forwarding to their primary sites this year but I have a feeling that true adoption is going to take much more time. .Club did well because it is a truly useful ecommerce gTLD. As far as premium pricing strategies, I'm a fan as long as it is not completely unreasonable. I think that .law, .tickets, and .bank hit a proper balance. There are a few others recently that I think have taken "premium" too far out of bounds to achieve real success. In general, I think that most registries have taken the premium idea too far, holding back too many premiums, and pricing them too high. In my view this will hold back the success of new gTLDs in the long term. I believe we would gain more traction as an industry by interfering in the market less. To succeed, they need users and stakeholders that are committed to their TLDs. Those stakeholders come in the form of domain investors who bet on the success of their domains. If the registry holds back too many domains or prices them out of the market or tries to control end users too strongly, they lose that benefit. They don't have to price domains at $5 or $10 dollars a year to succeed; I think that depending on their goals, a price range in the range of $50 to $150 per year is acceptable. But then, don't hold back too many premiums or try to tell registrants what to do with their domains. Let the market work things out. I'm on record as saying that .web will be a great new gTLD, so I suppose I should stick with that as my prediction for top release in 2016. I have no doubt that the Chinese domain awakening will continue throughout the coming year. It's a big country and they are just starting to realize the value of digital real estate. The nature of our business is very conducive to continued success there. In fact, I believe that developing nations around the world will contribute to continued success of the domain name business. Having so many new choices and options available should contribute to that. Even though the world is more connected than ever before, there are large masses who still don't know how to use the Internet for their own benefit. I believe *that domain names will continue to grow as more Internet users migrate from consumers of information to creators of information. That transition is still in its infancy.*

Christa Taylor, CEO at New gTLD consultancy DotTBA

My first prediction is the concept that registrants will choose and pay for meaningful, relevant domain names will continue in 2016. Strong TLDs that are easily understood by registrants or have been sufficiently promoted so registrants recognize the TLD will continue to grow and receive the greatest, and most deserved, benefits from industry growth. I predict that by the end of the 2016 the 80/20 rule will apply with the top 20% of new gTLDs receiving 80% of both revenues and registration volumes. The concern of course, is how much revenue the remaining 80% of new gTLD businesses will earn and the potential impacts to their business. As 25% of new gTLDs have a yearly registration volume of ~2,500 and an average retail price of ~$35 they are operating a loss. For these non-portfolio, new gTLD companies, it is a quest against time and selling their premium domain names to ensure sustainability. Thus, increased industry awareness and the utilization of any channels to promote the industry, including the use of ICANN auction funds of $60+ million, would be beneficial to all new gTLDs. Secondly, new gTLD launches that gain a spot in the top 20% will have an emerging markets' component within their launch strategy. While they will have to endure increased regulatory issues with the Chinese government, other emerging markets such as India will begin to sprout. While it will take time to gather momentum, registries who have strategically poised their TLD will seize a dominant market position along with the associated revenues. New gTLDs that bundle additional services such as an 'easy setup' website will boost traction while cultivating further growth. Finally, consolidation and integration between registries, registrars and backend providers will further expand the breadth of their services and revenue streams. Similarly, new gTLD portfolio companies will improve their market position by focusing on expansion, gross margins and effectiveness within the marketplace while smaller or individual new gTLDs will reconsider their business plans and how best to proceed with the current market conditions. 2016 will undoubtedly be another interesting year for everyone within the new gTLD industry.

Bill Doshier, founder, dotStrategy, Co., The .buzz Registry

New top level domain registrations soar toward 100 million as mass brand adoption, development and education efforts gain traction. Late 2016 - as new top level domain registration totals plow through 80 million strong – the domain.buzz focus is on which registry and domain registration will become the 100 millionth new top level domain registered. Bloggers feed the momentum with endless speculative posts, complete with the daily count to 100 million. Michael Berkens runs his most successful TheDomains.Com poll ever. Registry operators fuel the new registration energy by offering – BUY 1 DOMAIN GET 10 FREE!!! deals. All aspire to be a part of this 2016 industry event of the year. Acceptance of these cool, fun and meaningful new domains sweep the globe. New websites increase awareness, boosting 2016 registration totals exponentially. .nyc registration totals explode as City Hall opens new registrations to the world. Pre-launch – in those early application days - the idea of limiting .nyc registrations to residents of the five boroughs certainly seemed a just and noble cause. Supported by city government, this new massive digital undertaking- provided as a service to the people -looked great on paper. In 2016, New York City now operates one of the most valuable Internet properties ever. Attaching a governor to this most *dynamic of city based top level domains appears to be a small slip-up, perhaps occurring during a confusing application process. No big deal. Many new registry applicants would take a mulligan on their initial registry application. The good news is this will be corrected. NYC, recognizing the positive global potential of .nyc for both the City and its residents moves to open up .nyc domain registrations for all. A world of new business prospects and web developers anxiously wait. ICANN announces top level domain registry application round two is postponed spurring a malady referred to as RHAA. The continuing chaos that is ICANN forces the industry overseer to postpone top level domain application round two. New registry operators emboldened by this development, and the ongoing successes of 2016, hold tightly to their treasured registries and new opportunities. 'Registry Heightened Acquisition Anxiety' expands to epidemic status. The only known RHAA cure is registry ownership and the feel good opportunity to be a player in the new Internet age. In 2016, industry consolidation occurs through numerous registry acquisitions. Acquiring principals from outside the domain community make themselves and their desires known -driving offerings for all domain registries to new high multiples.*

Rubens Kuhl, Product Marketing Manager at nic.br

I see 2016 as a year when registries will look to cost efficiencies, either for them to survive the slow pace (compared to projections made at application time) or to invest more in marketing than what they invested in 2015. 2016 will also feature some instances of the China unknown where all of sudden Chinese investors get all interested in a TLD, and not because of specific business development targeted at China. In the brand arena, financial organisations will keep being the early adopters, but in 2016 we will probably see media groups (BBC, NHK etc.) start moving as well. You've heard the predictions of some of the leading experts in the domain industry. Let me know what you think in the comments. One thing is for sure: 2016 will be another exciting year for the new TLDs.

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The Key-Systems GmbH and the Corporate Domain Portal BrandShelter offer you premium domain name services such as complete and worlwide domain registrations as well as outstanding brand monitoring services.

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EXHIBIT KM-28

COMPETITION, CONSUMER TRUST, AND CONSUMER CHOICE REVIEW

Final Report

Competition, Consumer Trust, and Consumer Choice Review Team
8 September 2018

ICANN

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1 Executive Summary

ICANN's Affirmation of Commitments (AoC) called for a regular review of the degree to which the New Generic Top-Level Domain (gTLD) Program promoted consumer trust, choice and increased competition in the Domain Name System (DNS) market. This review is called the Competition, Consumer Trust, and Consumer Choice Review (CCT).[1] The AoC further called on the CCT reviews to evaluate the effectiveness of the application and evaluation process for new gTLD applicants and the safeguards put in place to mitigate the risks associated with the expansion of generic top-level domains. These reviews are important because they provide ICANN with an assessment of how the new gTLD round performed in these areas and guidance on key issues (including competition, consumer protection, security, malicious abuse, and rights protection issues) as it contemplates further increase in the number of top-level domains (TLDs). The CCT was asked to weigh the advantages and disadvantages of the New gTLD Program in these key areas and assess whether the Program resulted in net benefits to users of the DNS.

The review team endeavored to be as objective as possible and to base its findings on available data. The more objective the findings, the more likely the impact of implemented recommendations can be measured. The idea of using metrics to evaluate the performance of the DNS began six years ago with an ICANN Board resolution[2] that called on the community to identify quantitative targets to assess the impact of the New gTLD Program on consumer trust, choice, and competition in the DNS marketplace. Although the particular metrics developed at that time aided the review team's analysis, they ultimately did not form the basis for the majority of the review. However, the CCT Review Team did strive to employ quantitative analysis wherever possible.

The CCT Review Team found that while the New gTLD Program is quite new and the data are incomplete, on balance the expansion of the DNS marketplace has demonstrated increased competition and consumer choice and has been somewhat successful in mitigating its impact on consumer trust and rights (particularly trademark) protection. That said, the review team concluded that the New gTLD Program should be regarded only as a "good start," and that a number of policy issues should be addressed before any further expansion of gTLDs.

In particular, the review team found that critical data were in short supply for the analysis of competition, the effectiveness of safeguards, and the promotion of consumer trust and geographic representation of applicants. Even the definition of the DNS market itself is problematic without additional information about whether consumers view new gTLDs as substitutes for other domain names, such as country code top-level domains (ccTLDs). Some gTLDS compete in narrow markets that serve specialized groups of registrants, and alternative online identities such as Facebook and Yelp pages and third-level domains may serve as substitutes for registrations in gTLDs. Consequently, the CCT Review Team recommends that ICANN enhance its capabilities to gather and analyze data, in particular those used by ICANN's Contractual Compliance Department, prior to further increasing the number of gTLDs. We also identify certain policy issues that the community should resolve prior to the

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[1] On 30 September 2009, ICANN and the United States Department of Commerce signed the AoC, which—among other things—committed ICANN to periodically organizing Community-led review teams to assess the impact of the New gTLD Program on the domain name marketplace. In January 2017, the AoC expired following the IANA transition in October 2016. However, many of the provisions contained in the AoC—including Community-led reviews of competition, choice, and trust in the domain name marketplace—have been incorporated into ICANN's revised bylaws (see ICANN, "Bylaws for Internet Corporation for Assigned Names and Numbers: Section 4.6: Specific Reviews," amended 1 October 2016, https://www.icann.org/resources/pages/governance/bylaws-en/#article4).

[2] ICANN Board Resolution 2010.12.10.30, "Consumer Choice, Competition and Innovation," (2010), accessed 20 January 2017, https://www.icann.org/resources/board-material/resolutions-2010-12-10-en#6

further expansion of the gTLD space. Finally, we recommend a number of specific research projects that should be completed prior to a future CCT, and in many cases, even sooner.

Background

Prior to the start of the CCT Review Team's work in January 2016, ICANN, together with the community, had begun preparatory work to identify metrics to inform the forthcoming review. Data collection on these metrics began in 2014 and continued into 2016.[3] In addition, ICANN commissioned two major research projects in 2015 in anticipation of the review team's work: a global consumer end-user and registrant survey, and an economic study of the Program's competitive effects.[4] These surveys were repeated in 2016 to compare against those conducted in 2015 as newer gTLDs came into operation, and took into consideration, where applicable, additional questions and requirements raised by the review team.[5]

In conducting its analysis, the review team was mindful of the fact that the New gTLD Program had only been in place for a short period of time, that new domain names are continuously entering the marketplace, and thus the full effects of the Program may have not yet have been fully realized. The Team used data that had previously been collected—and commissioned new research where it felt important data were missing—to help inform its analysis. The Team divided its work into four subteams:

- **Competition and Consumer Choice**. This subteam examined the effects of the entry of new gTLDs on price and non-price competition in the expanded domain name marketplace, as well as whether consumer choice in the marketplace was effectively enhanced with the introduction of new gTLDs.

- **Consumer Trust and Safeguards**. This subteam focused on the extent to which the expansion of new gTLDs has promoted consumer trust and the impact of the safeguards adopted to mitigate any problems that might have arisen as a result of the program.

- **Application and Evaluation Process**. The review team explored issues related to the effectiveness of the application process to operate a new gTLD, with a particular focus on the applicant experience, the paucity of applications from underserved regions, and the objection processes.

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[3] This work was carried out by the Implementation Advisory Group for Competition, Consumer Trust, and Consumer Choice (IAG-CCT). See ICANN Board Resolution 2015.02.12.07 – 2015.02.12.09 "Recommendations for the Collection of Metrics for the New gTLD Program to Support the future AoC Review on Competition, Consumer Trust and Consumer Choice," (12 February 2015), accessed 3 August 2018, https://www.icann.org/resources/board-material/resolutions-2015-02-12-en#1.e

[4] Nielsen, *ICANN Global Consumer Research* (April 2015), accessed 26 April 2017, https://www.icann.org/news/announcement-2015-05-29-en; Nielsen, *ICANN Global Registrant Survey* (September 2015), accessed 26 April 2017, https://www.icann.org/news/announcement-2015-09-25-en; Analysis Group, *Phase I Assessment of the Competitive Effects Associated with the New gTLD Program* (September 2015), accessed 3 August 2018, https://www.icann.org/news/announcement-2-2015-09-28-en

[5] Nielsen, *ICANN Global Consumer Research: Wave 2* (June 2016), accessed 26 April 2017, https://www.icann.org/news/announcement-2-2016-06-23-en; Nielsen, *ICANN Global Registrant Survey: Wave 2* (August 2016), accessed 26 April 2017, https://www.icann.org/news/announcement-2-2016-09-15-en; Analysis Group, *Phase II Assessment of the Competitive Effects Associated with the New gTLD Program* (October 2016), accessed 3 August 2018, https://www.icann.org/news/announcement-2016-10-11-en

- **International Trademark Association (INTA) Impact Study**. The subteam was limited in time as it was formed to analyze and draw conclusions on the INTA Impact Study results.[6]

Competition and Consumer Choice

Although it is still too early to evaluate fully the competitive effects of the introduction of 741 delegated new gTLDs as of May 2017 (excluding those that are considered ".brands"),[7] some preliminary findings suggest that the potential for healthy competition exists and some important indicators are consistent with increased competition. Of particular note, as of December 2016, registrations in new gTLDs accounted for about three-fifths of new registrations in all gTLDs, about 45 percent of new registrations in all TLDs (including open ccTLDs) since the new gTLDs were introduced, and about 58 percent of new registrations in gTLDs and "open" ccTLDs. We also found that, in the same month, new gTLDs accounted for about 14 percent of registrations among new and legacy gTLDs (see Table 2 below).

It is also interesting to note that in 92 percent of the cases in which a second-level domain was available in .com, the registrant nonetheless chose a second-level string in a new gTLD. For example, even if bigshotphotography.com was available, registrants often chose bigshots.photography instead, and in many cases were willing to spend more money to do so.[8]

The structure of the domain name industry itself provides a partial explanation of the potential for sustained competition. In particular, the availability of independent back-end service providers and retailers (registrars) decreases barriers to entry because new registries do not need to invest in supplying their own in-house back-end infrastructure or developing their own sales channels. Consequently, smaller niche registries have a higher likelihood of achieving minimum viable scale.

Early indications are that right holders are less inclined to rely on defensive registrations (i.e., registering a domain simply to prevent others from doing so) than in the past. It's not clear whether this is the result of the new rights protection mechanisms or simply the sheer volume of new gTLDs. Instead rights holders are engaging in increased monitoring and case by case resolution mechanisms. Further analysis of the distribution of defensive costs (including "blocking," which entails an agreement with a registry not to sell a domain), direct communication (such as cease and desist correspondence and URS) is currently underway, but preliminary indications are that increases in defensive investment by trademark holders were less than anticipated prior to the launch of the Program.

One caveat to this analysis stems from the existence of a large number of "parked" domains (domains that have been registered but are not yet being used) in new gTLDs. Although not dispositive, the fact that the average parking rate for new gTLDs is higher than for legacy gTLDs may suggest that competition from new gTLDs may not be as significant as indicated

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[6] Nielsen, *INTA New gTLD Cost Impact Study* (April 2017) and INTA, *New gTLD Impact Study Status Report II* (August 2017), accessed 3 August 2018, https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials

[7] gTLDs considered .brands for the purpose of this review are those which include Specification 13 in their Registry Agreements, or are exempt from the Registry Operator Code of Conduct. See https://www.icann.org/resources/pages/registries/registries-agreements-en and https://www.icann.org/news/blog/new-gtld-registry-operator-code-of-conduct

[8] This reporting is derived from an analysis of two data sets produced by ICANN organization for the Review Team. See "New gTLD Registrations Available in .com," (2016 and 2018), and "Existing Registrations in .com Against New gTLDs," (2016 and 2018), accessed 3 August 2018, available at https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials

by the registration data reported above.[9] We hope that parking data will be part of the analysis in future reviews.

Consumer Trust and Safeguards

An international survey commissioned by the CCT indicates the domain industry is one of the most trusted in the tech sector and that the dramatic expansion of the DNS has done little thus far to undermine that trust.[10] A key component of this trust seems grounded in familiarity, with legacy gTLDs still more trusted than new gTLDs, and strings with recognized terms more trusted than strings with less familiar terms. In addition, there are indications of a desire among end-users for a more semantic Web in which the domain name is an indicator of the type of content contained within a TLD.

Similarly, consumers reported that restrictions on who could purchase certain gTLDs would engender greater trust, particularly if the domain name itself suggests that the registrant might need to possess a certain license or credentials. These tendencies represent both an opportunity and a danger if the connection between names and content proves to be less direct.

Given the difficulty of defining and measuring "trust," the review team explored the notion of "trustworthiness" as a proxy for consumer trust. For example, the review team fielded a study on DNS Security Abuse to determine if the rates of abuse were higher or lower in new gTLDs.[11] These findings were used to analyze whether or not new gTLDs were inherently less trustworthy than legacy gTLDs, as well as to determine the effectiveness of safeguards implemented as part of the New gTLD Program.[12] The results were mixed, indicating that despite new safeguards, some new gTLD registries and registrars may in fact be less trustworthy than those associated with legacy gTLDs, even if new gTLDs as a whole are not.

Other notable findings on the impact of the new gTLD safeguards include the following:

- Ninety-nine percent of registries have implemented safeguards regarding the prevention of abusive activities in their gTLDs as required in their registry-registrar agreements; however, the downstream impact is unclear.[13]

- ICANN reports that abuse complaint volumes are typically higher for registrars than registries, but it is difficult to determine if safeguards are affecting rates of abuse.[14]

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[9] See ntldstats, "Parking in New gTLDs Overview," accessed 3 August 2018, https://ntldstats.com/parking/tld
[10] Nielsen, *Consumer Research Wave 2* (2016), pp. 63-69.
[11] SIDN Labs and the Delft University of Technology (August 2017), *Statistical Analysis of DNS Abuse in gTLDs Final Report*, accessed 3 August 2018, https://www.icann.org/en/system/files/files/sadag-final-09aug17-en.pdf. "DNS Abuse" is a term used by the Review Team that refers to "intentionally deceptive, conniving, or unsolicited activities that actively make use of the DNS and/or the procedures used to register domain names" (see p. 3 of the "New gTLD Program Safeguards Against DNS Abuse: Revised Report" referenced below). "DNS Security Abuse" in the context of this report refers to specific, technical forms of abusive behavior: malware distribution, phishing, pharming, botnet command-and-control, and spam in the DNS. For more on how abuse has been characterized by the ICANN Community, see the *Registration Abuse Policies Working Group's Final Report* (29 May 2010), accessed 3 August 2018, https://gnso.icann.org/sites/default/files/filefield_12530/rap-wg-final-report-29may10-en.pdf
[12] ICANN Operations and Policy Research, *New gTLD Program Safeguards Against DNS Abuse: Revised Report* (July 2016), accessed 3 August 2018, https://www.icann.org/news/announcement-2016-07-18-en
[13] ICANN (2015), *ICANN Contractual Compliance 2014 Annual Report*, accessed 7 February 2017, https://www.icann.org/en/system/files/files/annual-2014-13feb15-en.pdf, p. 13.
[14] ICANN (2016), *ICANN Contractual Compliance 2015 Annual Report*, accessed 7 February 2017, https://www.icann.org/en/system/files/files/annual-2015-27jan16-en.pdf

- WHOIS accuracy complaints remain the largest category of complaints to ICANN Contractual Compliance.[15]

- ICANN Contractual Compliance has reported that 96 percent of the 264 registries that were reviewed in 2014 are performing the analysis that is required to determine if they are being used to perpetrate security threats.[16]

- The review team examined the rates of UDRP and URS case filings and found an overall decrease in the number of cases filed since 2012, although URS cases in new gTLDs have driven an approximately 10 percent increase in disputes since the recent low point in cases filed in 2013. The review team needs more information on costs related to trademark enforcement before it will be able to reach more specific conclusions in this area.[17]

The review team also identified several challenges to its assessment of the extent to which safeguards mitigated risks involved in the expansion of the gTLD space. Ultimately, the safeguards put in place as part of the Program were too narrow in scope to prevent some of the malicious abuse issues identified prior to the introduction of the new gTLDs.[18] Instead, as in legacy gTLDS, DNS Security Abuse still remains a significant issue. Although abuse does not universally persist in all new gTLDs, it is endemic to many. More troubling, at present there is little recourse for the community to stop new gTLD registries and registrars associated with high levels of abuse. This in turn creates incentives for network operators to unilaterally block all traffic from specific TLDs or registrars, running counter to community goals for Universal Acceptance of new gTLDs.[19]

The failure to prevent the spread of certain abusive activities to new gTLDs previously identified by the community is significant. The CCT Review Team recognizes the infrastructure role played by domain names in enabling abusive activities that impact the security, stability, and resiliency of the DNS, undermine consumer trust, and, ultimately, impact end-users around the globe. Accordingly, this is a high-priority topic that must be addressed before any further expansion of the DNS, and the review team offers several recommendations to remedy the deficiencies of the status quo and improve the security of the DNS.

As previously mentioned, one challenge to evaluating the impact of safeguards on trustworthiness is the lack of granularity in ICANN Contractual Compliance data. It is unclear what the impact of safeguards imposed on sensitive, regulated, and highly-regulated strings has been since complaints to registrants are difficult to track, as is the lack of detail publicly reported by ICANN Contractual Compliance regarding complaints that it receives. Moreover, provisions related to inherent government functions and cyberbullying that were incorporated into the Registry Agreements were difficult to measure as there were no consequences identified for a failure to comply with these provisions. Finally, the Public Interest Commitments

[15] ICANN, "Contractual Compliance Reports," accessed 8 August 2018, https://www.icann.org/resources/pages/compliance-reports-2016-04-15-en.
[16] ICANN (2015), *ICANN Contractual Compliance 2014 Annual Report*, accessed 10 August 2018, https://www.icann.org/en/system/files/files/annual-2014-13feb15-en.pdf.
[17] ICANN, "CCT Metrics Reporting Page: Rights Protection Mechanisms," accessed 3 August 2018, https://www.icann.org/resources/pages/cct-metrics-rpm-2016-06-27-en.
[18] ICANN (3 October 2009), *Exploratory Memorandum: Mitigating Malicious Conduct*, accessed 9 November 2016, https://archive.icann.org/en/topics/new-gtlds/mitigating-malicious-conduct-04oct09-en.pdf
[19] "Universal Acceptance" refers to an effort to encourage "Internet applications and systems [to] treat all TLDs in a consistent manner, including new gTLDs and internationalized TLDs. Specifically, they must accept, validate, store, process and display all domain names." See ICANN, "Universal Acceptance," accessed 3 August 2018, https://www.icann.org/resources/pages/universal-acceptance-2012-02-25-en

(PICs) incorporated into Registry Agreements were particularly challenging to assess because they varied greatly.[20] It remains unclear how effective enforcement of the PICs has been.

Application and Evaluation

Here the review team chose to focus less on the complexity and any inefficiencies of the application and evaluation process and more on the potential inequities of the program as implemented. Of particular concern to the review team was the relatively low application rate from entities in the "Global South."[21]

The CCT Review Team commissioned two focused efforts to explore applicant experiences and barriers to entry for those who did not apply to operate a new gTLD.[22] Although more than half of the applicants to the New gTLD Program indicated they would go through the process again (even with no changes), a large majority indicated the Program was overly complex and bureaucratic, and that the assistance of outside consultants was necessary. Therefore, it should come as no surprise that a focus group of potential applicant cohorts (similar entities to those who applied) in the Global South indicated not only a lack of awareness of the Program as a whole, but also concerns over the complexity of the application process and a lack of available assistance in applying. Although not the most frequently expressed concern, nearly every cohort expressed concerns about the return on investment from operating a new gTLD. Programs that were put in place to facilitate and encourage applications from the Global South were thought to be both poorly monitored and largely ineffective. The ICANN community needs to make a decision about the importance of applications from the Global South (and by extension, from other underrepresented regions) and, if appropriate, to take further steps to encourage those applications. It is clear that if the community wants more applications from underrepresented regions, more needs to be done.

Further analysis of the application process revealed that the implementation of policies around issues such as string confusion was inconsistent and unpredictable. More clarity is needed in the Applicant Guidebook (AGB) to reduce this inconsistency going forward.[23]

Finally, the CCT Review Team found that Governmental Advisory Committee (GAC) participation in the application and evaluation process was largely beneficial and led directly to modifications of applications and applicants more successfully navigating the process.

Rights Protection Mechanisms

An important aspect of the safeguards available in new gTLDs are the Rights Protection Mechanisms (RPMs) which were specifically developed in connection with the introduction of the New gTLD Program. The RPM's were meant to stand alongside existing rights protection mechanisms such as the Uniform Dispute Resolution Process (UDRP). The CCT Review

[20] See ICANN Wiki, "Public Interest Commitments," accessed 3 August 2018, https://icannwiki.org/Public_Interest_Commitments.

[21] "Global South" is a fluid and sometimes contested term used by social scientists to refer broadly to regions in Latin America, Asia, Africa, and Oceania. For an overview of the term's origins and use, see Nour Dados and Raewyn Connell, "The Global South," *Contexts: Journal of the American Sociological Association* [11, 1] (2012): http://journals.sagepub.com/doi/pdf/10.1177/1536504212436479

[22] AMGlobal Consulting, *New gTLDs and the Global South: Understanding Limited Global South Demand in the Most Recent New gTLD Round and Options Going Forward* (October 2016), accessed 3 August 2018, https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials

[23] ICANN, *gTLD Applicant Guidebook* (June 2012), accessed 3 August 2018, https://newgtlds.icann.org/en/applicants/agb

Team examined whether these RPMs help encourage a safe environment and promote consumer trust in the DNS. The CCT Review Team also sought to measure the cost impact of the New gTLD Program on intellectual property owners. The early indicators are that there is proportionately more trademark infringement in new gTLDs than in legacy TLDs.

The data available indicated that the number of domain name disputes had increased since the introduction of new gTLDs, with disputes rising year-on-year after their introduction. Of course, a rising number of domain name disputes is not in itself surprising, given the expansion of the DNS and increased number of domain name registrations worldwide. Thus, the CCT Review Team sought an answer to the more pertinent question of whether there is proportionately more trademark infringement in new gTLDs than in legacy TLDs. This is a more difficult issue, as there are many factors involved in assessing trademark infringement, and minimal data is available. For example, in addition to the UDRP and URS, trademark owners also use a variety of other means to deal with abusive domain name registrations, such as court actions and demand letters, which are not tracked centrally. Nor are the costs associated with such actions available. It is also not within ICANN's remit to track or attempt to track such data. The International Trademark Association (INTA) conducted a study of its membership to begin to explore the experience of trademark holders that reveals some of the complexities in obtaining such information. The INTA study was directed to the 1,096 corporations, nonprofits and other entities that own trademark portfolios and are considered "regular" members under INTA's membership structure. Outside counsel and other categories of trademark service providers were not the targets of the survey. This decision was made in order to avoid overlap with brand owners whose outside counsel may also be receiving the survey. Ninety-three respondents entered the survey and 33 completed it. Subsequent feedback suggests that the complexity of the questions, the length of the survey, and the survey methodology, generally, discouraged completion.

The CCT Review Team examined the survey results and supplemented these with its own analysis. While the survey received a low number of respondents, the INTA survey offers some interesting findings with respect to the costs of trademark enforcement in the new gTLDs to brand owners. The survey found that "new TLD registrations [by brand owners] primarily duplicate legacy TLD or ccTLD registrations." In particular, only 17% of respondents had registered names in the new gTLDs for the first time versus duplicating existing domains in legacy gTLDs or ccTLDs. This suggests that defensive registrations may remain an issue in the New gTLD Program. While one of the stated purposes of the New gTLD Program was to create greater choice, the primary consideration for domain registration by brand owners who participated in the survey appears to be defensive.

However, the survey also indicates that for the respondents the expansion of the New gTLD Program has made defensive registrations a less efficient means of protection. Accordingly, it appears that trademark holders are shifting their protection spending to alternatives and expanded monitoring. Furthermore, the survey suggests that as many as 75% of domain name dispute cases involve entities that have registered their domain names using privacy and proxy services making it difficult to assess whether this abuse is tied to common actors. These results suggest the need for further research in these systems. Finally, there is an indication that enforcement costs have increased in the new domains, which suggests that at least for respondents, there is greater infringement in those new domains than in legacy gTLDs and ccTLDs. The INTA survey suggests that, at the very least, further research is necessary, perhaps with a simplified methodology to encourage a higher completion rate. Nonetheless, the exercise did provide useful information in terms of indicating trends. It is clear that the brand owners that participated in this survey have experienced some frustration with the New gTLD Program and the rights protection mechanisms that have been put in place.

The CCT Review Team also looked to data collected by ICANN as well as data from the World Intellectual Property Organization ("WIPO"). ICANN's metrics data shows that domain name disputes are rising alongside total domain name registrations but does not show a breakdown of the relative use of UDRPs, i.e. the use of UDRPs in new gTLDs as opposed to legacy TLDs. WIPO data for 2017 however does give a strong indication that there is proportionately more trademark infringement in new gTLDs than in legacy TLDs.

The CCT Review Team could not definitively conclude whether the URS is a valuable RPM given its low usage compared to the UDRP. The fact that the TM-PDDRP and RRDRP have not been invoked to date may on the one hand bring into question their effectiveness but may equally suggest that their mere existence is acting as a successful deterrent. Conclusions from the RPM review currently underway may shed some more light on the issue in the near future.

Recommendations

In light of the studies and analyses carried out for this review, the CCT Review Team has developed recommendations that fall into three main categories:

- Requests for more and better data collection
- Policy issues to be addressed by the community
- Suggested reforms relating to transparency and data collection within ICANN Contractual Compliance

The review team has assigned a priority level to each recommendation, which reflects the timeframe in which each should be implemented and the extent to which any particular recommendation should be a prerequisite to further expansion of the DNS.

Data Gathering

In general, the review team's work was hampered by insufficient data on pricing of domain names, including wholesale, retail, and secondary market prices. In addition, collection of data about a country at a regional level would make it possible to assess competition in narrower geographic areas. Furthermore, the lack of data regarding DNS abuse and lack of more granular information about the subject matter of complaints received by ICANN Contractual Compliance also created obstacles to assessing the effectiveness of the safeguards and the trustworthiness of the new gTLDs. Some of this additional data collection will require changes to registry and registrar contracts, which will take some time, but the review team believes that it is necessary for proper evaluation of reforms to the New gTLD Program. Other data are collected by third parties, and also could be used by ICANN. To the extent possible, relevant data should be made available in an easily accessible and non-confidential form to researchers both within and outside the ICANN community. The CCT Review Team recommends that data gathering become a priority inside ICANN, with an emphasis on data-driven analysis and programmatic success measurement.

ICANN Contractual Compliance

The CCT Review Team found that current data available from ICANN Contractual Compliance are insufficient to measure the enforcement of various contract provisions and the success of safeguards in mitigating downstream consequences to DNS expansion. Part of the problem is transparency, in part due to the lack of granularity of the data that are being collected. The CCT make several recommendations for practical reform within ICANN Contractual Compliance.[24]

Conclusion

Initial indications are that the New gTLD Program has led to a dramatic increase in consumer choice, a modest, but important, increase in competition, and has had a minimal impact on consumer trust. However, there are several TLDs with a disproportionate level of DNS security abuse and the review team recommends enhancements to various enforcement mechanisms prior to any further additions to the DNS. The review team believes that there is a substantial need for more and better data on both competition and pricing, and on the impact of safeguards on consumer protection.

[24] Since the publication of the CCT Review Team's draft recommendations for public comment, ICANN Contractual Compliance has considered the review team recommendations in implementing certain changes described in the blogs of October 2017, "Enhancing Transparency in Contractual Compliance Reporting," https://www.icann.org/news/blog/enhancing-transparency-in-contractual-compliance-reporting, and March 2018, "Enhancing Transparency in Contractual Compliance Reporting, https://www.icann.org/news/blog/enhancing-transparency-in-contractual-compliance-reporting-en.

2 CCT Review Team Recommendations

The review team's recommendations are summarized in the table below. The full recommendations, with related findings and rationale, may be found in the cited chapters.

Prerequisite or priority level: Per the ICANN Bylaws, the CCT Review Team indicated whether each recommendation must be implemented prior to the launch of subsequent procedures for new gTLDs.[25] The review team agreed that those recommendations that were not categorized as prerequisites would be given a time-bound priority level:

- **High priority**: Must be implemented within 18 months of the issuance of a final report
- **Medium priority**: Must be implemented with 36 months of the issuance of a final report
- **Low priority**: Must be implemented prior to the start of the next CCT Review

[25] See ICANN, "Bylaws for Internet Corporation for Assigned Names and Numbers," amended 18 June 2018, https://www.icann.org/resources/pages/governance/bylaws-en/, Section 4.6.d.iv: "For each of its recommendations, the CCT Review Team should indicate whether the recommendation, if accepted by the Board, must be implemented before opening subsequent rounds of new generic top-level domain applications periods."

#	Recommendation	To	Prerequisite or priority level	Consensus
Chapter 5. Data-Driven Analysis: Recommendations for Additional Data Collection and Analysis				
1	Formalize and promote ongoing data collection.	ICANN organization	High	Yes
Chapter 6. Competition				
2	Collect wholesale pricing for legacy gTLDs.	ICANN organization	Low	Yes
3	Collect transactional pricing for the gTLD marketplace.	ICANN organization	Medium	Yes
4	Collect retail pricing for the domain marketplace.	ICANN organization	Low	Yes
5	Collect secondary market data.	ICANN organization	High	Yes
6	Partner with mechanisms and entities involved with the collection of TLD data. As feasible, collect TLD registration number data per TLD and registrar at a country-by-country level in order to perform analysis based on the same methods used in the Latin American and Caribbean DNS Marketplace (LAC) Study.[26]	ICANN organization	Low	Yes
7	Collect domain usage data to better understand the implications of parked domains.	ICANN organization	High	Yes
Chapter 7. Consumer Choice				
8	Conduct periodic surveys of registrants that gathers both objective and subjective information with a goal of creating more concrete and actionable information.	ICANN organization	Low	Yes
9	The ICANN community should consider whether the costs related to defensive registration for the small number of brands registering a large number of domains can be reduced.	New gTLD Subsequent Procedures PDP Working Group and/or Rights Protection Mechanisms (RPM) PDP Working Group	Prerequisite	Yes
10	The GNSO should initiate a new Policy Development Process (PDP) to create a consistent privacy baseline across all registries, including to explicitly cover cases of privacy infringements such as sharing or selling personal data without a lawful basis, such as the consent of that person. The GNSO PDP should consider limiting the collection and processing of personal data within rules which are mandatory for all gTLD registries. It should also consider not allowing registries to share personal data with third parties without a lawful basis, such as the consent of that person or under circumstances defined by applicable law (e.g. upon requests of government agencies, IP lawyers, etc.). Also, it is necessary to be aware of emerging, applicable regulations related to the processing of the personal data. For	Generic Names Supporting Organization	Medium	Yes

[26] Oxford Information Labs, EURid, InterConnect Communications (22 September 2016), Latin American and Caribbean DNS Marketplace Study (hereafter LAC Study), accessed 6 August 2018, https://www.icann.org/en/system/files/files/lac-dns-marketplace-study-22sep16-en.pdf.

#	Recommendation	To	Prerequisite or priority level	Consensus
	clarification, this recommendation does not relate to issues involving WHOIS or registration directory services data.			
Chapter 8. Consumer Trust				
11	Conduct periodic end-user consumer surveys. Future review teams should work with survey experts to conceive more behavioral measures of consumer trust that gather both objective and subjective data with a goal toward generating more concrete and actionable information.	ICANN organization and future CCT Review Teams	Prerequisite	Yes
12	Create incentives and/or eliminate current disincentives that encourage gTLD registries to meet user expectations regarding: (1) the relationship of content of a gTLD to its name; (2) restrictions as to who can register a domain name in certain gTLDs based upon implied messages of trust conveyed by the name of its gTLDs (particularly in sensitive or regulated industries) and (3) the safety and security of users' personal and sensitive information (including health and financial information). These incentives could relate to applicants who choose to make public interest commitments in their applications that relate to these expectations. Ensure that applicants for any subsequent rounds are aware of these public expectations by inserting information about the results of the ICANN surveys in the Applicant Guide Books.	New gTLD Subsequent Procedures PDP Working Group	Prerequisite (incentives could be implemented as part of application process)	Yes
13	ICANN should collect data in conjunction with its related data collection activities on the impact of restrictions on who can buy domains within certain new gTLDs (registration restrictions) to help regularly determine and report: 1. Whether consumers and registrants are aware that certain new gTLDs have registration restrictions; 2. Compare consumer trust levels between new gTLDs with varying degrees of registration restrictions; 3. Determine whether the lower abuse rates associated with gTLDs that impose stricter registration policies identified in the Statistical Analysis of DNS Abuse in gTLDs Study continue to be present within new gTLDs that impose registration restrictions as compared with new gTLDs that do not;[27]	ICANN organization	Low	Yes

[27] SIDN Labs and the Delft University of Technology, "DNS Abuse in gTLDs".

#	Recommendation	To	Prerequisite or priority level	Consensus
	4. Assess the costs and benefits of registration restrictions to contracted parties and the public (to include impacts on competition and consumer choice) and; 5. Determine whether and how such registration restrictions are enforced or challenged.			
Chapter 9. Safeguards				
14	Consider directing ICANN organization, in its discussions with registries, to negotiate amendments to existing Registry Agreements, or in consideration of new Registry Agreements associated with subsequent rounds of new gTLDs, to include provisions in the agreements to provide incentives, including financial incentives for registries, especially open registries, to adopt proactive anti-abuse measures.[28]	The ICANN Board, the Registry Stakeholders Group, the Registrar Stakeholders Group, the Generic Names Supporting Organization, and the Subsequent Procedures PDP WG.	High	Yes
15	ICANN Org should, in its discussions with registrars and registries, negotiate amendments to the Registrar Accreditation Agreement and Registry Agreements to include provisions aimed at preventing systemic use of specific registrars or registries for DNS Security Abuse. With a view to implementing this recommendation as early as possible, and provided this can be done, then this could be brought into effect by a contractual amendment through the bilateral review of the Agreements. In particular, ICANN should establish thresholds of abuse at which compliance inquiries are automatically triggered, with a higher threshold at which registrars and registries are presumed to be in default of their agreements. If the community determines that ICANN org itself is	The ICANN Board, the Registry Stakeholders Group, the Registrar Stakeholders Group, the Generic Names Supporting Organization and the Subsequent Procedures PDP WG	Prerequisite (provisions to address systemic DNS Security Abuse should be included in the baseline contract for any future new gTLDs)	Yes

[28] The review team looked for examples of practices that could assist in proactively minimizing abuse. One such example has been proposed by EURid, the operator of the .EU registry, which will soon test a delayed delegation system. See EURid, "EURid Set to Launch First of its Kind Domain Name Abuse Prevention Tool," 2017, accessed 8 August 2018, https://eurid.eu/en/news/eurid-set-to-launch-first-of-its-kind-domain-name-abuse-prevention-tool/ and Vissers T. et al. (2017), "Exploring the Ecosystem of Malicious Domain Registrations in the .eu TLD" In: Dacier M., Bailey M., Polychronakis M., Antonakakis M. (eds) Research in Attacks, Intrusions, and Defenses. RAID 2017. Lecture Notes in Computer Science, vol 10453. Springer, Cham, accessed 8 August 2018, https://link.springer.com/chapter/10.1007/978-3-319-66332-6_21. https://eurid.eu/media/filer_public/9e/d1/9ed12346-562d-423d-a3a4-bcf89a59f9b4/eutldecosystem.pdf. This process will not prevent registrations, but instead delay activation of a registration if a domain name is identified as being potentially abusive by machine learning algorithms. Future review teams could study this effort to consider its effectiveness and whether it could serve as a potential innovative model to help foster trust and a secure online environment. In addition, the .xyz registry may provide another example of proactive measures to combat abuse. The .xyz registry purports to have a zero-tolerance policy toward abuse-related activities on .xyz or any of their other domain extensions using a sophisticated abuse monitoring tool enabling proactive monitoring and detection in near real-time, suspending domains engaging in any of the abusive activities set out. Future review teams could explore the effectiveness of this approach by examining abuse rates over time and comparing the levels of abuse both before and after this policy.

#	Recommendation	To	Prerequisite or priority level	Consensus
	ill-suited or unable to enforce such provisions, a DNS Abuse Dispute Resolution Policy (DADRP) should be considered as an additional means to enforce policies and deter against DNS Security Abuse. Furthermore, defining and identifying DNS Security Abuse is inherently complex and would benefit from analysis by the community, and thus we specifically recommend that the ICANN Board prioritize and support community work in this area to enhance safeguards and trust due to the negative impact of DNS Security Abuse on consumers and other users of the Internet.			
16	Further study the relationship between specific registry operators, registrars, and DNS Security Abuse by commissioning ongoing data collection, including but not limited to, ICANN Domain Abuse Activity Reporting (DAAR) initiatives.[29] For transparency purposes, this information should be regularly published, ideally quarterly and no less than annually, in order to be able to identify registries and registrars that need to come under greater scrutiny, investigation, and potential enforcement action by ICANN organization. Upon identifying abuse phenomena, ICANN should put in place an action plan to respond to such studies, remedy problems identified, and define future ongoing data collection.	The ICANN Board, the Registry Stakeholders Group, the Registrar Stakeholders Group, the Generic Names Supporting Organization, and the Subsequent Procedures PDP WG, SSR2 Review Team.	High	Yes
17	ICANN should collect data about and publicize the chain of parties responsible for gTLD domain name registrations.	The ICANN Board, the GNSO Expedited PDP, the Registry Stakeholders Group, the Registrar Stakeholders Group, the Generic Names Supporting Organization, the Subsequent Procedures PDP WG, SSAC	High	Yes
18	In order for the upcoming WHOIS Review Team to determine whether additional steps are needed to improve WHOIS accuracy, and whether to proceed with the identity phase of the Accuracy Reporting System (ARS) project, ICANN should gather data to assess whether a significant percentage of WHOIS-related	ICANN organization to gather required data, and to provide data to relevant review teams to consider the results and, if warranted, to assess feasibility and	Medium	Yes

[29] ICANN, "Domain Abuse Activity Reporting (DAAR)," accessed 6 August 2018, https://www.icann.org/octo-ssr/daar

#	Recommendation	To	Prerequisite or priority level	Consensus
	complaints applicable to new gTLDs relate to the accuracy of the identity of the registrant.[30] This should include analysis of WHOIS accuracy complaints received by ICANN Contractual Compliance to identify the subject matter of the complaints (e.g., complaints about syntax, operability, or identity). The volume of these complaints between legacy gTLDs and new gTLDs should also be compared. ICANN should also identify other potential data sources of WHOIS complaints beyond those that are contractually required (including but not limited to complaints received directly by registrars, registries, ISPs, etc.) and attempt to obtain anonymized data from these sources. Future CCT Reviews may then also use these data.	desirability of moving to identity validation phase of WHOIS ARS project.		
19	The next CCT should review the "Framework for Registry Operator to Respond to Security Threats" and assess whether the framework is a sufficiently clear and effective mechanism to mitigate abuse by providing for systemic and specified actions in response to security threats.[31]	Future CCT Review Teams	Medium	Yes
20	Assess whether mechanisms to report and handle complaints have led to more focused efforts to combat abuse by determining: (1) the volume of reports of illegal conduct in connection with the use of the TLD that registries receive from governmental and quasi-governmental agencies; (2) the volume of inquires that registries receive from the public related to malicious conduct in the TLD; (3) whether more efforts are needed to publicize contact points to report complaints that involve abuse or illegal behavior within a TLD; and (4) what actions registries have taken to respond to complaints of illegal or malicious conduct in connection with the use of the TLD. Such efforts could include surveys, focus groups, or community discussions. If these methods proved ineffective, consideration could be given to amending future standard Registry Agreements to require registries to more prominently disclose their abuse points of contact and provide more granular information	ICANN organization and future CCT Review Teams	Medium	Yes

[30] ICANN, "WHOIS Accuracy Reporting System (ARS) Project Information," accessed 6 August 2018, https://whois.icann.org/en/whoisars

[31] ICANN, "Framework for Registry Operator to Respond to Security Threats," accessed 6 August 2018, https://www.icann.org/resources/pages/framework-registry-operator-respond-security-threats-2017-10-20-en

#	Recommendation	To	Prerequisite or priority level	Con sen sus
	to ICANN. Once this information is gathered, future review teams should consider recommendations for appropriate follow up measures.			
21[32]	Include more detailed information on the subject matter of complaints in ICANN publicly available compliance reports. Specifically, more precise data on the subject matter of complaints, particularly: (1) the class/type of abuse; (2) the gTLD that is target of the abuse; (3) the safeguard that is at risk; (4) an indication of whether complaints relate to the protection of sensitive health or financial information; (5) what type of contractual breach is being complained of; and (6) resolution status of the complaints, including action details. These details would assist future review teams in their assessment of these safeguards.[33]	ICANN organization	High	Yes
22	Initiate engagement with relevant stakeholders to determine what best practices are being implemented to offer reasonable and appropriate security measures commensurate with the offering of services that involve the gathering of sensitive health and financial information. Such a discussion could include identifying what falls within the categories of "sensitive health and financial information" and what metrics could be used to measure compliance with this safeguard.	ICANN organization	High	Yes

[32] Since the publication of the CCT Review Team's draft recommendations for public comment, ICANN Contractual Compliance has considered the review team recommendations in implementing certain changes. In October 2017, ICANN Contractual Compliance, began collecting and reporting on the granularity of registrar-related DNS Abuse complaints by identifying the type of abuse including spam, pharming, phishing, malware, botnets, counterfeiting, pharmaceutical, fraudulent and deceptive practices, trademark or copyright infringement, and missing or invalid registrar abuse contact information. This information is reported on ICANN.org in the monthly dashboard at this link https://features.icann.org/compliance/dashboard/report-list. The quarterly and annual metrics reports provide information about enforcement reasons, reporter categories, closure reasons and details of the complaints inclusive of DNS Abuse by legacy and new gTLDs as they evolve through the compliance process, from ticket receipt to closure. They also reporting on any complaint type if it concerns a GAC Cat 1 gTLD. They also report on granularity of type of Transfer complaints (choices are Transfer, Unauthorized Transfer, COR, Unauthorized COR and TEAC).
In light of the ICANN community concerns regarding DNS infrastructure abuse, Compliance updated the audit plans with expanded questions and testing to address DNS abuse and also includes concerns about DNS infrastructure abuse when determining which contracted parties to audit. This information will be reported via the Audit Report and published under Reports & Blogs at this link https://www.icann.org/resources/compliance-reporting-performance.

[33] Since the publication of the CCT Review Team's draft recommendations for public comment, ICANN Contractual Compliance has considered the review team recommendations in implementing certain changes described in the blogs of October 2017, "Enhancing Transparency in Contractual Compliance Reporting," https://www.icann.org/news/blog/enhancing-transparency-in-contractual-compliance-reporting, and March 2018, "Enhancing Transparency in Contractual Compliance Reporting, https://www.icann.org/news/blog/enhancing-transparency-in-contractual-compliance-reporting-en.

#	Recommendation	To	Prerequisite or priority level	Consensus
23	ICANN should gather data on new gTLDs operating in highly-regulated sectors to include the following elements:[34] ⊙ A survey to determine: 1) the steps registry operators are taking to establish working relationships with relevant government or industry bodies; and 2) the volume of complaints received by registrants from government and regulatory bodies and their standard practices to respond to those complaints. ⊙ A review of a sample of domain websites within the highly-regulated sector category to assess whether contact information to file complaints is sufficiently easy to find. ⊙ An inquiry to ICANN Contractual Compliance and registrars/resellers of highly regulated domains seeking sufficiently detailed information to determine the volume and the subject matter of complaints regarding domains in highly regulated industries. ⊙ An inquiry to registry operators to obtain data to compare rates of abuse between those highly-regulated gTLDs that have voluntarily agreed to verify and validate credentials to those highly-regulated gTLDs that have not. ⊙ An audit to assess whether restrictions regarding possessing necessary credentials are being enforced by auditing registrars and resellers offering the highly-regulated TLDs (i.e., can an individual or entity without the proper credentials buy a highly-regulated domain?). To the extent that current ICANN data collection initiatives and compliance audits could contribute to these efforts, we recommend that ICANN assess the most efficient way to proceed to avoid duplication of effort and leverage current work.	ICANN organization, New gTLD Subsequent Procedures PDP Working Group	High	Yes
24	a. Determine whether ICANN Contractual Compliance should report on a quarterly basis whether it has received complaints for a registry operator's failure to comply with either the	ICANN organization	Low	Yes

[34] For materials illustrating the safeguards related to highly-regulated sectors, see ICANN CCT Review Wiki, "Studies, Research, and Background Materials: Safeguards and Public Interest Commitments," accessed 6 August 2018, https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials

#	Recommendation	To	Prerequisite or priority level	Con sen sus
	safeguard related to gTLDs with inherent governmental functions or the safeguard related to cyberbullying.[35] b. Survey registries to determine: 1) whether they receive complaints related to cyberbullying and misrepresenting a governmental affiliation; and 2) how they enforce these safeguards.			
25	To the extent voluntary commitments are permitted in future gTLD application processes, all such commitments made by a gTLD applicant must state their intended goal and be submitted during the application process so that there is sufficient opportunity for community review and time to meet the deadlines for community and Limited Public Interest objections.[36] Furthermore, such requirements should apply to the extent that voluntary commitments may be made after delegation. Such voluntary commitments, including existing voluntary PICs, should be made accessible in an organized, searchable online database to enhance data-driven policy development, community transparency, ICANN compliance, and the awareness of variables relevant to DNS abuse trends.	ICANN organization, New gTLD Subsequent Procedures PDP Working Group	Prerequisite	Yes
26	A study to ascertain the impact of the New gTLD Program on the costs required to protect trademarks in the expanded DNS space should be repeated at regular intervals to see the evolution over time of those costs. The CCT Review Team recommends that the next study be completed within 18 months after issuance of the CCT Final Report, and that subsequent studies be repeated every 18 to 24 months. The CCT Review Team acknowledges that the Nielsen survey of INTA members in 2017 intended to provide such guidance yielded a lower response rate than anticipated.[37] We recommend a more user friendly and perhaps shorter survey to help ensure a higher and more statistically significant response rate.	ICANN organization	High	Yes
27	Since the review team's initial draft recommendation, the PDP "Review of All Rights Protection Mechanisms in All gTLDs (RPM	Generic Names Supporting Organization	Prerequisite	Yes

[35] ICANN Governmental Advisory Committee (GAC), *Beijing Communiqué*, accessed 6 August 2018, https://www.icann.org/en/system/files/correspondence/gac-to-board-18apr13-en.pdf
[36] ICANN, "Objection and Dispute Resolution," accessed 6 August 2018, https://newgtlds.icann.org/en/program-status/odr
[37] Nielsen, *INTA New gTLD Cost Impact Study* (April 2017) and INTA, *New gTLD Impact Study,* (August 2017).

#	Recommendation	To	Prerequisite or priority level	Consensus
	WG)" has started reviewing the Uniform Rapid Suspension system in detail and this is currently ongoing.[38] Given this ongoing review, the CCT Review Team recommends that the RPM WG continues its review of the URS and also looks into the interoperability of the URS with the Uniform Domain Name Dispute Resolution Policy (UDRP).[39] Given the current timeline, it would appear that the appropriate time to do so will be when the UDRP review is carried out by the PDP WG and at this time consideration be given to how it should interoperate with the UDRP. The review team has encountered a lack of data for complete analysis in many respects. The RPM PDP WG appears to also be encountering this issue and this may well prevent it drawing firm conclusions. If modifications are not easily identified, then the review team recommends continued monitoring until more data is collected and made available for a review at a later date.			
28	A cost-benefit analysis and review of the Trademark Clearinghouse (TMCH) and its scope should be carried out to provide quantifiable information on the costs and benefits associated with the present state of the TMCH services and thus to allow for an effective policy review.[40] Since our initial draft recommendation, the RPM PDP has started reviewing the TMCH in detail and ICANN has appointed Analysis Group to develop and conduct the survey(s) to assess the use and effectiveness of the Sunrise and Trademark Claims RPMs. Provided that the RPM PDP has sufficient data from this survey or other surveys and is able to draw firm conclusions, the CCT Review Team does not consider that an additional review is necessary. However, the CCT Review Team reiterates its recommendation for a cost-benefit analysis to be carried out if such analysis can enable objective conclusions to be drawn. Such cost-benefit analysis should include but not	Generic Names Supporting Organization	Prerequisite	Yes

[38] ICANN GNSO, "PDP Review of All Rights Protection Mechanisms in All gTLDs," accessed 6 August 2018, https://gnso.icann.org/en/group-activities/active/rpm and ICANN" and ICANN "Uniform Rapid Suspension (URS)," accessed 6 August 2018, https://www.icann.org/resources/pages/urs-2014-01-09-en
[39] ICANN, "Uniform Domain Name Dispute Resolution Policy," accessed 6 August 2018, https://www.icann.org/resources/pages/help/dndr/udrp-en
[40] ICANN, "Trademark Clearinghouse (TMCH)," accessed 6 August 2018, https://newgtlds.icann.org/en/about/trademark-clearinghouse

#	Recommendation	To	Prerequisite or priority level	Consensus
	necessarily be limited to looking at cost to brand owners, cost to registries, and cost to registrars of operating with the TMCH now and going forward and look at the interplay with premium pricing.			
Chapter 10. Application and Evaluation Process of the New gTLD Program				
29	Set objectives/metrics for applications from the Global South.	New gTLD Subsequent Procedures PDP Working Group/Generic Supporting Names Organization	Prerequisite —objectives must be set	Yes
30	Expand and improve outreach into the Global South.	ICANN organization	Prerequisite	Yes
31	The ICANN organization to coordinate the *pro bono* assistance program.	ICANN organization	Prerequisite	Yes
32	Revisit the Applicant Support Program.[41]	New gTLD Subsequent Procedures Working Group	Prerequisite	Yes
33	As required by the October 2016 Bylaws, Governmental Advisory Committee (GAC) consensus advice to the Board regarding gTLDs should also be clearly enunciated, actionable, and accompanied by a rationale, permitting the Board to determine how to apply that advice.[42] ICANN should provide a template to the GAC for advice related to specific TLDs, in order to provide a structure that includes all of these elements. In addition to providing a template, the Applicant Guidebook (AGB) should clarify the process and timelines by which GAC advice is expected for individual TLDs.	New gTLD Subsequent Procedures PDP Working Group, GAC, ICANN organization	Prerequisite	Yes
34	A thorough review of the procedures and objectives for community-based applications should be carried out and improvements made to address and correct the concerns raised before a new gTLD application process is launched. Revisions or adjustments should be clearly reflected in an updated version of the 2012 AGB.	New gTLD Subsequent Procedures PDP Working Group	Prerequisite	Yes
35	The New gTLD Subsequent Procedures PDP should consider adopting new policies to avoid the potential for inconsistent results in string confusion objections.[43] In particular, the PDP should consider the following possibilities:	New gTLD Subsequent Procedures PDP Working Group	Prerequisite	Yes

[41] ICANN, "Applicant Support Program (ASR)," accessed 6 August 2018, https://newgtlds.icann.org/en/applicants/candidate-support

[42] ICANN, "GAC Advice," accessed 6 August 2018, https://newgtlds.icann.org/en/applicants/gac-advice. See also ICANN, "Bylaws," Section 2.1, Article 3, Section 3.6: https://www.icann.org/resources/pages/governance/bylaws-en/#article2

[43] ICANN GNSO, "PDP New gTLD Subsequent Procedures," accessed 6 August 2018, https://gnso.icann.org/en/group-activities/active/new-gtld-subsequent-procedures

#	Recommendation	To	Prerequisite or priority level	Consensus
	1. Determining through the initial string similarity review process that singular and plural versions of the same gTLD string should not be delegated.[44] 2. Avoiding disparities in similar disputes by ensuring that all similar cases of plural versus singular strings are examined by the same expert panelist. 3. Introducing a post-dispute resolution panel review mechanism.			

[44] New gTLD Subsequent Procedures Wiki, "String Similarity," accessed 6 August 2018, https://community.icann.org/display/NGSPP/4.4.2+String+Similarity

3 Background on the Competition, Consumer Trust, and Consumer Choice Review

The Competition, Consumer Trust and Consumer Choice Review Team (CCT) was convened under the Affirmation of Commitments (AoC) Section 9.3.[45] The AoC prescribes that "when new gTLDs (whether in ASCII or other language character sets) have been in operation for one year, ICANN will organize a review that will examine the extent to which the introduction or expansion of gTLDs has promoted competition, consumer trust and consumer choice, as well as effectiveness of (a) the application and evaluation process, and (b) safeguards put in place to mitigate issues involved in the introduction or expansion." [46]

The CCT was assembled in January 2016 and was comprised of 17 community representatives and volunteer subject matter experts representing a diverse array of global Internet stakeholders.[47] Since the review team was convened, ICANN has adopted new Bylaws as part of the Internet Assigned Numbers Authority (IANA) stewardship transition that incorporated the AoC provisions into the ICANN Bylaws as "Specific Reviews" under Section 4.6.[48] Similar to the AoC, the Bylaws describe the scope of this review as:

> *"The review team for the CCT Review will examine (A) the extent to which the expansion of gTLDs has promoted competition, consumer trust and consumer choice and (B) the effectiveness of the New gTLD Round's application and evaluation process and safeguards put in place to mitigate issues arising from the New gTLD Round."*

The new Bylaws also specify that, for each of its recommendations, the CCT Review Team should indicate whether the recommendation, if accepted by the Board, should be implemented before opening subsequent rounds of new gTLD applications periods. The recommendations contained in this report identify those that should be implemented before the opening of future application periods for new gTLDs.

Producing recommendations that are as data- and fact-driven as possible is a fundamental goal of the review, and the CCT Review Team has endeavored to support its recommendations with data received prior to and throughout the review process. A number of initiatives were undertaken prior to the CCT Review's launch and during deliberations to inform its work.[49]

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[45] US Department of Commerce and ICANN, *Memorandum of Understanding Between the Department of Commerce and the Internet Corporation for Assigned Names and Numbers*, 31 December 1999, https://www.icann.org/resources/unthemed-pages/icann-mou-1998-11-25-en. The Affirmation of Commitments, signed on 30 September 2009 between ICANN and the U.S. Department of Commerce (the "AoC"), calls for periodic review of four key ICANN objectives: (1) ensure that decisions made related to the global technical coordination of the DNS are made in the public interest and are accountable and transparent; (2) preserve the security, stability and resiliency of the DNS; (3) promote competition, consumer trust, and consumer choice in the DNS marketplace and (4) facilitate international participation in DNS technical coordination.

[46] ICANN, "Bylaws for Internet Corporation for Assigned Names and Numbers," (October 2016), accessed 20 January 2017, https://www.icann.org/resources/pages/governance/bylaws-en This aspect has now been incorporated to the new ICANN Bylaws, https://www.icann.org/en/system/files/files/adopted-bylaws-27may16-en.pdf.

[47] The composition of the CCT Review Team can be viewed here: https://community.icann.org/display/CCT/Composition+of+Review+Team

[48] ICANN, "Bylaws," (2016).

[49] For details, see Appendix E: Terms of Reference.

In December 2010, the Board requested advice from the At-Large Advisory Committee (ALAC), Governmental Advisory Committee (GAC), Generic Names Supporting Organization (GNSO), and Country Codes Names Supporting Organization (ccNSO) on establishing the definition, measures, and three-year targets for competition, consumer trust and consumer choice in the context of the Domain Name System (DNS). This advice was requested to support ICANN's obligations under the AoC to review the extent to which the introduction or expansion of gTLDs has promoted competition, consumer trust and consumer choice.[50]

The ICANN Board formed an Implementation Advisory Group for Competition, Consumer Trust and Consumer Choice (IAG-CCT) in September 2013 to review 70 metrics recommended by a GNSO-ALAC working group in December 2012. The IAG-CCT was tasked to make recommendations to the review team based on an evaluation of the feasibility, utility and cost-effectiveness of each of the proposed metrics. In September 2014, the IAG-CCT submitted its final recommendations[51] to the ICANN Board, which adopted them in February 2015.[52] The recommendations included 66 metrics related to competition, consumer trust and consumer choice. The ICANN organization has been continuously gathering and publishing data related to most of these metrics on the ICANN website.[53]

These efforts led the ICANN organization to commission surveys of Internet users and registrants to gauge their sense of trust and choice of gTLDs, and an economic study of gTLD pricing and marketplace competition. Nielsen was retained to perform the registrant[54] and consumer[55] studies. The Analysis Group was retained to perform the economic studies.[56] Each served as important resources for the review team in building its draft recommendations.

The AoC mandates an examination of the effectiveness of the application and evaluation processes used in the 2012 round of gTLD applications, including ICANN organization's implementation of the policy recommendations made for the New gTLD Program. To help inform the CCT, ICANN organization compiled and published the Program Implementation Review,[57] which incorporated feedback from stakeholders, including applicants, service providers, and other community members, in order to provide the community (and the organization itself) with perspective on the execution of the New gTLD Program. The review team was also interested in understanding why more firms from the developing world did not apply to the program. To inform this aspect of its work, AMGlobal produced a report on its research and interviews conducted with firms, organizations and other institutions that did not apply for new gTLDs, but who may have been considered good candidates for the program because they were similar to entities from the developed world that did apply.[58]

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[50] ICANN Board Resolution 2010.12.10.30, "Consumer Choice, Competition and Innovation," (2010), accessed 20 January 2017, https://www.icann.org/resources/board-material/resolutions-2010-12-10-en#6

[51] Implementation Advisory Group for Competition Consumer Trust and Consumer Choice (26 September 2014), *Final Recommendations on Metrics for CCT Review,* accessed 20 January 2017, https://community.icann.org/display/IAG/IAG-CCT+report

[52] ICANN Board Resolution 2015.02.12.07-2015.02.12.09, "Recommendations for the Collection of Metrics for the New gTLD Program to Support the future AoC Review on Competition, Consumer Trust and Consumer Choice," (2012), accessed 20 January 2017, https://www.icann.org/resources/board-material/resolutions-2015-02-12-en#1.e

[53] ICANN, "Competition, Consumer Trust and Consumer Choice (CCT) Metrics Reporting," (2017), accessed 20 January 2017, https://www.icann.org/resources/reviews/cct/metrics

[54] Nielsen, Registrant Survey (2015) and Nielsen, Registrant Survey Wave 2 (2016).

[55] Nielsen, Consumer Research (2015) and Nielsen, Consumer Research Wave 2 (2016).

[56] Analysis Group, *Phase I Assessment* (2015) and Analysis Group, *Phase II Assessment,* (October 2016).

[57] ICANN, *Program Implementation Review* (January 2016), accessed 13 January 2017, https://newgtlds.icann.org/en/reviews/implementation/program-review-29jan16-en.pdf

[58] AMGlobal, *New gTLDs and the Global South* (October 2016).

The AoC also mandates that the review assess the effectiveness of safeguards enacted to mitigate abuse of new gTLDs. To inform CCT's work, the ICANN organization worked with the community to create the New gTLD Program Safeguards Against DNS Abuse report,[59] which explored methods for measuring the effectiveness of safeguards to mitigate DNS abuse that were implemented as part of the New gTLD Program. The ICANN organization also drafted the Rights Protection Mechanisms Review (RPM),[60] which focused on key rights protection mechanisms such as the Trademark Clearinghouse, the Uniform Rapid Suspension System and Post-Delegation Dispute Resolution Procedures.[61]

[59] ICANN Operations and Policy Research, *New gTLD Program Safeguards* (2016).
[60] ICANN (11 September 2015), Rights Protection Mechanisms Review, accessed 20 January 2017, https://newgtlds.icann.org/en/reviews/rpm/rpm-review-11sep15-en.pdf
[61] For more details, see Appendix C: Surveys and Studies.

4 History of the New gTLD Program[62]

In the 1990s, management of the Domain Name System (DNS) was revised periodically to encourage more competition in the domain name marketplace. The number of available gTLDs, however, remained fixed and small. Beginning in 2000, ICANN expanded the available set of gTLDs to encourage more competition in the market for domain names.

History of the Expansion of the DNS Prior to 2000

The DNS was developed in the early 1980s as a means of organizing and easing Internet navigation by establishing unique, easier-to-remember addresses for different locations on the Internet. Initially, eight gTLDs were established, within which eligible entities could register second-level domain names. Three of these gTLDs (.com, .org, and .net) were unrestricted, meaning that anyone could register a second-level domain name within them. Five (.edu, .gov, .arpa, .int, and .mil) were in restricted use, meaning that only particular types of users were allowed to register a second-level domain within them. In addition to gTLDs, two-letter country code TLDs (ccTLDs) were introduced over time, beginning with .us in 1985.

Initially, the task of registering second-level domain names in the various gTLDs fell to SRI International, a not-for-profit research institute operating under a contract with the Department of Defense (DOD). In the early 1990s, the responsibility for registering names for .com, .org, .net, .edu and .gov was transferred to a private corporation, Network Solutions Inc. (NSI), under a contract with the National Science Foundation, which had taken over from DOD as the funding source. NSI operated the registry and acted as the sole registrar for .com, .org and .net.

In the early 1990s, .com replaced .edu as the most-used gTLD as the commercial possibilities of the Internet became apparent following the development of the World Wide Web. As the .com registry operator and its sole registrar, NSI had a monopoly on the registration of second-level domain names in .com. In 1995 NSI began charging $100 to register a .com domain name for a two-year period.

The late 1990s saw a rapid series of steps designed to increase competition in the DNS marketplace. In 1997, the U.S. Government issued a policy directive stating that the management of the DNS should be privatized[63]. In a policy statement issued in 1998, the U.S. Department of Commerce ("Commerce") declared its intent to transfer management of the DNS from the U.S. government to a private corporation.[64] ICANN was established in 1998 as a private, not-for-profit corporation to manage the DNS. A Memorandum of Understanding (MOU) signed by Commerce and ICANN established ICANN's authority to manage the DNS and reiterated Commerce's intent that the management of the DNS would be "based on the principles of stability, competition, bottom-up coordination, and representation."[65] The MOU also described one of ICANN's main responsibilities as "oversight of the policy for determining

[62] Michael L. Katz, Gregory L. Rosston, and Theresa Sullivan (June 2010), *An Economic Framework for the Analysis of the Expansion of Generic Top-Level Domains*, prepared for ICANN, https://archive.icann.org/en/topics/new-gtlds/economic-analysis-of-new-gtlds-16jun10-en.pdf
[63] President William J. Clinton (1 July 1997), *Memorandum on Electronic Commerce*, https://www.gpo.gov/fdsys/pkg/WCPD-1997-07-07/pdf/WCPD-1997-07-07-Pg1006-2.pdf
[64] National Telecommunications and Information Administration, US Dept of Commerce (5 June 1998), *Statement of Policy on the Management of Internet Names and Addresses*, https://www.ntia.doc.gov/federal-register-notice/1998/statement-policy-management-internet-names-and-addresses
[65] US Department of Commerce and ICANN (31 December 1999), *Memorandum of Understanding between the US Department of Commerce and the Internet Corporation for Assigned Names and Numbers, Section II.A*, accessed 6 August 2018, https://www.icann.org/resources/unthemed-pages/icann-mou-1998-11-25-en

the circumstances under which new TLDs are added to the root system," [66] including "development of policies for the addition, allocation, and management of gTLDs and the establishment of domain name registries and domain name registrars to host gTLDs."[67] Thus, as described in the Applicant Guidebook (AGB), "one of [ICANN's] key mandates has been to promote competition in the domain name market." [68]

In late 1998, the National Telecommunications and Information Administration (NTIA), an agency within the U.S. Department of Commerce, required NSI to separate the registry functions from the registrar functions and to facilitate the entry of competitive registrars by establishing a shared registration system that would allow registrars other than NSI to interact with the .com, .org and .net registry databases. This led to the entry of hundreds of registrars, but the set of gTLDs remained fixed at a small number.

Previous gTLD Expansions[69]

Including the most recent in 2012, ICANN has held three rounds of gTLD expansion since its founding. The first began in 2000 as a "proof-of-concept" round.[70] In that round, ICANN announced that it would create a maximum of seven new gTLDs, for which it received approximately 50 applications. After evaluating the applications, ICANN added four unsponsored gTLDs (.biz, .info, .name and .pro) and three sponsored gTLDs (.aero, .coop and .museum). The second round of gTLD expansion began in 2004. In that round, ICANN accepted applications only for sponsored gTLDs but announced that it would not limit the number of new gTLDs and would approve all qualified applications. ICANN received ten applications for nine different sponsored gTLDs and ultimately approved eight of the applications (.asia, .cat, .jobs, .mobi, .post, .tel, .travel and .xxx). Thus, prior to the 2012 New gTLD Program, there were 23 gTLDs.

Background of the 2012 New gTLD Program[71]

In 2005, ICANN's Generic Names Supporting Organization (GNSO)—the main policy-making body for generic top-level domains—initiated a Policy Development Process (PDP) to consider the introduction of new gTLDs into the DNS based on the results of previous rounds conducted in 2000 and 2004. The two-year PDP included detailed and lengthy consultations with the many constituencies of ICANN's global Internet community, including governments, civil society, business and intellectual property stakeholders, and technologists. In 2008, the ICANN Board adopted 19 specific GNSO policy recommendations for implementing new gTLDs, which included elements such as allocation criteria and contractual conditions for operating a gTLD.[72]

After approval of the PDP's recommendations, ICANN undertook an open, inclusive and transparent implementation process to address stakeholder concerns, such as the protection

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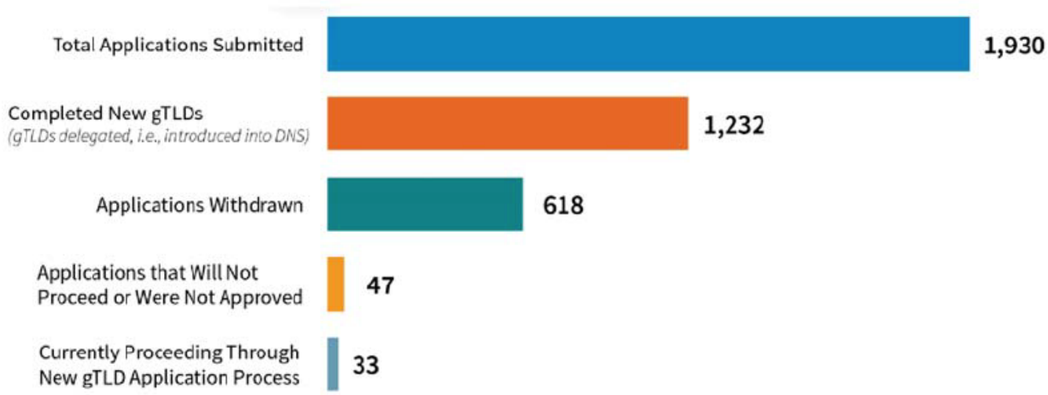
[66] Ibid., Section 2.B.c
[67] US Government Publishing Office, *Federal Register 31741: Management of Internet Names and Addresses* [Vol. 63, 1], (10 June 1998): https://www.gpo.gov/fdsys/pkg/FR-1998-06-10/pdf/98-15392.pdf
[68] ICANN, *gTLD Applicant Guidebook* (June 2012), p. A-1.
[69] Katz et. al (2010), An Economic Framework
[70] ICANN, "Registry Proof of Concept Reports," accessed 19 January 2017, https://www.icann.org/resources/pages/poc-2012-02-25-en.
[71] ICANN, "New Generic Top-Level Domains: About the Program," accessed 19 January 2017, https://newgtlds.icann.org/en/about/program.
[72] ICANN Generic Names Supporting Organization (8 August 2007), *Final Report: Introduction of New Generic Top-Level Domains*, https://gnso.icann.org/en/issues/new-gtlds/pdp-dec05-fr-parta-08aug07.html.

of intellectual property and community interests, consumer protection and DNS stability. This work included public consultations, review and input on multiple draft versions of the Applicant Guidebook. In June 2011, ICANN's Board of Directors approved the Guidebook and authorized the launch of the New gTLD Program. The program's goals included enhancing competition and consumer choice, and enabling the benefits of innovation via the introduction of new gTLDs, including both new ASCII and Internationalized Domain Name (IDN) top-level domains.

The application window opened on 12 January 2012, and ICANN received 1,930 applications for new gTLDs. As reported on ICANN's New gTLD website:

Table 1: New gTLD Applications' Status[73]



[73] Figures current to 6 August 2018. See ICANN, "New Generic Top-Level Domains: Program Statistics," accessed 6 August 2018, https://newgtlds.icann.org/en/program-status/statistics.

5 Data-Driven Analysis: Recommendations for Additional Data Collection and Analysis

As called for in its terms of reference, the CCT Review Team endeavored to engage in objective research, to determine its findings and to provide a framework to evaluate the effectiveness of its recommendations.[74] To this end, the review team assembled data that had been collected as a result of the IAG-CCT recommendations, purchased additional data, and commissioned the collection of more.[75] The timeframe for the review, beginning while new strings were still being delegated, necessarily limited the conclusions that could be reached. Furthermore, the effort to conceive data-driven evaluation models was hampered by the difficulty in defining abstract concepts such as "Consumer Trust." However, the primary challenge was insufficient data.

At the core of any competitive analysis is pricing, both in wholesale and retail markets. The data available to analyze both markets were often insufficient for the task. In particular, it would have been useful to have better price data, which would have allowed us to measure the impact of new gTLD entry and to define market(s) in which gTLDs compete more precisely. Anecdotal data suggest that the market in which new gTLDs participate also includes legacy gTLDs, certain "generic" ccTLDs (such as .co), other ccTLDs in their respective countries, and even alternative online identities such as social media accounts and third-level domains. More and better data on pricing, wholesale, retail, and the secondary market, both global and regional, are necessary to fully understand the behavior of participants within these markets. Finally, the role of parking (i.e., domains that have been registered, but are not yet being used as primary identifiers of typical websites. Instead, these domains are forwarded to other domains (including sub-domains), used only for email, monetized via advertising, or simply do not resolve, perhaps held in reserve by speculators or as premium domains by registries.

When evaluating the effectiveness of Rights Protection Mechanisms (RPMs) and safeguards, far more granular data on individual safeguards, as well as greater transparency on complaints from ICANN's Contract Compliance Department is necessary.

Additional surveys of end-users would be helpful for competition analysis, to explore substitution behavior, and to evaluate consumer trust. Although user surveys were fielded by the IAG-CCT and the CCT, it is the review team's view that future analyses would benefit greatly from surveys that take a more refined approach to analyzing registrant behavior. We describe our suggested approach to future surveys in Recommendations 8.

Finally, even the evaluation of the effectiveness of the application and evaluation process would have benefited from additional data. For example, programs put in place to encourage and facilitate applications from the Global South were not sufficiently tracked to allow for comprehensive evaluation.

As the issue of data has come up in the past and will inevitably come up in the future, the CCT would like to make a general recommendation about data collection to ICANN in addition to making suggestions particular to CCT research.

[74] Competition, Consumer Trust, and Consumer Choice Review Team (2016), *Terms of Reference*, accessed 6 August 2018, https://community.icann.org/pages/viewpage.action?pageId=58727456.
[75] Implementation Advisory Group for Competition Consumer Trust and Consumer Choice (26 September 2014), *Final Recommendations*.

Recommendation

Recommendation 1: Formalize and promote ongoing data collection.

Rationale/related findings: The lack of data has handicapped attempts both internally and externally to evaluate market trends and the success of policy recommendations.

To: ICANN organization

Prerequisite or priority level:[76] High

Consensus within team: Yes

Details: In an effort to promote more objective policy development inside ICANN, the ICANN organization should establish a formal initiative, perhaps including a dedicated data scientist, to facilitate quantitative analysis of policy initiatives and reviews by staff, contractors, and the community. Specifically, where possible, the ICANN organization should proactively collect data needed to validate or invalidate policy initiatives (whether ICANN organization- or community-driven), identify and collect data necessary to measure program success, both incrementally and in retrospect. On a case-by-case basis, this initiative would help to ascertain the cost/benefit and security requirements for the data in question.

Success measures: The ability for the community to determine, through review process, if policy initiatives had well-defined issue measurement to justify reform and facilitate review.

Below are some of the CCT-specific data requests for future review teams.

Competition and Consumer Choice

At various points in this report, we identify analyses that we were unable to conduct because we lacked the needed information. Some of these shortcomings can be overcome in the future if ICANN obtains these data directly from industry participants or if ICANN enters into contractual relationships with parties that collect the data. Others will require improved analyses of the behavior of industry participants, especially analyses that enhance our understanding of the way in which registrants substitute among TLDs. This section discusses these issues in greater detail. In addition, we believe that ICANN can make better use of publicly available data and that it should develop the capability to analyze both proprietary and public data on an ongoing basis.

The most significant data limitation that we faced was the almost total lack of information about the wholesale prices charged by legacy TLDs. Analysis Group requested wholesale price data directly from both legacy and new gTLD registries as part of its research, with the understanding that the data would never be provided to ICANN or made public. In addition, Analysis Group provided assurances that the data published in its report would be aggregated and anonymized so as not to compromise confidentiality. Although Analysis Group obtained

[76] Prerequisite or priority level: Per the ICANN Bylaws, the CCT Review Team indicated whether each recommendation must be implemented prior to the launch of subsequent procedures for new gTLDs. The team agreed that those recommendations which were not categorized as prerequisites would be given a time-bound priority level:
High priority: Must be implemented within 18 months of the issuance of a final report.
Medium priority: Must be implemented with 36 months of the issuance of a final report.
Low priority: Must be implemented prior to the start of the next CCT Review.

some data from most of the new gTLD registries from which it requested them, there were extremely few responses from legacy gTLDs and incomplete data from new gTLDs. We believe that ICANN should acquire this information from all registries on a regular basis and provide assurances that the data would be treated on a confidential basis. The data could then be analyzed by the ICANN organization and by others that execute non-disclosure agreements.

Very high parking rates are observed for some gTLDs, raising questions as to the competitive effects of parking. If prospecting rates are different between new and legacy gTLDs, we may be observing something different from competitive behavior and an analysis of registration renewal rates would be helpful in improving our understanding of this phenomenon. Although nTLDstats.com provides this information on an ongoing basis for new gTLDs, ICANN has had to enter into a contract with them to obtain similar information for legacy gTLDs. We report the results of our analysis of these data below. We recommend that ICANN arrange to obtain this information on an ongoing basis in the future.

A third limitation involved our inability to conduct analyses on a regional or country basis. However, during the course of our work, we learned that some of the data required to conduct this analysis had been compiled in connection with the Latin American and Caribbean DNS Marketplace Study.[77] We subsequently obtained those data, and we report the results of using the data to analyze concentration in a number of Latin American countries below.[78] We recommend that ICANN collect information on regional market shares between relevant ccTLDs and legacy TLDs, as well as pricing data for all countries on an ongoing basis in the future. In this regard, it is important to note that country-specific analysis would allow assessment of the extent to which gTLDs and ccTLDs compete. Some of these data may already be collected, for example by the Council for European National Top-Level Domain Registries (CENTR), and we recommend that ICANN explore the possibility of obtaining the needed data from these sources.[79]

Fourth, it appears that ICANN does not currently make use of retail price data that can be obtained directly from public sources such as https://tld-list.com/ and https://namestat.org. We recommend that ICANN develop the capability of analyzing these data on an ongoing basis. ICANN may also wish to explore the possibility of obtaining data on prices that prevail in secondary market transactions.

Finally, we note that our ability to define relevant markets has been severely handicapped by the lack of information about how registrants make choices among TLDs. Appendix G: Possible Questions for a Future Consumer Survey contains suggestions for questions that might be included in a future end-user survey.

Consumer Trust/Safeguards

The review team also faced challenges related to its assessment of the extent to which the expansion of gTLDs promoted consumer trust and the effectiveness of safeguards adopted by new TLD operators in mitigating certain risks involved in such expansion.

[77] Oxford Information Labs, EURid, InterConnect Communications, *LAC Study*.
[78] ICANN CCT Review Wiki, "Studies, Research, and Background Materials: LAC concentration ratios and HHIs" accessed 6 August 2018, https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials.
[79] centr.org, accessed 6 August 2018.

Two surveys were made available that contained data regarding the extent to which consumer end-user and registrants trusted new gTLDs.[80] However, the review team noted that the surveys did not define consumer trust (and other key terms) and contained few questions that explored the objective behavior of the survey respondents that could serve as a proxy for consumer trust. Moreover, certain responses that identified factors relevant to consumer trust—such as reputation and familiarity—were broad concepts that did not lend themselves to providing precise guidance for either future applicants, ICANN, or other community stakeholders. As a result, we recommend that future review teams work with survey experts to conceive more behavioral measures of consumer trust that gather both objective and subjective data, with a goal toward generating more concrete and actionable information, as described in recommendation 8.

The review team also lacked sufficient data on how effective safeguards adopted by new gTLD operators were in mitigating certain risks.[81] For example, although many safeguards for new gTLDs aimed at mitigating DNS Security Abuse, little information was available to the review team that directly addressed this issue. In response, the review team commissioned a study to establish baseline measures of DNS Security Abuse rates in new and legacy gTLDs that will enable further inquiry into the effectiveness of these safeguards.[82] We hope that future review teams will build on this study and consider how additional studies may shed further light on assessing the effectiveness of new gTLD safeguards.

An important and related issue is information about the costs of implementing these safeguards. At the time this review took place, the review team lacked data regarding the costs to registries and registrars of implementing the safeguards required under the New gTLD Program. Such data would be useful to future review teams who may wish to engage in a cost-benefit analysis.

Another challenge faced by the review team was a lack of transparency in the subject matter of complaints submitted to ICANN Contractual Compliance. Although ICANN makes available information about the general subject matter of the complaints it receives, such as WHOIS accuracy or DNS Security Abuse, ICANN does not disclose more specific information about the subject matter of these complaints. For example, regarding complaints about registrars, ICANN Compliance reports do not disclose what type of WHOIS accuracy is being complained about (i.e. address, email, or identity verification). Similarly, ICANN Compliance reports do not identify what types of DNS Security Abuse are the subjects of complaints, nor the nature of complaints made regarding implementation of UDRP and URS decisions (rather Compliance reports provide just the number of such complaints). Such information would permit review teams to identify more precisely which subject areas generate the most complaints and would enable a better assessment of the effectiveness of current safeguards.[83]

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[80] Nielsen, Consumer Research (2015); Nielsen, Consumer Research Wave 2 (2016); Nielsen, Registrant Survey (2015); and Nielsen, Registrant Survey Wave 2 (2016).

[81] ICANN, New gTLD Program Safeguards (2016).

[82] SIDN Labs and the Delft University of Technology (August 2017), "DNS Abuse in gTLDs".

[83] Since the publication of the CCT Review Team's draft recommendations for public comment, ICANN Contractual Compliance has considered the review team recommendations in implementing certain changes described in the blogs of October 2017, "Enhancing Transparency in Contractual Compliance Reporting," https://www.icann.org/news/blog/enhancing-transparency-in-contractual-compliance-reporting, and March 2018, "Enhancing Transparency in Contractual Compliance Reporting, https://www.icann.org/news/blog/enhancing-transparency-in-contractual-compliance-reporting-en.

6 Competition

In announcing the opening of the latest round of the introduction of new gTLDs, ICANN stated that:

> *The [New gTLD Program] aims to enhance innovation, competition, and consumer choice…The [Program] has enabled hundreds of new top-level domains in ASCII characters and in different scripts…to enter into the Internet's root zone since the first delegations occurred in October 2013.*[84]

This section describes the review team's analysis of the effects of the recent new gTLD round on competition. Before reporting the findings, however, it is important to emphasize that there were significant limitations in conducting the analysis. First, it is still "early innings" and the full effects of the New gTLD Program are unlikely to be felt for some time. TLDs continue to be introduced and many new gTLDs are still in the early stages of their development. Together, these factors make it difficult to reach definitive conclusions about the Program's impact at this time. Therefore, this should be regarded as an interim report and it is possible that the DNS marketplace will look quite different in the future than it does at present.

Second, the review team's analysis has been hampered significantly by the lack of relevant data, including, but not limited to, information about the wholesale prices charged for gTLD registrations. Consequently, among the conclusions reached are recommendations concerning additional information that ICANN should collect on an ongoing basis in order to improve its ability to carry out future analyses.[85]

Finally, although registrants are likely to view different types of TLDs as substitutes for one another—for example, ccTLDs, legacy, and new gTLDs may all offer the same kind of string ending a registrant may value—the review team does not currently have enough information to permit definition of markets definitively for the purpose of analyzing competition. For that reason, the review team has analyzed competition in a number of alternative markets, including all gTLDs, all gTLDs plus "open" ccTLDs,[86] and all TLDs.[87] The hope is that future analyses will be better able to define the relevant markets in which gTLDs compete. To that end, a draft of a registrant survey that ICANN could undertake that would improve our understanding of registrant behavior, and thus permit relevant markets to be defined more precisely, is included in Appendix G.

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[84] ICANN, "New Generic Top-Level Domains: About the Program," accessed 6 August 2018, https://newgtlds.icann.org/en/about/program

[85] Katz et. al (2010), *An Economic Framework*. In paragraph 118, the authors make a similar point: "…in order to derive the greatest informational benefits from the next round of gTLD introductions, ICANN should adopt practices that will facilitate the assessment of the net benefits from the initial rollout of additional gTLDs. Specifically, ICANN should require registries, registrars, and domain names registrants to provide information sufficient to allow the estimation of the costs and benefits of new gTLDs."

[86] Ben Edelman, "Registrations in Open ccTLDs," last modified 22 July 2002, https://cyber.harvard.edu/archived_content/people/edelman/open-cctlds/. Edelman notes: "Seeing the growth of COM, NET, and ORG, certain country-code top-level domains (ccTLDs) have decided to open their name spaces to all interested registrants, regardless of country. These domains are often referred to as 'open ccTLDs' as distinguished from those 'closed' ccTLDs that limit restriction to citizens or firms of their respective countries."

[87] There is also some indication that alternative online identities, including social media and third level domains, may be substitutes for registrations in TLDs. For example, Nielsen's Wave 2 Registrant Survey, conducted on behalf of ICANN for this report, found that these alternatives are often easier to use and may affect decisions on whether to register a domain name. See Nielsen, *Consumer Research Wave 2* (2016).

Economic Framework for Competition Analysis

In order to analyze the competitive effects of the entry of new gTLDs into the DNS, the review team first attempted to define the relevant markets in which participants in the DNS operate. This required an understanding of, among other factors, the extent to which new TLDs serve as substitutes for the legacy domains, substitutions among new TLDs, and the geographic dimension of the market in which TLDs operate. Because the review team did not have sufficient information to define markets definitively, we conducted our analysis using a number of alternative market definitions. After defining markets, the review team then calculated the market shares of TLD operators, registrars, and back-end providers, and calculated measures of market concentration based on those shares. In order to assess the likely effect of new gTLD entry on competition in the DNS marketplace, these measures were compared in late 2013—just before the introduction of the new gTLDs—to their levels in December 2016, giving the review team an observation window of approximately three years.

Penetration by New gTLDs in the Domain Name System

The New gTLD Program not only vastly increased the number of registries from which registrants can choose—an increase of more than 60-fold—but it has also vastly increased their variety. This increase in non-price competition among gTLDs is reflected in domains in new languages (e.g., .immobilien), new character sets (e.g., .网址 [xn--ses554g] and コム [xn--tckwe]), new geographic identities (e.g., .london and .tokyo), and new specialized domains (e.g., .racing, .realtor, and .pub). The review team found that, as of December 2016 new gTLDs had acquired approximately 61 percent of the increase in the number of registrations in all gTLDs; approximately 45 percent of the increase in the number of registrations in all TLDs, gTLDs, and ccTLDs; and about 58 percent of the increase in the number of registrations in all gTLDs and all “open” ccTLDs, since the introduction of new gTLDs began in October 2013. The review team also found that, as of December 2016, new gTLDs accounted for about 14 percent of the total number of registrations in all gTLDs, about 9 percent of the total number of registrations in all TLDs, and about 13 percent of the total number of registrants in all gTLDs and “open” ccTLDs.[88] Table 2 reports these results: [89]

[88] Google, “International Targeting,” accessed 19 January 2017, https://support.google.com/webmasters/answer/62399?hl=en is the source of the list of “open” ccTLDs, which Google refers to as “generic” TLDs.

[89] Since the review team’s primary focus is on gTLDs that are, or will be, generally available for registration by members of the public, the analysis excludes gTLDs that are subject to Specification 13 of the base registry agreement and/or are exempt from the “Registry Operator Code of Conduct” (ROCC). For this reason, the review team requested that Analysis Group exclude ROCC-exempt as well as “Brand” TLDs subject to Specification 13 from the analysis. For details on Specification 13 and a list of “Brand” TLDs, see ICANN, “Applications to Qualify for Specification 13 of the Registry Agreement,” accessed 20 January 2017, https://newgtlds.icann.org/en/applicants/agb/base-agreement-contracting/specification-13-applications. For details on ROCC-exempt TLDs, see ICANN, “Registry Operatior Code of Conduct Exemption Requests,” accessed 20 January 2017, https://newgtlds.icann.org/en/applicants/agb/base-agreement-contracting/ccer.

Table 2: New gTLD Registrations Relative to Various Benchmarks as of December 2016[90]

Benchmark	New gTLDs Registrations Relative to Benchmark (%)
Legacy TLD and new gTLD registrations	14.2%
Legacy TLD, new gTLD, and all ccTLD registrations	8.8%
Legacy TLD, new gTLD, and open ccTLD registrations	12.6%
New gTLD registrations and increase in legacy TLD registrations since the beginning of the New gTLD Program	61.0%
New gTLDs registrations and increase in legacy TLDs and all ccTLDs registrations since the beginning of the New gTLD Program	45.4%
New gTLD registrations and increase in legacy TLD and open ccTLD registrations since the beginning of the New gTLD Program	58.4%

A question that naturally arises is how to interpret the observed share of registrations currently captured by new gTLDs. There are at least three reasons why one might expect that share initially to be smaller than the level that it will eventually reach. First, there are costs to registrants for switching from a legacy to a new gTLD that impart inertia to the process. These costs can be fairly mundane, such as the costs of repainting trucks or issuing new business cards. But they can be significant—for example, the costs of assuring that customers and others are made aware of the change—and may well exceed any direct costs related to the registration of a domain name. Second, there are what might be called "network" effects. Here, a potential registrant might be reluctant to register in a new domain because the domain has a small subscriber base and thus users are generally unaware of its existence. Although a "bandwagon effect"—where a new gTLD's increased popularity may motivate more users to register names after it has reached a given size—is unlikely to occur during the early part of its operations.[91] Third, a registrant might wait for the expiration of its registration term with a legacy gTLD before switching to a new gTLD or, at least for a time, register in a new gTLD

[90] These and other calculations in this section were performed by Analysis Group at the request of the review team. Registration data for legacy and new gTLDs were derived from monthly transaction reports as of December 2016 and October 2013, which are available at https://www.icann.org/resources/pages/registry-reports. Registration data for ccTLDs were based on Zooknic map data. Where Zooknic data were not available, ccTLD registration data were based on Nominet data as of December 2016. Registration data for ccTLDs at the beginning of the New gTLD Program were based on Nominet data as of December 2013. All calculations were based on the total number of registrations as of December 2016 with the exception of the change in legacy TLD and ccTLD registrations since the entry of new gTLDs (October 2013). Brand and ROCC-exempt TLDs were excluded from the analysis. The list of Brand TLDs is available at https://newgtlds.icann.org/en/applicants/agb/base-agreement-contracting/specification-13-applications. The list of ROCC-exempt TLDs is available at https://newgtlds.icann.org/en/applicants/agb/base-agreement-contracting/ccer

[91] Michael L. Katz and Carl Shapiro, "Systems Competition and Network Effects," *The Journal of Economic Perspectives* 8(2), (1994): 93-115, http://www.jstor.org/stable/2138538?origin=JSTOR-pdf&seq=1#page_scan_tab_contents. Katz and Shapiro discuss network effects, where the value of a product to a user depends not only on its intrinsic characteristics but also on the number of other users of that product. See also: H. Liebenstein, "Bandwagon, Snob, and Veblen Effects in the Theory of Consumers' Demand," *Quarterly Journal of Economics* 64(2), (1950), 183-207, http://qje.oxfordjournals.org/content/64/2/183.short. Liebenstein calls this type of behavior a "bandwagon effect," which reflects "the desire of people to wear, buy, do, consume, and behave like their fellows…" (p. 184).

while maintaining its registration in a legacy domain. Given the low cost of renewal and the high likelihood of remnant links and traffic, there may be very little incentive to drop an old domain registration immediately. Future surveys of gTLD registrants may provide evidence of this type of behavior.

Together, these factors suggest that new gTLDs are unlikely to reach their full potential immediately. In fact, a study performed by KPMG for ICANN found that the new gTLDs that had been introduced after 2001 had, on average, reached 40 percent of their "most recently observed peak registration" at the end of 12 months of operation, 60 percent of the peak at the end of 24 months of operation, and 70 percent of the peak at the end of 36 months of operation.[92] For these reasons, the share of registrations currently captured by the new gTLDs likely understates the level that it will eventually reach.[93]

It is important to note that the share of registrations accounted for by new gTLDs depends both on their share of the increase in the number of registrations and on the rate at which the total number of all registrations increased over the period.[94] For example, given the approximately 61 percent share of the increase in gTLD registrations accounted for by new gTLDs, their share of total gTLD registrations would have been approximately 30 percent if the number of gTLD registrations had doubled between October 2013 and December 2016. In fact, the rate of increase was about 30 percent.[95] Interestingly, however, this rate of increase is greater than the rates observed before the introduction of the new gTLDs.[96]

It is also possible to use these results to project the share of total registrations that would be captured in the future by the new gTLDs if the rate of increase in the total remains unchanged at about 30 percent every three years and if the new gTLDs continue to capture about 61 percent of the increase. Under these assumptions, the share captured by the new gTLDs would be approximately one-quarter after six years and approximately one-third after nine years.

Substitution Analysis

One question typically asked when evaluating a competitive market is whether a new entrant is a reasonable economic substitute for an existing product. Substitute goods are those goods, to varying degrees that can satisfy the same necessity, they can be used for the same end. Some examples of substitute goods are:

- Coca-Cola and Pepsi
- Car, motorbike, bike and public transport
- Butter and margarine
- Tea and coffee
- Bananas and Apples

Generally, this "substitutability" is expressed a relationship between price and demand for the substitute good. Basically, if the price of Coke goes up, more people will switch to Pepsi. This

[92] KPMG, *Benchmarking of Registry Operations* (February 2010), accessed 19 January 2017, https://www.icann.org/resources/pages/benchmarking-2010-02-15-en, p. 17.
[93] A possible offsetting factor that we discuss below is the fact that a significant percentage of registrations in new gTLDs are currently "parked" and therefore may not be renewed when they expire.
[94] Note that the increase in the number of registrations equals new registrations minus registrations that are not renewed.
[95] Over the same period, the rate of increase of registrations in all TLDs was about 24 percent and the rate of increase of registrations in gTLDs and "open" ccTLDs combined was about 28 percent. This suggests that the number of registrations in gTLDs grew faster than that of all ccTLDs and of all "open" ccTLDs.
[96] Analysis Group, *Phase I Assessment* (2015), p. 33, Fig. 8.

is distinguished from “complementary” products such as hot dogs and mustard. In this case, more sales of hot dogs lead to an increase in sales in mustard, while an increase in the price of hot dogs leads to a decrease in sales of both hot dogs and mustard.

Applied to the gTLD market, assessing whether the new gTLDs represent economic substitutes for legacy gTLDs, one would ask: as the price of legacy gTLDs increases, does demand for the new gTLDs increase? Analysis of this sort in the gTLD marketplace involves three challenges.

First, as noted earlier, the existence of price caps on legacy gTLDs masks what might be the true market price for legacy gTLDs, and any tipping price that would directly increase demand for alternatives. It is possible that these price caps actually suppress competition by keeping prices below market value and discouraging substitution and other competitive effects. As Debra Aron and David Burnstein note:

> *The regulatory constraints on the market would, in some circumstances, impede the normal functioning of competitive forces, resulting in a market that appears to fail competitive criteria, which in turn leads regulators to perpetuate the regulatory constraints.*[97]

Ideally, an evaluation of the pricing in the secondary market is desirable to determine if there are any direct price impacts, but even those will not likely be directly substitutions.

Second, the typical price point of a gTLD is such that “substitution” is not economically mandatory and, in certain cases, counter-indicated. For example, if a registrant has done business at VertigoSoftware.com for a number of years, but eventually buys Vertigo.software, perhaps even at a premium, they are unlikely to immediately drop VertigoSoftware.com because of its presence in bookmarks, emails, blog posts, 3rd party reports, etc. When the price to maintain VertigoSoftware.com is relatively low, the registrant will be inclined to simply keep both registrations, at least for a time. The “substitution” takes place on letterhead, websites, business cards and marketing materials, not directly in the marketplace. Studying the use of a gTLD would be complex but perhaps necessary to fully understand what substitution has taken place.

The third challenge with a substitution analysis is that not every second-level domain of a new gTLD is a substitute for the corresponding domain in a legacy gTLD (see “Previous Studies” in the Consumer Choice section below). With the exception of a few new strings such as .xyz, .online, .site and .space, the new gTLDs are meant to be more semantic and specific than the legacy generic TLDs. So while bridal.photography is a reasonable substitute for bridalphotography.com, plumbing.photography is not a substitute for plumbing.com. Instead, it’s important to take the new gTLDs as a whole and treat the group of them as alternatives for the legacy gTLDs (and ccTLDs). For example, SHOP might be a substitute for online shopping websites, PHOTOGRAPHY might be an alternative for photographers, NEWS might be an alternative for news websites, etc… It’s here that one can see a competitive trend while observing that half of new registrations (or a third if you include ccTLDs) are new gTLDs. While the demand for second-level domains has remained somewhat constant at roughly 5% growth per year, these new registration figures suggest that substitution is taking place in the overall market.

[97] Debra Aron and David Burnstein, “Regulatory Policy and the Reverse Cellophane Fallacy”, *Journal of Competition Law & Economics* [Volume 6, Issue 4] (December 2010), https://doi.org/10.1093/joclec/nhp033 pp. 973–994.

As Jonathan Parker and Adrian Majumdar argue:

> *In some cases, the dynamics of future competition are much better captured by the share of new business won than shares based on total revenues from installed base customers. For example, where a firm has a large installed base of customers locked-in to long term contracts, it may be of greater interest to access its success in relation to business opportunities.*[98]

While ongoing study is certainly needed, the trends suggest the initial formation of a competitive marketplace for second-level domains that will only grow with time and eventually reveal more explicit substitution behavior.

The Structure of the TLD Industry

Registrar Services

One factor that has facilitated the entry of new gTLDs is the availability of important "inputs," specifically registrar and back-end services, that can be acquired through market transactions rather than be "produced" internally.[99] This has the effect of reducing the minimum viable scale—"the smallest scale of output at which an entrant would expect to cover its complete entry and operating costs at current levels of prices"[100]—of gTLDs.

According to ICANN, "An individual or legal entity wishing to register a domain name under a generic top-level domain ("gTLD") … may do so by using an ICANN-accredited registrar…. Any entity that wants to offer domain name registration services under gTLDs with a direct access to the gTLD registries is required to obtain an accreditation from ICANN. To that end, the interested entity must apply for accreditation and demonstrate that it meets all the technical, operational and financial criteria necessary to qualify as a registrar business."[101] At the end of August 2016, 2,084 registrars operated under the 2013 Registrar Accreditation Agreement, and 51 operated under the 2009 Registrar Accreditation Agreement.[102] Only registrars that operate under the 2013 Registrar Accreditation Agreement can register domain names in the new gTLDs.

Three hundred thirty-four (334) registrars currently register domain names in new gTLDs and a significant number of new gTLDs are represented by a relatively large number of

[98] Jonathan Parker and Adrian Majumdar, *UK Merger Control*, (Oxford: Hart Publishing, 2016), p. 432.
[99] Of course, this does not mean that registries should be prevented from vertically integrating into either back-end or registrar functions, especially as doing so is unlikely to result in foreclosing other registries from obtaining needed services from third parties.
[100] Robert D. Willig, "Merger Analysis, Industrial Organization Theory, and Merger Guidelines," in *Brookings Papers on Economic Activity (Microeconomics)*, eds. M.N. Bailey and C. Winston, 1991, p. 310. See also US Department of Justice and the Federal Trade Commission (2010), *Horizontal Merger Guidelines*, https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf, section 3.3.
[101] ICANN, "Information for Registrars and Registrants," accessed 20 January 2017, https://www.icann.org/resources/pages/registrars-0d-2012-02-25-en.
[102] ICANN, "2013 Registrar Accreditation Agreement," accessed 20 January 2017, https://www.icann.org/resources/pages/approved-with-specs-2013-09-17-en. ICANN, "2009 Registrar Accreditation Agreement," accessed 20 January 2017, https://www.icann.org/resources/pages/ra-agreement-2009-05-21-en.

registrars.[103] The following table reports the distribution of new gTLDs as measured by the number of registrars that register names in their domains:

Table 3: Number of Registrars Registering Each New gTLD as of December 2016[104]

Number of Registrars	Number of New gTLDs	% of New gTLDs
Fewer than 10	29	7%
11–20	25	6%
21–30	14	3%
31–40	31	7%
41–50	25	5%
51–75	54	11%
More than 75	305	61%

Note that more than three-fifths of new gTLDs have their names offered by more than 75 registrars, about three-quarters have their names offered by more than 50 registrars, and 89 percent have their names offered by more than 20 registrars.[105]

Not only is it common for TLDs to be represented by multiple registrars, it is also usually the case that registrars represent multiple TLDs. The following table reports the number of new gTLDs that are represented by each of the top 20 registrars, which collectively have registered almost 87 percent of all domains that have been registered in the new gTLDs. The mean number of new gTLDs that are represented by these registrars is approximately 287; 18 have registered domains in more than 50 new gTLDs and 12 have registered domains in well over 300 new gTLDs.[106]

[103] These registrars report active registrations in new gTLDs or were included in the March 2016 ICANN Monthly Transaction Reports of new gTLDs, despite having zero active registrations in those domains. The list of registrars was obtained from: iana.org, "Registrar IDs," accessed 20 January 2017, http://www.iana.org/assignments/registrar-ids/registrar-ids.xhtml (brand and ROCC-exempt TLDs excluded from the review team analysis). As a point of reference, 2042 registrars provide registrations for the legacy gTLDs.
[104] Calculations performed by Analysis Group at the request of the review team. All calculations were based on the total number of registrars and registrations as of December 2016. Registrar and registration data for legacy gTLDs and new gTLDs were derived from monthly transaction reports provided to ICANN by operating registries as of December 2016, available at https:// www.icann.org/resources/pages/registry-reports. Only ICANN-accredited registrars and new gTLDs were included in the analysis. ICANN-accredited registrars were identified based on registrars listed at: iana.org, "Registrar IDs," accessed 20 January 2017, http://www.iana.org/assignments/registrar-ids/registrar-ids.xhtml. Brand and ROCC-exempt TLDs were excluded.
[105] As a point of reference, of the five ccTLDs in the Latin American and Caribbean region that do not employ a direct registration model in which "domains are acquired directly from the registry's platform and/or website," the number of registrars employed were 17, 19, 80, 92, and 200, respectively. See ICANN (2016), Latin American and Caribbean DNS Marketplace Study, p. 50. Although at least some of these ccTLDs have apparently been able to attract the interest of a significant number of registrars, the report notes that "one of the challenges that many ccTLDs in the region face once they have decided to implement the registry-registrar model is more [sic] how to attract the larger international registrars to their business…" (Ibid. p. 51). This suggests that the availability of registrars to registries may differ across regions, but further research is needed to assess this issue.
[106] The mean is 318 if eName Technology, which represents only four registries, and Knet Registrar, which represents a single registry, are eliminated from the calculation.

Table 4: Number of New gTLDs Represented by Top 20 Registrars by Registration Volume[107]

Registrar	Rank	% Of New gTLDs Registrations	# Of New gTLDs Offered
Alibaba Cloud Holding Ltd.	1	25.46	81
NameCheap Inc	2	14.03	373
GoDaddy Group	3	9.70	365
GMO Internet Inc	4	6.67	352
Chengdu West Dimension Digital Tech	5	5.23	162
Tucows	6	3.75	427
West263 International Ltd	7	5.25	64
United Internet AG	8	3.04	428
PublicDomainRegistry Ltd	9	2.91	387
Alpnames Ltd	10	1.46	262
Rightside	11	1.14	409
Uniregistrar Corp	12	1.10	379
eName Technology Co Ltd	13	1.03	7
Web.com	14	0.99	391
Xin Net Technology Corp	15	0.93	107
KeyDrive Group	16	0.92	509
Gandi SAS	17	0.89	472
Knet Registrar Co Ltd	18	0.85	1
Google LLC	19	0.74	208
NameSilo LLC	20	0.73	346
Total		86.82	N/A

Back-End Registry Operators

ICANN defines a back-end registry operator as "an organization contracted by a registry to run one or more of the Critical Functions of a gTLD registry."[108] The Critical Functions are:

- DNS resolution
- DNSSEC properly signed zone (if DNSSEC is offered by the registry)
- Shared Registration System (SRS), usually by means of the Extensible Provisioning Protocol (EPP)
- Registration Data Directory Services (RDDS), e.g., WHOIS provided over both port 43 and through a Web-based service.
- Registry Data Escrow

Back-end providers may also offer additional services such as billing, reporting, account management tools, and other technical services related to the TLD's registration database.

[107] nTLDStats, "Registrar Overview," accessed 12 July 2018, https://ntldstats.com/.
[108] ICANN, "Registry Transition Processes," accessed 20 January 2017, https://www.icann.org/resources/pages/transition-processes-2013-04-22-en.

Although there are far fewer back-end providers than there are registrars, six different back-end providers each provide services to new gTLD registries that collectively have more than one million registrations.

Of the 944 new gTLDs that had begun operation as of 6 May 2016, 495 (52 percent) were using back-end providers that were located in their respective jurisdictions and 627 (66 percent) were using back-end providers located in their respective ICANN regions.[109] Thus, although well over half of all new gTLDs employed back-end providers that were located in relatively close proximity, a significant number did not. This suggests that back-end providers at more distant locations can nonetheless provide service to a registry.

For each of the six largest back-end providers as measured by the number of registrations in the gTLDs that they serve, we also compiled data on the size distribution of the gTLDs that they serve. Table 5 reports the results of this analysis.

Table 5: Back-End Registry Service Providers (RSPs) Servicing the Most New gTLD Registrations as of December 2016[110]

	Number of TLDs serviced, by number of domain name registrations								
Back-End RSPs servicing the most New gTLD registrations	1 – 2,500	2,501 – 5,000	5,001 – 10,000	10,001 – 50,000	50,001 – 100,000	100,001 – 250,000	250,001 – 500,000	500,001 – 1 Million	> 1 Million
CentralNic	3	10	3	8	4	2	1	2	1
ZDNS	0	3	1	0	0	1	0	0	1
Neustar, Inc.	193	3	3	8	5	4	0	3	1
Rightside Registry	46	57	69	56	9	0	0	0	0
Uniregistrar Inc.	11	2	3	6	2	1	1	0	0
Afilias Limited	164	9	3	14	0	1	2	0	0

There are several observations that can be made about these results. First, about 94 percent of the new gTLDs that obtain back-end services from one of these providers have fewer than 50,000 registrants. Second, three of these back-end providers—Rightside, Neustar, and Afilias—collectively serve about 90 percent of the new gTLDs with fewer than 50,000 registrants. Third, whereas neither Rightside nor Afilias serves any new gTLDs with more than 500,000 registrants and, indeed, none of the new gTLDs that are served by Rightside has more than 100,000 registrants, three of these back-end providers—Neustar, CentralNic, and ZDNS—together serve all of the eight new gTLDs with more than 500,000 registrants.

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[109] "ICANN Geographic Regions," accessed 20 January 2017, https://meetings.icann.org/en/regions and Eleeza Agopian to CCT-Review mailing list, "Ry-RSP geographic location comparison," (19 May 2016), http://mm.icann.org/pipermail/cct-review/2016-May/000461.html. In Africa, three gTLDs (out of a total of 10) are using back-end providers in their respective jurisdictions and these three are therefore also using back-end providers in their regions; in Latin America and the Caribbean, five gTLDs (out of a total of 17) are using back-end providers in their respective jurisdictions with one additional gTLD using a back-end provider in the region; in Asia Pacific, 81 gTLDs (out of a total of 163) are using back-end providers in their respective jurisdictions and a total of 102 are using back-end providers in their regions, in North America, 357 gTLDs (out of a total of 441) are using back-end providers in their respective jurisdictions and 409 are using back-end providers in their regions, and in Europe: 49 gTLDs (out of a total of 352) are using back-end providers in their respective jurisdictions and 107 are using back-end providers in in their regions.

[110] Registration data derived from ICANN Monthly Transaction Reports, available at https://www.icann.org/resources/pages/registry-reports.

It is also important to note that the incremental cost incurred by a back-end operator to serve a registry operator varies with the number of domains served by the registry[111] and that back-end providers employ a number of pricing models that take these cost differences into account. For example, some charge registries a fixed fee per registered domain. Others charge a per-domain fee that varies with the number of domains in the registry. Still others provide service in return for a share of registry revenues, among other models. As a result, small TLDs tend to pay lower total prices to back-end operators than do large ones.

Size Distribution of gTLDs

Another aspect of the structure of the TLD industry is the wide variation in the sizes of different gTLDs. The table below reports the size distribution of new gTLDs, where size is measured by number of registrations. In reviewing the data in the table, it is important to recognize that some new gTLDs have only recently become available for registrations by the public and others may still not be available.

We find that about three-quarters of the new gTLDs that we have analyzed currently have fewer than 10,000 registrants and more than 90 percent have fewer than 50,000 registrants.[112] This raises the question of whether these gTLDs will be viable in the long run. There are, at least, the following five possibilities for "small" gTLDs: (1) they may succeed economically despite their size by serving niche markets, for example small geographic areas or specialized products and services, and may be viable even if they do not serve large numbers of registrants because their registrants are willing to pay relatively high prices;[113] (2) they may lower their prices in the hope that the resulting increase in registrations will more than offset the reduction in price; (3) they may grow over time and eventually achieve economic viability;[114] (4) they may change their target markets;[115] (5) they may be acquired by larger

[111] This also varies with the registry's policies. For example, the incremental cost incurred by a back-end operator to serve a gTLD that does non-standard manual vetting is higher than the incremental cost of serving one that does not.

[112] The ICANN (2016), Latin American and Caribbean DNS Marketplace Study, p. 91 refers to "the typical long tail seen in domain names worldwide…"

[113] Uniregistry recently announced price increases of up to 3,000 percent for its new gTLDs. Frank Schilling, CEO of Uniregistry argued that "If you have a space with only 5,000 registrations, you need to have a higher price point to justify its existence…" (See Kevin Murphy, "Schilling, big price increases needed to keep new gTLDS alive," Domain Incite, March 7, 2017, http://domainincite.com/21603-schilling-big-price-increases-needed-to-keep-new-gtlds-alive.

[114] Boston Ivy recently announced substantial price decreases for four new gTLDs. See A. Allemann, "A TLD registry just slashed its wholesale prices up to 97%, Domain Name Wire, March 15, 2017, http://domainnamewire.com/2017/03/15/tld-registry-just-slashed-wholesale-prices-97/.

[115] For example, .whoswho recently eliminated its requirement that registrants show that their names had appeared in a print Who's Who book. See Kevin Murphy, "Relaunch and slashed prices for .whoswho after terrible sales," Domain Incite, 1 September 2017, accessed 20 January 2017, http://domainincite.com/20930-relaunch-and-slashed-prices-for-whoswho-after-terrible-sales.

operators that achieve economic viability by owning several TLDs;[116] or (6) they may eventually exit the market.[117]

Table 6: Size Distribution of New gTLDs as of May 2017[118]

Number of Registrars	Number of New gTLDs	% of New gTLDs
0 – 1,000	300	40.49
1,001 – 10,000	263	35.49
10,001 – 50,000	120	16.19
50,001 – 100,000	29	3.91
100,001 – 250,000	13	1.27
250,001 – 500,000	6	0.47
500,001 – 1,000,000	7	0.50
>1,000,000	3	0.21
Total	741	

Nonetheless, it is important to note that, according to publicly available monthly transaction reports, some small legacy TLDs continue to operate despite a small number of registrations in their domains.

[116] For examples of such acquisitions, see: ICANN (2015), Assignment Transfer and Assumption of the top-level domain .promo registry agreement, accessed 20 January 2017, https://www.icann.org/sites/default/files/tlds/promo/promo-assign-pdf-14dec15-en.pdf; ICANN (2015), Assignment and Assumption Agreement [of .hiv by Uniregistry Corp], accessed 20 January 2017, https://www.icann.org/sites/default/files/tlds/hiv/hiv-assign-pdf-20nov15-en.pdf; ICANN (2015), Assignment and Assumption Agreement [of .reise by Foggy Way LLC (Donuts)]: Dot-REISE Registry Agreement, accessed 20 January 2017, https://www.icann.org/sites/default/files/tlds/reise/reise-assign-pdf-04may15-en.pdf. Note, however, that most acquisitions that have occurred to date involved transfers from one holder of a large number of domains to another, for example the transfer of 24 domains from Donuts to Rightside (UnitedTLDHoldco). See Kevin Murphy, "You might be surprised how many new gTLDs have changed hands already," Domain Incite, 1 July 2015, accessed 20 January 2017, http://domainincite.com/18849-you-might-be-surprised-how-many-new-gtlds-have-changed-hands-already. More recently, Donuts and Rightside agreed to merge. See Rightside, "Rightside and Donuts Announce Definitive Merger Agreement," 14 June 2017, http://investors.rightside.co/releasedetail.cfm?releaseid=1030175. Under that agreement, Donuts would acquire 40 top-level domains as well as Rightside's technical registry (i.e., backend) system. See also A. Allemann, "First take: Donuts to buy Rightside for $213 million," 14 June 2017, http://domainnamewire.com/2017/06/14/first-take-donuts-buy-rightside-213-million/.

[117] See ICANN, "Registry Agreement Termination Information Page," accessed 6 August 2018, https://www.icann.org/resources/pages/gtld-registry-agreement-termination-2015-10-09-en#status

[118] Data current to May 2017. Since the review team's primary focus is on gTLDs that are, or will be, generally available for registration by members of the public, the analysis excludes gTLDs that are subject to Specification 13 of the base registry agreement. For details on Specification 13 and a list of "Brand" TLDs, see ICANN, "Applications to Qualify for Specification 13 of the Registry Agreement," accessed 20 January 2017, https://newgtlds.icann.org/en/applicants/agb/base-agreement-contracting/specification-13-applications. For details on ROCC-exempt TLDs, see ICANN, "Registry Operator Code of Conduct Exemption Requests," accessed 20 January 2017, https://newgtlds.icann.org/en/applicants/agb/base-agreement-contracting/ccer.

Table 7: Small (Under 20,000 Registrations) Legacy gTLDs Still in Operation[119]

TLD	Number of Domains (March 2018)
.aero	10,900
.coop	8,122
.museum	678
.post	410
.travel	17,700

At the other end of the distribution are the new gTLDs in which the largest numbers of domains have been registered. As the following table shows, about 39 percent of the domains that have been registered in new gTLDs have been registered in the five largest new gTLDs, about 52 percent have been registered in the 10 largest, and about 76 percent have been registered in the 20 largest.[120] Thus, although a very large number of gTLDs have entered in recent years, a relatively small number account for a very large proportion of the domains that have been registered.

Table 8: Percentage of gTLD Registrations in Top 20 New gTLDs[121]

New gTLD	Rank	% of New gTLD Registrations	% of New gTLD Registrations in Top 5, 10, and 20 New gTLDs
.top	1	12.11	
.loan	2	9.27	
.xyz	3	8.49	
.club	4	5.46	
.vip	5	3.70	Top 5 = 39.03%
.online	6	3.48	
.win	7	2.70	
.shop	8	2.62	
.site	9	2.05	
.ltd	10	1.96	Top 10 = 51.84%
.men	11	1.89	
.wang	12	1.48	
.bid	13	1.46	
.work	14	1.45	
.stream	15	1.30	
.app	16	1.18	
.review	17	1.08	
.space	18	1.07	
.xin	19	0.99	
.website	20	0.98	Top 20 = 64.72%

119 ICANN, "Monthly Registry Reports," accessed 12 July 2018, https://www.icann.org/resources/pages/registry-reports/#a. Note that, for contractual reasons, data from these monthly reports are withheld from public view until three months after the end of the month to which the report relates..

120 nTLDStats, "New gTLD Overview," accessed 12 July 2018, https://ntldstats.com/tld. According to nTLDStats, 37 new gTLDs currently have more than 100,000 registered domains, 63 have more than 50,000 registered domains, and 198 have more than 10,000 registered domains.

121 Ibid.

Effect of New gTLD Entry on Industry Concentration

Above, we described our analysis of the extent to which new gTLDs together have captured a share of overall TLD registrations. In this section, we analyze whether, and the extent to which, the entry of new gTLDs has affected concentration among registry operators, registrars, and back-end providers using three standard measures of concentration: the 4-firm concentration ratio (the share of registrants served by the four largest firms), the 8-firm concentration ratio (the share of registrants served by the eight largest firms), and the Herfindahl-Hirschman Index (HHI)—the sum of the squared shares of each firm.[122] In doing so, we are implicitly defining the markets in which registries, registrars, and back-end providers compete. Market definition, which is a central component of all antitrust analyses, and which has both product and geographic dimensions, is an attempt to identify the suppliers among which competition determines prices and other indicia of market performance.[123]

The United States antitrust agencies define markets using a "hypothetical monopolist test."[124] Under this test, the agencies begin by defining a relatively narrow market and ask whether a hypothetical monopolist in that market could impose "a small but significant and non-transitory increase in price, ('SSNIP')." If they conclude that the hypothetical monopolist cannot do so, this means that some significant competitors have been excluded from the market, and the antitrust agencies would expand the market to include more suppliers. This process would continue until the SSNIP test is satisfied (i.e., until it is concluded that a hypothetical monopolist in the defined market could raise prices). The agencies would then calculate the shares held by each of the firms in the defined market. The Horizontal Merger Guidelines state that "the Agencies normally consider measures of market shares and market concentration as part of their evaluation of competitive effects."[125]

Under many economic theories, higher measures of concentration are associated with lower levels of competition. Moreover, a substantial body of empirical work in, and across, varying industries confirms that high concentration often lead to higher prices and markups.[126] In particular, the preponderance of evidence is that markets with a small number of firms, or

[122] The HHI reflects the market shares of all firms, but, because it is calculated by squaring market shares, it gives proportionately greater weight to firms with large shares.
[123] As noted above, because we have not been able to reach a definitive conclusion about the appropriate market definition, we have conducted our analysis using a number of alternative definitions.
[124] United States Department of Justice and Federal Trade Commission (2010), "Merger Guidelines," Section 4.1.1. A similar approach is employed in other jurisdictions. See, for example, Article 102 of the Treaty on the Functioning of the European Union (TFEU), which prohibits abusive conduct by companies that have a dominant position on a particular market. Defining the relevant market is essential for assessing dominance, because a dominant position can only exist on a particular market.
[125] Ibid., p. 15.
[126] For example, Pautler notes: "Several studies of price/concentration relationships indicate that prices are higher where concentration is higher, or the number of sellers is lower." (Paul A. Pautler, Bureau of Economics, Federal Trade Commission (2003), *Evidence on Mergers and Acquisitions*, accessed 20 January 2017, https://www.ftc.gov/sites/default/files/documents/reports/evidence-mergers-and-acquisitions/wp243_0.pdf, p. 42). Sutton states "...that a fall in concentration will lead to a fall in prices and price-cost margins is well supported both theoretically and empirically" (John Sutton (2006), *Market Structure: Theory and Evidence*, accessed 20 January 2017, http://personal.lse.ac.uk/sutton/market_structure_theory_evidence.pdf, p. 7). Timothy Bresnahan reviews a numbers of studies that "...confirm the existence of a relationship between price and concentration..." (T.F. Bresnahan, "Empirical Studies of Industries with Market Power," in *Handbook of Industrial Organization*, Vol. II, eds. R. Schmalensee and R.D. Willig, North-Holland, 1989, pp. 1011 - 1057). Coates and Hubbard find that "Empirical studies of auction markets and various industries, such as airlines, railroads, books, and pharmaceuticals, show prices declining as the number of bidders or rivals increases and as concentration of sales in a few firms declines" (John C. Coates IV and Glenn R. Hubbard, "Competition in the Mutual Fund Industry: Evidence and Implications for Policy," *The Journal of Corporation Law* 33(1) (August 2007), 151-222, p. 164).

markets in which a few firms have very large market shares, tend to have higher prices than markets where concentration is lower.[127]

Our analysis, which, as noted previously, was limited to gTLDs and excluded brand and Registry Operator Code of Conduct (ROCC)-exempt gTLDs, measured the change in each of the concentration measures among registries, registrars, and back-end providers between September 2013, which was before the first new gTLDs entered, and December 2016.[128] Tables 9 reports the results of our analysis.

[127] The review team would have preferred to analyze the effects of new gTLD entry on competition directly but, as noted elsewhere in this Report, they were unable to obtain data on changes in the wholesale prices actually charged by legacy gTLDs after new gTLD entry occurred. For examples of this approach see: Phillip M. Parker and Lars-Hendrik Roller, "Collusive Conduct in Duopolies: Multimarket Contact and Cross-ownership in the Mobile Telephone Industry," *The RAND Journal of Economics* 28(2), (1997) https://www.jstor.org/stable/2555807?seq=1#page_scan_tab_contents, pp. 304 - 322. Jerry Hausman, "Mobile Telephone," in *Handbook of Telecommunications Economics: Volume I*, eds. M.E. Cave, S.K. Majumdar, and I. Vogelsang, (Elsevier: 2002), http://economics.mit.edu/files/1031, 563 - 604; and Thierry Penard, "Competition and Strategy on the Mobile Telephone Market: A Look at the GSM Business Model in France," *Communications and Strategies* 45, (2002), http://www.comstrat.org/fic/revue_telech/426/CS45_PENARD.pdf, 49 - 79, who examines the effect of mobile carrier entry on the prices charged by incumbent firms.

[128] Note that measures of concentration among registries would have been substantially lower if the review team had defined the market to include both gTLDs and ccTLDs, and somewhat lower if it had defined the market to include gTLDs and "open" ccTLDs.

Table 9: Comparison of Registry, Registrar, Back End Concentration Ratios and HHIs and Rates of Change from September 2013 to December 2016 in New and Legacy gTLDs [129,130]

		4-Firm Conc. Ratio	8-Firm Conc. Ratio
Registries	Legacy gTLDs *(Sept. 2013)*	99.3	99.9
	New gTLDs *(Dec. 2013)*	57.6	72.3
	New and Legacy gTLDs *(Dec. 2016)*	87.9	93.8
	Total Market Change *(New and Legacy Sept. 2013 - Dec. 2016)*	-11.4	-6.1
Registrars	Legacy gTLDs *(Sept. 2013)*	50.3	61.7
	New gTLDs *(Dec. 2013)*	46.9	68.1
	New and Legacy gTLDs *(Dec. 2016)*	42.2	54.1
	Total Market Change *(New and Legacy Sept. 2013 - Dec. 2016)*	-8.1	-7.6
Backend Provider	Legacy gTLDs *(Sept. 2013)*	95.7	99.5
	New gTLDs *(Dec. 2013)*	74.2	93.8
	New and Legacy gTLDs *(Dec. 2016)*	92.5	98.6
	Total Market Change *(New and Legacy Sept. 2013 - Dec. 2016)*	-3.3	-0.9

Concentration Among Registry Operators

In 2004, Summit Strategies International (SSI) prepared a study for ICANN that analyzed the effect of the introduction of seven new gTLDs on, among other things, concentration in "the domain name market," a market consisting of both gTLDs and ccTLDs.[131] It found that, as of the first quarter of 2004, .com had about a 45 percent share, .de had about a 12 percent share, .uk had about an 8 percent share, .net had about an 8 percent share, .org had about a 5 percent share, and .info, .nl, .biz, and .it each had about a 2 percent share.[132] At that time, the

[129] All calculations were based on the total number of registrations in September 2013 and December 2016. Registration data were derived from monthly transaction reports as of December 2016 and October 2013. Brand and ROCC-exempt TLDs were excluded from the analysis. The list of Brand TLDs is available at https://newgtlds.icann.org/en/applicants/agb/base-agreement-contracting/specification-13-applications. The list of ROCC-exempt TLDs is available at https://newgtlds.icann.org/en/applicants/agb/base-agreement-contracting/ccer. Backend provider data were supplied by ICANN. Concentration ratios were calculated by summing the market shares of the largest n number of firms. The Herfindahl-Hirschman Index (HHI) was calculated by taking the market share of each firm in the industry, where the share is expressed as a whole number, squaring the respective shares, and summing the result.

[130] Registries, registrars, and back-end providers are included in the September 2013 analyses if there are registrations associated with that registry, registrar, or back-end provider as of September 2013. Registries, registrars, and back-end providers are included in the December 2016 analyses if there are registrations of legacy TLDs associated with that registry, registrar, or back-end provider as of December 2016. The 8-firm ratio for back-end providers is not available, as there are only four and five providers in September 2013 and December 2016, respectively.

[131] Summit Strategies International and ICANN (2004), *Evaluation of the New gTLDs: Policy and Legal Issues*, accessed 20 January 2017, https://archive.icann.org/en/tlds/new-gtld-eval-31aug04.pdf.

[132] Ibid. pp. 95-96. .biz was the only new gTLD among this group.

combined share of new gTLDs in this market was only about 4 percent. When it focused on a market that consisted only of gTLDs, SSI found that .com had a share of about 73 percent, .net had a share of about 12 percent, .org had a share of about 8 percent, and the combined share of the seven new gTLDs was less than 7 percent.[133] Although SSI noted that the introduction of the new gTLDs had doubled their number, it also remarked on "the relatively small impact that the new gTLDs have had on overall market share."[134]

In a later study that was also performed for ICANN, Katz, Rosston and Sullivan found that .com's share was about 75 percent throughout the period from July 2001 through July 2009, about the same as SSI had found for early 2004.[135] In a later paper, the same authors concluded that "the finding that undifferentiated gTLDs introduced in the past have been unable to provide significant competition for the well-established .com is not surprising; because they are undifferentiated, these gTLDs lack unique features that offer value to users that might (at least partially) offset user familiarity with and perception of .com as the primary gTLD location for commercial (and even non-commercial) websites."[136]

SSI also found significant concentration among the operators of gTLDs. In particular, it found that gTLDs operated by Verisign had a combined share of 85 percent of the gTLD market, Afilias had an 11.5 percent share, and NeuLevel had a 2.7 percent share in 2004.[137] In their Phase 1 Competition Study using data for November 2014 after the introduction of new gTLDs that began in late 2013, Analysis Group found that Verisign's share was 85 percent, Public Interest Registry's share was 6.6 percent, Afilias' share was 4 percent, and the share of Neustar, Inc., which had acquired NeuLevel in 2006, was 1.6 percent.[138] Thus, although concentration among operators was somewhat lower than in 2004, a market that consisted of operators of gTLDs was still highly concentrated and Verisign's share was essentially unchanged.

The review team found that, although measured concentration among registry operators remains high, new gTLD entry has reduced overall concentration.[139] In particular, the share of registrations served by the four largest operators declined by about 11 percentage points, the share of registrations served by the eight largest operators declined by about 6 percentage points, and the HHI declined by almost 1,700 points between September 2013 and December 2016. These differences can be explained largely by the fact that concentration among new gTLD registry operators is substantially lower than that among all gTLD operators. For example, where the HHI for all gTLD operators was 5,728 at the end of 2016, the HHI for new gTLD operators was only 1,116.

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[133] Ibid. p. 96
[134] Ibid. p. 96.
[135] Katz et. al (2010), *An Economic Framework*, pp. 47-48.
[136] Ibid. p. 7.
[137] Ibid. p. 96, Table 3.
[138] Analysis Group, *Phase I Assessment* (2015), p. 15, Table 2.
[139] In calculating market shares, the shares of registries with the same parent company were combined. For example, Donuts, Inc. was treated as a single firm whose market share was calculated as the aggregation of the shares of all registry LLCs that are owned by Donuts. In characterizing concentration as high or low, we are employing the standards based on HHIs that are described in United States Department of Justice and Federal Trade Commission (2010), "Merger Guidelines," pp. 18-19. The Guidelines note that "Based on their experience, the Agencies generally classify markets into three types: [1] Unconcentrated Markets: HHI below 1500; [2] Moderately Concentrated Markets: HHI between 1500 and 2500; [3] Highly Concentrated Markets: HHI above 2500" (p. 19). The agencies note: "The purpose of these thresholds is not to provide a rigid screen to separate competitively benign mergers from anticompetitive ones, although high levels of concentration do raise concerns. Rather, they provide one way to identify some mergers unlikely to raise competitive concerns and some others for which it is particularly important to examine whether other competitive factors confirm, reinforce, or counteract the potentially harmful effects of increased concentration. The higher the post-merger HHI and the increase in the HHI, the greater are the Agencies' potential competitive concerns and the greater is the likelihood that the Agencies will request additional information to conduct their analysis" (p. 19).

Defining the market to include only all gTLDs implicitly assumes that all gTLDs compete at least some degree with one another. An alternative approach might, therefore, be to analyze competition among the members of groups of gTLDs, each of which could be expected to compete for the patronage of a particular group of potential registrants. For example, one would not expect .beer to compete with .photography for registrants.

To consider this possibility, one might calculate concentration within "families" of gTLDs, where the "families" are constructed on the basis of domain names that suggest that they compete for the same registrants. However, doing so raises two issues. First, groupings based on the names of gTLDs may be either under- or over-inclusive because the names may be poor indicators of substitution by registrants. Second, they may result in markets that are too narrowly defined because they fail to account for competition for registrants between the members of the "families" and legacy gTLDs. To pursue the previous example, although .pub, .bar and .beer might be regarded as substitutes by bar owners, defining a market to include only those entities ignores the possibility that bar owners might also consider .com, .biz and .xyz as substitutes. Unfortunately, the review team did not have access to data that would permit it to address these issues, and therefore did not pursue this approach. If ICANN wishes to consider competition in more narrowly defined markets in the future, it will need to obtain additional information about substitution by registrants, perhaps through additional surveys.[140]

Recommendations

These results suggest that measures of the impact of the entry of new gTLDs may be sensitive to whether or not they take registration parking into account. As a result, the review Team recommends that ICANN consider undertaking research into whether registration renewal rates are correlated with parking rates and to use the results of that research to improve its analysis of developments in the DNS marketplace. In addition, the review team recommends that ICANN consider using data on upcoming registration deletes, which nTLDstats routinely collects for new gTLDs, for the same purpose.

A Prototype Country-Specific Analysis

The previous analyses implicitly treated the geographic market in which gTLDs compete as worldwide and did not take competition between gTLDs and ccTLDs into account. However, because competition may occur in narrower geographic markets and because the ccTLD in a particular country may compete with gTLDs for registrations in that country, the review team decided to undertake an analysis of market concentration within individual countries. Although the analysis was limited to a small number of countries in a particular region, the review team believes that ICANN can use this analysis as a prototype to carry out similar analyses for other countries and regions.

In order to carry out the analysis, the review team utilized registration data for a number of countries in the Latin America and Caribbean region that had been developed in connection with a previous ICANN-commissioned study ("LAC" Study).[141] That study employed gTLD registrant data that were "based on analysis of WHOIS data (based on the country of registrant)".[142] We supplemented these data using ccTLD registration data that were derived

[140] Such a survey is descr bed in Appendix G.
[141] Oxford Information Labs, EURid, InterConnect Communications (2016), *Latin American and Caribbean DNS Marketplace ("LAC") Study*. We chose these countries because the LAC Study provided country-specific market shares, not because these countries were necessarily representative.
[142] Ibid., p. 82.

from Zooknic.[143] Those data were not based on WHOIS lookups and thus may include some registrations of users located in other countries. The authors of the LAC Study provided the ccTLD registration data that they employed.[144] We note, however, that those data were also based on self-reporting by ccTLDs and were not based on WHOIS lookups.

The review team carried out two types of analysis. First, it compared the shares of registrations held by ccTLD, legacy gTLD, and new gTLD operators, respectively, in the LAC countries analyzed to the worldwide shares reported by CENTR for March 2016, the same month for which the LAC data had been collected.[145] Second, the review team compared worldwide measures of concentration among gTLD registry operators to the same measures of concentration among all TLD operators in these countries in the same month.

ccTLD, Legacy gTLD, and New gTLD Shares Worldwide and in the LAC Region

CENTR reported that, in the first quarter of 2016, ccTLDs accounted for about 45 percent, legacy gTLDs accounted for about 50 percent, and new gTLDs accounted for about 5 percent of worldwide registrations.[146] The following table reports the same measures for each of the LAC countries that we analyzed.

Table 10: LAC Country-based Market Shares of ccTLDs & gTLDs (Legacy vs. New)

	ccTLD	Legacy gTLDs	New gTLDs	All gTLDs
Argentina	67.75%	29.44%	2.80%	32.25%
Brazil	80.85%	18.41%	0.74%	19.15%
Chile	83.01%	14.04%	2.95%	16.99%
Costa Rica	93.16%	0.14%	6.70%	6.84%
Dominican Republic	30.03%	66.12%	3.85%	69.97%
Peru	31.74%	67.22%	1.04%	68.26%

Two things are notable about these results. First, the share of registrations accounted for by the ccTLD in four of the countries—Argentina, Brazil, Chile, and Costa Rica—is substantially above the share accounted for by ccTLDs worldwide. Indeed, in three of these countries the ccTLD share exceeds 80 percent and it exceeds 67 percent in Argentina, all substantially above the 45 percent ccTLD share worldwide. Second, in all but one of these countries, the share of registrations accounted for by new gTLDs is less than the share accounted for by new gTLDs worldwide.

[143] ICANN, "Zooknic ccTLD data," accessed 6 August 2018, https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials
[144] CCT Wiki, "LAC TLD market shares, concentration ratios, and HHIs (March 2017)," accessed 6 August 2018, https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials
[145] The authors of the LAC study excluded Panama and the Cayman Islands from much of their analysis because of "the high proportion of proxy registrations" in those countries (LAC Study, p. 82), and we followed that approach. In addition, we excluded Colombia from our analysis because, as its website indicates, ".CO is used all over the world, and recognized by Google as a global domain extension," http://www.go.co/about/, viewed on March 29, 2017.
[146] CENTR (2016), DomainWire Edition 15 – Q1 2016, Global TLD Stat Report, accessed 28 March 2017, https://www.centr.org/library/library/statistics-report/domainwire-global-tld-report-2016-1.html?filter=Statistics%20report.

Measures of Concentration Worldwide and in the LAC Region

In March 2016 for all gTLD registry operators worldwide, the 4-firm concentration ratio was 90.9 percent, the 8-firm concentration ratio was 95.7 percent, and the HHI was 6,364.[147] The following table reports the same measures for each of the LAC countries that we analyzed using data for the same month for all TLDs.

Table 11: LAC Country-based Concentration Ratios and HHIs

	4-Firm	8-Firm	HHI
Argentina	99.27%	99.75%	5,460
Brazil	99.45%	99.74%	6,845
Chile	99.15%	99.76%	7,065
Costa Rica	97.30%	98.75%	8,687
Dominican Republic	99.15%	99.76%	7,065
Peru	99.22%	99.73%	5,104

It is notable that the HHI in four of these six countries exceeds the worldwide HHI and that in three of these countries—the exception being the Dominican Republic—the share of registrations accounted for by the ccTLD exceeds 80 percent.

Concentration Among Registrar Owners

Concentration among registrar owners, which was relatively low prior to new gTLD entry, declined somewhat between September 2013 and December 2016.[148] In particular, the 4-firm and 8-firm concentration ratios both declined by about eight percentage points and the HHI declined by about 300 points.[149] These declines are largely the result of the slightly lower concentration among registrar owners for new gTLDs—for example the HHI is 751—as compared to the HHI for registrar owners for all gTLDs, which is 919.

Concentration Among Back-End Providers

Although the supply of back-end services to all gTLDs is highly concentrated, with a 4-firm concentration ratio of 92.5 percent and an HHI of 5,812, the supply of back-end services to new gTLDs is considerably less concentrated, with a 4-firm concentration ratio of 74.2 percent

[147] The Review Team employed March 2016 data here because they are for the same time period as that covered in the LAC report.
[148] As in the case of registry owners, the market shares of registrars with the same parent company were combined in the calculations. Market share and HHI calculations for registrars were based on registrar entities identified by Globally Unique Registrar ID (i.e., IANA ID).
[149] We also found that, although concentration among registrars *for a given gTLD* was high for some gTLDs, for most it was generally quite low. Moreover, even where concentration was relatively high, there were often a large number of registrars for a gTLD. For example, among legacy gTLDs, the HHI among registrars for .pro was 3,666 but there were 90 registrars and the HHI among registrars for .job was 7,155, but there were 63 registrars. Among new gTLDs, the HHI among registrars for .bar was 5,864, but there were 95 registrars and the HHI for .casa was 5,191, but there were 62 registrars.

and an HHI of only 1,645.[150] This disparity largely reflects the fact that both the largest legacy gTLD, .com, and the second-largest legacy gTLD, .net, both obtain their back-end services from a single supplier[151]. In fact, measured concentration among back-end providers to new gTLDs is not much greater than it would be if there were eight providers each with an equal share.[152] Although measured concentration among all back-end providers remains high, it has declined significantly since new gTLD entry. In particular, the 4-firm concentration ratio declined by about three percentage points and the HHI declined by about 1,700 points between September 2013 and December 2016.

Price Analysis

The review team was unable to determine whether the prices charged by legacy gTLD to registrars have declined since the introduction of new gTLDs because legacy gTLDs are not required to provide this information under their agreements with ICANN, and only two legacy gTLDs provided this information in response to Analysis Group's data requests.[153] Moreover, if, as seems likely, the legacy gTLDs that are subject to price caps, set their wholesale prices at their respective caps during the period under review, we would still not be able to observe any effect.[154] However, in an attempt to determine whether the new gTLDs have provided price competition to the legacy gTLDs, Analysis Group compared simple and weighted averages of the wholesale prices charged by a sample of new gTLDs to simple and weighted averages of the legacy gTLDs price caps, where the weights are the number of registrations served by a TLD, as of March 2016. The following table reports the results of these calculations:

Table 12: Simple and Weighted Average Prices of Legacy and New gTLDs (USD)[155]

	Legacy gTLDs	New gTLDs
Simple Average Wholesale Price	$16.72	$21.46
Weighted Average Wholesale Price	$7.92	$15.38

On average, the wholesale prices charged by new gTLDs are at or above the wholesale prices that legacy gTLDs are permitted to charge under their price caps, although the differences are

[150] As in the cases of registry and registrar owners, the market shares of back-end providers with the same parent company were combined in the calculations.
[151] In fact, Verisign, which operates both .com and .net, provides its own back-end services.
[152] In that case, the HHI would be 1,250.
[153] The only legacy gTLD wholesale price data that were available to Analysis Group came from correspondence between registry operators and ICANN, which contained information on price caps, the maximum prices that legacy gTLDs were permitted to charge, which are not necessarily the same as the price that they actually charged. Although Analysis Group also obtained actual wholesale price information as of April 2016 for 12 legacy gTLDs that responded to a data request, those data were provided on a confidential basis to Analysis Group and thus cannot be publicly reported or analyzed at the individual gTLD level. Below, the Review Team explains why it believes that all gTLDs should be required to provide this information in conjunction with future economic studies in their agreements with ICANN.
[154] Even if we could observe the wholesale prices that registries actually charged, if the wholesale price caps were binding throughout the period, i.e., if prices were always at the caps, we would still be unable to observe the effect of new gTLD entry on the prices that legacy gTLDs *would have wanted to pay* because we would not observe those prices. It is possible that legacy gTLDs reduced their wholesale prices *below* their respective price caps in response to new gTLD entry although we have no evidence that this was the case.
[155] Analysis Group, *Phase II Assessment* (2016), p.45. Table 9 of their assessment shows the full results of these calculations as compared with the results of their *Phase I Assessment* (2015). Section III provides a description of the manner in which the new gTLD sample was constructed.

not statistically significant.[156] Although the new gTLDs have set wholesale prices somewhat above the price caps, their presence might nonetheless have provided a constraint on the ability of legacy gTLDs to increase their prices significantly if the caps were removed, although we cannot be certain that this was the case.

The review team was unable to reach a definitive conclusion on this issue in the absence of adequate data and until more time has passed for the effect of new gTLD entry to be fully felt. The review team views this issue should be addressed in more detail in the future.[157]

In 2006, well before the beginning of the recent round that substantially increased the number of gTLDs, a majority of the ICANN Board expressed the view that regulation of the prices charged by TLDs might no longer be needed:

> *…we appreciate the community's concerns regarding the price of .COM names. However, we firmly believe that ICANN is not equipped to be a price regulator, and we also believe that the rationale for such provisions in registry agreements is much weaker now than it was at the time the Verisign agreement was originally made in 1998. At that time, Verisign was the only gTLD registry operator, and .COM was, as a practical matter, the only commercially focused gTLD. Today, there are a number of gTLD alternatives to .COM, and several ccTLDs that have become much stronger alternatives than they were in years past. In addition, the incredibly competitive registrar market means that the opportunities for new gTLDs, both in existence and undoubtedly to come in the future, are greater than they have ever been. It may well be that .COM offers to at least some domain name registrants some value that other registries cannot offer, and thus the competitive price for a .COM registration may well be higher than for some alternatives. But price is only one metric in a competitive marketplace, and relative prices will affect consumer choices at the margin, so over time, we expect the registry market to become increasingly competitive. One way to hasten that evolution is to loosen the artificial constraints that have existed on the pricing of .COM and other registries. We began this process with the .NET agreement, and we now continue it with the .COM agreement, and we expect to continue along this path as we renegotiate agreements with other registries.*[158]

This view was apparently not universally held, however. The following year, some members of the GNSO Council in a report to the ICANN Board stated that:

> *When a registry contract is up for renewal, there should be a determination whether that registry is market dominant. That determination should be made by a panel of competition experts including competition lawyers and economists…If the panel determines that there is a situation of market power, then the registry*

[156] An important caveat to this finding is that we do not have access to transactional, premium or promotional pricing data for either new or legacy gTLDs. Thus, it is likely that the actual sales prices for many of the domains registered may be significantly different from the reported wholesale prices.
[157] Another possible source of price data are the prices that prevail in secondary market transactions. Although we have been unable to pursue this alternative, ICANN may wish to do so in the future.
[158] ICANN, *Joint Statement from Affirmative Voting Board Members* (28 February 2006), accessed 20 January 2017, http://archive.icann.org/en/topics/vrsn-settlement/board-statements-section1.html.

agreement must include a pricing provision for new registrations, as currently is included in all of the largest gTLD registry agreements…Regardless of whether there is market dominance, consumers should be protected with regard to renewals due to the high switching costs associated with domain names…The price for new registrations and renewals for market dominant registries and for renewals for non-market dominant registries should be set at the time of the renewal of the registry agreement. Such a price should act as a ceiling and should not prohibit or discourage registries from providing promotions or market incentives to sell more names…The pricing provision should include the ability for an increase if there is cost justification for such an increase…non-dominant registries may differentially price for new registrations, but not for renewals. Dominant registries may not differentially price for new registrations or renewals…all registries should provide equitable pricing opportunities for all registrars...[159]

In any event, legacy gTLDs remain subject to price caps, although some have been permitted to increase their prices over time. In principle, the current substantial increase in the number of gTLDs provides an opportunity for ICANN to evaluate the claim of some that legacy gTLDs remain "market dominant" and for ICANN to re-examine its earlier claim that the entry of new gTLDs, in much greater numbers than had occurred earlier, has weakened the rationale for price regulation. However, in the absence of adequate data on the wholesale prices actually charged by both legacy and new gTLDs, the review team has been unable to address this issue. In recommendation 2, the review team suggests that ICANN collect additional data to remedy this shortcoming in the future.

The review team also notes that wholesale prices may vary among gTLDs even if competition among them is intense. For example, if the market for gTLDs is characterized by monopolistic competition, where products are differentiated and consumers choose on the basis both of product characteristics and price but there is free entry of suppliers, prices might vary because of differences in product characteristics.[160] For example, gTLDs with a small number of customers that have an intense demand for them because there are few close substitutes might charge higher prices than ones with many customers for which customers regard other gTLDs as particularly close substitutes. Thus, even if we were to observe that new gTLDs charge, on average, higher prices than do legacy gTLDs, that could reflect differences in the products that they offer and the number of consumers that they serve rather than the absence of competition among them. Of course, we do not have data on the prices charged by most legacy gTLDs and, even if we did, those prices are as likely to reflect the effects of price regulation as of outcomes produced by competitive market forces.

Finally, even if monopolistic competition is a reasonably accurate description of the DNS "market," it is unlikely to be a complete description because of both inertia and network effects. Some registries may be able to earn excess profits in the long run because consumers incur costs when they switch to new entrants and/or because some consumers prefer to employ large, established domains.

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[159] ICANN Board Report (4 October 2007), *Council Report to the Board: Policies for Contractual Conditions, Existing Registries, PDP Feb 06*, https://gnso.icann.org/en/issues/gtld-policies/council-report-to-board-PDP-feb-06-04oct07.pdf, pp. 29-30. Other recommendations "received some support from either constituencies of NomCom members."

[160] JBDON, "Pricing under monopolistic and oligopolistic competition," accessed 20 January 2017, http://www.jbdon.com/pricing-under-monopolistic-and-oligopolistic-competition.html. As defined by economist Joe S. Bain, "Monopolistic competition is found in the industry where there are a large number of sellers, selling differentiated but close substitute products."

Recommendations

Recommendation 2: Collect wholesale pricing for legacy gTLDs.

Rationale/related findings: The lack of data from legacy gTLDs and transactional data will continue to hinder future CCT Review Teams' efforts to analyze competition between registries in the domain marketplace. In particular, the review team was unable to determine whether wholesale prices charged by legacy gTLDs had declined as a result of increased competition due to the introduction of new gTLDs.

To: ICANN organization

Prerequisite or priority level: Low

Consensus within team: Yes

Details: ICANN could work with an appropriate contractor and registry operators to acquire wholesale price information from both legacy and new gTLD registries on a regular basis, including at least a sample of transactional data. Transactional data is essential to allow analysis of the cost of similar strings across TLDs, and to understand the role of promotional pricing by registries. Due to the sensitive nature of this data, ICANN should provide strong assurances that the data would be treated on a confidential basis, including collecting the data under a nondisclosure agreement. In the event that ICANN is unable to establish a voluntary framework for sharing this information, this may require amendment to the Base Registry Agreement for legacy gTLDs.

Success measures: The ability for a third-party economic study to establish a meaningful understanding of (1) wholesale pricing in legacy gTLDs; (2) the role of promotional pricing in the marketplace; and (3) the value of individual second-level labels across various TLDs.

Recommendation 3: Collect transactional pricing for the gTLD marketplace.

Rationale/related findings: The lack of transactional data will continue to hinder future CCT Review Teams' efforts to analyze competition between registries in the domain marketplace. Although ICANN was able to obtain base wholesale prices from registries, individual domain transactions are often sold at either a significant discount as part of promotional campaigns, or at a significantly higher price than the baseline price for certain premium domains. For some TLDs, the review team believes that a large fraction (even a substantial majority) of domains were sold at discounted prices. Therefore, any pricing analysis based solely on the base wholesale price is unlikely to correctly capture the competitive dynamics in the marketplace.

To: ICANN organization

Prerequisite or priority level: Medium

Consensus within team: Yes

Details: ICANN or an outside contractor should attempt to acquire at least some samples of wholesale price information from registries on a regular basis and provide necessary assurances that the data would be treated on a confidential basis. The data could then be used for analytic purposes by the ICANN organization and by others that execute non-disclosure agreements.

Success measures: The availability of relevant data for use by the ICANN organization, contractors, and the ICANN community for its work in evaluating competition in the DNS marketplace.

Recommendation 4: Collect retail pricing for the domain marketplace.

Rationale/related findings: The lack of retail data will continue to hinder future CCT Review Teams' efforts to analyze competition between registries and TLDs in the domain marketplace. One of the anticipated benefits of increased competition from the introduction of new gTLDs would be lower prices for registrants of domain names. Prices charged by registrars to registrants are the best indicator of this potential consumer benefit. In addition, retail prices offered to the public will generally be accessible through registrars' public websites and will not require additional disclosures to ICANN by contracted parties. (Note that some registrars, such as those providing corporate/brand protection services, do not publish their prices and therefore would not be represented in a survey of publicly available prices.)

To: ICANN organization

Prerequisite or priority level: Low

Consensus within team: Yes

Details: ICANN does not currently make use of retail price data that can be obtained directly from public sources such as https://tld-list.com/ and https://namestat.org. We recommend that ICANN develop the capability to analyze these data on an ongoing basis. Alternatively, an amendment to the Registrar Accreditation Agreement would ensure the availability of this data with all due diligence to protect competitive information.

Success measures: The availability of relevant data for use by the ICANN organization, contractors, and the ICANN community for its work in evaluating competition in the DNS space.

Recommendation 5: Collect secondary market data.

Rationale/related findings: The presence of price caps in certain TLDs hinders efforts to comprehensively analyze competitive effects. The true market price may very well be above the caps. Accordingly, the secondary market is the best place to see price movement.

To: ICANN organization

Prerequisite or priority level: High

Consensus within team: Yes

Details: ICANN should engage with the secondary market community to better understand pricing trends. Ideally, ICANN would be able to be able to obtain long-term transactional data that would allow it to evaluate whether the price of similar domain names was increase or decreasing over time, and whether there was any relationship to the introduction of new gTLDs. Given that it may be difficult to obtain such data, aggregated data that show per-TLD trends or overall trends in market pricing that take into consideration the introduction of new gTLDs would still be an improvement over the current limited data on pricing dynamics in legacy gTLDs.

Success measures: The availability of relevant data for use by the ICANN organization, contractors, and the ICANN community for its work in evaluating competition in the DNS space.

Recommendation 6: Partner with mechanisms and entities involved with the collection of TLD data. As feasible, collect TLD registration number data per TLD and registrar at a country-by-country level in order to perform analysis based on the same methods used in the LAC study.[161]

Rationale/related findings: The lack of country-level data will continue to frustrate future CCT Review Teams' efforts to analyze competition between registries and TLDs in the domain marketplace. In particular, the lack of country-specific data hinders efforts to understand the competition between gTLDs and ccTLDs. ccTLD data, which is useful in understanding the overall TLD marketplace, is particularly hard to come by.

To: ICANN organization

Prerequisite or priority level: Low

Consensus within team: Yes

Details: Some of this data is collected by third parties such as CENTR, so it is possible that ICANN can arrange to acquire the data.

Success measures: The availability of relevant data for use by the ICANN organization, contractors, and the ICANN community for its work in evaluating competition in the DNS space.

Potential Impact of "Parked" Domains on Measures of Competition

Overall, in its discussion of the impact of new gTLDs on competition, the review team treated all domains as equal. However, it is worth noting that the majority of domains in both legacy and new gTLDs are not the primary identifiers of typical websites. Instead, these domains are forwarded to other domains (including sub-domains), used only for email, monetized via advertising, or simply do not resolve, perhaps held in reserve by speculators or as premium domains by registries. For a high-level impact assessment, the review team, for lack of a better term, considered these domains "parked." The review team attempted to consider if rates of these activities differed between legacy and new gTLDs and, if so, whether the difference suggests the need for further research. The review team's conclusion is that, while further research is ideal, this phenomenon is common across all types of TLDs and a study from outside the narrow lens of the New gTLD Program may be most appropriate. Using an expansive definition of parking, according to data compiled by nTLDstats, about 68 percent of registrations in new gTLDs were parked at the time of this analysis.[162] For comparison, 56

[161] ICANN (2016), Latin American and Caribbean DNS Marketplace Study.
[162] "Parking in new gTLDs Overview," viewed 21 March 2017, https://ntldstats.com/parking/tld.

percent of registrations in legacy gTLDs were parked. Halvorsen et al ascribe parking to: (1) speculation in order to sell the domain later at a profit; (2) plans to develop the domain at a later date; or (3) unsuccessful development.[163]

Examples of behaviors that could be considered parking include:

- The domain name does not resolve.
- The domain name resolves, but attempts to connect via HTTP return an error message.
- HTTP connections are successful, but the result is a page that displays advertisements, offers the domain for sale, or both. These pages may also be used as a vector to distribute malware.
- The page that is returned is empty or otherwise indicates that the registrant is not providing any content.
- The page that is returned is a template provided by the registry with no customization offered by the registrant.
- The domain was registered by an affiliate of the registry operator and uses a standard template with no unique content.
- The domain redirects to another domain in a different TLD.

Of course, this represents a broad view of "parking"; the implications for competition as they relate to each of these scenarios are likely different. Future research will require analyzing each of these categories individually to determine their impact on competition.[164]

However, because the percentage of "parked" registrations in new gTLDs is so large, the review team sought to understand whether this phenomenon would affect its conclusions regarding the impact of the introduction of new gTLDs on the marketplace and thereby justify further research. Hypotheses could be advanced to suggest counting certain types of parked domains differently when computing market share and concentration. For example, one possible reason for taking parking rates into account is that registration renewal rates may be negatively correlated with rates of certain types of parking. If so, the current market shares of TLDs with relatively high parking rates may overstate their long run competitive significance. For example, some early registrations in a new gTLD are the result of "land rush" behavior by speculators.[165] Furthermore, there was an initial spike in registrations from China in both legacy and new gTLDs, some of which is the result of speculation and some the result of regulations that allow the registration, but not the use of domain names. Finally, a large number of parked domains in a particular gTLD may be a related to heavily discounted promotions in that TLD. Significant differences in pricing between initial registration and renewal could have a significant impact on renewals.[166] In such an instance, these new

[163] T. Halvorson, M.F. Der, I. Foster, S. Savage, L.K. Saul, and G.M. Voe ker, "From .academy to .zone: An Analysis of the New TLD Land Rush," Proceedings of the 2015 ACM Conference on Internet Measurement, accessed 8 August 2018, http://conferences2.sigcomm.org/imc/2015/papers/p381.pdf

[164] The DNS Abuse Study commissioned by the Review Team for this report (SIDN Labs and the Delft University of Technology, "DNS Abuse in gTLDs") found a small but positive statistically significant relationship between the amount of parked domains and level of abusive behavior in TLDs. In other words, the more parked domains in a TLD, the more likely that TLD is to have higher levels of abuse relative to others. See the "DNS Abuse" section later in this report for more detailed analysis of the study's findings.

[165] Ibid.

[166] For example, initial pricing for .xyz was free in many instances, but renewal was full price.

domains should be discounted at a rate commensurate to the correlation. In other words, if speculative registrations are isolated and determined to be half as likely to be renewed, their numbers should be discounted 50 percent in any calculation of market share and market concentration.

Of course, one must leave room for the possibility that speculative behavior is fundamentally different between new and legacy gTLDs with established market expectations. Another hypothesis posits that domains used as pointers imply a transition away from an existing domain. In other words, a pointer could be an indication of provisional acceptance of a new gTLD by the market and the old domain is being maintained in the near term purely to smooth a transition. In this case, the domains to which others are pointed should be discounted at some rate. Of course, there are instances when redirects simply represent "over registration" either to capture typos and guesses, or protect brand identity. Future analysis of redirects would require determining which domain is being used to promote the site. Finally, it's possible that speculation has a pro-competitive effect, not captured directly by market share and concentration calculations, by bridging new entrants to maturity, which can take years. Unfortunately, the review team lacked sufficient data to substantially test any of these hypotheses.

As discussed later in this report, the incidence of parking in new gTLDs may also be a reflection that some registrations in new gTLDs are defensive in nature. Respondents to the INTA Impact Study indicated that in most cases, trademark holders register domains in order to protect their brands and prevent cybersquatting.[167] These domains are generally parked. However, the review team does not believe defensive registrations by trademark holders constitutes a large enough fraction of overall registrations in new gTLDs to significantly alter our approach to measuring effects on competition.

In order to better understand this topic, the review team used existing parking data for new gTLDs that nTLDstats routinely calculates. The review team also requested that ICANN contract with nTLDstats to develop parking data for legacy gTLDs especially for this project.[168] The review team used registration data for December 2016, the same month for which other statistics in this report are based, and the most comprehensive parking measure provided by nTLDstats, the aggregate of the seven separate sources of parking that it identifies.[169]

Using this data, the review team made an initial comparison of overall parking rates between legacy and new gTLDs. nTLDstats estimated that the weighted average parking rate for legacy gTLDs in that month was approximately 56 percent and that the weighted average parking rate for new gTLDs in the same month was approximately 68 percent, a rate that is almost 20 percent higher than the parking rate for legacy gTLDs.[170] Again, the review team is not certain of the impact of parked domains on market rivalry, but if (as hypothesized above) TLDs with

[167] Nielsen, *INTA Cost Impact Study* (April 2017) and INTA, *gTLD Impact Study Status Report II* (August 2017).
[168] nTLDstats.com, "Parking Analysis of Legacy gTLDs (3 March 2017)," accessed 6 August 2018, https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials. nTLDstats applied its parking analysis method to each legacy gTLD based on the number of names in its zone file. For TLDs with 10,000 names or fewer, nTLDstats analyzed all registered names, for TLDs with 10,001-100,000 names, nTLDstats analyzed 10 percent of registered names, and for TLDs with more than 100,000 names, nTLDstats analyzed 1 percent of registered names. nTLDstats also conducted a manual review of 10 percent of the total sample to check for false positives.
[169] Specifically, the Review Team adjusted the number of registrations for each gTLD to reflect the number of registrations that were not parked, i.e., (1 minus the parking rate) multiplied by the number of registrations for each gTLD.
[170] 20 percent of 55.6 = 11.2 and 55.6 + 11.12 = 66.72 (nearly 68 percent).

large number of parked domains are somehow less vibrant competitors, this is a substantial difference that could affect the computation of our competition-related indicators.[171]

Taking a cursory stab at understanding the potential significance of parking rates on future market shares, the review team attempted to determine whether there was a relationship between parking and renewal rates. In order to perform this analysis, the review team compared parking rates in each TLD as of December 2016 with a renewal rate computed based on registries' monthly transaction reports[172] for the period of July – December 2016.[173] Using a Pearson correlation analysis (which measures the correlation between two sets of variables), the review team was unable to find a statistically significant correlation between renewal rates and parking rates in either new or legacy gTLDs.[174] While the identification of a relationship would have been interesting, the results of this test are by no means dispositive of a potential correlation. The review team recommends more robust studies of this topic to better understand whether such a relationship exists. Such studies could include, among other things, a closer examination of the following factors: 1) what parking measures best measure market rivalry; 2) what renewal rates should be used; 3) what factors other than parking are likely to affect renewal rates; 4) a description of the functional form (e.g., linear, logarithmic, etc.) of the relationship between parking and renewals; and 5) the "lag" between parking and non-renewals (i.e., how much time is there between the time that a domain name is parked and the time at which it is not renewed?).

Geographic Differences in Parking Behavior

The review team also sought to determine whether the quantity of parked domains varied based on region. For example, the Latin American and Caribbean DNS Marketplace Study (LAC Study) reports that "across the entire region, 78% of the gTLD domain names are active, and 22% are not in use (either timing out, or no active services)."[175] By comparison, according to nTLDstats, across all new gTLDs approximately 33% of domains had no valid DNS or returned invalid HTTP responses.

Although the review team did not have the ability to directly correlate registrant addresses with parked domains, it did identify six of the top 50 largest new gTLDs, including TLDs operated by registries based in China, showing markedly higher parking rates than the average across all new gTLDs, with parking rates ranging from 85 percent for .wang to 98 percent for .xin. Table 13 below shows the parking rate for each of the six.

[171] At one extreme, if parked registrations were excluded from the market share analysis entirely, the Review Team found a "non-parked" market share of new gTLD registrations as a portion of all gTLDs of 10.9 percent, approximately 23 percent lower than the 14.2 percent share when parked domains are included. Making a similar adjustment in market concentration calculations did not make a meaningful difference between including or excluding parked domains.

[172] Registries do not submit a renewal rate calculation to ICANN. Nevertheless, given that second-level domains auto-renew, the Review Team computed a renewal rate for each TLD by dividing the number of renewal transactions by the sum of the deletion transactions (outside of the add grace period) plus renewal transactions.

[173] Monthly renewal rates can be quite volatile and represent only the portion of domains eligible for renewal that month, whereas parking rates are calculated across all domains in a TLD. Therefore, the Review Team used a six-month period to calculate renewal rates in order to minimize sample errors in the analysis.

[174] CCT Wiki, "Parking, Renewal, and Correlation Analysis: Pearson Linear Correlation Analysis of Parking and Renewal Rates," August 2017, https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials.

[175] Oxford Information Labs, LACTLD, EURid and InterConnect Communications, *Latin America and Caribbean DNS Marketplace Study*, p. 107.

Table 13: Parking Rates of Six of the Top 50 Largest New gLTDs

Number of Registrars	Parking Rate (%)
All New gTLDs	68.0%
.XIN	97.77%
.WANG	85.08%
.TOP	85.08%
网址 (xn--ses554g)	83.22%
.REN	82.82%

According to data from nTLDstats, there were over 9 million registrations made in new gTLD strings that have their origin in China.[176] One possible reason for the higher levels of parking rates seen in new gTLDs that cater to Chinese registrants may be speculative domain registrations out of China, particularly with regard to short domain names (i.e., names containing five or less letters or numbers). In 2015, Chinese investors purchased a large number of short domain names as these were seen as especially interesting to Chinese investors.[177] Furthermore, it seems that Chinese buyers are also purchasing names with actual end-uses in mind that they think will go up in value. As a result, the increase in awareness of domain investment in China may have contributed to higher parking rates of China-based new gTLDs. This trend may also be indicative of a speculative bubble in the Chinese market as well as expected value of these domains.

These initial analyses of geographically based parking rates are quite cursory and based on limited data, but they do seem to indicate that regional variations in parking rates exist and can be quite significant. Again, these figures represent a gross measurement of parking, and future analysis will require a more granular exploration of behavior across geographic regions.

Relationship Between Parking and DNS Abuse

While the review team was not able to identify a direct relationship between parking rates and either competition or consumer choice, it considered the possibility that parked domains may be linked to consumer trust, and in particular to the possibility that parking is associated with DNS Abuse. Previously, Vissers et al[178] studied over eight million parked domains and found that "users who land on parked websites are exposed to malware, inappropriate content, and elaborate scams."[179]

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[176] NTLDStats.com, "Parking Analysis of Legacy gTLDs."

[177] Echo Huang, "China's newest investment craze is short domain names," Quartz, 10 January 2016, accessed 30 October 2017, https://qz.com/581248/chinas-latest-investment-craze-is-short-domain-names/.

[178] Vissers, Joosen, and Nikiforakis, "Parking Sensors: Analyzing and Detecting Parked Domains," (paper presented at NDSS, San Diego, USA, 8-11 February 2015). http://dx.doi.org/10.14722/ndss.2015.23053, p. 1.

[179] It is not entirely clear to the review team whether malware propagation is intentional by the parked sites or parking services, or the result of compromised ad networks. Vissers et al raise this possibility in their paper: "Possibly, these complex chains are the consequence of a process similar to ad arbitration, a widely adopted practice performed by most ad syndicators [p. 33]. During this process, the syndicator bids on available ad slots of other publishers or syndicators, allowing them to resell these slots to the next bidder. Often, ad slots are subjected to multiple iterations of this reselling process. As a consequence, ad slots are no longer under control of the syndicator that the original publisher partnered with. All these interactions and intermediate parties have

In conjunction with this Review, the "Statistical Analysis of DNS Abuse in gTLDs" study conducted for this report found that, in general, in new gTLDs, the total number of registrations associated with malware is lower than in legacy gTLDs,[180] whereas the rate of malware associated domain names per volume in new gTLDs is occasionally higher than that of legacy gTLDs. However, if one examines parking rates in the new gTLDs, the malware propagation that is occurring is marginally more likely to occur in zones with higher parking rates. There may be some correlation between parking and malware, but that is not as strong and indicative as the overall trend of lower malware distribution rates than those of legacy gTLDs. Nonetheless, the malware distribution rate gap between legacy and new gTLDs appears to be shrinking. Therefore, the review team believes the community should further explore the correlation between parking and malware distribution.

Recommendations

While the review team observes that new gTLDs have higher parking (using the broadest possible definition) rates than legacy gTLDs and that there are regional variations in parking rates, it is so far unclear if parking has a meaningful effect on either competition or consumer choice. As a result, the review team recommends that ICANN consider undertaking further research into the potential competitive impact of domain parking and to use the results of that research to improve its analysis of developments in the DNS marketplace. In addition, the review team recommends that ICANN consider using data on upcoming registration renewals for the same purpose.

Recommendation 7: Collect domain usage data to better understand the implications of parked domains.

Rationale/related findings: The high incidence of parked domains suggests an impact on the competitive landscape, but insufficient data hinders efforts to analyze this impact.

To: ICANN organization

Prerequisite or priority level: High

Consensus within team: Yes

Details: The review team uses the term "domain usage" rather than "parking" in the recommendation because the term "parking" is associated with a wide variety of behaviors, and different members of the community may define "parking" differently. It is also likely that different types of "parking" behaviors reflect different intentions by registrants and will have different implications on the competitive dynamics in the marketplace. ICANN should regularly track the proportion of domains in gTLDs that are parked with sufficient granularity to identify trends on a regional and global basis. Ideally, data would allow analysis to occur on a per-domain basis rather than being aggregated on a TLD level. Future reviews should conduct further analyses of whether there is a correlation between parked domains and renewal rates or other factors that may affect competition. Further analysis should be performed on the relationship between parking and DNS abuse. The community may also wish to take this issue up for further study outside of the periodic CCT Review process, as the phenomenon is also

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the potential to blur the direct involvement of the parking service in serving malware. In some cases, however, we also see malware being delivered more directly, for example, by the parent company of Parking Service 8."

[180] SIDN Labs and the Delft University of Technology, "DNS Abuse in gTLDs".

prevalent within legacy gTLDs, and there does not seem to be significant study of the topic with ICANN.

Success measures: The availability of relevant data for use by the ICANN organization, contractors, and the ICANN community for its work in evaluating competition in the DNS space.

7 Consumer Choice

The review team also considered the question of whether the introduction of new gTLDs increased the choices available to registrants. The expansion of the Program gives registrants new options in terms of new languages, character sets, geographic identities, and new specialized categories. However, the review team sought to establish whether registrations in the new gTLDs represented a positive choice available to registrants or if a significant number felt obliged to register defensively in new gTLDs to protect their brand or identity. In particular, there has been considerable discussion of whether trademark holders would find it necessary to register those trademarks as domain names in new gTLDs in order to prevent others from doing so.

There have been a number of studies (see below) of the extent to which registrants have engaged in such "defensive" registrations. In anticipation of this review, ICANN commissioned Nielsen to perform the Global Registrant Survey to gain insights from registrants. More recently, INTA conducted a study of its membership, which reflects the experience of trademark holders.[181] The review team examined each of these studies and supplemented them with its own analysis. The review team initially addressed the general topic of consumer choice and then performed a specific analysis related to trademark holders below.[182]

In evaluating these results, it is important to note that not all instances of duplicate registrations are necessarily "defensive" in nature. For example, a trademark holder might register the same mark in multiple domains in order to increase the probability that it will be found through user searches, a consideration that has become increasingly important as the number of domains has grown.[183] In fact, a total of 52 percent of registrants interviewed by Nielsen indicated that one of the reasons for registering duplicate domain names was "to help ensure my site gets found in searches."[184] However, 51 percent of the respondents indicated that they engaged in duplicate registrations "to protect my brand or organization name" and the same percentage did so "to keep someone else from having a similar name."[185] The INTA Survey found that amongst trademark holders, "new TLD registrations primarily duplicate legacy TLD or ccTLD registrations"[186] and, in particular, that only 17 percent of respondents had registered names in the new gTLDs for the first time versus duplicating existing domains in legacy gTLDs or ccTLDs. Thus, it appears that "defensive" registrations are a real phenomenon, apparently because the costs of challenging registrations by others can be considerably greater than the costs of registering their marks in multiple domains.[187]

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[181] Nielsen, Consumer Research (2015); Nielsen, Consumer Research Wave 2 (2016); Nielsen, INTA New gTLD Cost Impact Study (April 2017) and INTA, New gTLD Impact Study Status Report II (August 2017),

[182] In this chapter, the term "consumers" is used primarily to refer to domain name registrants and not consumer end-users, whose behavior and beliefs are largely covered in the Consumer Trust chapter.

[183] Consider users that search for websites by guessing Internet addresses. As the number of TLDs increases, finding the "correct" website by guessing becomes more difficult and, on average, the number of required guesses is substantially increased. Faced with this fact, one would expect that some "guessers" would use search engines more frequently than in the past. However, some registrants may still choose to register in several TLDs in order to reduce the number of guesses that a user must make in order to find them.

[184] Nielsen, *Registrant Survey Wave 2* (2016), p. 13.

[185] Ibid. Many registrants chose both responses; a total of 60 percent of registrants of new gTLDs selected one of the two responses.

[186] Nielsen, *INTA New gTLD Cost Impact Study* (April 2017), Slide 19

[187] Appendix G: Possible Questions for a Future Consumer Survey includes a series of questions that may be included in future surveys of domain name registrants to better understand the choices they make when registering domain names.

Previous Studies

Krueger and Van Couvering surveyed 1,043 brand names of *Fortune* 100 companies and found the following registration percentages in different TLDs: 100 percent in .com, 76 percent in .org, 84 percent in .net, 69 percent in .info, 65 percent in .biz, and 57 percent in .mobi.[188] Zittrain and Edelman found that, six months after open registration in .biz began, 91 percent of a sample of .biz domain names were also registered in .com, 63 percent were also registered in .net, and 49 percent were also registered in .org.[189] Summit Strategies International analyzed the extent of duplicate name registrations and the presence of the same registered name holder between four of the then-new and three legacy TLDs, finding that: "The statistics for .info indicate that only 11% of registrants hold the same name in .com, which suggests that .info has created significant new opportunities. With .biz, 42% of duplicate registrations appear to be registered to the same party, thereby suggesting that they are protective in nature."[190] Katz, Rosston, and Sullivan analyzed the overlap in domain registrations for 200 of the top 500 global brands as ranked by Brand Finance and found "that a very high percentage of them were registered in the different TLDs" that they examined.[191] However, they also found "a big range in the share of registered domains with content" and that the percentage of active sites "was quite low", except for .com. Finally, Halvorson et al, who employ a variety of measures to identify matches of registrants between .com and .biz, found "at least some degree of a match for around 40% of the [biz-com] pairs [they] could assess."[192] Using what they describe as "stronger indicators" they classified 11.6 percent of biz domains as "defensive."[193]

CCT Analysis

The Global Registrant Survey, Wave 2, found that 35 percent of all surveyed registrants had registered at least one name in a new gTLD.[194] Of those, 60 percent indicated that they had registered to "protect existing domain(s) and ensure no one else got a domain similar" while 34 percent indicated that they registered to "appeal to new Internet users or new types of customers", and 6 percent registered because the "name I wanted was not available using older gTLDs."

The review team also performed an analysis of strings registered as second-level domains in new gTLDs and comparable strings registered in .com, which is currently by far the most popular of the legacy gTLDs. The review team's analysis focused on two potential patterns. In the first case, the review team looked to see if the identical string registered as a second-level domain in a new gTLD was registered as a second-level domain in .com (e.g., if example.tld

[188] F. Krueger and A. Van Couvering, "An Analysis of Trademark Registration Data in New gTLDs," *Minds + Machines Working Paper,* (February 2010): 51.
[189] Jonathan Zittrain and Benjamin Edelman, Berkman Center for Internet and Society Harvard Law School, "Survey of Usage of the .biz TLD" (June 2002), accessed 6 August 2017, https://cyber.law.harvard.edu/tlds/001/.
[190] Summit Strategies International (July 2004), *Evaluation of the New gTLDs: Policy and Legal Issues*, accessed 6 August 2018, p. 102. The authors note that "The data…is based on an extremely small sample of only 100 names for .biz and .info." This study was prepared for ICANN.
[191] M.L. Katz, G.L. Rosston, and T. Sullivan, *Economic Considerations in the Expansion of Generic Top-Level Domain Names, Phase II Report: Case Studies* (December 2011), accessed 25 January 2017, https://archive.icann.org/en/topics/new-gtlds/phase-two-economic-considerations-03dec10-en.pdf. These domains were .com, .net, .org, .biz, .info, .mobi, and .us. This study was prepared for ICANN.
[192] T. Halvorson, J. Szurdi, G. Maier, M. Felegyhazi, C. Kreibich, N. Weaver, K. Levchenko, and V. Paxon, "The BIZ Top-Level Domain: Ten Years Later" in *Passive and Active Measurement*, eds N. Taft and F. Ricciato. (Germany: Springer Berlin Heidelberg, 2012), 221-230, 228. http://www.icir.org/vern/papers/dot-biz.pam12.pdf
[193] See Substitution Analysis section earlier.
[194] Nielsen, *Registrant Survey Wave 2* (2016), p. 164.

was registered, was example.com also registered?).[195] The review team found that 82 percent of registrations in new gTLDs had identical matches in .com. However, there was considerable variation in the percentages of identical matches across gTLDs. For example, among 414 gTLDs with at least 1,000 registrations, 32 had at least 99 percent of their second-level domains as exact matches in .com, including both .wang and .xin, which are the third- and eleventh-largest new gTLDs by registration volume as of November 2016; and nearly two-thirds (271) had at least 95 percent of their second-level domains as exact matches in .com. At the other extreme, 10 gTLDs had fewer than 50 percent of their second-level domains as exact matches in.com. Of these, half were IDNs. In general, IDN gTLDs contained fewer identical matches to .com, with only about 70 percent of registrations in IDN gTLDs being identical matches to domains in .com. Unfortunately, because the analysis did not include WHOIS data, the review team was unable to determine whether the same registrant had registered both domains.

In a second analysis, the review team examined whether the combined string representing both the TLD and the second-level domain was registered as a second-level domain in .com (e.g., if example.tld was registered, was exampletld.com also registered?).[196] If this combined string were available in .com, it meant that the registrant had chosen a new gTLD even though they could have registered a roughly equivalent name in the most popular existing gTLD. In this analysis, the review team found that only 13 percent of registrations in the new gTLDs were also registered in .com in the combined form, meaning that 87 percent of registrants could have registered a very similar string in .com. Of course, in many cases the combined string is nonsense—for example, registrants in the popular .xyz TLD probably did not consider something like examplexyz.com as an alternative. Registrants in these TLDs would likely be looking for the exact match equivalent in other generic TLDs such as .com.

While the review team was unable to systematically differentiate between "generic" (such as .xyz or .com) and "specific" TLDs (such as .photography or .bank), a manual review did reveal a substantial difference in the patterns of availability across these types of TLDs. Unsurprisingly, only .1 percent of the registrations in .xyz were registered in their combined form in .com. On the other hand, many of the combined strings registered in specific TLDs such as .capital (only 30 percent available in .com), .movie (35 percent), .cafe (47 percent), and .properties (49 percent) were also registered in.com, meaning that many of these registrants would have been unable to pick an equivalent string in .com. Overall, approximately 65 new gTLDs representing half a million registrations saw more than 50 percent of their combined strings registered in .com. The vast majority of registrants, including those in popular gTLDs such as .club (95 percent), .review (99 percent), and .shop (89 percent) could have registered the combined form in .com and chose a new gTLD instead.

Overall, the review team concluded that while some registrants are motivated by defensive objectives in the new gTLDs, many registrants choose to register in new gTLDs to broaden the appeal or reach of their offerings even when similar options remain available in legacy gTLDs. As noted in Recommendation 8, the review team suggests that ICANN continue to conduct periodic registrant surveys in order to better understand the value of the increased choice offered by new gTLDs and to observe any changes in their sentiments and motivations over time.

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[195] Analysis Group, *Summary of Trademark Strings Registered in Legacy gTLDs Trademark Strings that are also Brand TLDs* (October 2016), accessed 6 August 2018, https://community.icann.org/download/attachments/56135378/New%20gTLD%20Registrations%20of%20Brand%20TLD%20TM%20Strings%2010-18-16.pdf?version=1&modificationDate=1481305785167&api=v2.

[196] This reporting was derived from an analysis of two data sets produced by ICANN organization for the Review Team. See "New gTLD Registrations Available in .com," (2016 and 2018), and "Existing Registrations in .com Against New gTLDs," (2016 and 2018), accessed 3 August 2018, available at https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials.

CCT Analysis: Trademarks and Defensive registrations

The INTA Survey indicated that amongst its respondents of trademark holders, "nearly all of the new domains registered as duplicates to a Legacy or ccTLD were intended primarily to prevent the name from being used by another registrant."[197] In order to better understand the prevalence of these defensive registrations by trademark holders, the review team, together with Analysis Group, used data from the most recent round of new gTLD expansion to analyze the same issue. Specifically, the review team began by identifying a number of trademarks for which one might expect some degree of "defensive" registrations together with the identity of the registrant. Analysis Group collected a random sample of data from the TMCH database that represented 25% of trademark holders within the database. Identities of registrants were obtained using WHOIS data.[198] The trademark strings analyzed were limited to verified or corrected Latin text strings in the Trademark Clearinghouse. Matches were identified as those involving an exact match in accordance with ICANN's matching criteria, where the registrant was identified as the trademark holder associated with the registered string based on an approximate text comparison between registrant and trademark holder names.

Using these data, the review team determined: (1) whether each of the trademarks in the data was registered by the trademark holder in least one legacy gTLD; (2) whether the same string was registered by the trademark holder in at least one new gTLD; and (3) for those strings that were registered by the trademark holder in at least one new gTLD, the number of new gTLDs in which the trademark holder had registered the string. The team found that 54 percent of the strings that were registered in a legacy gTLD were also registered in at least one a new gTLD. The review team also found that, of these strings, three was the median number of registrations in new gTLDs. That is, half of the trademarks that were analyzed were registered in three or fewer new gTLDs.[199] The review team also found that three-quarters of these strings were registered in seven or fewer new gTLDs, and that 90 percent of these strings were registered in 17 or fewer new gTLDs.[200] At the same time, a small number of trademarked strings were registered in a large number of TLDs: 4 percent of trademarks were registered in at least 100 new gTLDs, and one was registered in 406 new gTLDs. Extrapolating the sample across all marks, one would expect that trademark holders would have made approximately 80,000 total registrations of their trademarks in new gTLDs as of September 2016, which represents 0.3 percent of all registrations within new gTLDs[201]. The review team concluded from this analysis that, although the direct cost of the New gTLD Program for most trademark holders related to defensive registrations appears to be lower than some had feared prior to the inception of the program,[202] a small fraction of trademark holders are likely incurring significant costs associated with defensive registrations.

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[197] Nielsen, *INTA New gTLD Cost Impact Study* (April 2017), slide 22.

[198] Analysis Group, *Independent Review of Trademark Clearinghouse (TMCH) Services Draft Report* (July 2016), accessed 7 August 2018, https://newgtlds.icann.org/en/reviews/tmch/draft-services-review-25jul16-en.pdf.

[199] The mean number of duplicate registrations was eight, but the statistic is strongly influenced by a small number of trademarks that were registered in a very large number of domains. For example, one trademark was registered in 406 domains.

[200] In assessing these findings, it is important to emphasize that the extent of duplicate registrations that we observe may have been influenced, to some degree at least, by the use by trademark holders of the blocking services described above. That is, to the extent that trademark holders obtained protection through blocking, they may have had less need to register their trademarks "defensively."

[201] The TMCH review found a total of 19,642 registrations by trademark holders of their mark using a 25 percent sample. Extrapolating this to 100 percent gives us an expected total of 78,568 total registrations. In comparison, as of September 2016, there were a total of 24,814,734 registrations across all new gTLDs.

[202] Dan Jaffe of the Association of National Advertisers (ANA) stated in his prepared testimony before the House Subcommittee on Communications and Technology: "This cost [of defensive registrations] alone could be in the hundreds of thousands of dollars per brand name, creating a multi-million dollar liability for major corporations and a multi-billion dollar cost to the industry." See Testimony of Daniel L. Jaffe (14 December 2011), *Hearing on ICANN's Top-Level Domain Program*, accessed 7 August 2018, https://www.ana.net/getfile/17073, p.6; 2) The Coalition Against Domain Name Abuse (CADNA) claimed that defensive registrations would cost $2.4

In addition to defensive registrations, some registries offer a service through which a trademark owner can block others from using its marks without the need to purchase the domain name itself. For example, the Donuts registry offers a "Domain Protected Marks List," which "protects trademark holders against cybersquatting at a fraction of the cost of defensively and individually registering the terms across all Donuts domains."[203] Unfortunately, the Review Team was not able to locate any data related to the costs incurred by trademark holders making use of these blocking services, and thus is unable to draw any conclusions as to the efficacy of such services.

Recommendations

Recommendation 8: Conduct periodic surveys of registrants that gathers both objective and subjective information with a goal of creating more concrete and actionable information.

Rationale/related findings: Although Nielsen conducted two surveys of registrants in conjunction with the CCT, the set of questions posed did not allow for a full analysis of consumer motivations or to understand how valuable they found the expanded choice offered by the new gTLDs. At the same time, as the review team observed additional registrations and more familiarity with new gTLDs, it is likely that consumer attitudes will change over time as well. A periodic survey will allow the community to observe those changes.

To: ICANN organization

Prerequisite or priority level: Low

Consensus within team: Yes

Details: Because the survey supports further analysis of both consumer choice and consumer trust, it must pose questions relating to both topics. In both cases, it is important to know which TLDs consumers are familiar with and which they actually visit.

To better understand issues of consumer trust, it is also important to understand why they choose to register in some TLDs but not others, and whether the TLD's registration policies and perception of trustworthiness influence the choice of whether or not to register.

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billion. See Michael Berkens (21 September 2013), "CADNA: Costs of Defensive New gTLD Registrations To Be Double The Total Cost of Cost of All .Com Registrations," accessed 7 August 2018, https://www.thedomains.com/2013/09/21/cadna-costs-of-defensive-new-gtld-registrations-to-be-double-the-total-cost-of-all-com-registrations/. As the article points out, that was double the cost of all .COM and .NET registrations combined at the time.

[203] Donuts Registry, "Brand Protection," accessed 7 August 2018, http://www.donuts.domains/services/dpml. According to domainname.com: "Three of the largest new top-level domain registries has [sic] created a new domain name blocking tool. Many clients prefer to avoid defensive registrations but these services offer some economies of scales and are worth considering for key brands. The service is offered by three new gTLD providers; Donuts (covering 172 TLDs) Rightside (covering 36 TLDs) and Minds + Machines (covering 16 TLDs). [NB: Donuts acquired the Rightside registry in 2017]. The blocking tool allows trademark owners to block their marks and related terms, at the second-level, in all supported new gTLDs, for one fee per registry. The service is designed to be an economical way for trademark owners to protect their rights from cybersquatters. With the block it is not necessary for trademark owners to take out defensive registrations in each of the three providers TLDs In order to obtain a block, the term you want to block must be based on a trademark validated by the Trademark Clearinghouse." In 2016, Donuts announced a new version of its blocking service that will allow brand owners the opportunity to obtain blocking in return for a fee of $10,000. See Jack Ellis, "Donuts unveils enhanced trademark protection offering; expert urges lower cost options in next gTLD round," *World Trademark Review*, 29 September 2016, accessed 7 August 2018, http://www.worldtrademarkreview.com/blog/Detail.aspx?g=fa934d21-cfa7-459c-9b1f-f9aa61287908

For consumer choice, the survey should allow a relative weighting of the potential contributions to consumer choice with respect to geographic name gTLDs, specific sector gTLDs, and IDN gTLDs. The survey should help determine whether there is a clear preference by registrants for different types of gTLDs and whether there are regional differences or similarities in their preferences. It will be also be important to gather further data on the geographic distribution of gTLD registrants and the services provided to them by registrars, particularly in different regions, including languages offered for service interactions and locations beyond the primary offices.

The survey should be designed to repeat portions of previous surveys while continuously striving to improve the data available on registrant behavior and attitudes. Some potential questions are included in Appendix G: Possible Questions for a Future Consumer Survey. The survey should allow an analysis of: (1) what factors matter most to users in determining which gTLDs to visit; (2) whether perceived trustworthiness of TLDs influences registration behavior; (3) the the perception of new gTLDs with restrictions on registration compared to new gTLDs with few or no restrictions; and (4) whether registrants view the expanded name space as beneficial or confusing.

Success measures: The availability of relevant data for use by the ICANN organization, contractors, and the ICANN community for its work in evaluating competition in the DNS space.

Recommendation 9: The ICANN community should consider whether the costs related to defensive registration for the small number of brands registering a large number of domains can be reduced.

Rationale/related findings: The review team found that while most trademarks were either not registered in new gTLDs or in only a handful of new gTLDs, a small number of trademarks were responsible for a large number of registrations across many new gTLDs and were likely bearing most of the cost of registrations. This bimodal distribution suggests that RPMs tailored to certain of these trademarks may be appropriate.

To: New gTLD Subsequent Procedures PDP Working Group and/or Rights Protection Mechanisms (RPM) PDP Working Group

Prerequisite or priority level: Prerequisite

Consensus within team: Yes

Details: The review team does not suggest a specific mechanism. However, the review team believes the uneven distribution of costs of defensive registrations to a small number of trademark holders may be an unanticipated effect of the current RPM regime and that the relevant PDP(s) should consider whether those costs can be lowered without impacting the benefits of the New gTLD Program, thereby improving the cost-benefit ratio of the overall Program.

Success measures: A reduction in the number of defensive registrations overall and, in particular, a reduction in the number of defensive registrations per trademark by the registrants with the most defensive registrations without causing an increase in the number of UDRP and URS cases.

Benefits vs. Confusion to End-users

The CCT attempted to consider the benefits of the expanded number of gTLDs weighed against the risks that such expansion could create confusion, particularly for consumer end-users navigating to domain names. Although there was some data available about the benefits of the expansion for consumer end-users and registrants, the review team lacked specific data about the risks of confusion. As a result, the analysis on this topic is incomplete.

Using the data available, the review team looked at whether the New gTLD Program benefitted consumer end-users and registrants. In the case of consumer end-users, the review team examined benefits from increased choice and variety. In particular, the review team looked at the benefits consumer end-users would gain in having a broader and more diverse source of domain names to access. For registrants, the review team considered the benefits of having a broader and more diverse source of domain names for registration. This includes geographic TLDs, TLDs using non-Latin scripts and written in languages other than English, and new service models.

Benefits to consumer end-users include greater choice in the number of generic top-level domain names (given the increase from some 22 in 2013 to over 1000 in 2016, which does not include the ccTLDs).[204] Another benefit is greater "specificity" of identification regarding the domain names (i.e., a consumer end-user can search within a narrower range of gTLDs depending upon their interests, for example by searching for local florists within .berlin or banks within .bank), as well as increased availability of non-Latin scripts at the top- and second-level (IDNs).[205]

When comparing the 2013 environment to that of 2016-2017, registrants have benefited from a broader and more diverse source of domain names for registration (e.g., geographic TLDs, new scripts).[206] Registrants indicated that having an extension that was relevant to their needs was one of the most important factors in determining which gTLD to purchase compared to the previous situation in which the most important factor was price.[207] There has also been a clear increase in the number of jurisdictions governing the registrations, with growth from only 6 jurisdictions having at least one gTLD registry operator in 2013 up to 50 jurisdictions in the second half of 2017.[208] The number of registrars has not increased at the same pace, but there were already a large number of registrars prior to the inception of the New gTLD Program. The total number of second-level domain name registrations increased by roughly 59 percent from 2010 to 2017, and, notably, the number of second-level registrations in IDNs has increased by over 3 million percent, from 19 in the second half of 2013 to over 590,000 by the second half of 2017.[209]

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[204] When the New gTLD Program was launched, there were 22 gTLDs and over 250 ccTLDs that could be used.
[205] Nielsen, *Consumer Research Wave 2* (2016), pp. 7-9, 33, 35. While awareness and visitation of new gTLDs has not increased at the rate of the legacy TLDs, the rise has been greatest in Africa, Asia/Pacific, and Latin America (see pp. 7 – 8). It is also clear that trust in new gTLDs is high for IDNs and that expectations on restrictions on same add to consumer confidence (see p. 9).
[206] Nielsen, *Registrant Survey Wave 2* (2016) indicates that awareness of new gTLDs is increasing compared to relative stagnation or decrease in legacy gTLDs. See also ICANN, *gTLD Marketplace Health Index* (July 2016), accessed 25 January 2017, https://www.icann.org/en/system/files/files/gtld-marketplace-health-index-beta-19jul16-en.pdf, pp. 5 – 7.
[207] Nielsen, *Consumer Research Wave 2* (2016), p. 33 states: "Having a well-known extension and one that seems most relevant are the main factors across the board in determining **which gTLD to purchase"** [emphasis added], which must be a reference to registrants as they are the only ones purchasing gTLD domain names.
[208] ICANN, *gTLD Marketplace Health Index* (June 2018), accessed 7 August 2018, https://www.icann.org/en/system/files/files/gtld-marketplace-health-index-beta-20jun18-en.pdf, p. 3.
[209] ICANN, *gTLD Marketplace Health Index* (December 2017), p. 5.

In addition to understanding these benefits, the review team attempted to see if there was evidence that an increased number and type of gTLDs (geographic, new internationalized scripts) might create confusion for consumers and, if such confusion existed, whether it would reduce the value to registrants of the new type and number of gTLDs. This effort was hampered by a lack of data relevant to this topic. In particular, the Nielsen surveys of consumer end-users did not include specific questions on this issue.

Nevertheless, there is evidence from the Nielsen surveys that over half of end-users search for websites via search engines rather than via specific names of gTLDs.[210] The use of search engines to find websites might reduce the risk of confusion as to specific searches depending upon the sophistication of the search engines, but more research would need to be conducted to confirm this hypothesis. Also, in order to accurately assess whether the increase in gTLDs increased the risk of confusion for consumer end-users and/or registrants, more research would need to be gathered.

Greater specificity and "sectoralization" of the new gTLDs has permitted consumer end-users to have greater choice in identifying the domains from which they wish to find goods and services. This increased specificity is also reflected in the greater number of geographic gTLDs, potentially permitting narrower searches and search parameters at the second-level. The expansion of availability of IDNs has also increased consumer choice, although the review team did not have sufficient evidence of whether any confusion has arisen as a result.[211] Again, if search engines are a primary source for finding domain names, the use of non-Latin scripts would help to narrow the search and in theory, reduce confusion. But there is no clear insight on this that can be derived from the current surveys.[212]

Registry Policies

As a part of a new gTLD's attractiveness to consumers as a product, its registration policies and rights protection mechanisms can be used as a point of comparison. The review team analyzed the registry policies of the top 30 new gTLDs that related to protection of privacy, registration rules and rights protection mechanisms (See also section "Background to the RPMs).[213] For comparison purposes, the top five ccTLDs (by registration numbers) were included.[214]

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[210] Nielsen, *Registrant Survey Wave 2* (2016), p. 102 shows that 59 percent of respondents (in both 2016 and 2015) indicated that using a search engine is their preferred method for finding a website. Second to search engines was typing the domain name directly into the browser; 22 percent in 2016 of respondents indicated they did this, down very slightly from 23 percent from 2015. Nielsen, *Consumer Research Wave 2* (2016), p. 22 indicates that over 70 percent of consumers use search engines to find information about domain name extensions. This may mean that the specific names themselves are less relevant to consumers (and to a certain extent registrants) when searching for a domain so long as they arrive at the gTLD(s) or the content that they are searching for.

[211] However, there are examples of IDNs being used to purposely confuse victims in furtherance of DNS abuse. See PBS (18 January 2018), "Hackers are flooding the internet with more fake domain names. Here's how you can protect yourself," accessed 7 August 2018, https://www.pbs.org/newshour/nation/hackers-are-flooding-the-internet-with-more-fake-domain-names-heres-how-you-can-protect-yourself.

[212] Nielsen, *Registrant Survey Wave 2* (2016), p. 46.

[213] Registries of the top 30 strings by registration number were analysed: .xyz, .top, .wang, .win, .club, .link, .site, .science, .bid, .xin, .red, .ren, .party, .online, .click, .loan, .xn--ses554g (网址), .date, .website, .space, .kim, .work, .tech, .lol, .webcam, .nyc, .realtor, .review, .news, .guru. Listed strings are managed by following companies: .XYZ, Jiangsu Bangning Science & Technology Co., Ltd, Zodiac Leo Limited, First Registry Limited, .Club Domains LLC, Uniregistry, Corp., Radix, Famous Four Media, Elegant Leader Limited, Afilias, Beijing Qianxiang Wangjing Technology Development Co., Ltd, Hu Yi Global Information Resources (Holding) Company, (Minds + Machines) Top Level Domain Holdings Limited, Neustar + (The City of New York, a municipal corporation under the laws of the State of New York, by and through the New York City Department of Information Technology & Telecommunications), Real Estate Domains LLC, Rightside, Donuts.

[214] .cn, .de, .uk, .nl and .ru

The vast majority (90 percent) of the top 30 new gTLD registries have a published privacy policy. Two-thirds of these registries would not share personal data with third parties except in cases required by law and in compliance with relevant ICANN contract requirements. Many (30 percent) strictly underline that they will not sell personal data to third parties. Of these registries, 6.6 percent share personal data of its registrants with third parties, and 13.3 percent will ask for registrant consent before sharing the registrant's personal data. With regard to registries with personal data protection policies, many of them—43.3 percent—have strict obligations to take reasonable measures to provide the security of personal data, and 33.3 percent of those registries have information in their policies regarding collecting of cookies.[215]

Of the five compared ccTLDs, all have rules that do not permit sharing personal data with third parties. On the other hand, there are differences among them regarding data that they are publishing through WHOIS (ccTLDs do not have the same WHOIS policies, which accounts for those differences). Three of those ccTLDs have information on collecting cookies. Regarding content, three have no applicable rules. The remaining two have certain rules for dealing with illegal content. Three of the ccTLDs are open to registration by anyone. The remaining two require at least a local address within the jurisdiction of the ccTLD.

For the top 30 new gTLDs considered, there are no requirements to reside within a particular jurisdiction, except for .nyc (only businesses and organizations with an New York City address and individuals with a primary residence in New York City can register a .nyc domain name). Regarding eligibility to register, 20 percent of registries refer to the Trademark Clearinghouse for registration priority. All of these registries have compliance procedures for abusive behavior or other violations of their policies. Registries have provided online forms for filing the complaint or a specific address for this purpose. Also, all registries have the right to act in case of abusive usage of a domain name. None of these registries have policies that regulate parked domain names.

For the analyzed ccTLDs, three have registrations that are open to anyone, and the remaining two require at least a local address. All five of the ccTLDs for which information has been collected have compliance procedures for abusive behavior or other violations of policy. In relation to abusive usage of domain names, all refer to relevant policy or law. Besides that, one has a “blacklist” database: domains on that list are not allowed to be repeatedly registered or utilized. The five ccTLDs do not have any concrete policies regarding parked domains.

Most of the top 30 gTLD registries (73 percent) have different voluntary PICs, such as those that involve security issues, abuse prevention, and additional rights protection mechanisms. Besides voluntary PICs, there are mandatory PICs for all new gTLDs as a part of the Registry Agreement. All new gTLD registry operators are required to work with ICANN-accredited registrars and include GAC safeguards.[216]

With the inclusion of the PICs for new gTLDs, non-price related competition was potentially improved for new gTLDs when compared to legacy gTLDs. To that extent, expectations of consumer end-users for gTLD restrictions are increasing. While both consumer end-users and registrants felt that more restrictions could be protective, registrants were slightly more opposed to restrictions relative to consumers.[217] Users at a global level generally believe that

[215] The recent implementation of the European Union’s General Data Protection Regulation (GDPR) on 25 May 2018 has had a major impact on how data is collected and processed in all sectors.
[216] ICANN Board Resolution 2013.07.02.NG07–2013.07.02.NG08, “Category 1 Safeguard Advice from GAC,” (2013), accessed 7 August 2018, https://www.icann.org/resources/board-material/resolutions-new-gtld-2013-07-02-en#1.c.
[217] Nielsen, Registrant Survey Wave 2 (2016); Nielsen, Consumer Research Wave 2 (2016).

restrictions increased trust.[218] Regarding specific restrictions, there are wide differences among regions. For example, registrants in North America are more likely to want local presence restrictions while those in Asia are more likely to want credential validation.[219] A clear majority of consumer end-users feel that there should be at least some level of restrictions on who can register a domain name, such as those related to credentials, location, and consistent use.[220]

On the other hand, there are many similarities among the policies of legacy gTLDs. Most of the legacy gTLD registries were already involved in the domain name industry, so they had developed policies based on their previous experience and background. Besides that, for some issues, rules were already set by ICANN or they were part of accreditation processes. In those cases there was no need or incentive for further developments by registries.

The URS is a rights protection mechanism developed in order to provide protection to trademark holders under the New gTLD Program (see section below on "Background to the RPMs").[221] Compared to the existing UDRP, which was the primary process established by ICANN for the resolution of disputes regarding the registration of domain names that infringe trademark rights, the URS is much faster in taking down websites that are found to infringe on intellectual property rights as well as in fighting cybersquatting. Compared to the UDRP, fees are lower for the URS, ranging from USD $300 – 500.[222] By comparison, the World Intellectual Property Organization (WIPO), one of the main UDRP arbitration providers, charges USD $1500 – 2000 for a single panelist and USD $2000 – 4000 for three panelists.[223]

The URS was designed to be used for obvious cases of infringement.[224] Although the URS is faster and cheaper than the UDRP, the remedy available is limited to a suspension of domain name registrations. Thus, the same domain name could be registered by another potential infringer once it is released following the expiration of the registration (which can be extended by the Complainant). Some rights holders prefer having the remedy of transfer not available under the URS. For such cases, the UDRP is the more appropriate mechanism.

Recommendation

Recommendation 10: The GNSO should initiate a new Policy Development Process (PDP) to create a consistent privacy baseline across all registries, including to explicitly cover cases

[218] Nielsen, Registrant Survey Wave 2 (2016), p. 31.
[219] Ibid. p. 30.
[220] Nielsen, Consumer Research Wave 2 (2016), p. 9.
[221] ICANN, *Uniform Rapid Suspension System (URS) Rules* (June 2013), accessed 1 December 2016, https://newgtlds.icann.org/en/applicants/urs/rules-28jun13-en.pdf.
[222] Currently, there are three providers who arbitrate URS disputes: the Asian Domain Name Dispute Resolution Center (ADNDRC), the National Arbitration Forum (NAF), and the MFSD Intellectual Property Dispute Resolution Center. See ICANN, "Uniform Rapid Suspension (URS)," accessed 7 August 2018, https://www.icann.org/resources/pages/urs-2014-01-09-en. For an example of fees charged, see ADNDRC, "Procedure, Rules, and Supplemental Rules," accessed 7 August 2018, https://www.adndrc.org/urs
[223] WIPO, "Schedule of Fees under the UDRP," last modified 1 December 2002, http://www.wipo.int/amc/en/domains/fees/
[224] See D. S. Prahl and E. Null, "The New Generic Top-Level Domain Program: A New Era Of Risk For Trademark Owners And The Internet," *The Law Journal of the International Trademark Association* 101, (2011): 1784. http://www.inta.org/TMR/Documents/Volume%20101/vol101_no6_a4.pdf: "…the URS is designed to be used for obvious cases of infringement and requires the complainant to prove bad faith and meet the clear and convincing evidentiary standard. In United States jurisprudence, there are generally three standards of proof from least to most onerous: (1) "preponderance of the evidence," (2) "clear and convincing," and (3) "beyond a reasonable doubt. Because ICANN requires the clear and convincing standard for a URS, the URS panelist will take a more exacting look at the facts and evidence than is required in a UDRP proceeding, where the preponderance of the evidence standard applies."

of privacy infringements such as sharing or selling personal data without a lawful basis, such as the consent of that person. The GNSO PDP should consider limiting the collection and processing of personal data within rules which are mandatory for all gTLD registries. It should also consider not allowing registries to share personal data with third parties without a lawful basis, such as the consent of that person or under circumstances defined by applicable law (e.g. upon requests of government agencies, IP lawyers, etc.). Also, it is necessary to be aware of emerging, applicable regulations related to the processing of the personal data. For clarification, this recommendation does not relate to issues involving WHOIS or registration directory services data.

Rationale/related findings: As mentioned above, the policies of the top 30 new gTLDs have rules regarding sharing of personal data of its registrants with third parties. Furthermore, some of those policies have very clear statements that registries have the right to share or sell personal data.

To: Generic Names Supporting Organization

Prerequisite or priority level: Medium

Consensus within team: Yes

Details: Despite the fact that the Base Registry Agreement has references to privacy laws and policies, some of the registries are explicit that they have right to share personal data with third parties without consent of that person or under circumstances defined by applicable law.

Success measures: The development of relevant policy and update of the Base Registry Agreement.

8 Consumer Trust

Background

The review team sought to determine the extent to which the increase in the number of gTLDs has promoted consumer trust.[225] As with the review team's findings about competition and consumer choice issues, the New gTLD Program is still in its early stages and hence the data reflects an early look, rather than a long-term assessment of the Program. To examine the impact of the New gTLD Program on consumer trust, among other issues, ICANN commissioned the Nielsen company to survey global online consumers and global domain name registrants.[226] To avoid confusion between the review team's broad definition of "consumer" and the narrower segment of Internet users surveyed in ICANN's Global Consumer Surveys, the review team refers to the latter group as "consumer end-users." These surveys were conducted approximately one year apart between 2015 and 2016, and were aimed at assessing the current TLD landscape, as well as measuring factors such as consumer awareness, experience, choice, and trust in new TLDs and the Domain Name System in general. Reports on the results of the consumer end-user survey were published in April 2015 and June 2016, and reports on the results of the registrant surveys were published in September 2015 and August 2016. Nielsen directed its "consumer" survey at global Internet users who spent more than five hours per week on the Internet and its "registrant" survey at the primary decision makers that registered a domain name.[227]

Based on this data, the review team identified two primary factors relevant to the public's trust of gTLDs: familiarity and security. The concept of "familiarity" includes the awareness and reputation of the gTLD. The concept of "security" includes concerns about DNS abuse and expectations about restrictions concerning who can register a domain name within a particular gTLD.

Typically, awareness is the most basic knowledge of a domain name extension. Familiarity can be considered a higher level of awareness; it entails more experience and understanding about a particular domain name extension. In addition to providing data on aspects of awareness of gTLDs, the global consumer end-user and registrant surveys also asked consumers about the level of their trust in new gTLDs as compared to that of legacy gTLDs, and their comfort levels with providing certain types of sensitive information to new gTLDs as compared to legacy gTLDs. The following discussion sets forth the most pertinent findings from those studies.

Awareness and Visitation

[225] For the purposes of this review, the review team recognized that "consumers" (typically, a natural person, acting primarily for personal, family or household purposes) generally fall into two categories: 1) Internet Users and other market participants who make use of domains through DNS resolution, such as by navigating to a URL or sending an e-mail; and 2) registrants (and potential registrants), which may, depending on the context, include individuals, businesses, and government agencies.

[226] Nielsen, *Consumer Research* (2015); Nielsen, *Consumer Research Wave 2* (2016); Nielsen, *Registrant Survey* (2015); Nielsen, *Registrant Survey Wave 2* (2016). Statistical significance test results in the Nielsen surveys are reported at a 95 percent confidence interval. Although differences in the results of the surveys between 2015 and 2016 reported below are small in many cases and not all are statistically significant, the Review Team nonetheless views the survey data as useful information for its analysis of consumer trust in new gTLDs (results of the significance tests can be found in the respective Nielsen reports). The Review Team recognizes that further study of consumer trust will be required to compare these early measures with the results of future surveys.

[227] Nielsen, Consumer Research Wave 2 (2016), p.3; Nielsen, Registrant Survey Wave 2 (2016), p. 4.

In terms of awareness, the logical predecessor to familiarity, the ICANN Global Consumer Survey found that consumer end-user "total awareness" of new gTLDs increased from 46 percent to 52 percent between 2015 and 2016.[228] Total awareness of new gTLDs by registrants was higher than awareness for consumer end-users and remained stable, showing no statistically significant change between 2015 (66 percent) and 2016 (64 percent).[229] Interestingly, consumer end-user and registrant awareness of any new gTLDs specified in the survey was higher in the Asian, African, and South American regions than it was in North America and Europe.[230] As one might expect, total awareness of new gTLDs is lower than that of legacy gTLDs. Legacy gTLDs have total consumer end-user and registrant awareness levels of 98 percent or more in both 2015 and 2016.[231]

Nielsen also found that consumer end-users do not visit new gTLDs as often as they do legacy gTLDs. Comparing visitation rates between well-known legacy gTLDs (.com, .net, .org) and specified new gTLDs (.email, .photography, .link, .guru, .realtor, .club, .xyz), the data showed that in 2015, 71 percent of consumer end-users indicated a "high" visitation rate for legacy gTLDs versus 15 percent of consumer end-users reporting a "high" visitation rate for specified new gTLDs (.email, .photography, .link, .guru, .realtor, .club).[232] In 2016, an even higher percentage of consumer end-users reported visiting these same legacy gTLDs (81 percent), while the number of consumer end-users visiting the specified new gTLDs was down slightly (12 percent).[233] When additional new gTLDs were added to the survey questions in 2016 (.news, online, .website, .site, .space, .pics, .top), the reported visitation rate was 15 percent.[234] Generally speaking, the average visitation rates for new gTLDs were closest to the rates reported for legacy gTLDs in the moderately known categories (.info, .biz): 22 percent in 2015 and 27 percent in 2016.[235]

Expectations about Relationship of gTLD Name to Websites Using that gTLD

The surveys indicated that the sample population expected a connection between the name of a gTLD and the websites associated with that gTLD. Fifty-five percent of consumer end-users surveyed expected "a very clear relationship" between domain names and websites registered under those domain names.[236] In addition, 79 percent of consumer end-users also expect that the actual use of the domain name to be consistent with the meaning of the gTLD.[237] This issue relates to another question posed in the surveys: "Why do websites have different extensions?" A majority of registrants believed that websites have different

[228] Nielsen, Consumer Research Wave 2 (2016), p. 42 (for "consistent" gTLDs listed in both 2015 and 2016 surveys).
[229] Nielsen, Registrant Survey Wave 2 (2016), p. 12.
[230] Nielsen, Consumer Research Wave 2 (2016), p.42; Nielsen, Registrant Survey Wave 2 (2016), p. 42.
[231] Nielsen, Consumer Research Wave 2 (2016), p. 8; Nielsen, Registrant Survey Wave 2 (2016), p. 12.
[232] Nielsen, Consumer Research Wave 2 (2016), p.7.
[233] Ibid, p.7. Note these are averages of regional responses. Statistical significance of regional results in 2015 and 2016 can be found on p. 15 for legacy gTLD visitation and pp. 46-47 for new gTLD visitation.
[234] Ibid, p.7.
[235] Ibid, p.7.
[236] Nielsen, Consumer Research Wave 2 (2016), pp. 9, 50. The survey asked the following question: "Think about accessing a website with one of the newer domain extensions (the part after the "dot"). If the domain name extension in question is descriptive of a service or item, would you expect that all websites using that domain extension have a direct relationship to it? For example, if you go to .bank, would you expect to see registrations by banks across the globe? If you go to .paris do you expect to see domain names connected to the city of Paris? If you go to .film do you expect to see content related to films?" Id. at appended survey question Q890, p. 20.
[237] Ibid, p.27. In relation to legacy gTLDs, the survey asked respondents to answer "yes" or "no" as to whether they felt that certain restrictions on registration of a gTLD should be enforced. The reported result relates to the following restriction: "[r]equirements for use of the name to be consistent with the meaning of the gTLD (e.g., use of a .net name must be for network operations purposes)." See appended survey question Q767, p. 16.

extensions to "properly identify the purpose or owner or to give an indication of content or function."[238]

Nevertheless, when asked about how much attention consumer end-users pay to a domain extension, the survey reported that 29 percent reported "they don't pay much attention," 34 percent only visit sites with "familiar" domains, and 37 percent base their visitation upon search engine results.[239] This finding is consistent with another reported result, that the public's preferred way of finding a website is with search engines.[240] The consumer end-user survey indicated that in 2016, 67 percent of consumer end-users preferred to use a search engine to find a website as compared to 20 percent that indicated that they preferred to type the domain name directly into a browser.[241] Registrants also reported a preference for using search engines to find websites and also identified search engines as the leading method that they use to find out more information about gTLDs.[242]

When asked what makes domain extensions trustworthy, consumer end-users reported that reputation and familiarity played key roles.[243] In the related topic of why consumer end-users visit gTLDs, Nielsen found that consumer end-users choose to visit sites based upon relevance of the gTLD to the information they seek. Consumer end-users also tend to visit sites with which they are already familiar.[244] Interestingly, registrants may presume familiarity and trust of certain domains based on the name (such as a reference to a prominent city) regardless of whether the gTLD has actually been delegated.[245] Conversely, the public may experience discomfort visiting sites with unfamiliar gTLDs.[246] When deciding whether to visit a website with an unfamiliar gTLD, consumer end-users look to usage (their own prior usage or the popularity of the website), site appeal or interest, and reputation (good reviews, recommendations, etc.).[247]

Public Trusts Legacy gTLDs More Than New gTLDs

The survey data show that both consumer end-users and registrants trust new gTLDs less than they do legacy gTLDs. In both 2015 and 2016, consumer end-users reported trusting specified new gTLDs approximately only half as much as specified legacy gTLDs.[248] For example, in 2015, consumer end-users found 90 percent of specified legacy gTLDs to be

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238 Nielsen, *Registrant Survey Wave 2* (2016), pp. 25-26.

239 Nielsen, Consumer Research Wave 2 (2016), p.54.

240 Ibid, p.77.

241 Ibid, p.77.

242 Nielsen, Registrant Survey Wave 2 (2016), pp.102, 32.

243 Nielsen, *Consumer Research Wave 2* (2016), pp.19-20. See also pp. 56-57. Survey respondents indicated that relevance and appeal of information are significant factors in determining whether an unfamiliar domain extension feels trustworthy. The respondents inserted these results in a text box. See also: NCC Group (2016), *Trust in the Internet Survey*, accessed 7 February 2017, https://www.nccgroup.trust/uk/about-us/resources/trust-in-the-new-internet-survey-2016-discussion-paper/, p. 5. More than 50 percent of those surveyed identify the following as a factor that would increase their confidence in new domains: "Brand/company clearly communicates the steps to take to secure your personal information within the website." The review team notes that it appears this study was commissioned by an entity that has a business interest in marketing both cyber-security products and the .trust domain.

244 Nielsen, Consumer Research (2015), pp. 8, 18, 36.

245 Nielsen, Registrant Survey Wave 2 (2016), p. 39.

246 NCC Group, Trust in the Internet Survey (2016), p. 3. In 2016, 52 percent of those surveyed reported feeling "not very or not at all comfortable" visiting websites with new domains.

247 Nielsen, Consumer Research Wave 2 (2016), pp. 38.

248 Nielsen, Consumer Research (2015), pp. 9, 40; Nielsen, Consumer Research Wave 2 (2016), p. 9. Note the referenced figures are based on averages of regional responses. Statistical significance for changes in trustworthiness from 2015 to 2016 for selected gTLDs can be found on p. 55 of the Wave 2 Study.

"very" or "somewhat" trustworthy, but only 49 percent of specified new gTLDs were found to be "very" or "somewhat" trustworthy.[249]

Results were similar in 2016, with consumer end-users reporting that 91 percent found specified legacy gTLDs to be "very" or "somewhat" trustworthy, whereas 45 percent found new gTLDs to be "very" or "somewhat" trustworthy. When Nielsen added certain specified new gTLDs to its survey question in Wave 2 of the consumer end-user survey, the percentage of new gTLDs that consumer end-users found to be "very" or "somewhat" trustworthy rose to 52 percent.[250] When surveyed about specific new gTLDs, consumer end-user responses varied depending upon the particular gTLD and the consumer's region.[251] For example, approximately half the consumer end-users surveyed reported high levels of trust for .news, .photography, .email, and .realtor, with .news seen as the most trustworthy across all regions.[252] When asked similar questions about specified legacy gTLDs, over 70 percent of consumer end-users across all regions rated .com, .org, and .net as "very" or "somewhat" trustworthy.[253]

Compared to consumer end-users, registrants consistently reported higher levels of trust for specified gTLDs, but still reported lower levels of trust for new gTLDs when compared to legacy gTLDs.[254] Registrants associated the term "trustworthy" with legacy gTLDs more than with new gTLDs. For example, in 2015, 83 percent of registrants associated the term "trustworthy" with legacy gTLDs compared to a rate of 58 percent for new gTLDs.[255] In 2016, 79 percent of registrants viewed legacy gTLDs as "trustworthy" compared to 60 percent for new gTLDs.[256]

This increase in the rates of trust for new gTLDs by registrants is also reflected in data regarding individual new gTLDs. For example, for the most trusted new gTLD surveyed over both waves—.email—68 percent of registrants viewed this domain as "very" or "somewhat" trustworthy compared to approximately 62 percent of consumer end-users who viewed it similarly.[257]

Consumer Behavior That Indicates Trust

In addition to surveying the public about their subjective views on trust, Nielsen also gathered data about behavior that could indicate trust, such as willingness to provide sensitive information to websites associated with new gTLDs. To a certain extent, these results were similar to differences between consumer end-users' trust of new gTLDs and legacy gTLDs. For example, when asked whether they felt "very" or "somewhat" comfortable providing financial information to websites in the .com legacy gTLDs, 62 percent of consumer end-users responded affirmatively compared to only 36 percent when asked this same question regarding new gTLDs.[258]

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[249] Nielsen, Consumer Research (2015), pp. 9, 40. Specified legacy gTLDs: .com, .net, .org; specified new gTLDs: .email, .photography, .link, .guru, .realtor, .club; .xyz.
[250] Nielsen, Consumer Research Wave 2 (2016), p. 9. Added new gTLDs (.news, online, .website, .site, .space, .pics, .top).
[251] Ibid, p. 55.
[252] Ibid, p. 55.
[253] Ibid, p. 18.
[254] Nielsen, Registrant Survey Wave 2 (2016), p. 64. Compare trustworthiness percentages for legacy gTLDs reported on p. 27 to legacy gTLDs p. 66.
[255] Ibid, pp.27 and 66 show trustworthiness percentages.
[256] Ibid, pp.27 and 66 show trustworthiness percentages.
[257] Nielsen, Registrant Survey Wave 2 (2016), p.64.
[258] Nielsen, Consumer Research Wave 2 (2016), p. 90. The survey did not specify which new gTLD and asked "Please think about two websites. One has a .com domain extension and one has one of the new gTLDs like

Results for other types of personal information showed lower comfort levels when consumer end-users were asked about providing sensitive information to new, versus legacy, gTLDs.[259] In fact, consumer end-users tended to respond that they were "not very comfortable" with providing sensitive information to new gTLDs.[260] Related to these findings, a survey by the NCC Group on "trust in the Internet" reflected the public's increasing concerns about stolen credit card/financial information, online security, and protection and security of credit card and personal information.[261]

Registration Restrictions Contribute to Trust

The ICANN Global Surveys indicated that the sample population expects certain restrictions about who can purchase domain names and trusts that these restrictions will be enforced.[262] The survey results also indicated that the presence of such restrictions contributed to consumer trust.[263] These results applied to all gTLDs and the percentage of the consumer end-users who reported that restrictions contributed to consumer trust increased from 56 percent in 2015 to 70 percent in 2016.[264] For example, the consumer end-user surveys indicated that over 70 percent of those surveyed not only trusted entities that offer domain names to take precautions about who gets a domain name, but they also trusted entities that offer domain names to screen individuals or companies who register for certain special domain names.[265] In addition, over 80 percent of consumer end-users expected the enforcement of restrictions, such as requiring validation that the person or company registering a website in a given gTLD has valid credentials related to the gTLD.[266]

Focusing on new gTLDs, an increasing percentage of consumer end-users (73 percent) expected at least some level of restriction on registrations in specified new gTLDs.[267] Registrants also favored restrictions, but were generally more opposed to restrictions than consumer end-users.[268] However, when put in context of validating certain characteristics that are in keeping with the intended or implied use of the gTLD (such as a contractor's license for .builder), three out of four registrants approved of such restrictions.[269] For context, both consumer end-users and registrants also expected restrictions on registrations in legacy gTLDs.[270]

Consumer Trust in the Domain Name System Overall Since the Introduction of New gTLDs

Wave 1 of the Global Survey found that about half of consumer end-users trusted the domain name industry just as much as they did other tech industries (e.g., Internet Service Providers,

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.club or .bank. How comfortable would you be doing each of these activities on each website?" See appended survey question Q1145, p. 31.

[259] Ibid, p. 90.

[260] Ibid, p. 90.

[261] NCC Group, Trust in the Internet Survey (2016), p. 2. The Review Team notes that it appears this study was commissioned by an entity that has a business interest in marketing both cyber-security products and the .trust domain.

[262] Nielsen, Consumer Research Wave 2 (2016), pp. 9, 13, 26-27, 65; Nielsen, Registrant Survey Wave 2 (2016), pp. 14, 18, 30, 68.

[263] Nielsen, Consumer Research (2015), pp. 9, 26; Nielsen, Consumer Research Wave 2 (2016), pp. 9, 13, 26.

[264] Nielsen, Consumer Research Wave 2 (2016), p. 9.

[265] Nielsen, Consumer Research (2015), p. 49.

[266] Nielsen, Consumer Research Wave 2 (2016), p. 27.

[267] Nielsen, Consumer Research Wave 2 (2016), p. 9. This figure is up from 67 percent in 2015.

[268] Nielsen, Registrant Survey Wave 2 (2016), p. 67.

[269] Ibid, p. 14.

[270] Nielsen, Consumer Research Wave 2 (2016), p. 9; Nielsen, Registrant Survey Wave 2 (2016), p. 29.

software companies, computer/hardware companies, e-commerce, and Web-based marketing companies), and the rest are more inclined to trust it more as opposed to less.[271] Consumer end-users in Africa, Asia, and South America had higher levels of trust than consumer end-users in other regions.[272] Reputation was the factor cited most as the reason some consumer end-users trusted the domain name industry more than they did other tech industries. However, it was also cited as the reason some consumer end-users trusted the domain name industry less than other industries[273]. Wave 2 of the survey found that trust levels had at least remained the same since 2015.[274] The global total seemed to improve against all of the five reference industries, wave over wave, by an average of just over four percentage points.[275] At this point, with only a year between the two reports on a nascent market, it is not possible to conclude with certainty that these levels had in fact improved. Therefore, the review team recommends periodically conducting further registrant surveys as discussed in Recommendation 13 in order to better understand why some TLDs are trusted more than others and how trust in new gTLDs and the domain name industry in general evolves over time.

The survey of registrants found positive results similar to those found in the consumer segment when it comes to trust in the domain name industry relative to other industries.[276] General reputation and self-interest drive trust.[277] Registrants expected the industry to adhere to practices that protect their own interests and commonly note security protocols, as well as just a general positive reputation, as factors that promote trust.[278] Those who trust less cite poor security and regulations, as well as general reputational issues like a lack of transparency regarding business practices.[279]

Conclusions

The consumer end-user and registrant surveys indicate that the release of hundreds of new gTLDs does not appear to have had a negative impact on overall trust in the DNS. Looking at trust of new gTLDs specifically, the survey found that while consumer end-users do not trust new gTLDs nearly as much as they do legacy gTLDs, the trust levels appear to be stable over both waves of the surveys, with registrants reporting slightly higher trust levels than consumer end-users. Finally, a majority of registrants and consumer end-users expected gTLD registration restrictions, trust that such restrictions would be enforced, and associate such restrictions with an increase in trustworthiness.

Recommendations

Recommendation 11: Conduct periodic end-user consumer surveys. Future review teams should work with survey experts to conceive more behavioral measures of consumer trust that gather both objective and subjective data with a goal toward generating more concrete and actionable information.

[271] Nielsen, Consumer Research (2015), p. 50.
[272] Ibid, p. 50.
[273] Nielsen, Consumer Research Wave 2 (2016), p. 66.
[274] Ibid, pp. 63-64.
[275] Ibid, pp. 63-64.
[276] Nielsen, Registrant Survey (2015), p. 67. In Asia, registrants say they hold comparatively higher trust in the domain name industry compared to other regions.
[277] Nielsen, Registrant Survey Wave 2 (2016), pp. 77,79.
[278] Ibid, pp. 77,79.
[279] Ibid, pp. 77, 81-82.

Rationale/related findings: The New gTLD Program is still in its early days. In order to further analyze consumer choice and trust, surveys of consumer end-users must be continued in order to better understand their behavior and motivations.

To better understand issues of consumer trust, it is also important to understand why consumer end-users choose to visit some TLDs but not others; whether the TLD's registration policies influence the choice of whether or not to visit; and whether consumer end-users' behavior on certain websites indicate varying levels of trust across TLDs.

For consumer choice (discussed above), the survey should allow a relative weighting of the potential contributions to consumer choice with respect to geographic name gTLDs, specific sector gTLDs, brand gTLDs, and IDN gTLDs to help determine whether there is a clear preference among consumer end-users for different types of gTLDs, and whether there are regional differences or similarities in their preferences.

To: ICANN organization and future CCT Review Teams

Prerequisite or priority level: Prerequisite

Consensus Within Team: Yes

Details: Future review teams should work with survey experts to conceive more behavioral measures of consumer trust that gather both objective and subjective data, with a goal toward generating more concrete and actionable information. In addition, the survey should repeat applicable parts of the global surveys for consumer end-users to allow an analysis of (1) which new gTLDs they have visited most; (2) the reasons they give to explain why they visited certain new gTLDs more than others; (3) what factors matter most to them in determining which gTLDs to visit; (4) how their behaviors indicate to what extent they trust new gTLDs; (5) the trustworthiness of new gTLDs with restrictions on registration compared to new gTLDs with few or no restrictions; and (6) whether consumer end-users view the expanded name space as beneficial or confusing.

Success measures: This recommendation would be considered successful if it produces data that enables future review teams and the ICANN organization to see how the levels of trustworthiness correlate with the number of visitations to new gTLDs, and what factors may contribute to the levels of trustworthiness. For example, registration restrictions appear to contribute to higher levels. This information could inform future policy-making on the terms and conditions that should apply for all new gTLD applicants. Another success measure would be information for new gTLD applicants in regard to what factors may lead to increased visitation and trustworthiness for new gTLDs. The last success measure would be data that informs ICANN policy on registration restrictions, especially if the data indicates that certain basic restrictions enhance trustworthiness in the gTLD space, alongside other variables driving gTLD model design and diversity. Those applicants choosing to apply for gTLDs with restrictions would then have a better basis for the decision to do so.

Recommendation 12: Create incentives and/or eliminate current disincentives that encourage gTLD registries to meet user expectations regarding: (1) the relationship of content of a gTLD to its name; (2) restrictions as to who can register a domain name in certain gTLDs based upon implied messages of trust conveyed by the name of its gTLDs (particularly in sensitive or regulated industries) and (3) the safety and security of users' personal and sensitive information (including health and financial information). These incentives could relate to applicants who choose to make Public Interest Commitments in their applications that relate to these expectations. TLD applicants for any subsequent rounds should be made aware of these public expectations by inserting information about the results of the surveys in an updated Applicant Guidebook.

Rationale/related findings: The Nielsen surveys indicate certain expectations on the part of the public. They indicated the public believes that websites have different extensions to "properly identify the purpose or owner or to give an indication of content or function."[280] The majority of those surveyed expect 1) a connection between the name of a gTLD and the websites associated with that gTLD and 2) a consistency between the meaning of the domain name and its actual use. The Nielsen surveys also indicate that the public expects restrictions on who can purchase domain names, expects that such restrictions will be enforced, and is concerned about the security of their personal and sensitive information. Hence, the Nielsen surveys indicated a positive relationship between registration restrictions and trustworthiness of a domain.

However, in practice, non-brand gTLDs with registration restrictions are extremely rare. Although the review team did not have any specific data sources to explain the general trend away from restricted TLDs, discussions with registries[281] have indicated that the following factors discourage restricted business models:

- ICANN charges each TLD an up-front application fee of $185,000 and an annual fee of $25,000 regardless of the number of registrations within the gTLD. These fixed costs mean that smaller TLDs pay a much larger share of total revenue to ICANN than larger TLDs.

- The process of verifying compliance with restrictions may qualify as a "Registry Service", which requires additional approval from ICANN and possibly additional fees to evaluate the service through ICANN's Registry Service Evaluation Process (RSEP).[282]

- Registration restrictions reduce the addressable market for the registry operator while increasing costs and adding friction to the registration process. Hence, profit-making registry operators generally tend to shy away from such restrictions. This is mirrored in legacy gTLDs and ccTLDs where many TLDs that initially operated with restrictions have subsequently removed or relaxed them, as with .pro, .travel, .fr and .ie.

Because consumer end-users expect restrictions, and the current market is largely not delivering restricted TLDs, the review team believes that future introductions of new gTLDs should consider examining whether it is possible to reduce existing disincentives to impose restrictions, or even to explicitly incentivize the adoption of restricted models by registry operators.

The fact that so few restricted TLDs exist despite these consumer expectations may also affect consumer trust in new gTLDs. As discussed later in this report in the section on Consumer Trust, consumers are generally less willing to share sensitive information to websites hosted on new gTLDs. Encouraging the protection of user data and/or registration restrictions on

[280] Nielsen, Consumer Research Wave 2 (2016), p. 21.
[281] ICANN CCT Wiki, "Meeting with Registries Stakeholder Group – ICANN 59," accessed 21 August 2018, https://community.icann.org/display/CCT/Meeting+with+Registries+Stakeholder+Group+-+ICANN+59and ICANN CCT Wiki, "Update to Registries Stakeholder Group – ICANN 59," accessed 21 August 2018, https://community.icann.org/display/CCT/Update+to+Registries+Stakeholder+Group+-+ICANN+59
[282] ICANN, "Registry Service Evaluation Process," accessed 7 August 2018, https://www.icann.org/resources/pages/rsep-2014-02-19-en.

TLDs related to sensitive data sets (e.g. namespaces related to medical or financial data) may help address the existing gap in consumer trust.

To: New gTLD Subsequent Procedures PDP Working Group

Prerequisite or priority level: Prerequisite (incentives could be implemented as part of application process)

Consensus within team: Yes

Details: In addition to benefits in terms of trust, registration restrictions may also impact competition. Therefore, consideration should be given to both the potential benefits and drawbacks of registration restrictions.

Success measures: Measures of success for these recommendations would include improved public trust and visitation of new gTLDs and reduced fears regarding the misuse of users' personal and sensitive information. They would also include an assessment of whether registration restrictions have had a negative impact on competition.

Further Review

Recommendation 13: ICANN should collect data in conjunction with its related data-collection activities on the impact of restrictions on who can buy domains within certain new gTLDs (registration restrictions) to help regularly determine and report:

(1). Whether consumers and registrants are aware that certain new gTLDs have registration restrictions;

(2). Compare consumer trust levels between new gTLDs with varying degrees of registration restrictions;

(3). Determine whether the lower abuse rates associated with gTLDs that impose stricter registration policies identified in the "Statistical Analysis of DNS Abuse in gTLDs" study continue to be present within new gTLDs that impose registration restrictions as compared with new gTLDs that do not;[283]

(4). Assess the costs and benefits of registration restrictions to contracted parties and the public (to include impacts on competition and consumer choice); and

(5). Determine whether and how such registration restrictions are enforced or challenged.

Rationale/related findings: The ICANN Consumer Research and Registrant surveys indicate that the public expects certain restrictions about who can purchase domain names and trusts that these restrictions will be enforced. The survey results also indicated that the presence of such restrictions contributed to consumer trust. However, it would be useful for future review teams and those developing future policy to have more data on how aware the public is of registration restrictions and the impact of registration restrictions on consumer trust. In addition, the "Statistical Analysis of DNS Abuse in gTLDs" study indicated that DNS Security Abuse levels correlate with strict registration policies, with bad actors preferring register

[283] SIDN Labs and the Delft University of Technology, "DNS Abuse in gTLDs", p25.

domains with no registration restrictions.[284] It is also important to obtain information on the costs of registration restrictions on the relevant parties so that benefits (in terms of increased trust and decreased DNS abuse) can be weighed against costs (including increased resources needed to implement such restrictions and financial costs) and any restrictions on competition. Future PDPs and review teams can use this data to inform future policy decisions regarding new gTLDs, especially as they relate to the issue of whether restrictions should be encouraged or included within the standard provisions included in ICANN new gTLD contracts.

To: ICANN organization

Prerequisite or priority level: Low

Consensus within team: Yes

Details: ICANN should explore how to incorporate this data collection as part of its existing data collection initiatives, including but not limited to the Domain Abuse Activity Reporting System and the gTLD Marketplace Health Initiative, as well as future ICANN initiatives related to measuring DNS abuse, and the health of the DNS and the DNS marketplace.[285] Moreover, ICANN may also explore how to incorporate this data collection through the activities and reporting of ICANN Contractual Compliance, including, but not limited to, its audit functions. Collecting this data would inform future review teams about the impact of registration restrictions and whether and how they can best be utilized for gTLDs, particularly those gTLDs that fall within sensitive or highly-regulated market sectors.

Success measures: This recommendation will be considered successful if it generates data that provides guidance for future review teams and policy development processes on the topic of registration restrictions, particular if the data indicates under what circumstances the benefits of registration restrictions to the public (which may include decreased levels of DNS abuse) outweigh possible costs to contracted parties or possible impacts on competition.

[284] Ibid.
[285] ICANN, "Domain Abuse Activity Reporting (DAAR)" and "gTLD Marketplace Health Index" (June 2018).

9 Safeguards

DNS Abuse

The widespread availability and relative accessibility of domain names as unique global identifiers have created opportunities for innovative technologies as well as for a multitude of malicious activities. Bad actors have misused these universal identifiers for cybercrime infrastructure and directed users to websites that enable other forms of crime, such as child exploitation, intellectual property infringement, and fraud.[286] Each of these activities may constitute a form of DNS abuse. Determinations as to how to characterize these forms of abuse depend largely upon local laws, the roles played by other infrastructure providers, and subjective interpretations. Nonetheless, consensus exists on what constitutes DNS Security Abuse, or DNS Security Abuse of DNS infrastructure, as demonstrated by community findings associated with the development of the New gTLD Program. These forms of abuse include more technical forms of malicious activity, such as malware, phishing, and botnets, as well as spam when used as a delivery method for these forms of abuse.[287]

Due to the misuse of domain names, the community initially expressed concerns about whether the vast expansion of available gTLDs would result in increased DNS abuse. Consequently, the CCT was tasked with examining issues associated with the expansion of the DNS, including the implementation of safeguards designed to preempt identified risks.[288]

Prior to the approval of the New gTLD Program, ICANN invited feedback from the cybersecurity community on DNS abuse and the risks posed from the expansion in the DNS name space.[289] The identified the following areas of concern:

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[286] Bursztein et. al., "Framing Dependencies Introduced by Underground Commoditization," paper presented at the proceedings of the 2015 Workshop on the Economics of Information Security, Delft, Netherlands (22–23 June 2015), accessed 8 August 2018, https://research.google.com/pubs/pub43798.html, p. 12.

[287] DNS Abuse" is a term used by the Review Team that refers to "intentionally deceptive, conniving, or unsolicited activities that actively make use of the DNS and/or the procedures used to register domain names" (see p. 3 of the "New gTLD Program Safeguards Against DNS Abuse: Revised Report" (2016)). "DNS Security Abuse" in the context of this report refers to specific, technical forms of abusive behavior : spam, phishing, and malware distribution in the DNS. For more on how abuse has been characterized by the ICANN Community, see the *Registration Abuse Policies Working Group's Final Report* (29 May 2010), accessed 3 August 2018, https://gnso.icann.org/sites/default/files/filefield_12530/rap-wg-final-report-29may10-en.pdf.

[288] ICANN's Affirmation of Commitments (AoC) with the US Department of Commerce specifies that "malicious abuse issues" need to be analyzed prior to expanding the top-level domain space. Furthermore, the AoC requires the CCT Review Team to analyze the "safeguards put in place to mitigate issues involved in the introduction or expansion" of new gTLDs (see ICANN, "Affirmation of Commitments," accessed 8 August 2018, https://www.icann.org/resources/pages/affirmation-of-commitments-2009-09-30-en, Section 9.3). Consequently, the CCT Review Team Terms of Reference define the work of the team to include a review of the "effectiveness of safeguards" and "other efforts to mitigate DNS abuse" (see Appendix E: Terms of Reference). Furthermore, the GAC's 2015 Buenos Aires Communiqué requested "that the ICANN Community creates a harmonized methodology to assess the number of abusive domain names within the current exercise of assessment of the New gTLD Program" (see GAC (24 June 2015), *Buenos Aires Communiqué*, accessed 8 August 2018, https://www.icann.org/en/system/files/correspondence/gac-to-board-24jun15-en.pdf, p. 5). Likewise, the 2015 Dublin Communiqué requested that the ICANN Board "develop and adopt a harmonized methodology for reporting to the ICANN Community the levels and persistence of abusive conduct...that have occurred in the rollout of the New gTLD Program" (see GAC (21 October 2015), *Dublin Communiqué*, accessed 8 August 2018, https://www.icann.org/en/system/files/correspondence/gac-to-board-21oct15-en.pdf, p. 7.

[289] "ICANN (3 October 2009), *Mitigating Malicious Conduct*, accessed 9 November 2016, https://archive.icann.org/en/topics/new-gtlds/mitigating-malicious-conduct-04oct09-en.pdf. Feedback came from groups such as the Anti-Phishing Working Group (APWG), Registry Internet Safety Group (RISG), the Security and Stability Advisory Community (SSAC), Computer Emergency Response Teams (CERTs), the banking/financial and wider Internet security communities.

- How do we ensure that "bad actors" do not run registries?
- How do we ensure integrity and utility of registry information?
- How do we ensure more focused efforts on combating identified abuse?
- How do we provide an enhanced control framework for TLDs with intrinsic potential for malicious conduct?[290]

Based on the community's feedback, ICANN identified several recommendations for safeguards aimed at mitigating these risks.[291] Nine safeguards were identified and recommended:

- Vet registry operators
- Require Domain Name System Security Extension (DNSSEC) deployment
- Prohibit "wildcarding"[292]
- Encourage removal of "orphaned glue" records[293]
- Require "Thick" WHOIS records
- Centralize Zone File access
- Document registry- and registrar-level abuse contacts and policies
- Provide an expedited registry security request process
- Create a draft framework for a high security zone verification program[294]

The CCT was tasked with analyzing the effectiveness of these nine recommended safeguards. To the extent possible, the CCT assessed the implementation and effectiveness of each of these safeguards using available implementation and Contractual Compliance data. Additionally, the CCT commissioned a quantitative DNS Security Abuse study to provide insight into the relationship, if any, that may exist between levels of abuse and implemented safeguards in the new gTLD name space.[295]

The first safeguard, "vet registry operators," required that all new gTLD applicants provide full descriptions of the technical back-end services that they would use, even where these services were subcontracted, as part of the application process. This was an initial evaluation

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290 Ibid.
291 Ibid.
292 "Wildcarding" refers to the practice of reserving a special character (commonly an asterisk) within an operating system search operation to mean "return any match in a search." See Security and Stability Advisory Committee (SSAC), "SAC 015: Why Top Level Domains Should Not Use Wildcard Resource Records," accessed 8 August 2018, https://www.icann.org/groups/ssac/documents/sac-015-en.
293 The Security Skeptic, "Orphaned Glue Records," 26 October 2009, accessed 2 February 2017, http://www.securityskeptic.com/2009/10/orphaned-glue-records.html. These are records remaining once a domain name has been deleted from a registry.
294 ICANN, "Malicious Conduct."
295 ICANN (2 August 2016), *Request for Proposal For Study on Rates of DNS Abuse in New and Legacy Top-Level Domains*, accessed 2 February 2017, https://www.icann.org/en/system/files/files/rfp-dns-abuse-study-02aug16-en.pdf. The resulting "Statistical Analysis of DNS Abuse in gTLDs" study measured common forms of abuse—such as spam, phishing, and malware distribution—in a large sample of new and legacy gTLDs from 1 January 2014 until December 2016.

to ensure technical competence. These descriptions were evaluated only at the time of application.[296] Additionally, all applicants were required to pass Pre-Delegation Testing (PDT).[297] PDT included comprehensive technical checks of Extensible Provisioning Protocol (EPP), Name Server setup, Domain Name System Security Extensions (DNSSEC), and other protocols.[298] Applicants were required to pass all of these tests before a domain name would be delegated.

Upon delegation, registry operators were required to comply with the technical safeguards through their Registry Agreements with ICANN. The second safeguard mandated that new gTLD registries implement DNSSEC, with active monitoring of compliance and notices sent to non-compliant registries.[299] DNSSEC is a set of protocols intended to increase the security of the Internet by adding authentication to DNS resolution to prevent problems such as DNS spoofing[300] and DNS cache poisoning.[301] All new gTLDs are DNSSEC signed at the root level, which is not indicative of second-level domain names in the zone being signed.[302]

For the third safeguard, the Registry Agreement for new gTLDs prohibits wildcarding to ensure that domain names only resolve for an exact match and that end-users are not misdirected to another domain name by a synthesized response.[303] Complaints against registry operators for permitting wildcarding may be submitted to ICANN via an online interface.[304] A registry's use of wildcarding is easily detectable because every query will receive a response, instead of a "name error," even if the domain name is not valid.[305] This means that a user will be redirected to a similar domain name. It appears that all new gTLD operators are in compliance with this safeguard.[306]

To comply with the fourth safeguard, new gTLD registries are required to remove orphan glue records when presented with evidence that such records have been used in malicious conduct.[307] Unmitigated orphan glue records can be used for malicious purposes such as fast-flux hosting botnet attacks.[308] This requirement is reactive by design, but registry operators can make it technically impossible for orphan glue records to exist in the first place and some do. Since 2013, there have been no ICANN organization complaints related to orphan glue records.[309]

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296 Technical requirements change over time, which would make continual auditing difficult.

297 ICANN, *Applicant Guidebook* (June 2012), Section 5-4.

298 ICANN, "Pre-Delegation Testing (PDT)," accessed 2 February 2017, https://newgtlds.icann.org/en/applicants/pdt.

299 ICANN, "Registry Agreement," accessed 2 February 2017, https://www.icann.org/resources/pages/registries/registries-agreements-en, Specification 6, Clause 1.3.

300 SANS Institute (2002), *Global Information Assurance Certification Paper*, accessed 2 February 2017, https://www.giac.org/paper/gcih/364/dns-spoofing-attack/103863. DNS spoofing occurs "when a DNS server accepts and uses incorrect information from a host that has no authority giving that information" (p. 16).

301 Sooel Son and Vitaly Shmatikov, "The Hitchhiker's Guide to DNS Cache Poisoning" (paper presented at the 6th International ICST Conference on Security and Privacy in Information Networks, Singapore, 7-9 September 2010), https://www.cs.cornell.edu/~shmat/shmat_securecomm10.pdf. DNS cache poisoning occurs when the temporary cached data stored by a DNS resolver is intentionally altered to map DNS resolutions to IP addresses routed to invalid or malicious destinations (p. 1).

302 ICANN, "TLD DNSSEC Report," accessed 26 April 2017, http://stats.research.icann.org/dns/tld_report/. This does not include .aero.

303 ICANN, "Registry Agreement," Specification 6, Clause 2.2.

304 ICANN, "Wildcard Prohibition (Domain Redirect) Complaint Form," accessed 2 February 2017, https://forms.icann.org/en/resources/compliance/registries/wildcard-prohibition/form.

305 SSAC, "SAC 015: Why Top-Level Domains Should Not Use Wildcard Resource Records."

306 As of 1 January 2017, no complaints have been reported via this form. See also "DNSSEC Deployment Report," accessed 1 January 2017, https://rick.eng.br/dnssecstat/.

307 ICANN, "Registry Agreement," Specification 6, Clause 4.1.

308 ICANN Security and Stability Advisory Committee (March 2008), *SSAC Advisory on Fast Flux Hosting and DNS*, accessed 2 February 2017, https://www.icann.org/en/system/files/files/sac-025-en.pdf.

309 ICANN, "Contractual Compliance Reports," accessed 8 August 2018, https://www.icann.org/resources/pages/compliance-reports-2016-04-15-en.

For the fifth safeguard, Registry Agreements require new gTLD operators to create and maintain Thick WHOIS records for domain name registrations. This means that registrant contact information, along with administrative and technical contact information, is collected and displayed in addition to traditional Thin WHOIS data at the registry level.[310] ICANN Contractual Compliance monitors adherence to the Thick WHOIS requirement on an active basis, for both reachability and format.[311] Syntax and operability accuracy are evaluated by the ICANN WHOIS Accuracy Reporting System (ARS) project.[312] The "Impact of Safeguards" chapter below further explains the ARS and related compliance issues.

Registry Agreements also require all new gTLD registry operators to post abuse contact details on their websites and to notify ICANN of any changes to contact information.[313] ICANN monitors compliance with this requirement and publishes statistics, including remediation measures, in its quarterly reports.[314] The Registry Agreements require registry operators to respond to well-founded complaints, but do not mandate specific procedures for doing so. Consequently, there is no standard by which the ICANN organization can assess the particular means by which registry operators resolve complaints. There were 55 complaints related to abuse contact data in 2016,[315] 61 in 2015,[316] 100 in 2014,[317] and 386 in 2013.[318]

For the sixth safeguard, new gTLD operators are required via the Registry Agreement to make their zone files available to approved requestors via the Centralized Zone Data Service (CZDS).[319] Centralizing these data sources enhances the ability of security researchers, IP attorneys, law enforcement agents, and other approved requestors to access the data without the need to enter into a contractual relationship each time. There were 19 complaints related to bulk zone file access in 2016,[320] 27 in 2015,[321] and 55 in 2014.[322] No data was available in the ICANN 2013 Contractual Compliance Report.

To enhance the stability of the DNS, ICANN created the Expedited Registry Security Request (ERSR) process, which permits registries "to request a contractual waiver for actions it might take or has taken to mitigate or eliminate" a present or imminent security incident.[323] As of 5 October 2016, ICANN reports that the ERSR has not been invoked for any new gTLD.[324] In addition to the aforementioned safeguards, ICANN, in response to community input, proposed the creation of the High Security Zone Verification Program whereby gTLD registry operators

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310 ICANN, "What are thick and thin entries?", accessed 2 February 2017, https://whois.icann.org/en/what-are-thick-and-thin-entries.

311 ICANN, "Registry Agreement," Specification 10, Section 4.

312 ICANN, "WHOIS Accuracy Reporting System (ARS) Project Information," accessed 2 February 2017, https://whois.icann.org/en/whoisars.

313 ICANN, "Registry Agreement," Specification 6, Section 4.1.

314 ICANN, "Contractual Compliance Reports 2016," accessed 2 February 2017, https://www.icann.org/resources/pages/compliance-reports-2016-04-15-en.

315 https://www.icann.org/en/system/files/files/annual-2016-31jan17-en.pdf

316 ICANN, "Contractual Compliance Reports 2015," accessed 2 February 2017, https://www.icann.org/resources/pages/compliance-reports-2015-04-15-en.

317 ICANN, "Contractual Compliance Reports 2014," accessed 2 February 2017, https://www.icann.org/resources/pages/compliance-reports-2014-2015-01-30-en.

318 ICANN, "Contractual Compliance Reports 2013," accessed 2 February 2017, https://www.icann.org/resources/pages/reports-2013-02-06-en.

319 ICANN, "Registry Agreement," Specification 4, Section 2.1; ICANN, "Centralized Zone Data Service," accessed 2 February 2017, https://czds.icann.org/en.

320 ICANN, "Contractual Compliance Reports 2016."

321 ICANN, "Contractual Compliance Reports 2015."

322 ICANN, "Contractual Compliance Reports 2014."

323 ICANN, "Expedited Registry Security Request Process," accessed 2 February 2017, https://www.icann.org/resources/pages/ersr-2012-02-25-en.

324 ICANN Registry Services, email discussion with Review Team, July 2017.

could voluntarily create high security zones.[325] An advisory group conducted extensive research to determine standards by which registries could create and operate a "high security zone." However, the proposals never reached the implementation stage due to a lack of consensus.

The technical safeguards, enforced through Contractual Compliance, imposed requirements upon new gTLD registries and registrars that were intended to mitigate risks inherent in the expansion of the DNS. The review team commissioned a DNS abuse study to provide insight as to whether the overall implementation of these safeguards resulted in a decrease in the levels of DNS Security Abuse compared to legacy gTLDs.[326]

DNS Abuse Study

In preparation for the CCT's assessment of the New gTLD Program safeguards discussed above, ICANN issued a report analyzing the history of DNS abuse safeguards tied to the New gTLD Program.[327] The report assessed the various ways to define DNS abuse. Some of the challenges to defining DNS abuse arise because of the various ways that different jurisdictions define and treat DNS abuse. Certain activities are considered to be abusive in some jurisdictions but not others. Some of these activities, such as those solely focused on intellectual property violations, are interpreted differently not only in terms of substance, but also in terms of available remedies depending upon the jurisdiction involved. Another challenge is the lack of data available regarding certain types of abuse. Nonetheless, there are core abusive behaviors for which there is both consensus and significant data available. These include spam, phishing, and malware distribution.

The ICANN report on the history of DNS abuse safeguards acknowledged the absence of a comprehensive comparative study of DNS abuse in new gTLDs versus legacy gTLDs. Nonetheless, some metrics suggest that a high percentage of new gTLDs might suffer from DNS Security Abuse. For example, Spamhaus consistently ranks new gTLDs amongst its list of "The 10 Most Abused Top-Level Domains," which is based on the ratio of the number of domain names associated with abuse versus the number of domain names seen in a zone.[328] Using a different methodology, previous research from Architelos and the Anti-Phishing Working Group named .com as the TLD with the largest number of domain names associated with abuse.[329] A 2017 report from PhishLabs also concluded that half of all phishing sites are in the .com zone, with new gTLDs comprising 2 percent of all phishing sites.[330] However, the same report concluded that phishing sites in new gTLD zones have increased 1,000 percent

[325] ICANN (18 November 2009), *A Model for a High-Security Zone Verification Program*, accessed 2 February 2017, https://archive.icann.org/en/topics/new-gtlds/high-security-zone-verification-04oct09-en.pdf; ICANN, "Public Comment: High Security Zone TLD Final Report," 11 March 2011, accessed 8 August 2018, https://www.icann.org/news/announcement-2011-03-11-en.

[326] SIDN Labs and the Delft University of Technology, "DNS Abuse in gTLDs". See also ICANN, *Request for Proposal*.

[327] ICANN, New gTLD Program Safeguards (2016)

[328] Spamhaus, "The World's Most Abused TLDs," accessed 8 August 2018, https://www.spamhaus.org/statistics/tlds/

[329] Anti-Phishing Working Group (29 April 2015), *Phishing Activity Trends Report: 4th Quarter 2014*, accessed 8 August 2018, http://docs.apwg.org/reports/apwg_trends_report_q4_2014.pdf; Architelos (June 2015), *The NameSentry[SM] Abuse Report: New gTLD State of Abuse 2015*, accessed 8 August 2018, http://domainnamewire.com/wp-content/Architelos-StateOfAbuseReport2015.pdf

[330] PhishLabs, *2017 Phishing Trends & Intelligence Report*, accessed 8 August 2018, https://pages.phishlabs.com/rs/130-BFB-942/images/2017%20PhishLabs%20Phishing%20and%20Threat%20Intelligence%20Report.pdf, pp. 23-24. New gTLDs comprised 8 percent of the overall TLD market during this time period when .tk is excluded from the data. See also Kevin Murphy, "Phishing in new gTLDs up 1,000 percent but .com still the worst," Domain Incite, 20 February 2017, accessed 8 August 2018, http://domainincite.com/21552-phishing-in-new-gtlds-up-1000-but-com-still-the-worst

since the previous year, which appears to have coincided with an overall significant increase in phishing attacks during 2016.[331] By the end of 2017, new gTLDs exclusively filled the list of Symantec's top 20 "Shady Top-Level Domains." [332]

Domain names are often a key component of cybercrimes and enable cybercriminals to quickly adapt their infrastructure.[333] For example, spam campaigns often correlate with phishing and other cybercrime.[334] Domain names are also used to assist with malware distribution and botnet command-and-control.[335] Troubling statistics and incidents observed by network operators have led to perceptions that many new gTLDs offer little more than abuse.[336] In fact, some Internet security companies have advised customers to block all network traffic from specific TLDs.[337] Such practices run counter to ICANN's Universal Acceptance efforts.[338] Although ICANN's standard contracts for registries and registrars have mandated consistent use of specified safeguards, efforts to combat domain name abuse vary greatly amongst the contracted parties. Some entities do not act until a complaint is received. In contrast, other registrars take proactive steps, such as checking registrant credentials, blocking domain name strings similar to known phishing targets, and scrutinizing domain name resellers. Domain name resellers are not ICANN-contracted parties and hence not directly subject to ICANN's enforcement authority over standard contract requirements, including the safeguards under discussion in this report.[339]

In light of the dynamic DNS environment, snapshots of new gTLD abuse do not account for the full variety of registration rules and safeguards in the 1,000+ new gTLDs that have been delegated since 2013. Accordingly, it is difficult to find definitive distinctions between abuse rates in legacy gTLDs compared to new gTLDs without performing a comprehensive assessment. To the extent possible, the CCT has sought to measure the effectiveness of the technical safeguards developed for the New gTLD Program in mitigating various forms of DNS abuse. As part of this process, the CCT commissioned a comprehensive DNS abuse study to analyze levels of DNS Security Abuse in legacy and new gTLDs, both to inform this review and potentially serve as a baseline for future analysis. [340] The ICANN-selected vendor, a joint

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[331] Lindsey Havens, "APWG & Kaspersky Research Confirms Phishing Trends & Intelligence Report Findings," 2 March 2017, accessed 8 August 2018, https://info.phishlabs.com/blog/apwg-kaspersky-research-confirms-phishing-trends-investigations-report-findings; Darya Gudkova, et. al., "Spam and phishing in 2016," 20 February 2017, accessed 8 August 2018, https://securelist.com/kaspersky-security-bulletin-spam-and-phishing-in-2016/77483/; Anti-Phishing Working Group (23 February 2017), *Phishing Activity Trends Report: 4th Quarter 2016*, accessed 8 August 2018, http://docs.apwg.org/reports/apwg_trends_report_q4_2016.pdf

[332] Chris Larsen, "The 'Top 20': Shady Top-Level Domains," Symantec, 15 March 2018, https://www.symantec.com/blogs/feature-stories/top-20-shady-top-level-domains

[333] Symantec (April 2015), *Internet Security Threat Report*, accessed 2 February 2017, https://its.ny.gov/sites/default/files/documents/symantec-internet-security-threat-report-volume-20-2015-social_v2.pdf

[334] Richard Clayton, Tyler Moore, and Henry Stern, "Temporal Correlations between Spam and Phishing Websites" (paper presented at the LEET'09 Proceedings of the 2nd USENIX Conference on Large-Scale Exploits and Emergent Threats, Boston, MA, 21 April 2009) https://www.cl.cam.ac.uk/~rnc1/leet09.pdf.

[335] CrowdStrike, *Global Threat Intel Report*, (2014, pp.14-15, https://go.crowdstrike.com/rs/281-OBQ-266/images/ReportGlobalThreatIntelligence.pdf

[336] Tom Henderson, "The new internet domains are a wasteland," Network World 5 July 2018, accessed 8 August 2018, http://www.networkworld.com/article/3091754/security/the-new-internet-domains-are-a-wasteland.html.

[337] In a 2015 report, Blue Coat advised network operators to block all traffic to or from ".work, .gq, .science, .kim and .country". See Blue Coat, "DO NOT ENTER: Blue Coat Research Maps the Web's Shadiest Neighborhoods," September 2015, accessed 8 August 2018, http://dc.bluecoat.com/2015_NAM_Shady_TLD_Reg, p. 7.

[338] ICANN, "Universal Acceptance."

[339] Secure Domain Foundation (June 2015), *The Cost of Doing Nothing: The Business Case for Proactive Anti-Abuse*, https://securedomain.org/Documents/SDF_Report1_June_2015.pdf, p. 8. Registrars must impose flow-down contractual requirements onto resellers with whom they contract. However, the resellers are not ICANN-accredited. See ICANN, "2013 RAA: Section 3.12: Obligations Related to Provision of Registrar Services by Third Parties," accessed 8 August 2018, https://www.icann.org/resources/pages/approved-with-specs-2013-09-17-en

[340] The study ultimately was able to collect data on phishing, malware hosting, and spam. Initially, the Review Team sought to include botnet hosting and command-and-control domains in the analysis. However, discrete

team comprised of researchers from Delft University of Technology in the Netherlands (TU Delft) and the Foundation for Internet Domain Registration in the Netherlands (SIDN), delivered their final report (hereafter, the "DNS Abuse Study") to the review team on 9 August 2017.[341]

DNS Abuse Study Methodology

The DNS Abuse Study relied upon zone files, WHOIS records, and 11 distinct domain name blacklist feeds to calculate rates of technical DNS Security Abuse from 1 January 2014 through the end of 31 December 2016.[342]

The analysis includes:

1. Absolute counts of abusive domains per gTLD and registrar from 1 January 2014 until 31 December 2016, taking into account sunrise periods and dates of general availability for registration;

2. Abuse rates, based on an "abused domains per 10,000" ratio (as a normalization factor to account for different TLD sizes), per gTLD and registrar from 1 January 2014 until 31 December 2016;

3. Abuse rates associated with privacy and proxy services;

4. Identification of geographic locations associated with abusive activities;

5. Abuse levels distinguished by "maliciously registered" versus "compromised" domains;

6. An inferential statistical analysis on the effects of security indicators and the structural properties of new gTLDs, (i.e., number of DNSSEC-signed domains, parked domains, number of domains in each new gTLD, the level of registration restrictiveness, as well as the number of domains resolving to content).

DNS Abuse Study Findings

The DNS Abuse Study makes many significant findings regarding DNS Security Abuse associated with new gTLDs as compared to legacy gTLDs. Generally, the Study indicates that the introduction of new gTLDs did not increase the total amount of abuse for all gTLDs. Nonetheless, the results demonstrate that the nine aforementioned safeguards alone do not guarantee a lower rate of abuse in each new gTLD compared to legacy gTLDs. Instead, factors such as registration restrictions, price, and registrar-specific practices seem more likely to affect abuse rates.[343]

DNS Security Abuse is Migrating to New gTLDs

Legacy gTLDs still account for most domain name registrations and, perhaps consequently, the highest volume of phishing and malware associated domain names.[344] Nonetheless, the

historical data on botnets was unavailable for the timeframe of the study. However, botnet-associated domain names were included in the malware blacklists used for the study. See ICANN, *Request for Proposal.*

341 SIDN Labs and the Delft University of Technology, "DNS Abuse in gTLDs."

342 The first new gTLD delegations began in October 2013.

343 SIDN Labs and the Delft University of Technology, "DNS Abuse in gTLDs," pp.24-25

344 Ibid., p.24.

overall rates of abuse in legacy and new gTLDs were similar by the end of 2016. Moreover, there are distinct trends with regard to specific types of abuse. For example, by the end of 2016, spam registrations in legacy gTLDs had declined while those in new gTLDs saw a significant increase. In the last quarter of 2016, 56.9 of every 10,000 legacy gTLD domain names were on spam blacklists, whereas the rate for new gTLD domain names was 100 times more: 526.6 domain names per 10,000 registrations.[345]

Some abuse trends showed overlap. The top five legacy gTLDs with the highest rates of phishing also had the highest rates of domain names tied to malware distribution.[346] Phishing and malware abuse rates in legacy gTLDs more often resulted from compromised domain names rather than malicious registrations. There are much higher rates of compromised legacy gTLD domain names than new gTLDs.

Specific to malware distribution, the top 5 new gTLDs with the highest rates of abusive domain names were .top, .wang, .win, .loan, and .xyz. [347] Since the end of 2015, the .top TLD has had the highest rate of abusive registrations for all legacy and new gTLDs.[348] Each of these TLDs offered low-priced registrations, usually at levels lower than those for a .com registration.

The DNS Abuse Study distinguishes between domain names registered specifically for malicious purposes and domain names registered for legitimate purposes that were subsequently compromised.[349] The results of the Study indicate that the introduction of new gTLDs has corresponded with a decrease in the number of spam-associated registrations in legacy gTLDs, and an increase in the number of spam-associated registrations in new gTLDs.[350] This, along with the fact that the total number of spam registrations remains stable, suggests that perhaps miscreants are shifting from registering domain names in legacy gTLDs to new gTLDs.[351] Within this trend, there are specific new gTLDs that serve as primary targets of opportunity for abusive registrations, whether due to lax registration policies and abuse enforcement, or low price. In fact, some registrars are almost entirely associated with abusive, rather than legitimate, registrations.[352]

DNS Security Abuse is Not Universal in New gTLDs

Even though abuse is growing in new gTLDs, it is by no means rampant across all of them. Instead, by the end of 2016, this phenomenon was highly concentrated. Five new gTLDs, exhibiting the highest concentration of domain names used in phishing attacks,[353] accounted for 58.7 percent of all blacklisted new gTLD domain names,[354] whereas Spamhaus blacklisted at least 10 percent of all domain names registered within 15 new gTLDs.[355] However, approximately a third of all new gTLDs did not have a single instance of abuse, as reported on blacklists, in the final quarter of 2016.[356]

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[345] Ibid., p.24.
[346] Ibid., p.12.
[347] Findings based on the "StopBadware" data feed.
[348] Ibid., p.13.
[349] Compromised domain names include domain names for which the domain name registration or the website may have been hacked.
[350] SIDN Labs and the Delft University of Technology, "DNS Abuse in gTLDs," p. 2.
[351] Ibid. Figures 24, 36, and 38 illustrate the absolute number of spam domains for different spam feeds.
[352] Ibid., p. 22.
[353] Anti-Phishing Working Group, *Phishing Activity Trends Report: 4th Quarter 2016*.
[354] SIDN Labs and the Delft University of Technology, "DNS Abuse in gTLDs," p.11.
[355] Ibid., p. 1.
[356] Ibid., p. 1.

Two registrars highlighted in the study had overwhelming rates of abuse. Alarmingly, more than 93 percent of the new gTLD registrations sold by Nanjing Imperiosus Technology, based in China, appeared on SURBL's blacklists.[357] For much of 2016, abuse rates associated with this registrar grew at significant rates. ICANN eventually suspended Nanjing in January 2017, citing its failure to pay fees in compliance with the RAA.[358] However, ICANN did not rely upon the sustained, unabated, high abuse rates as the reason for its suspension of Nanjing, which in and of itself may not have violated the RAA.

Another registrar, Alpnames Ltd., based in Gibraltar, was associated with a high volume of abuse from the .science and .top domain names. The Study notes that this registrar used price promotions that offered domain name registrations for USD $1 or sometimes even free.[359] Moreover, Alpnames permitted registrants to randomly generate and register 2,000 domain names in 27 new gTLDs in a single registration process. Registering domain names in bulk using domain generation algorithms are commonly associated with cybercrime.[360] However, there is currently no contractual prohibition or safeguard against the bulk registration of domains. At the time of this report, Alpnames remained ICANN-accredited.

Many factors can play a role in the volume or rate of abuse in a particular TLD. In terms of absolute size, new gTLDs are no different than legacy gTLDs in that the larger the size of the TLD, the higher the total number of domain names associated with abuse.[361] However, analyzing attributes of cross-TLD registry operators suggests that many of the operators associated with the highest rates of abuse had low-priced domain registration offerings.

The Study concluded that domain names registered for malicious purposes often contained strings related to trademarked terms.[362] Specifically, of the 88 top domain names associated with abuse in the fourth quarter of 2015, 75 of them included exact or misspelled versions of Apple, iCloud, or iPhone, implying that the domain names were used in a phishing campaign against users of Apple, Inc. products and services.[363] These registrations should have raised reasonable suspicion at the time of registration, but were nonetheless delegated and later associated with abuse. Furthermore, registrant data matching registrations associated with abuse can be useful for identifying and preventing repeat abuse. In fact, the Study found 150 abusive .work domain name registrations were registered on the "same day using the same registrant information, the same registrar, and the domain names were composed of similar strings."[364] In this instance, correlating matching registrant data in advance could identify suspicious registrations before they are used to harm potential victims.

The Study found a statistically weak but positive correlation between the number of parked domains in a new gTLD zone and the rate of abuse.[365] Oddly, there was also a weak positive correlation between the number of DNSSEC-signed domain names and abuse in a new gTLD zone.[366] The use of privacy/proxy services to mask registrant WHOIS data is more common

[357] Ibid., p. 19.
[358] ICANN Contractual Compliance (4 January 2017), "Notice of Termination of Registrar Accreditation Agreement," accessed 8 August 2018, https://www.icann.org/uploads/compliance_notice/attachment/895/serad-to-hansmann-4jan17.pdf
[359] SIDN Labs and the Delft University of Technology, "DNS Abuse in gTLDs," p.20.
[360] Aditya K. Sood, Sherali Zeadally, "A Taxonomy of Domain-Generation Algorithms," *IEEE Security & Privacy*, vol. 14, no. , pp. 46-53, July-Aug. 2016, https://ieeexplore.ieee.org/document/7535098/
[361] SIDN Labs and the Delft University of Technology, "DNS Abuse in gTLDs," p.15.
[362] Ibid., p. 12.
[363] Ibid., p. 12.; Other research has shown similar techniques in which trademarked terms are used in IDNs for homograph-based DNS Security Abuse, see Mike Schiffman, *Touched by an IDN: Farsight Security shines a light on the Internet's oft-ignored and undetected security problem*, Jan. 17, 2018, accessed 5 September 2018, https://www.farsightsecurity.com/2018/01/17/mschiffm-touched_by_an_idn/
[364] Ibid., p. 12.
[365] Ibid., p. 16.
[366] Ibid., p. 16.

in legacy than new gTLDs. Regardless, the Study did not find any statistically significant relationship between the use of such services and domain name abuse.[367] Above all, the Study identified a relatively stronger statistically significant correlation between restrictive registration policies and lower rates of abuse. Nonetheless, even new gTLDs with open registration policies varied greatly in abuse rates, suggesting that other key variables, such as price and differences in registry and registrar anti-abuse practices may also influence abuse rates.

DNS Security Abuse is Not Random

Price and registration restrictions appear to affect which registrars and registries cybercriminals will choose for DNS Security abuse, making low-priced domain names with low barriers to registration attractive attack vectors.[368] However, these same qualities may be appealing for registrants with legitimate interests and further the overarching goal of a free and open Internet. High prices and/or onerous registration restrictions would not be compatible with many business models focused on open registration and low prices. However, monetary incentives based on fees paid to ICANN may nevertheless provide an impetus for such contracted parties to better prevent systemic DNS Security Abuse by proactively screening registrations and detecting malfeasance.[369] For example, there is precedent for ICANN adjusting its fee structure to address behavior harmful to the DNS, such as abolishing the automatic fee refund for "domain tasters."[370] Similarly, the CCT Review Team proposes the development of mandates as well as incentives to reward best practices that curb or prevent technical DNS Security Abuse and strengthen the consequences for culpable or complacent conduits of technical DNS Security Abuse. These recommendations may be applicable to curb other misuse of domain names to the extent the community reaches consensus on other forms of DNS abuse.

The review team is concerned with the high levels of DNS Security Abuse concentrated in a relatively small number of registries and registrars and geographic regions. Of particular concern, DNS Security Abuse appears to have continued without consequence for an extended amount of time in some cases.

Recommendations 14 to 18 are designed to address the reality that the new gTLD safeguards did not, on their own, prevent technical DNS Security Abuse. In addition to means available today to prevent and mitigate DNS Security Abuse, the review team proposes new incentives and tools to combat abuse that will:

- Encourage and incentivize proactive abuse measures as per Recommendation 14;
- Introduce measures to prevent technical DNS Security Abuse as per Recommendation 15;
- Ensure that the data collection is ongoing and acted upon as per Recommendation 16.

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[367] Ibid., pp. 16-17.
[368] Ibid., p. 25.
[369] This is a best practice in other parts of the Internet infrastructure ecosystem. For example, the Messaging, Malware, and Mobile Anti-Abuse Working Group (M3AAWG) has encouraged hosting providers to adopt a "vetting process to proactively identify malicious clients before they undertake abusive activities" and to take measures to "prevent abusers from becoming customers," M3AAWG (March 2015), *Anti-Abuse Best Common Practices for Hosting and Cloud Service Providers*, accessed 8 August 2018, https://www.m3aawg.org/sites/default/files/document/M3AAWG_Hosting_Abuse_BCPs-2015-03.pdf, p. 4.
[370] Brian Krebs, "New Policy Aims to Curb Web Site Name Abuse," *The Washington Post*, 30 January 2008, accessed 8 August 2018, http://www.washingtonpost.com/wp-dyn/content/article/2008/01/30/AR2008013002178.html

- Provide an additional mechanism for circumstances where, despite Recommendations 14, 15, and 16, registry operators and/or registrars do not effectively address technical DNS Security Abuse within the domains they offer. A dispute resolution process should be considered to enable injured parties to take action as in Recommendation 15.

Indeed, there should be more consideration by ICANN organization of where further steps are needed to address high levels of DNS Security Abuse. If the level of abuse has not been reduced to acceptable levels, as per the commitment of a registry or registrar, then the failure of the contracted party to implement the plan should constitute a breach of the RAA and/or the RA. If the contracted parties commit to not exceeding a minimum level of DNS Security Abuse, then the proposed dispute resolution process becomes less necessary, and less likely to be used. This translates to positive outcomes for all parties due to decreased levels of DNS Security Abuse.

Recommendation 14: Consider directing ICANN organization, in its discussions with registries, to negotiate amendments to existing Registry Agreements, or in consideration of new Registry Agreements associated with subsequent rounds of new gTLDs, to include provisions in the agreements to provide incentives, including financial incentives for registries, especially open registries, to adopt proactive anti-abuse measures.[371]

Rationale/related findings: ICANN is committed to maintaining "the operational stability, reliability, security, global interoperability, resilience, and openness of the DNS and the Internet."[372] The new gTLD safeguards alone do not prevent DNS Security abuse in the DNS and have consequently failed to meet their intended goal in preventing the abuse phenomenon from spreading to new gTLDs. The review team's analysis and the DNS Abuse Study indicate that abuse rates are associated with registration restrictions imposed on registrants and registration prices (i.e., abuse rates tend to go down with increased registration restrictions and high domain name prices). Some registries are inherently designed to have strict registration policies and/or high prices. However, a free, open, and accessible Internet will invariably include registries with open registration policies and low prices that must adopt other measures to prevent DNS Security Abuse. Registries that do not impose registration eligibility restrictions can nonetheless reduce technical DNS Security Abuse through proactive means, such as identifying repeat offenders, monitoring suspicious registrations, and actively detecting abuse instead of merely waiting for complaints to be filed. Therefore, ICANN should incentivize and reward operators that adopt and implement proactive anti-abuse measures identified by the community as effective for reducing DNS Security Abuse. Operators that have

[371] The review team looked for examples of practices that could assist in proactively minimizing abuse. One such example has been proposed by EURid, the operator of the .EU registry, which will soon test a delayed delegation system. See EURid, "EURid Set to Launch First of its Kind Domain Name Abuse Prevention Tool," 2017, accessed 8 August 2018, https://eurid.eu/en/news/eurid-set-to-launch-first-of-its-kind-domain-name-abuse-prevention-tool/ and Vissers T. et al. (2017), "Exploring the Ecosystem of Malicious Domain Registrations in the .eu TLD" In: Dacier M., Bailey M., Polychronakis M., Antonakakis M. (eds) Research in Attacks, Intrusions, and Defenses. RAID 2017. Lecture Notes in Computer Science, vol 10453. Springer, Cham, accessed 8 August 2018, https://link.springer.com/chapter/10.1007/978-3-319-66332-6_21. https://eurid.eu/media/filer_public/9e/d1/9ed12346-562d-423d-a3a4-bcf89a59f9b4/eutldecosystem.pdf. This process will not prevent registrations, but instead delay activation of a registration if a domain name is identified as being potentially abusive by machine learning algorithms. Future review teams could study this effort to consider its effectiveness and whether it could serve as a potential innovative model to help foster trust and a secure online environment. In addition, the .xyz registry may provide another example of proactive measures to combat abuse. The .xyz registry purports to have a zero-tolerance policy toward abuse-related activities on .xyz or any of their other domain extensions using a sophisticated abuse monitoring tool enabling proactive monitoring and detection in near real-time, suspending domains engaging in any of the abusive activities set out. Future review teams could explore the effectiveness of this approach by examining abuse rates over time and comparing the levels of abuse both before and after this policy.

[372] ICANN, "Bylaws," Section 1.2(a)(i).

already adopted such measures, prior to the creation of an incentive program, should be rewarded as well.

To: The ICANN Board, the Registry Stakeholders Group, the Registrar Stakeholders Group, the Generic Names Supporting Organization, and the Subsequent Procedures PDP WG.

Prerequisite or priority level: High

Consensus within team: Yes

Details: The ICANN Board should consider urging ICANN organization to negotiate with new and legacy gTLD registries and registrars to include in the registry agreements fee discounts for registry operators with open registration policies and who implement proactive measures to prevent DNS Security Abuse in their zone. ICANN should verify compliance with incentive programs to ensure bad actors are not receiving incentives despite acting in bad faith. The adoption of proactive anti-abuse measures in exchange for incentives should not form the basis for shifting liability for underlying abuse incidents to the registry operator.

Success measures: More registries and registrars, even those with open registration policies, adopting proactive anti-abuse measures that result in measurable decreases in the overall rates of DNS Security Abuse in their zones.

Recommendation 15: ICANN Org should, in its discussions with registrars and registries, negotiate amendments to the Registrar Accreditation Agreement and Registry Agreements to include provisions aimed at preventing systemic use of specific registrars or registries for DNS Security Abuse. With a view to implementing this recommendation as early as possible, and provided this can be done, then this could be brought into effect by a contractual amendment through the bilateral review of the Agreements. In particular, ICANN should establish thresholds of abuse at which compliance inquiries are automatically triggered, with a higher threshold at which registrars and registries are presumed to be in default of their agreements. If the community determines that ICANN org itself is ill-suited or unable to enforce such provisions, a DNS Abuse Dispute Resolution Policy (DADRP) should be considered as an additional means to enforce policies and deter against DNS Security Abuse. Furthermore, defining and identifying DNS Security Abuse is inherently complex and would benefit from analysis by the community, and thus we specifically recommend that the ICANN Board prioritize and support community work in this area to enhance safeguards and trust due to the negative impact of DNS Security Abuse on consumers and other users of the Internet.

Rationale/related findings: Published research, cybersecurity analysis, and DNS Security Abuse monitoring tools highlight concentrated, systemic DNS Security Abuse for which there are no adequate, actionable remedies. The CCT-RT is of the view that the existing powers of ICANN Compliance are too weak in their present form to be as effective as they need to be in abating such DNS Technical Abuse, and ICANN Compliance needs clear authority to address systematic abuse effectively. Whilst abuse can be due, in part, to negligent parties, one of the specific areas of concern identified nearly a decade ago by the community prior to the launch of the New gTLD Program was how to ensure that "bad actors" do not run registries[1]. The anti-abuse safeguards put in place as part of the new gTLD program do not address this problem. Examples from the DNS Abuse Study of new gTLDs registrars with more than 10% of their domain names blacklisted as well as registries, according to Spamhaus for example are .science (51%), .stream (47%), .study (33%), .download (20%), .click (18%), .top (17%), .gdn (16%), .trade (15%), .review (13%), and .accountant (12%). Current policies focus on individual abuse complaints and an ineffective duty to investigate. Such abuse as has been identified by the DNS Abuse Study[2] concentrated in particular in certain registries and registrars and despite such identification it appears that ICANN Compliance are unable to remedy the situation whereby ICANN may suspend registrars and registry operators found to be associated with unabated, abnormal and extremely high rates of DNS Security Abuse. In this paradigm, certain registrars and registry operators associated with extremely high rates of DNS Security Abuse have continued to operate and face little incentive to prevent such malicious activity. Moreover, there currently exist few enforcement mechanisms to prevent systemic domain name abuse associated with resellers. Systemic use of particular registrars and registries for DNS Security Abuse threatens the security and stability of the DNS, the universal acceptance of TLDs, and consumer trust. Consequently, the imposition of contractual requirements and effective means to enforce them are necessary to remedy this unacceptable phenomenon.

To: The ICANN Board, the Registry Stakeholders Group, the Registrar Stakeholders Group, the Generic Names Supporting Organization and the Subsequent Procedures PDP WG

Prerequisite or priority level: Prerequisite (provisions to address systemic DNS Security Abuse should be included in the baseline contract for any future new gTLDs)

Consensus within team: Yes

Details: The ICANN Board should direct ICANN Org to negotiate amendments to the Registrar Accreditation Agreement and Registry Agreement provisions aimed at preventing DNS Security Abuse. Such language should impose upon registries and registrars, and, through downstream contract requirements their affiliated entities such as resellers, a duty to prevent wide-scale DNS Security Abuse and implement specific measures to reduce malicious conduct whereby ICANN may suspend registrars and registry operators found to be associated with unabated, abnormal and extremely high rates of DNS Security Abuse. It is important for ICANN Org to gather relevant data, conduct analysis, and act on actionable information. Accordingly, ICANN should initiate an investigation into a contracted party's direct or indirect (such as through a reseller) involvement with systemic DNS Security Abuse. ICANN should make use of well-regarded abuse/black lists and establish an initial threshold at which compliance inquiries are automatically generated. We suggest that this initial threshold should be 3% of registrations or 30 total registrations, whichever is higher. Further, ICANN should establish a subsequent threshold at which a contracted party is presumed to be in breach of its agreement. We suggest this subsequent threshold should be 10% of registrations or 100 total registrations, whichever is higher.

Upon making a finding and contacting the contracted party, such findings may be rebutted upon sufficient proof that the findings were materially inaccurate or that the TLD operator is actively mitigating the identified DNS Security Abuse. The following factors may be taken into account when making a determination: whether the registrar or registry operator 1) engages in proactive anti-abuse measures to prevent DNS Security Abuse, 2) was itself a victim in the relevant instance, 3) has since taken necessary and appropriate actions to stop the abuse and prevent future systemic use of its services for DNS Security Abuse.

It is imperative that ICANN Org be empowered to deal with systemic DNS Security Abuse. However, in addition, a specific DADRP should be considered to the extent the community concludes that ICANN Compliance may be unable or ill-suited to deal with certain situations related to such abuse. Where proper, a DADRP could serve as a significant deterrent and help prevent or minimize such high levels of DNS abuse. Analogous to the Trademark PDDRP, this tool would empower the community to address systemic DNS Security Abuse, which plagues the security and stability of Internet infrastructure and undermines safeguards aimed at ensuring consumer trust. Such a procedure would apply if ICANN Compliance were not the right body to resolve a complaint related to DNS Security Abuse, is ill-suited or unable to do so and the registry operators or registrars are identified as having excessive levels of abuse. It may be useful for Compliance to be able to refer a case to the DADRP. The Community should determine the conditions under which a complainant can invoke a DADRP.

Success measures: 1) Contractual language is adopted which empowers ICANN to investigate and engage in enforcement actions against registries and registrars associated with systemic DNS Security Abuse such that there are no contracted parties serving as enablers of systemic DNS Security Abuse for which ICANN cannot bring an enforcement action. 2) A DADRP is created if there is an area of DNS Security Abuse that ICANN Org is unable to address 3) There exist no gTLD or registrar with systemic high levels of DNS Security Abuse (>3%). 4) The total volume of DNS Security Abuse decreases.

Recommendation 16: Further study the relationship between specific registry operators, registrars, and DNS Security Abuse by commissioning ongoing data collection, including but not limited to, the ICANN Domain Abuse Activity Reporting (DAAR) initiative. For transparency purposes, this information should be regularly published, ideally quarterly and no less than annually, in order to enable identification of registries and registrars that require greater scrutiny, investigation, and potential enforcement action by the ICANN organization. Upon identifying abuse phenomena, ICANN should put in place an action plan to respond to such studies, remedy problems identified, and define future ongoing data collection.

Rationale/related findings: Comprehensive DNS Security Abuse data collection and analysis is necessary for studying the efficacy of safeguards put in place to protect against malicious abuse issues associated with the expansion of the DNS. Furthermore, progress and trends can be identified by repeating studies over time. The DNS Abuse Study commissioned by the CCT Review Team identified extremely high rates of abuse associated with specific registries and registrars as well as registration features, such as bulk registrations, which appear to enable abuse. Moreover, the Study concluded that registration restrictions correlate with abuse, which indicates that there are many factors to consider and analyze in order to extrapolate cross-TLD abuse trends for specific registry operators and registrars. The DNS Abuse Study highlighted certain behaviors that are diametrically opposed to encouraging consumer trust in the DNS. Certain registries and registrars appear to either positively encourage or at the very least willfully ignore DNS Security Abuse. Such behavior needs to be identified and acted upon quickly by the ICANN organization as determined by the facts and evidence presented. The DNS Abuse Study, which provided a benchmark of DNS Security Abuse since the onset of the New gTLD Program, should be followed up with regular studies so that the community is provided current, actionable data on a regular basis to inform policy decisions.

To: The ICANN Board, the Registry Stakeholders Group, the Registrar Stakeholders Group, the Generic Names Supporting Organization, and the Subsequent Procedures PDP WG, SSR2 Review Team.

Prerequisite or priority level: High

Consensus within team: Yes

Details: The additional studies need to be of an ongoing nature, collecting relevant data concerning DNS Security Abuse at both the registrar and registry level. The data should be regularly published, thereby enabling the Community and the ICANN organization in particular to identify registries and registrars that need to come under greater compliance scrutiny and thereby have such behavior eradicated.

Success measures: Comprehensive, up-to-date technical DNS Security Abuse data is readily available to the ICANN Community to promptly identify problems, craft data-driven policy solutions, and measure the efficacy of implemented safeguards and ongoing initiatives. Furthermore, the next CCT Review Team will have a rich dataset on DNS abuse from which to measure safeguard efficacy.

Recommendation 17: ICANN should collect data about and publicize the chain of parties responsible for gTLD domain name registrations.

Rationale/related findings: At present, there is no consistent mechanism for determining all of the ICANN-contracted and non-contracted operators associated with a gTLD domain name registration. WHOIS records often do not distinguish between registrars and resellers. The DNS Abuse Study, for example, was unable to discern resellers from registrars to determine the degree to which DNS Security Abuse rates may be driven by specific-resellers, which in turn affects overall levels of DNS Security abuse. This data should be available to enhance data-driven determinations necessary for recommendations proposed by this and future CCT Review Teams, supplement New gTLD Program safeguards, and improve ICANN Contractual Compliance determinations.

To: The ICANN Board, the GNSO Expedited PDP, the Registry Stakeholders Group, the Registrar Stakeholders Group, the Generic Names Supporting Organization, the Subsequent Procedures PDP WG, SSAC

Prerequisite or priority level: High

Consensus within team: Yes

Details: WHOIS information is an important source of data for DNS Security Abuse analysis. Safeguards, such as the Thick WHOIS requirements, do not mandate that resellers be listed in WHOIS records. Consequently, the full chain of parties to a registration transaction is not readily discernible. Without such information, it is difficult to determine the extent to which DNS Security Abuse is correlated to individual resellers rather than registrars. For example, with such data hidden, it would be possible for a reseller associated with extremely high levels of abuse to remain in operation under a registrar with relatively normal levels of DNS Security Abuse. This would, in effect, permit systemic DNS Security Abuse by a non-contracted party. Although the reseller is theoretically bound by flow-down contract requirements, in practice this systemic DNS Security Abuse often remains difficult to attribute and tends to go unabated. Whereas, collecting and publicizing such information would enable end-users to readily determine the registry, registrar, and reseller associated with malicious domain name registrations. This would allow for more granular DNS abuse analysis as well as transparency for Internet users, thereby enhancing Community accountability efforts and Contractual Compliance enforcement.

Success measures: It is possible for anyone to readily determine the reseller associated with any gTLD registration.

Impact of Safeguards

Background on Safeguards

A key distinguishing feature of the New gTLD Program was the advent of additional safeguards aimed at protecting the integrity of the DNS. The Governmental Advisory Committee (GAC) greatly influenced the development and adoption of many of those safeguards. In its Beijing Communiqué, the GAC advised that the safeguards proposed be subject to contractual oversight by ICANN, and many have been implemented via contract provisions in the standard Registry and Registrar Agreements required for all new gTLDs.[373] However, a 2015 review on the effectiveness of GAC advice observed that certain aspects of GAC advice were implemented differently from the way in which they were initially proposed.[374]

What follows is a discussion of certain key safeguards, focusing on the ability of the safeguards to be enforced via ICANN Contractual Compliance and/or to withstand challenges to potential enforcement.

Safeguards for All New gTLDs

WHOIS verification

The WHOIS verification requirements of the New gTLD Program sought to enhance abuse prevention and mitigation efforts.[375] The 2013 Registrar Agreement, which was mandatory for all new gTLD registrars, required adherence to the obligations specified in the WHOIS Accuracy Program Specification.[376] Consequently, new gTLD registrars are required to engage in "reasonable and commercially practicable" WHOIS accuracy verification at the time of registration and periodic reverification thereafter.[377]

Specifically, registrars are required to verify the syntax accuracy of registrant-provided postal addresses, email addresses, and telephone numbers, and verify the validity of the phone number and email address of the registrant. These provisions limit registrants to seven days for correcting or updating such information and a total of 15 days for responding to inquiries by the registrar.[378] The consequences imposed by a registrar for a registrant's failure to comply include the suspension and/or cancellation of the domain name registration.[379]

ICANN Contractual Compliance reports indicate that WHOIS-related complaints comprise the largest category of complaints that they receive related to registrars.[380] For example, of the 41,790 total complaints received in 2014, 29,857 related to WHOIS (most complained about

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373 ICANN, "Registry Agreement"; ICANN, "2013 RAA."

374 ICANN GAC (2016), *GAC Advice Effectiveness Review*, accessed 8 August 2018, https://gacweb.icann.org/display/gacweb/GAC+Correspondence?preview=/27492514/41943089/Advice%20Effectiveness%20Review.pdf, pp. 14-15, regarding review of the advice contained within the Be jing Communiqué . The review noted that "the more the advice seeks to impose restrictions, safeguards, checks, rules, verification, authentication, other minimum behavioral expectations or 'standard setting', the less l kely it is that ICANN will accept and implement the advice in the precise way that the GAC have requested" (p. 2).

375 ICANN (2009), *Mitigating Malicious Conduct.*

376 The implementation of the European Union's GDPR on 25 May 2018 has had a major impact on how data is collected and processed in all sectors. As of the date of publication [verify] ICANN has amended the contract specifications that govern WHOIS collection and publication. See https://www.icann.org/resources/pages/gtld-registration-data-specs-en. The temporary specification no longer permits public access to many WHOIS data fields and this change will likely affect the number of complaints received by ICANN contractual compliance. Nevertheless, GDPR Principles require personal information to be "accurate, and where necessary, kept up to date." GDPR, Art. 5(d).

377 ICANN, "2013 RAA," Section 3.7.8

378 ICANN, "2013 RAA," Section 3.7.7.1 and 3.7.7.2

379 ICANN, "2013 RAA," Section 3.7.7.2

380 ICANN, "Contractual Compliance Reports," accessed 7 February 2017, https://www.icann.org/resources/pages/compliance-reports-2016-04-15-en.

lack of accuracy, about 71 percent).[381] Of the 48,106 total complaints received in 2015, 36,354 related to WHOIS (again, accuracy with about 75 percent).[382] In 2016 and 2017, WHOIS-related complaints continued to comprise the largest category of complaints received related to registrars.[383]

These figures indicate that the WHOIS safeguards created contractual obligations that were sufficiently specific, that violations were flagged, and generated complaints subject to the ICANN compliance process.[384]

Coinciding with the new WHOIS verification requirements to improve the quality of contact data in the WHOIS, ICANN also implemented the WHOIS Accuracy Reporting System (ARS).[385] The ARS is an effort to identify and report on WHOIS accuracy in a systematic way. The GAC advised that registry operators be required to maintain statistical reports of inaccurate WHOIS records.[386] ARS is an ICANN project taken in part to respond to this GAC-advised safeguard requiring documentation of WHOIS inaccuracies. This implementation shifted the responsibility from registry operators to ICANN.[387] Originally, the ARS contemplated three phases: syntax accuracy, operability accuracy, and identity validation.[388]

To date, the ICANN ARS has only dealt with accuracy of syntax and operability (i.e., is the contact information in the correct format and is it an operating email, address ,or telephone number?). The ARS Report issued in June 2016 and contains findings on the accuracy of syntax (proper format) and operability (can it be used to communicate) of telephone numbers, postal address, and email address for a sample of both new and legacy gTLDs.[389] These findings indicate that new gTLDs have higher syntax accuracy ratings for email and telephone, but lower syntax accuracy for postal address, when compared to legacy gTLDs.[390] The latest ARS Report issued in June 2018 shows that new gTLDs have an overall higher syntax accuracy (88.5% compared to 81.3% for legacy gTLDs), with similar syntax accuracy for email, and higher syntax accuracy for telephone and postal address.[391] In terms of operability accuracy, in June 2018, new gTLDs had higher accuracy for email addresses, lower accuracy for telephone numbers, and about the same accuracy for postal addresses.[392]

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381 ICANN, "Contractual Compliance Reports 2014," accessed 7 February 2017, https://www.icann.org/resources/pages/compliance-reports-2014-2015-01-30-en.

382 ICANN, "Contractual Compliance Reports 2015," accessed 7 February 2017, https://www.icann.org/resources/pages/compliance-reports-2015-04-15-en.

383 https://www.icann.org/en/system/files/files/annual-2016-31jan17-en.pdf and https://www.icann.org/en/system/files

384 ICANN, "Competition, Consumer Trust, and Consumer Choice Metrics Reporting," accessed 7 February 2017, https://www.icann.org/resources/reviews/cct/metrics.

385 ICANN, "WHOIS Accuracy Reporting System (ARS) Project Information," accessed 7 February 2017, https://whois.icann.org/en/whoisars. The project aims to: proactively identify inaccurate gTLD registration data, explore the use of automated tools, forward potentially inaccurate records to registrars for action, and publicly report on the resulting actions to encourage improvement.

386 ICANN GAC (11 April 2013), *Beijing Communiqué*, accessed 7 February 2017, https://www.icann.org/en/system/files/correspondence/gac-to-board-18apr13-en.pdf; ICANN GAC, *GAC Advice Effectiveness Review*.

387 ICANN GAC (11 April 2013), *Beijing Communiqué*; ICANN GAC, GAC Advice Effectiveness Review.

388 ICANN, "WHOIS Accuracy Reporting System."

389 ICANN, "WHOIS Accuracy Reporting System."

390 Ibid.

391 ICANN (June 2018), WHOIS ARS Cycle 2 Phase 6 Report: Syntax and Operability Accuracy," accessed 8 August 2018, https://whois.icann.org/en/file/whois-ars-phase-2-cycle-6-report-syntax-and-operability-accuracy

392 Ibid.Ibid.

ICANN has not committed to progressing to the identity validation phase (i.e., is the individual listed responsible for the domain?).[393] Hence, the current documentation effort will only detect syntax and operability issues but will not detect and therefore not document inaccurate identity.[394]

Ultimately, specific language regarding WHOIS obligations and a detailed WHOIS specification may have promoted more focused efforts on combating abuse by creating clear obligations on registrars to gather specified information, and thus enable the ability to make actionable complaints to ICANN Contractual Compliance.

Recommendations

Recommendation 18[395]: In order for the upcoming WHOIS Review Team to determine whether additional steps are needed to improve WHOIS accuracy, and whether to proceed with the "identity" phase of the Accuracy Reporting System (ARS) project, ICANN should gather data to assess whether a significant percentage of WHOIS-related complaints applicable to new gTLDs relate to the accuracy of the identity of the registrant. This should include analysis of WHOIS accuracy complaints received by ICANN Contractual Compliance to identify the subject matter of the complaints (e.g., complaints about syntax, operability, or identity). The volume of these complaints between legacy gTLDs and new gTLDs should also be compared. ICANN should also identify other potential data sources of WHOIS complaints beyond those that are contractually required (including, but not limited to, complaints received directly by registrars, registries, ISPs, etc.) and attempt to obtain anonymized data from these sources.

Future CCT Review Teams may then also use these data.

Rationale/related findings: WHOIS-related complaints are the largest category of complaints received by ICANN Contractual Compliance for registrars. However, it is unclear what aspect of WHOIS accuracy forms the basis of these complaints, or if the introduction of new gTLDs has had any effect on the accuracy of WHOIS data. Phase 1 of ICANN's ARS project analyzes the syntactic accuracy of WHOIS contact information and Phase 2 assesses the operability of the contact data in the WHOIS record. But there is currently no plan to proceed with Phase 3 of the ARS project: identity validation (is the contacted individual responsible for the domain?).

To: ICANN organization to gather required data, and to provide data to relevant review teams to consider the results and, if warranted, to assess feasibility and desirability of moving to identity validation phase of WHOIS ARS project.

Prerequisite or priority level: Medium

Consensus within team: Yes

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393 To carry out this phase of the project, ICANN "requires further consultation with the community as to if and how this phase would be implemented." See ICANN, "WHOIS ARS Project Information."

394 Ibid.

395 Since the publication of the CCT Review Team's draft recommendations for public comment, ICANN Contractual Compliance has considered the review team recommendations in implementing certain changes. Contractual Compliance now codes Whois Inaccuracy tickets by syntax, operability, and identity, and divides complaints based on gTLD type (legacy or new). It also publishes reports with this level of granularity on the performance reporting dashboard. See July data as an example:
https://features.icann.org/compliance/dashboard/0718/report
The reports also include some data concerning the reporter (complainant), including whether the reporter was anonymous. See quarterly data as an example:
https://features.icann.org/compliance/dashboard/2018/q2/complaint-count-reporters (also part of blog).

Success measures: Availability of data that shows the breakdown of WHOIS accuracy complaints by subject matter (syntax, operability or identity). Availability of data that allows comparison between legacy gTLDS and new gTLDS. Availability of data to inform the upcoming WHOIS Review Team on where further work is needed to improve WHOIS accuracy.

Mitigating Abusive Activity

The Base Registry Agreement required new gTLD registry operators to include provisions in their Registry-Registrar Agreements (RRA) that prohibited registrants from "distributing malware, abusively operating botnets, phishing, piracy, trademark or copyright infringement, fraudulent or deceptive practices, counterfeiting or otherwise engaging in activity contrary to applicable law, and providing (consistent with applicable law and any related procedures) consequences for such activities including suspension of the domain name."[396] By its terms, this safeguard is aimed at mitigating abusive activity. This provision was incorporated into the mandatory Public Interest Commitments (PICs) section of the Registry Agreement.

Notably, the plain language of the safeguard does not obligate the registry operator to monitor and enforce this provision beyond requiring the inclusion of the provision in the downstream Registrar–Registrant agreement. ICANN has concluded that 99 percent of new gTLD registry operators had complied with the obligation to include this language in their Registry-Registrar agreements by the end of 2014.[397]

Complementing the "prohibited use" provisions, new gTLD registrars were bound by the 2013 RAA, which imposed on registrars a duty to promptly "investigate and respond appropriately to any reports of abuse."[398] Subsequently, ICANN received abuse complaints in 2014, 2015, and 2016.[399] Abuse complaints are typically higher for registrars than for registries. In 2015, ICANN received 438 abuse complaints related to registrars.[400] These complaints included both legacy and new gTLDs. ICANN noted that these complaints involved in part, "registrars not taking reasonable and prompt steps to respond to appropriately to reports of abuse, which at a minimum should be to forward valid complaints to the registrants."[401] ICANN's 2015 audit of registrars under the 2013 RAA indicated that 74 percent of the registrars audited had deficiencies related to the RAA contract provisions requiring a Registrar Abuse Contact and a duty to investigate complaints of abuse.[402] ICANN's 2016 audit of registrars showed a deficiency rate of 60 percent related to this same contract provision.[403] These figures indicate that the "mitigating abuse" safeguard is the subject of complaints and the ICANN compliance process.[404]

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[396] ICANN, "Registry Agreement," Specification 11, 3(a).

[397] ICANN (2015), *ICANN Contractual Compliance 2014 Annual Report*, accessed 7 February 2017, https://www.icann.org/en/system/files/files/annual-2014-13feb15-en.pdf, p. 13.

[398] ICANN, "2013 RAA," 3.18.

[399] ICANN, "Contractual Compliance Reports 2014" and ICANN, "Contractual Compliance Reports 2015." Quarterly reports are available as well on their year's respective pages.

[400] ICANN (2016), *ICANN Contractual Compliance 2015 Annual Report*, accessed 7 February 2017, https://www.icann.org/en/system/files/files/annual-2015-27jan16-en.pdf

[401] Ibid.

[402] ICANN, *Contractual Compliance September 2015 Round Audit Report*, accessed 7 February 2017, https://www.icann.org/en/system/files/files/compliance-registrar-audit-report-2015-06jul16-en.pdf

[403] ICANN, *Contractual Compliance May 2016 Round Audit Report*, accessed 7 February 2017, https://www.icann.org/en/system/files/files/compliance-registrar-audit-report-2016-16nov16-en.pdf

[404] The effectiveness of this safeguard as well as ICANN Compliance's enforcement it has been the topic of Congressional Testimony. See Senate Committee on the Judiciary Subcommittee on Oversight, Agency Action, Federal Rights and Federal Courts ("Protecting Internet Freedom: Implications of Ending U.S. Oversight of the

It is not clear whether these safeguards have had an impact on mitigating abuse. It is also not clear what constitutes "reasonable and prompt steps to respond to appropriately to reports of abuse."

Security Checks

Another mandatory PIC included in the new gTLD Registry Agreement required that registry operators "periodically conduct a technical analysis to assess whether domains in the TLD are being used to perpetrate security threats, such as pharming, phishing, malware, and botnets."[405] Furthermore, this safeguard obligated registry operators to maintain statistical reports on such threats and mitigation efforts, and to make them available to ICANN upon request.[406] This safeguard was intended to enhance efforts to fight DNS abuse.[407]

GAC advice also contained a proposed enforcement mechanism that called for a registry operator to notify a registrar if the detected threats posed an actual risk of harm and provided for suspension of a domain name until a matter is resolved if the registrar failed to act.[408] However, ICANN reported Community concerns about the timing, cost, and scope of conducting security checks for threats.[409] Hence, the safeguard implementation provided "general guidelines for what registry operators must do, but omits the specific details from the contractual language to allow for the future development and evolution of the parameters for conducting security checks."[410] Nevertheless, as implemented by ICANN, the safeguard lacks obligations on either notification to the registrar or how to respond to security threats.

The obligation to engage in security checks can be enforced, as implemented.[411] ICANN Contractual Compliance reports engaging in proactive monitoring of this safeguard and determined, for example, that 96 percent of registries were conducting security checks as per the contract.[412] Additionally, a voluntary "Framework for Registry Operator to Respond to Security Threats" has been released during the writing of this report. [413]

Recommendation 19: The next CCT Review Team should review the "Framework for Registry Operator to Respond to Security Threats" and assess whether the framework is a sufficiently clear and effective mechanism to mitigate abuse by providing for systemic and specified actions in response to security threats.

Rationale/related findings: It is not clear whether the intended goal of the "security checks" safeguard to strengthen efforts to fight DNS abuse has been met. The Community will be better positioned to evaluate the effectiveness of this safeguard once the "Framework for

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Internet," written statement of John C. Horton, President and CEO, Legitscript, 14 September 2016), https://www.judiciary.senate.gov/imo/media/doc/09-14-16%20Horton%20Testimony.pdf. Mr. Horton argues that ICANN Compliance efforts regarding registrars that allegedly failed to investigate and respond to complaints that domain names were being used to facilitate illegal activity were ineffective and lacked transparency.

405 ICANN, "Registry Agreement," Specification 11, 3(b).

406 Ibid.

407 ICANN (2009), *Mitigating Malicious Conduct*.

408 ICANN GAC (2013), *Beijing Communiqué*.

409 ICANN, "Safeguards Applicable to All gTLDs," accessed 8 August 2018, https://features.icann.org/safeguards-applicable-all-new-gtlds.

410 Ibid.

411 ICANN GAC, *GAC Advice Effectiveness Review*, pp. 12-13. The Review questioned the effectiveness of this safeguard, noting that "risks may be identified but not necessarily acted on."

412 ICANN (2015), *ICANN Contractual Compliance 2014 Annual Report*, p. 1.

413 ICANN, "Framework for Registry Operator to Respond to Security Threats," accessed 8 August 2018, https://www.icann.org/resources/pages/framework-registry-operator-respond-security-threats-2017-10-20-en

Registry Operator to Respond to Security Threats" is in place for a sufficient period of time to provide more specific information.

To: Future CCT Review Teams

Prerequisite or priority level: Medium

Consensus within Team: Yes

Details: It is not clear whether the intended goal of the "security checks" safeguard has been met. With the voluntary framework in place as of October 2017, the Community will be better positioned to evaluate the effectiveness of this safeguard.

Success measures: An evaluation of the "Framework for Registry Operator to Respond to Security Threats."

Making and Handling Complaints

The Base Registry Agreement for new gTLDs required registry operators to "take reasonable steps to investigate and respond to any reports from law enforcement and governmental and quasi-governmental agencies of illegal conduct in connection with the use of the TLD" with the caveat that they would "not be required to take any action in contravention of applicable law."[414] Furthermore, new gTLD registry operators were obligated to post abuse contact details on their websites and to notify ICANN of any changes to contact information.[415]

These safeguards, like others, were aimed at enabling more focused mitigation of DNS abuse[416] and created a duty for registry operators to investigate and respond to complaints from government agencies, but not the public. GAC advice did not propose such a restriction.[417]

Data from Nielsen's Consumer surveys indicate that many consumers remain unaware of to whom to report abuse. Specifically, 31 percent overall "don't know" to whom to report site abuse, 31 percent overall would report abuse to a consumer protection agency, 30 percent overall would report abuse to local police, 24 percent overall would report abuse to website owner or operator, and 11 percent overall would report abuse to ICANN.[418]

The GAC questioned the specifics of implementation, specifically asking "what constitutes reasonable steps" to investigate and respond to complaints and noting that the effectiveness of this safeguard depends on whether registry operators "have a responsibility to respond to complaints from sources other than governments or law enforcement agencies."[419] ICANN's 2014 Contractual Compliance report noted that registry operators "not publishing the email address and primary contact for reports by mail" and registry operators "not responding in a

[414] ICANN, "Registry Agreement," Section 2.8.

[415] ICANN, "Registry Agreement," Specification 6, Section 4.1.

[416] ICANN, *Mitigating Malicious Conduct*.

[417] ICANN GAC (11 April 2013), *Beijing Communiqué*; ICANN GAC (11 February 2015), *Singapore Communiqué*, accessed 7 February 2017, https://www.icann.org/en/system/files/correspondence/gac-to-board-11feb15-en.pdf. The Singapore Communiqué questions what mechanisms could be used by victims (in addition to law enforcement) to report abuse to registry operators and what constitutes "reasonable steps" to investigate and respond to reports from law enforcement or other governmental bodies.

[418] Nielsen, *Consumer Research Wave 2* (2016), pp. 88, 102.

[419] ICANN GAC (11 February 2015), *Singapore Communiqué*, p. 10 regarding safeguard 5.; ICANN GAC, *GAC Advice Effectiveness Review*, p.13.

timely matter" were a common Contractual Compliance issue regarding publishing abuse contact information.[420] Hence, this safeguard can be the subject of complaints and the ICANN compliance process.

The obligation to have mechanisms to respond to complaints likely assists registries to investigate and possibly combat abuse and may help protect the public by providing information about harmful practices. However, questions remain about the scope of registry operators' response under this safeguard, both as to their duty to investigate and respond to complaints from law enforcement and their responsibility to respond to complaints from the public.

Recommendations

Recommendation 20: Assess whether mechanisms to report and handle complaints have led to more focused efforts to combat abuse by determining: (1) the volume of reports of illegal conduct in connection with the use of the TLD that registries receive from governmental and quasi-governmental agencies; (2) the volume of inquires that registries receive from the public related to malicious conduct in the TLD; (3) whether more efforts are needed to publicize contact points to report complaints that involve abuse or illegal behavior within a TLD; and (4) what actions registries have taken to respond to complaints of illegal or malicious conduct in connection with the use of the TLD. Such efforts could include surveys, focus groups, or Community discussions. If these methods prove ineffective, consideration could be given to amending future standard Registry Agreements to require registries to more prominently disclose their abuse points of contact and provide more granular information to ICANN. Once this information is gathered, future review teams should consider recommendations for appropriate follow up measures.

Rationale/related findings: The Consumer Research and Registrant surveys conducted by Nielsen have shown significant consumer concern related to abuse, which may undermine confidence and trust in the DNS. The broad strategic response should be to ensure that there are sufficiently effective mechanisms to report complaints that can be measured and assessed, and hence develop the capacity to manage and mitigate the causes of these complaints.

There is concern from the Community that abuse data is not reported consistently to registries. Other concerns relate to ICANN's own reporting of the complaints it receives. In particular, those concerns focus on the lack of granularity regarding the subject matter of the complaints and lack of information regarding the response to abuse complaints. Generally speaking, detailed information regarding the subject matter of complaints and responses to those complaints is sparingly captured and shared, missing, or unknown.

Although the safeguards regarding making and handling complaints have been implemented, in light of the concerns noted above, it is unclear: (1) whether either law enforcement or the public is sufficiently aware that these complaint mechanisms exist; (2) how frequently these channels are used by the public and law enforcement to notify registries of illegal or abusive behavior; and (3) what impact these safeguards have had on their intended goal of mitigating DNS abuse. Hence, the review team's recommendations relate to improved data gathering to inform future efforts to combat abuse within gTLDs.

To: ICANN organization and future CCT Review Teams

[420] ICANN (2015)., *Contractual Compliance 2014 Annual Report*, accessed 8 August 2018, https://www.icann.org/en/system/files/files/annual-2014-13feb15-en.pdf, p. 14.

Prerequisite or priority level: Medium

Consensus within Team: Yes

Success measures:

- More information is gathered to assess whether current complaint reporting mechanisms are effective, and that this information informs policy efforts involving amendment of standard Registry agreements.

- ICANN Contractual Compliance routinely records and makes available information about complaints by categories filed from registry and registrars, including responses to reports of abuse to original reporters.

Safeguards for Sensitive and Regulated Strings

The GAC identified a non-exhaustive group of nearly 200 strings—which it dubbed "Category 1" strings—that raised consumer protection concerns, contained sensitive strings, or strings in regulated markets and advised that five safeguards should apply to these strings. The GAC explained that strings linked to "regulated or professional sectors should operate in a way that is consistent with applicable laws" and observed that the identified strings were "likely to invoke a level of implied trust from consumers, and carry higher levels of risk associated with consumer harm."[421] During implementation, however, ICANN included only a subset of these GAC-identified strings within the Category 1 safeguard protections.[422] In addition, during implementation, ICANN included only three of the five GAC-recommended safeguards to its selected subset of Category 1 strings in regulated markets.[423]

As implemented, these safeguards took the form of downstream contract requirements contained in the Public Interest Commitments Specification of the Registry Agreement.[424] Specifically, the safeguards required registry operators to obligate registrars via the Registry-Registrar Agreement to include certain provisions in their Registration Agreements with registrants.

The requirements for sensitive strings and those in regulated markets included provisions requiring registrants to comply with all applicable laws.[425] Another provision emphasized that this obligation includes "those [laws] that relate to privacy, data collection, consumer protection

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421 ICANN GAC (11 April 2013), *Beijing Communiqué*, p. 8.
422 Ibid. Compare the Beijing Communiqué with ICANN's implementation framework for GAC Category 1 implementation advice. See ICANN, "GAC Advice: Category 1 Safeguards," accessed 8 August 2018, https://newgtlds.icann.org/en/applicants/gac-advice/cat1-safeguards; and ICANN New gTLD Program Committee (NGPC) (5 February 2014), *GAC Category 1 Safeguards: Annex 2: ICANN NGPC Resolution No. 2014.02.05.NG01*, accessed 8 August 2018, https://www.icann.org/en/system/files/files/resolutions-new-gtld-annex-2-05feb14-en.pdf; Steve Crocker ([former] Chair, ICANN Board of Directors), "NGPC Consideration of GAC Category 1 and Category 2 Safeguard Advice," letter to GAC Chair, 29 October 2013, https://www.icann.org/en/system/files/correspondence/crocker-to-dryden-3-29oct13-en.pdf; Steve Crocker ([former] Chair, ICANN Board of Directors), "Implementation of GAC Safeguard Advice," letter to GAC Chair, 2 September 2014 https://www.icann.org/en/system/files/correspondence/crocker-to-dryden-2-02sep14-en.pdf ; Steve Crocker ([former] Chair, ICANN Board of Directors), "GAC Advice re Category 1 Safeguards for New gTLDs," letter to GAC Chair, 23 June 2015, https://www.icann.org/en/system/files/correspondence/crocker-to-schneider-23jun15-en.pdf.
423 Ibid. See in particular: Crocker, letter to GAC chair, 2 September 2014 and Crocker, letter to GAC Chair, 29 October 2013..
424 ICANN, "Registry Agreement," Specification 11.
425 ICANN, "Registry Agreement," Specification 11, 3(f).

(including in relation to misleading and deceptive conduct), fair lending, debt collection, organic farming, disclosure of data, and financial disclosures."[426] Furthermore, specific provisions detailed requirements for registrants handling sensitive information, such as health or financial data, to "implement reasonable and appropriate security measures commensurate with the offering of those services, as defined by applicable law."[427]

It is difficult to determine whether these safeguards have been the subject of complaints to ICANN Contractual Compliance because the categories of complaints identified in ICANN's Compliance reports do not provide this level of detail. That is, the reported ICANN complaint categories for registries and registrars—such as "PIC" (Public Interest Commitments) or "abuse"—do not contain sufficiently specific information to correlate complaints with specific safeguards. However, the ICANN Global Consumer Surveys noted much lower comfort levels when consumer end-users were asked about providing sensitive information (including financial and health information) to new gTLDs as compared to legacy gTLDs.[428] Moreover, a separate survey on trust in the internet reflected the public's increasing concerns regarding stolen credit card and financial information, online security, and protection and security of credit card and personal information.[429] ICANN Contractual Compliance does report that it proactively monitored compliance with Specification 11, paragraph 3a, which includes the obligation for downstream contracts to include language requiring compliance with applicable laws, and determined that there was 99 percent compliance with this provision.[430]

Recommendations

Recommendation 21[431]: Include more detailed information on the subject matter of complaints in ICANN publicly available Contractual Compliance reports. Specifically, more precise data on the subject matter of complaints should be included, particularly: (1) the class/type of abuse; (2) the gTLD that is target of the abuse; (3) the safeguard that is at risk; (4) an indication of whether complaints relate to the protection of sensitive health or financial information; (5) what type of contractual breach is being complained of; and (6) resolution status of the complaints, including action details. These details would assist future review teams in their assessment of these safeguards.[432]

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426 ICANN, "GAC Advice: Category 1 Safeguards" and ICANN NGPC, *Category 1 Safeguards*.
427 Ibid.
428 Nielsen, *Consumer Research* (2015); Nielsen, *Consumer Research Wave 2* (2016).
429 NCC Group, *Trust in the Internet Survey* (2016), p. 2.
430 ICANN (2015), *ICANN Contractual Compliance 2014 Annual Report*, p.13.
431 Since the publication of the CCT Review Team's draft recommendations for public comment, ICANN Contractual Compliance has considered the review team recommendations in implementing certain changes. In October 2017, ICANN Contractual Compliance, began collecting and reporting on the granularity of registrar-related DNS Abuse complaints by identifying the type of abuse including spam, pharming, phishing, malware, botnets, counterfeiting, pharmaceutical, fraudulent and deceptive practices, trademark or copyright infringement, and missing or invalid registrar abuse contact information. This information is reported on ICANN.org in the monthly dashboard at this link https://features.icann.org/compliance/dashboard/report-list. The quarterly and annual metrics reports provide information about enforcement reasons, reporter categories, closure reasons and details of the complaints inclusive of DNS Abuse by legacy and new gTLDs as they evolve through the compliance process, from ticket receipt to closure. They also reporting on any complaint type if it concerns a GAC Cat 1 gTLD. They also report on granularity of type of Transfer complaints (choices are Transfer, Unauthorized Transfer, COR, Unauthorized COR and TEAC).
In light of the ICANN community concerns regarding DNS infrastructure abuse, Compliance updated the audit plans with expanded questions and testing to address DNS abuse and also includes concerns about DNS infrastructure abuse when determining which contracted parties to audit. This information will be reported via the Audit Report and published under Reports & Blogs at this link https://www.icann.org/resources/compliance-reporting-performance.
432 Since the publication of the CCT Review Team's draft recommendations for public comment, ICANN Contractual Compliance has considered the review team recommendations in implementing certain changes described in the blogs of October 2017, "Enhancing Transparency in Contractual Compliance Reporting," https://www.icann.org/news/blog/enhancing-transparency-in-contractual-compliance-reporting, and March 2018,

Rationale/related findings:

(Note: A general recommendation for further transparency regarding the subject matter of complaints received by ICANN Contractual Compliance is set forth in Chapter 5: Data-Driven Analysis: Recommendations for Additional Data Collection and Analysis.)

The lack of publicly available information about whether ICANN Contractual Compliance has received complaints related to the implemented Category 1 safeguards, and lack of a common framework to define sensitive information and identify what constitutes "reasonable and appropriate security measures" make it difficult to assess what impact this safeguard has had on mitigating risks to the public.

The results of the Consumer Research and Registrant Surveys by Nielsen indicate that new gTLDs are not trusted to the same extent as legacy gTLDs, and that the public is concerned about potential misuse of their personal information. Domains catering to interests in highly-regulated sectors such as health and finance are likely to collect more personal and sensitive information. So in that sense, trustworthiness of these domains is even more crucial. There is a further concern that complaints about illegal DNS activities may be under-reported.

Although ICANN has mandated certain safeguards applicable to all new gTLD domains in general and domains for highly-regulated strings in particular, there is scant evidentiary data that the contracted parties have implemented and are complying with these safeguards. The review team lack the evidence to definitively declare whether the defined and implemented safeguards have been effective in mitigating risks associated with domains in the overall new gTLD market, and those in highly-regulated markets in particular. Hence, it is desirable to gather sufficient information to understand whether the existing safeguards mitigate the risks assessed for the new gTLD domains, especially those associated with highly-regulated sectors, and whether there is adequate and effective enforcement. The recommendation therefore proposes that ICANN Contractual Compliance collect and provide reports on the abuse reported to registry and registrars with a granularity that allows identification of origin, type, form, and nature of abuse or alleged illegal use of the DNS.

The ICANN organization acknowledges that data on the several safeguards is not currently being collected in either the detail expected or at all. However, there are ongoing data collection activities and initiatives that may remedy this situation.

To: ICANN organization

Prerequisite or priority level: High

Consensus within team: Yes

Details: This recommendation is tied to the previous one. Together they aim to address whether the New gTLD Program safeguards, the mechanisms developed to implement them, and the outcomes of those implementations allow a reviewer to draw a definitive conclusion on their effectiveness and fitness to purpose.

Success measures: ICANN Contractual Compliance publication of a formatted report on abuse reports received and adjudicated, including, at minimum, all of the specified types and categories noted above.

"Enhancing Transparency in Contractual Compliance Reporting, https://www.icann.org/news/blog/enhancing-transparency-in-contractual-compliance-reporting-en.

Recommendation 22: Initiate engagement with relevant stakeholders to determine what best practices are being implemented to offer reasonable and appropriate security measures commensurate with the offering of services that involve the gathering of sensitive health and financial information. Such a discussion could include identifying what falls within the categories of "sensitive health and financial information," and what metrics could be used to measure compliance with this safeguard.

Rationale/related findings: The lack of publicly available information about whether ICANN Contractual Compliance has received complaints related to the implemented Category 1 safeguards, and lack of a common framework to define sensitive information, makes it difficult to assess what impact this safeguard has had on mitigating risks to the public. However, protection of sensitive information, particularly sensitive financial and health information, is a high priority for Internet users. As a result, this recommendation aims at improving both complaint data regarding these issues and encouraging communications about best practices on how to protect these sensitive categories of information.

To: ICANN organization

Prerequisite or priority level: High

Consensus within Team: Yes

Success measures: This recommendation would be successful if relevant stakeholders, including new gTLD registries and stakeholder groups representing the public interest, discuss what constitutes sensitive information and best practices regarding how to protect sensitive information. Such discussions could inform future policy in this area with a goal of increasing the public's trust of new gTLDs.

Safeguards for Highly-Regulated Strings

The GAC advised that strings associated with market sectors that have clear and/or regulated entry requirements in multiple jurisdictions (e.g., financial, gambling, professional services, environmental, health and fitness, corporate identifiers, and charity) should also receive protections in the form of three additional safeguards requiring registry operators to verify and validate a registrant's licenses or credentials, consult with authorities in case of doubt about the credentials, and conduct periodic post-registration checks to ensure the registrant's compliance.[433] The GAC explained that these strings may require such additional safeguards to address specific risks and to "bring registry policies in line with arrangements in place offline."[434] As implemented by ICANN, the safeguards applied to about 50 strings, but received fewer protections than GAC had originally advised.[435]

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[433] ICANN GAC (11 April 2013), *Beijing Communiqué*, pp. 8-10.

[434] Ibid, p. 10.

[435] Ibid. Compare to ICANN NGPC, *Category 1 Safeguards*. ICANN indicated its rationale for changes to the GAC safeguard advice in its October 29, 2013 letter to the GAC Chair, expressing concerns that implementation could discriminate against registrants from developing countries that lacked regulatory bodies or databases which the registry operators could work with to verify credentials (Crocker, "NGPC Consideration of GAC Category 1 and Category 2 Safeguard Advice," letter to GAC Chair). See also ICANN GAC, *GAC Advice Effectiveness Review*, Appendix 1 regarding Beijing Advice. See also "Category 1 Consumer Safeguards," pp. 14-15, which describes ICANN's implementation of its Category 1 safeguards 6, 7, 8 as "substantially watered down." Also see the 23 June 2015 letter from Steve Crocker to the GAC Chair (Crocker, "GAC Advice re Category 1 Safeguards for New gTLDs."

As with the other safeguards, many of these safeguards imposed downstream contract requirements upon registry operators to obligate registrars vis-à-vis the Registry-Registrar Agreement to include certain provisions in their Registration Agreements with registrants.

ICANN implemented several additional safeguards that applied to strings in highly-regulated markets related to relationships with regulatory and industry bodies, providing contact information to report complaints, and screening for proper credentials for strings in highly-regulated markets.[436]

Specifically, registry operators were obligated to establish relationships with relevant regulatory and industry bodies to mitigate risks of illegal activity.[437] Moreover, the standard contracts needed to include provisions that would require registrants to have a single point of contact for complaint reporting and contact information for these regulatory bodies.[438]

Regarding the requirement to establish relationships with relevant regulatory and industry bodies, implementation of this provision appears to be satisfied by the mere issuing of an invitation to have a relationship.[439] This implementation may reflect the practical challenges involved with mandating a relationship with a third-party organization. In terms of effectiveness, more information is needed on registry efforts to comply with this safeguard. Regarding the requirement for registrants to provide contact information for complaints and information about relevant regulatory bodies, a key question would be how easy it is for the public to find information on a website regarding contact information for communicating complaints both to those responsible for the domain and applicable government agencies or regulatory bodies.

The final three safeguards related to the credentials that registrants possessed in regard to strings in highly-regulated markets. The GAC had recommended that registry operators (1) verify and validate registrants' credentials "at the time of registration"; (2) consult with authorities in case of doubt about the credentials; and (3) conduct periodic post-registration checks to ensure registrants' validity and compliance.[440] As implemented by ICANN, registry operators were required to ensure that registrars included in their agreement with registrants a provision requiring a representation that the "registrant possesses any necessary authorizations, charters, licenses and/or other related credentials for participation in the sector associated with the TLD."[441] Registry operators were obligated to investigate the authenticity of a registrant's credentials if they received a complaint casting doubt on them.[442] Finally, registrars, via the Registry-Registrar Agreement, were obligated to require their registrants to report "any material changes to the validity" of their credentials.[443]

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436 The GAC had advised that certain safeguards apply to all Category 1 strings. ICANN's implementation applied the recommended safeguards regarding establishing relationships with regulatory bodies and providing contact information to report complaints only to specified new gTLDs in the "highly-regulated category". See ICANN GAC (11 April 2013), *Beijing Communiqué*, p. pp. 8-10. Compare to ICANN NGPC, *Category 1 Safeguards.*

437 ICANN NGPC, *Category 1 Safeguards.*

438 Ibid.

439 "Registry operators will proactively create a clear pathway for the creation of a working relationship with the relevant regulatory or industry self-regulatory bodies by publicizing a point of contact and inviting such bodies to establish a channel of communication...". See ICANN (5 February 2014), *Annex 2 - ICANN NGPC Resolution NO. 2014.02.05.NG01,* accessed 8 August 2018, https://www.icann.org/en/system/files/files/resolutions-new-gtld-annex-2-05feb14-en.pdf, p. 3 and the Base Registry Agreement for TLDs working in highly-regulated sectors.

440 ICANN NGPC, *Category 1 Safeguards*, paras. 6-8.

441 Ibid., para. 6.

442 Ibid., para. 7.

443 Ibid., para. 8.

These provisions were designed to mitigate the higher levels of risks of abuse associated with strings in highly-regulated industries, which are likely to invoke a higher level of trust to consumers.[444] The Nielsen Consumer and Registrant Surveys indicated that consumers expect some restrictions on who can purchase domains within new gTLDs and that restrictions on who can purchase new gTLDs contribute to consumer trust.[445] GAC advice originally required registries to screen registrants for proper credentials or licenses at the time of registration to ensure that they are what they purport to be before they may do business with the public using the name of a regulated sector such as a bank or pharmacy. As implemented by ICANN, registrants themselves were to self-report that they possessed the necessary credentials. The GAC indicated that the looser requirement that registrants provide some "representation" that they possess the appropriate credentials (e.g., as a bank, insurer, pharmacy, etc.) poses the risk of consumer fraud and potential harm because bad actors will not hesitate to make false representations about their credentials.[446]

The ICANN Board indicated that its implementation approach resulted from concerns about the practical ability to implement these safeguards as advised because of challenges involved in verifying credentials of entities in multiple jurisdictions.[447]

Recommendations

Recommendation 23: ICANN should gather data on new gTLDs operating in highly-regulated sectors to include the following elements:

- A survey to determine 1) the steps registry operators are taking to establish working relationships with relevant government or industry bodies, and 2) the volume of complaints received by registrants from government and regulatory bodies and their standard practices to respond to those complaints;
- A review of a sample of domain websites within the highly-regulated sector category to assess whether contact information to file complaints is sufficiently easy to find;
- An inquiry to ICANN Contractual Compliance and registrars/resellers of highly-regulated domains seeking sufficiently detailed information to determine the volume and the subject matter of complaints regarding domains in highly-regulated industries.
- An inquiry to registry operators to obtain data to compare rates of abuse between those highly-regulated gTLDs that have voluntarily agreed to verify and validate credentials to those highly-regulated gTLDs that have not.
- An audit to assess whether restrictions regarding possessing necessary credentials are being enforced by auditing registrars and resellers offering the highly-regulated TLDs (i.e., can an individual or entity without the proper credentials buy a highly-regulated domain?).

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444 ICANN GAC (11 April 2013), *Beijing Communiqué*, and GAC (25 June 2014), *London Communiqué*, accessed 8 August 2018, https://www.icann.org/en/system/files/correspondence/gac-to-board-25jun14-en.pdf.

445 Nielsen, Consumer Research (2015), pp. 9, 25-26, 44; Nielsen, Consumer Research Wave 2 (2016), pp. 9, 13, 24-27, 35, 60-63, 65; Nielsen, Registrant Survey Wave 2 (2016) pp. 14, 18, 29, 67.

446 ICANN GAC (25 June 2014), *London Communiqué,* p. 10; ICANN GAC (11 February 2015), *Singapore Communiqué*, pp. 4, 10; GAC (15 October 2014), *Los Angeles Communiqué*, accessed 8 August 2018, https://www.icann.org/en/system/files/correspondence/gac-to-board-15oct14-en.pdf, p.5. The Communiqués all question ICANN's failure to implement the GAC's advice regarding verification and validation of credentials for strings in highly-regulated markets.

447 See, e.g., Board Chair correspondence to GAC Chair, October 29, 2013 and; Sept. 2, 2014.

To the extent that current ICANN data collection initiatives and Contractual Compliance audits could contribute to these efforts, the review team recommends that ICANN assess the most efficient way to proceed to avoid duplication of effort and leverage current work.

Rationale/related findings: Although ICANN has implemented certain safeguards applicable to domains operating in highly-regulated sectors, it is unclear whether and how contracted parties are complying with these safeguards. It is also not clear whether these safeguards have been effective in mitigating risks associated with domains in highly- regulated markets. The Nielsen consumer end-user survey results indicate that new gTLDs are not trusted to the same extent as legacy gTLDs and that the public is concerned about potential misuse of their sensitive information. Domains working in highly-regulated sectors such as health and finance may be more apt to collect this sensitive information, and hence the trustworthiness of these domains is even more crucial. Accordingly, it is important to understand whether the safeguards put into place to mitigate the risks associated with highly- regulated domains are being enforced and whether they are effective.

To: ICANN organization, New gTLD Subsequent Procedures PDP Working Group

Prerequisite or priority level: High

Consensus within Team: Yes

Details: ICANN is embarking on several data gathering initiatives that may shed light on some of these issues, including the Domain Abuse Activity Reporting Project, the gTLD Marketplace Health Index, and the Identifier Technology Health Indicators project.[448] Moreover, ICANN Contractual Compliance is expanding its audit functions to include additional examination of compliance with certain safeguards. Hence, consideration should be given to assessing whether ICANN's ongoing data collection and Contractual Compliance initiatives could be leveraged to implement parts of this recommendation.

Success measures: This recommendation will be successful if additional data is generated to inform ongoing policy development processes regarding the effectiveness of ICANN contract provisions intended to safeguard the public, particularly as they relate to new gTLDs operating in highly-regulated sectors, and whether the current contractual safeguards sufficiently protect the public against the higher risks associated with these domains. In particular, it is vital to determine whether the current safeguard requiring that registrants possess appropriate credentials for gTLDs operating in highly-regulated sectors is working as intended. Success in this regard would be to generate an assessment of complaints relating to this safeguard, including information on how this safeguard is enforced, among other factors, in order to determine its effectiveness.

Special Safeguards Related to New gTLDs with Inherent Governmental Functions and Cyberbullying

The Base Registry Agreement included provisions for operators of new gTLDs with inherent governmental functions, such as .army, .navy, and .airforce, to mandate that their registrars ensure that their registrants "take reasonable steps to avoid misrepresenting or falsely

[448] ICANN, "Domain Abuse Activity Reporting (DAAR)"; ICANN (June 2018), "gTLD Marketplace Health Index"; ICANN, "Identifier Technology Health Indicators (ITHI), accessed 8 August 2018, https://www.icann.org/ithi

implying" that the registrant was associated with a governmental authority when such a relationship did not exist.[449]

Another safeguard was related to cyberbullying and harassment and applied to the .fail, .gripe, .sucks, and .wtf gTLDs. This provision required registry operators to "develop and publish registration policies to minimize the risk of cyber bullying and/or harassment."[450]

It is not clear whether failure to comply with these safeguards has generated complaints. In addition, as advised and implemented, neither safeguard contains consequences for failure to comply, raising questions about their effectiveness.

Recommendations

Recommendation 24:

1. Determine whether ICANN Contractual Compliance should report on a quarterly basis whether it has received complaints for a registry operator's failure to comply with either the safeguard related to gTLDs with inherent governmental functions or the safeguard related to cyberbullying.

2. Survey registries to determine 1) whether they receive complaints related to cyberbullying and misrepresenting a governmental affiliation, and 2) how they enforce these safeguards.

Rationale/related findings: The lack of information about whether ICANN Contractual Compliance or registries have received complaints related to these safeguards and lack of consequences for failure to comply with these safeguards make it difficult to assess their effectiveness in mitigating the risks they were intended to address. Gathering this information would assist future policy development processes by identifying whether the current safeguards are meeting their intended goal. (Note: A general recommendation for further transparency regarding the subject matter of complaints received by ICANN Contractual Compliance is set forth in Chapter 5: Data-Driven Analysis: Recommendations for Additional Data Collection and Analysis.)

To: ICANN organization

Prerequisite or priority level: Low

Consensus within Team: Yes

Success measures: These recommendations will be successful if they generate data that indicates the magnitude of complaints regarding cyberbullying and misrepresenting governmental affiliations and provide information regarding how registries enforce these safeguards.

Restricted Registration Policies

ICANN implemented safeguards applicable to restricted registration policies. In its Category 2 safeguard advice on restricted registration policies, the GAC noted that restricted access was "an exception to the general rule that the gTLD domain name space is operated in an open

[449] ICANN NGPC, *Category 1 Safeguards*.
[450] Ibid.

manner."[451] ICANN implemented these recommendations by incorporating provisions into the Base Registry Agreement to (1) mandate that registries operate in "a transparent manner consistent with general principles of openness and nondiscrimination by establishing, publishing and adhering to clear registration policies,"[452] and (2) prevent "Generic String" registry operators from restricting registration eligibility to a "single person or entity and/or that person's or entity's 'Affiliates'."[453] The GAC had originally advised to ensure that registration restrictions were appropriate for risks associated with particular gTLDs.[454] Subsequent GAC advice reflects ongoing concerns about whether restricted registration policies could lead to undue preferences.[455]

The ICANN Global surveys indicate that the public expects some restrictions about who can purchase domain names and trusts that restrictions will be enforced.[456] The survey results also indicate that the presence of such restrictions contribute to consumer trust[457] (in Recommendation 13, the review team suggests that ICANN perform such surveys on a regular basis). This perception of trust was consistent with the findings of the DNS Abuse Study, which found a negative correlation between the use of registration restrictions in a gTLD and the level of DNS Security Abuse (i.e., the presence of restrictions contributed to lower levels of abuse). Those registering domain names for malicious purposes were more likely to use an open new gTLD that did not impose strict registration criteria. The review team's recommendations and related rationale are set forth in Recommendation 13, which discusses further data gathering related to registration restrictions.

Public Interest Commitments

Background of Public Interest Commitments

One safeguard mechanism unique to the New gTLD Program was the incorporation of mandatory and voluntary Public Interest Commitments (PICs) into registry applications and, ultimately, registry agreements. The advent of these binding and enforceable contractual obligations stemmed from GAC concerns about how commitments contained in new gTLD applications would be enforced by ICANN. Consequently, in its Toronto Communiqué, the GAC advised that all commitments and objectives set forth in new gTLD applications (or amendments thereto) should be "transformed into binding contract obligation subject to compliance oversight by ICANN."[458] In the Communiqué, the GAC also signaled that it had a variety of public policy concerns about the new gTLD applications, including issues involving:

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[451] ICANN GAC (11 April 2013), *Beijing Communiqué*, Annex 1, pp. 10-11 (Category 2 Safeguards).
[452] ICANN NGPC Resolutions 2013.06.25.NG04 - 2013.06.25.NG05 - 2013.06.205.NG06, "Category 2 Safeguard Advice re Restricted and Exclusive Registry Access," accessed 8 August 2018, https://features.icann.org/category-2-safeguard-advice-re-restricted-and-exclusive-registry-access and "Annex I: Proposed PIC Spec Implemenation of GAC Category 2 Safeguards," accessed 8 August 2018, https://www.icann.org/en/system/files/files/resolutions-new-gtld-annex-i-agenda-2c-25jun13-en.pdf
[453] Ibid.
[454] ICANN GAC (11 April 2013), *Beijing Communiqué*, Annex 1, pp. 10-11 (Category 2 Safeguards).
[455] ICANN GAC (11 April 2013), *Beijing Communiqué*; ICANN GAC (25 June 2014), *London Communiqué*; ICANN (GAC) (15 October 2014), *Los Angeles Communiqué*; ICANN Governmental Advisory Committee (GAC) (24 June 2015), *Buenos Aires Communiqué*. These Communiqués address the implementation of the GAC Category 2 safeguard advice: "The NGPC should reconsider its position, particularly since the GAC has clearly advised that it does not believe the current requirements in Specification 11 actually meet either the spirit or the intent of the GAC's advice" (*London Communiqué*, p.11).
[456] Nielsen, Consumer Research Wave 2 (2016), pp.9, 13, 26-27, 65; Nielsen, Registrant Survey Wave 2 (2016), pp. 14, 18, 30, 68.
[457] Nielsen, Consumer Research (2015), pp. .9, 26; Nielsen, Consumer Research Wave 2 (2016), pp. 9, 13, 26.
[458] ICANN Governmental Advisory Committee (GAC) (17 October 2012), *Toronto Communiqué*, accessed 8 August 2018, https://gac.icann.org/advice/Communiqués/public/gac-45-toronto-Communiqué.pdf

consumer protection; strings related to regulated market sectors such as financial, health, and charities; intellectual property issues; and the relationship between new gTLDs and applicable legislation.

On 5 February 2013, ICANN released a revised draft registry agreement that incorporated PICs for new gTLD applicants.[459] The draft proposed some mandatory requirements, but also allowed for the adoption of voluntary commitments by applicants. The timing of the announcement effectively gave applicants less than 30 days to decide whether to include voluntary PICs in their applications.

Later in 2013, the GAC followed up in Beijing by issuing safeguard advice with mandatory proposals specific to all new gTLDs, regulated gTLDs, and highly-regulated gTLDs.[460] Other stakeholders, such as the Business Constituency and At-Large Advisory Committee, also weighed in on the proposals.[461] Thereafter, ICANN modified the GAC safeguard advice and elected to implement the modified safeguards in the PICs of the Base Registry Agreement for new gTLDs.[462]

On 5 February 2014, the New gTLD Program Committee adopted GAC Category 1 Safeguard Advice, mandating that new registry operators include four mandatory PICs in their registry agreements and additional mandatory PICs for regulated and highly-regulated gTLD operators.[463] Moreover, the Applicant Guidebook included provisions requiring that Community applicants create enforceable provisions designed to ensure conformity to the stated purpose of the TLD.[464]

Adoption Rate of Voluntary PICs

Out of 1,930 new gTLD applications, 513 included voluntary PICs.[465] Seventeen of the 29 highly-regulated gTLD applications included voluntary PICs, which were ultimately included in

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[459] ICANN (5 February 2013), Revised New gTLD Registry Agreement Including Additional Public Interest Commitments Specification, accessed 8 August 2018, https://www.icann.org/resources/pages/base-agreement-2013-02-05-en.

[460] ICANN GAC, *Beijing Communiqué*.

[461] For a brief summary of BC and ALAC correspondence, see ICANN (16 October 2014), *At-Large Advisory Committee ALAC Statement on the Public Interest Commitments,* accessed 8 August 2018, http://atlarge.icann.org/correspondence/correspondence-16oct14-en.htm and ICANN (9 December 2014), *Business Constituency Comment on Safeguards for Category 1 gTLDs,* accessed 8 August 2018, http://www.bizconst.org/assets/docs/positions-statements/bc-comment-on-safeguards-for-category-1-gtlds.pdf.

[462] Crocker, "NGPC Consideration of GAC Category 1 and Category 2 Safeguard Advice," letter to GAC Chair.

[463] Specifically, all new gTLDs had to incorporate four specific safeguards involving: WHOIS verification and documentation and checks and of same; mitigating abusive activity; security checks; and making and handling complaints. See ICANN (25 June 2013), *Annex I NGPC Proposal for Implementation of GAC Safeguards Applicable to All New gTLDs,* accessed 8 August 2018, https://www.icann.org/en/system/files/files/resolutions-new-gtld-annex-i-agenda-2b-25jun13-en.pdf. In addition, regulated new gTLDs had to also incorporate three safeguards regarding compliance with applicable laws and reasonable/appropriate security measures for collection of sensitive financial/health information Furthermore, highly-regulated new gTLDs had to also incorporate five safeguards regarding (1) establishing relationship with relevant regulatory/industry bodies to mitigate risks of illegal activity, (2) requiring registrants to have a single point of contact for complaint reporting and contact info for relevant regulatory bodies, and (3) verification and validation of credentials. (see ICANN (5 February 2014), *Annex 2 - ICANN NGPC Resolution NO. 2014.02.05.NG01*).

[464] See Section 2.18 of the Applicant Handbook. Commitments made under this provision later became part of Specification 12 of the Registry Agreement.

[465] ICANN, "New gTLD Current Application Status," accessed 3 February 2017, https://gtldresult.icann.org/application-result/applicationstatus/viewstatus

their registry agreements.[466] Seventy of the 116 registry agreements[467] for regulated gTLDs included voluntary PICs.[468]

Eleven of the regulated new gTLD registry operators, representing 69 regulated registries, incorporated voluntary PICs related to abuse or acceptable use into their registry agreements.[469] Five of the highly-regulated new gTLD registry operators, representing 17 highly-regulated registries, incorporated voluntary PICs related to abuse into their registry agreements.[470] Each of the top 30 new gTLDs registries that committed to voluntary PICs incorporated anti-abuse provisions.[471]

Implementation of PICs

New gTLD applicants were permitted to incorporate voluntary PICs into Specification 11, Sections 2 and 3 of their applications.[472] Commitments made in Section 2 were incorporated into Specification 11, Section 2 of the registry agreements, whereas those commitments made in Section 3 became part of Section 4 of the registry agreements. Other voluntary commitments took the form of Specification 12: "Community Registration Policies", which predated the advent of voluntary PICs. Section 2.18 of the Base Registry Agreement included in the Applicant Guidebook was intended to incorporate by reference portions of new gTLD applications that related to Community-based policies and procedures as proposed by Community applicants. Later, it was decided to incorporate the full text of those policies and procedures into the Registry Agreement as Specification 12 for transparency and clarity.

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466 Donuts (.surgery, .dentist, .creditcard, .attorney, .lawyer, .doctor, .ltd, .sarl, .gmbh, .bingo, .university, .casino), Minds+Machines (.dds, .abogado), CUNA Performance Resources,LLC (.creditunion), Excellent First Limited (慈善 (xn--30rr7y) – Chinese for "charity"), mySRL GmbH (.srl).

467 Based on data provided by ICANN organization on 21 October 2016. These included Donuts (.games, .clinic, .dental, .healthcare, .claims, .finance, .fund, .investments, .loans, .credit, .insure, .tax, .mortgage, .movie, .software, .video, .accountants, .gratis, .legal, .school , .schule , .toys, .care, .fitness, .capital, .cash, .exchange, .financial, .lease, .market, .money, .degree, .mba, .band, .digital, .associates, .fan, .discount, .sale, .media, .news, .pictures, .show, .theater, .tours, .vet, .engineering, .limited, .capital, .town, .city, .reisen), Big Room, Inc. (.eco), Afilias (.organic), DotHealth (.health), DotHIV gemeinnuetziger e.V. (.hiv), Stable Tone Limited (健康 (xn--nyqy26a) – Chinese for "healthy"), Medistry LLC (.med), Celebrate Broadway, Inc. (.broadway), Famous Four Media (.download, .loan, .accountant), Rightside (.gives, .engineer, .rip, .rehab), Minds+Machines (.law, .fit, .fashion), Foggy Way, LLC (.reise). The National Association of Real Estate Investment Trusts, Inc. (.reit) and European Broadcasting Union (EBU) (.radio) adopted Specification 12 Community Registration Policies.

468 The National Association of Boards of Pharmacy (.Pharmacy) adopted Specification 12 Community Registration Policies.

469 Based on data provided by ICANN organization on 21 October 2016. These included Donuts (.games, .clinic, .dental, .healthcare, .claims, .finance, .fund, .investments, .loans, .credit, .insure, .tax, .mortgage, .movie, .software, .video, .accountants, .gratis, .legal, .school , .schule , .toys, .care, .fitness, .capital, .cash, .exchange, .financial, .lease, .market, .money, .degree, .mba, .band, .digital, .associates, .fan, .discount, .sale, .media, .news, .pictures, .show, .theater, .tours, .vet, .engineering, .limited, .capital, .town, .city, .reisen), Big Room, Inc. (.eco), Afilias (.organic), DotHealth (.health), Stable Tone Limited (健康 (xn--nyqy26a) – Chinese for "healthy"), Medistry LLC (.med), Celebrate Broadway, Inc. (.broadway), Famous Four Media (.download, .loan, .accountant), Rightside (.gives, .engineer, .rip, .rehab), Minds+Machines (.law, .fit, .fashion), Foggy Way, LLC (.reise). The National Association of Real Estate Investment Trusts, Inc. (.reit) and European Broadcasting Union (EBU) (.radio) adopted Specification 12 Community Registration Policies.

470 Donuts (.surgery, .dentist, .creditcard, .attorney, .lawyer, .doctor, .ltd, .sarl, .gmbh, .bingo, .university, .casino), Minds+Machines (.dds, .abogado), CUNA Performance Resources,LLC (.creditunion), Excellent First Limited (慈善 (xn--30rr7y) – Chinese for "charity"), mySRL GmbH (.srl).

471 Based on data available to ICANN organization on 12 September 2016, these included: Famous Four (.win, .loan, .date, .racing, .download, .accountant), Minds+Machines (.vip, .bayern, .work), Donuts (.news, .rocks, .guru, .email, .solutions, .photography, .company, .tips, .center, .city, .world, .expert, .media, .today, .live, .life), Rightside (.pub, .ninja), Dot London Domains Limited (.london), Infibeam Incorporation Limited (.ooo), and Over Corner, LLC/Donuts (.ltd). Of these gTLDs, .accountant , .city, .download, .loan, .news, and .media are gTLDs designated as GAC Category 1 strings (Regulated Sectors/Open Entry Requirements in Multiple jurisdictions. One gTLD, .ltd is designated as a Highly Regulated sector/Closed Entry Requirements in Multiple Jurisdictions.

472 ICANN, "Specification 11 Public Interest Commitments," accessed 3 February 2017, https://newgtlds.icann.org/en/applicants/agb/base-agreement-spec-11-pic-19feb13-en.pdf.

Commitments ultimately adopted into voluntary PICs ranged greatly in topic area and substance. Some of the voluntary PICs used language resembling other obligations,[473] such as those found in the applicant guidebook or elsewhere in the registry agreement, while many articulated unique methods for enforcing acceptable use, avoiding ambiguity,[474] protecting intellectual property rights, or proactively preventing DNS abuse.

For example, of the 30 most popular new gTLDs that ultimately adopted voluntary PICs in their registry agreements, six registry applications included provisions related to pre-existing obligations, such as the Abuse Prevention and Mitigation plan, the Additional Mechanism for Protection of Capital City Names, the Additional Mechanisms to Protect and Reserve IGO Names, the Acceptable Abuse Policy, Rights Protection Mechanisms, and WHOIS Accuracy.[475] The only wholly new voluntary commitment made in these applications was for the creation of an "Abuse Prevention and Mitigation Seal," which requires registrants to incorporate an APM Seal onto their webpages for one-click access by visitors to geographically-tailored abuse reporting resources.[476] These voluntary PICs were ultimately incorporated into Specification 11, Section 4 of the respective registration agreements.[477]

Many voluntary PICs emphasized prohibited uses of domain names, including some also forbade by other obligations, while others created new anti-abuse provisions. For example, some of the voluntary PICs incorporated into registry agreements included attempts to prevent the ability of DNS abusers to rely on privacy and proxy services. One operator focused on registrants by committing to "[l]imit the use of proxy and privacy registration services in cases of malfeasance,"[478] whereas another targeted service providers by promising to "allow domain name proxy or privacy services to be offered only by select registrars and resellers who have demonstrated a commitment to enforcing the accuracy of registrant data and their willingness to cooperate with members of law enforcement to identify users who are engaging in improper or illegal activity."[479] One operator of two highly- regulated domain names included provisions aimed at preventing repeat abuse by voluntarily committing to "block registrants of abusive

473 This may have been due to the fact that the Registry Agreement was not yet finalized when voluntary PICs were submitted, and therefore applicants may not have been aware of pre-existing obligations.
474 Voluntary PICs were incorporated into the .ooo Registry Agreement to protect against confusion with Australia's Triple Zero Emergency Call Service, including the reservation of domain names related to police, fire, and emergency, in order to prohibit domain name registrations that might lead to confusion with these services. See ICANN, ".ooo Registry Agreement," accessed 2 February 2017, https://www.icann.org/resources/pages/registries/registries-agreements-en, Specification 11, Section 4 a-c.
475 Famous Four Media for .win, .loan (regulated), .date, .racing, .download (regulated), .accountant (regulated).
476 ICANN, "Registry Agreement,", Specification 11 Public Interest Commitments. Registry Agreements for .loan, .win. date, ,racing, .download, and .accountant can be found at the Registry Agreement homepage. ICANN, ".loan Application Details," accessed 2 February 2017, https://gtldresult.icann.org/application-result/applicationstatus/applicationdetails/1205; ICANN, ".win Application Details," accessed 2 February 2017, https://gtldresult.icann.org/application-result/applicationstatus/applicationdetails/1201; ICANN, ".date Application Details," accessed 2 February 2017, https://gtldresult.icann.org/application-result/applicationstatus/applicationdetails/1175; ICANN, ".racing Application Details," accessed 2 February 2017, https://gtldresult.icann.org/application-result/applicationstatus/applicationdetails/1227; ICANN, ".download Application Details," accessed 2 February 2017, https://gtldresult.icann.org/applicationstatus/applicationdetails/1217; ICANN, ".accountant Application Details," accessed 2 February 2017, https://gtldresult.icann.org/applicationstatus/applicationdetails/1187.
477 See ICANN, "Registry Agreement," Specification 11, Section 4. Registry Agreements for .loan, .win. date, ,racing, .download, and .accountant. These can be found on the Registry Agreement homepage at https://www.icann.org/resources/pages/registries/registries-agreements-en.
478 ICANN, "Registry Agreement," Specification 11, Section 4 (iii). Registry Agreements for .life, .live, .today, .ltd, .news, .rocks, .guru, .email, .solutions, .photography, .company, .tips, .center, .city, .world, .expert, .media can be found at the Registry Agreement homepage.
479 ICANN, "Registry Agreement," Specification 11, Section 4 c(v). Registry Agreements for .life, .live, .today, .ltd, .news, .rocks, .guru, .email, .solutions, .photography, .company, .tips, .center, .city, .world, .expert, .media can be found at the Registry Agreement homepage.

domain names from further registrations" and "suspend or delete all names associated with a registrant."[480]

Many voluntary PICs included proactive and reactive methods for protecting intellectual property rights claims. Even for generic and open gTLDs, several registry agreements included voluntary PICs to undertake "commercially reasonable efforts" to consult with specific brand owners regarding the use of domain names in relevant commercial applications and to "reserve certain names that likely would interfere with the rights of that entity."[481] The same operator also committed to creating a "Domains Protected Marks List" that "allows rights holders to reserve registration of exact match trademark terms and terms that contain their trademarks across all gTLDs administered by registry operator under certain terms and conditions."[482] Moreover, the operator committed to establishing a "Claims Plus service," which would alert new registrants if they attempted to register a domain name that matched a trademark.[483]

Registrant validation methods also appeared in some voluntary PICs. For example, the operator of a highly-regulated new gTLD included in its voluntary PICs a requirement that registrants hold a valid trademark corresponding to the domain name for which they are registering.[484] Another operator added a commitment to include corporate designation status in the WHOIS records for a highly regulated domain,[485] committing to "provide appropriate jurisdictional authorities with the capability at their option and at no cost to make designations in the WHOIS record indicating the registrant's organizational status in the registrant's jurisdiction."[486]

Both the registrant and consumer surveys commissioned by the CCT demonstrated a positive correlation between restrictions imposed by TLD operators and trust associated with a given TLD.[487] In line with this notion, voluntary PICs provided a mechanism by which new gTLD operators imposed and promoted registration and use restrictions as part of their brand identity, making binding commitments to ICANN as well as to registrants, which, in effect, may have assuaged concerns from the GAC and other Community members. However, two factors could be viewed as undermining this goal: first, the applicant could choose whether or not to incorporate these application representations into the final registration agreement and second, even if the applicant chose to incorporate the representations into its registry agreement as PICs, it could also include a provision permitting it and subsequent operators[488] to withdraw or modify the PICs.[489]

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[480] Minds+Machines (.dds, .abogado)
[481] ICANN, "Registry Agreement," Specification 11, Section 4. Registry Agreements for .life, .live, .today can be found at the Registry Agreement homepage.
[482] ICANN, "Registry Agreement," Specification 11, Section 4 (iii). Registry Agreements for .life, .live, .today. , .ltd, .news, .rocks, .guru, .email, .solutions, .photography, .company, .tips, .center, .city, .world, .expert, .media can be found at the Registry Agreement homepage.
[483] ICANN, "Registry Agreement," Specification 11, Section 4 (iv). Registry Agreements for .life, .live, .today. , .ltd, .news, .rocks, .guru, .email, .solutions, .photography, .company, .tips, .center, .city, .world, .expert, .media can be found at the Registry Agreement homepage.
[484] gTLD Registry Services (.insurance)
[485] ICANN, "Annex 2 - ICANN NGPC Resolution NO.2014.02.05.NG01."
[486] ICANN, "Registry Agreement," Specification 11, Section 4 (e). The Registry Agreement for .ltd can be found at the Registry Agreement homepage.
[487] Nielsen, Consumer Research (2015); Nielsen, Consumer Research Wave 2 (2016). Nielsen, Registrant Survey (2015); Nielsen, Registrant Survey Wave 2 (2016).
[488] .Live was assigned from the original applicant, a Donuts subsidiary, to United LTD.
[489] One registry operator that made several uniquely robust voluntary PICs reserved the right to discontinue any of its voluntary PICs "in the case of a substantial and compelling business need." ICANN, "Registry Agreement," Specification 11, Section 4 (iii). Registry Agreements for .life, .live, .today. , .ltd, .news, .rocks, .guru, .email, .solutions, .photography, .company, .tips, .center, .city, .world, .expert, .media can be found at the Registry Agreement homepage.

Ultimately, applicants had little time to decide which PICs to adopt voluntarily and did not know what the enforcement mechanism would be for the PICs. The combination of a short timeframe—less than 30 days—and uncertainty about the specifics of enforcement may have deterred certain applicants from submitting PICs or impacted which PICs they elected to submit. [490]

Enforcement of PICs

Mandatory and voluntary PICs are enforced by both ICANN Contractual Compliance via its standard complaint procedures and via the Public Interest Commitment Dispute Resolution Process (PICDRP) established on December 19, 2013.[491] The GAC has expressed concerns that the PICDRP is "complex, lengthy, and ambiguous, raising questions as to its effectiveness in addressing serious threats."[492]

To date, only one complaint has been accepted and heard via the PICDRP.[493] After an investigation carried out by Contractual Compliance, it was determined that the registry in question had breached its Specification 11 obligations.[494] Although the complaint alleged that the registry engaged in widespread fraud, ICANN advised the PICDRP Panel to focus its review on the "evaluation of the applicable sections of Specification 11 raised in the Complaint, and on the policies established by the registry operator and its adherence to them."[495] The PICDRP analyzes the operator's adherence to the contractual language and its own policies. Going forward, applicants should be required to state the intentions of their PIC and incorporate these into their Registry Agreements, making them enforceable. At present, there is a gap between the apparent goals of voluntary PICs and the enforceable obligations arising from such PICs. This gap creates a risk that only the letter and not the spirit of a voluntary PIC would be enforceable. In fact, the degree to which voluntary PICs were ultimately effective, implemented, and enforced is also called into question by data from the DNS Abuse Study. Ironically, all six of the top 30 most popular new gTLDs registries that adopted voluntary PICs focused on preventing DNS abuse actually correlated with some of the highest concentrations of DNS Security Abuse of all new gTLDs.[496]

Recommendations

Recommendation 25: To the extent voluntary commitments are permitted in future gTLD application processes, all such commitments made by a gTLD applicant must state their intended goal and be submitted during the application process so that there is sufficient

[490] ICANN, "Frequently Asked Questions: Specification 11 of the Revised New gTLD Registry Agreement: Public Interest Commitments: What is schedule for the Public Interest Commitments (PIC) Specification Proposal?" accessed 8 August 2018, https://newgtlds.icann.org/en/applicants/agb/base-agreement-specs-pic-faqs; ICANN, "Revised New gTLD Registry Agreement Including Additional Public Interest Commitments Specification: Section I: Description, Explanation, and Purpose," accessed 8 August 2018, https://www.icann.org/resources/pages/base-agreement-2013-02-05-en; ICANN, "Posting of Public Interest Commitments (PIC) Specifications Completed," accessed 8 August 2018, https://newgtlds.icann.org/en/announcements-and-media/announcement-06mar13-en.

[491] ICANN, "About Public Interest Commitments Dispute Resolution Procedure (PICDRP)," accessed 8 August 2018, https://www.icann.org/resources/pages/picdrp-2013-10-31-en; ICANN, "About gTLD Compliance Program," accessed 8 August 2018, https://www.icann.org/resources/pages/gtld-2012-02-25-en; GAC, *Singapore Communiqué* (see p. 4 regarding the role of Contractual Compliance in enforcing PICS).

[492] ICANN GAC (2014), "London Communiqué" and ICANN GAC (2015), "Singapore Communiqué."

[493] "Complaint for ICANN Compliance Investigation, Evaluation by PICDRP Standing Panel, and Remedies," 12 October 2016, accessed 8 August 2018, http://domainincite.com/docs/FEEDBACK-PICDRP-Complaint.pdf.

[494] "Notice of Breach of Registry Agreement," 16 March 2017, accessed 8 August 2018, https://www.icann.org/uploads/compliance_notice/attachment/911/serad-to-westerdal-16mar17.pdf.

[495] Ibid., p. 16.

[496] SIDN Labs and the Delft University of Technology, "DNS Abuse in gTLDs".

opportunity for Community review and time to meet the deadlines for Community and limited public interest objections. Furthermore, such requirements should apply to the extent that voluntary commitments may be made after delegation. Such voluntary commitments, including existing voluntary PICs, should be made accessible in an organized, searchable online database to enhance data-driven policy development, Community transparency, compliance, and awareness of variables relevant to DNS abuse trends.

Rationale/related findings: The intended purpose of many existing voluntary commitments, through the form of voluntary PICs, is not readily discernible. This ambiguity stifles the Community's ability to evaluate effectiveness. Moreover, upon submission of a gTLD application, there is no mechanism in place for the Community to ensure that such commitments do not negatively impact the public interest and other aspects of the DNS. Consequently, it is important to the multistakeholder process that such voluntary commitment proposals be made available to the Community with adequate time for assessment and potential objections. Furthermore, once adopted, the current process for analyzing voluntary commitments, drawing comparisons amongst TLDs, measuring effectiveness, and building data points for analysis, is too cumbersome because such commitments are only available in individualized contractual documents embedded on the ICANN website and not available in a categorized, searchable form. Unlike many other aspects of registry agreements, voluntary PICs vary greatly from one TLD to another. Therefore, a publicly accessible, categorized, searchable database of these commitments would enhance data-driven policy development, Community transparency, compliance, awareness of variables relevant to DNS abuse trends, and the overall ability of future review teams to measure their effectiveness.

To: ICANN organization, New gTLD Subsequent Procedures PDP Working Group

Prerequisite or priority level: Prerequisite

Consensus within team: Yes

Success measures: The implementation of this recommendation would be successful if the purpose of any voluntary commitment proposed by a registry operator is clearly stated to describe its intended goal, all parties in the multistakeholder community are given ample time to provide input before such a commitment is adopted into a contract, and any adopted measures are available and easily accessible on the ICANN website in an organized way to empower Community awareness and accountability.

Rights Protection Mechanisms

New Rights Protection Mechanisms (RPMs) were specifically developed in connection with the introduction of the New gTLD Program alongside existing rights protection mechanisms. The CCT Review Team examined whether these RPMs help encourage a safe environment and promote consumer trust in the DNS, and also sought to measure the costs impact of the New gTLD Program to intellectual property owners.

The RPMs themselves are firstly described for completeness before moving on to a consideration of these mechanisms and whether they have helped mitigate the issues around the protection of trademark rights and consumers in this expansion of gTLDs. It was clear that the CCT faced difficulties in obtaining reliable data to make this assessment, turning primarily to the data obtained by ICANN under the CCT Metrics Reporting[497] and the INTA Impact

[497] ICANN, "Competition, Consumer Trust and Consumer Choice (CCT) Metrics Reporting," accessed 10 October 2017, https://www.icann.org/resources/reviews/cct/metrics.

Study,[498] as well as existing data and commentary from the ICANN Rights Protection Mechanisms Review and the Independent Review of Trademark Clearinghouse (TMCH) Services Revised Report.[499]

The review team also noted the parallel work by the ongoing working groups currently looking into RPMs and sought not to duplicate or undermine that work and thus looks forward to the reports from those groups.[500]

Background to the RPMs

Prior to the 2012 gTLD expansion in the number of gTLDs, aside from action taken by courts, the main rights protection mechanism for the DNS was the Uniform Domain Name Dispute Resolution Policy (UDRP), an alternative dispute resolution procedure (adopted by ICANN on 26 August 1999) that applied to all generic top-level domains. However, the existence of issues concerning trademark protection was identified prior to the 2012 gTLD expansion. In particular, the trademark community had voiced concerns that this mechanism alone would be insufficient to adequately protect trademark rights and consumers in an expanded DNS. The ICANN Board therefore resolved that an internationally diverse group of persons with knowledge, expertise, and experience in the fields of trademarks, consumer protection, competition law, and their relationship to the DNS be convened to propose solutions to the overarching issue of trademark protection in connection with the introduction of new gTLDs.[501] This group was named the Implementation Recommendation Team (IRT).

The IRT proposed a new set of RPMs, namely: Uniform Rapid Suspension System (URS); Post-Delegation Dispute Resolution Procedures (PDDRPs); the Trademark Post-Delegation Dispute Resolution Procedure (TM-PDDRP); Registry Restriction Dispute Resolution Procedure (RRDRP); Public Interest Commitments Dispute Resolution Procedure (PICDRP); and the Trademark Clearinghouse (Sunrise and Claims Service).[502]

Description of the RPMs

Uniform Domain Name Dispute Resolution Policy (UDRP)

The Uniform Domain Name Dispute Resolution Policy (UDRP) is an alternative dispute resolution procedure adopted by ICANN on 26 August 1999 that applies to all generic top-level domains (gTLDs), including legacy gTLDs (such as .com, .net, .info) as well as new gTLDs, and certain country code top-level domains (ccTLDs) that have adopted it. To be successful under the UDRP, a complainant must demonstrate with a preponderance of evidence the following three requirements: (1) the domain name registered by the respondent is identical or confusingly similar to a trademark or service mark in which the complainant has

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[498] Nielsen, *INTA New gTLD Cost Impact Study*.
[499] ICANN, *Rights Protection Mechanisms Review: Revised Report* (11 September 2015), accessed 9 August 2018, https://newgtlds.icann.org/en/reviews/cct/rpm; Analysis Group, *Independent Review of Trademark Clearinghouse*.
[500] For example, see ICANN GNSO, "PDP Review of All Rights Protection Mechanisms in All gTLDs."
[501] ICANN, "Adopted Board Resolutions: Mexico: Protections for Trademarks in New gTLDs," 6 March 2009, https://www.icann.org/resources/board-material/resolutions-2009-03-06-en#07.
[502] In addition, string contention processes were introduced for applications for the gTLDs themselves, relating to string confusion, limited public interest, community objection, and legal rights objection. These are discussed in more detail in the Application and Evaluation section below.

rights; (2) the respondent has no rights or legitimate interests in respect of the domain name; and (3) the domain name has been registered and is being used in bad faith.

A procedure under the UDRP takes approximately two months, from the filing of a complaint to a decision. Costs for filing a complaint for one to five domain names under the UDRP range between USD $1,500 (single-member panel) and USD $4,000 (three-member panel), excluding lawyers' fees. The remedies available under the UDRP are limited to the transfer or cancellation of a domain name. No damages are awarded and there is no appeal mechanism in place. A decision is generally implemented after 10 business days following the notification of the decision, unless court proceedings are initiated in a court of competent jurisdiction.

UDRP complaints are filed electronically with an ICANN-approved dispute resolution provider. To date, the following providers have been approved by ICANN: the Asian Domain Name Dispute Resolution Centre (ADNDRC), the National Arbitration Forum (NAF), World Intellectual Property Organization (WIPO), the Czech Arbitration Court Arbitration Center for Internet Disputes (CAC), and the Arab Center for Domain Name Dispute Resolution (ACDR).

Uniform Rapid Suspension System (URS)

The Uniform Rapid Suspension System (URS) is an alternative dispute resolution procedure launched in 2013 that was originally designed for clear-cut cases of cybersquatting in new generic top-level domains (gTLDs), although it has been voluntarily adopted by a handful of ccTLDs and “sponsored” TLDs (such as .pw, .travel, .pro and .cat). The substantive requirements under the URS are similar to those under the UDRP, although the required burden of proof is heavier (“clear and convincing evidence,” as opposed to “preponderance of the evidence”). A complainant must thus prove the following three requirements:

1. That the domain name is identical or confusingly similar to a wordmark:

    a. For which the Complainant holds a valid national or regional registration and that is in current use, or

    b. That has been validated through court proceedings or (c) that is specifically protected by a statute or treaty in effect at the time the URS complaint is filed.[503]

2. That the registrant has no rights or legitimate interests in the domain name.[504]

3. The domain name was registered and is being used in bad faith.[505]

Complaints are limited to 500 words. The URS is intended for the most clear-cut cases of cybersquatting, so it is generally not appropriate for domain name disputes involving more complex, genuine contestable issues (such as fair use). The only remedy available under the URS is the suspension of the domain name, as opposed to the transfer or cancellation (which are remedies available under the UDRP).

Under the URS, a domain name may be suspended in as quickly as three weeks from the filing of a complaint. In the event of a favorable decision for the complainant, the domain name

[503] ICANN, “Uniform Rapid Suspension,” Section 1.2.6.1
[504] Ibid., Section 1.2.6.2
[505] Ibid., Section 1.2.6.3

is suspended for the remainder of the registration period (which may be extended for an additional year). The website associated with the domain name in question will display a banner stating “This Site is Suspended,” but the WHOIS record for the domain name will continue to display the information of the original registrant (except for the redirection of the name servers). If the decision in favor of the complainant was a judgment by default, the registrant may seek a *de novo* review by filing a response up to six months after the notice of default (which may be extended by six additional months upon request by the registrant). In the event the decision is denied, the URS provides for an appeal mechanism based on the existing record.

Costs for filing a URS complaint are around USD $375 (for 1 to 14 domain names).

Only three providers have so far been accredited to provide URS services: the Asian Domain Name Dispute Resolution Centre (ADNDRC), the National Arbitration Forum (NAF) and MSFD Srl.[506]

Post-Delegation Dispute Resolution Procedures (PDDRP)

Post-Delegation Dispute Resolution Procedures are RPMs that have been designed to provide relief against a new gTLD registry operator's alleged conduct (as opposed to a domain name registrant or registrar). There are three types of PDDRP:

1. **The Trademark Post-Delegation Dispute Resolution Procedure (TM-PDDRP)** allows a trademark holder to file a complaint against the registry operator for its involvement in trademark infringement either at the top- or second-level of a new gTLD.

   At the top level, a complainant must demonstrate by “clear and convincing evidence” that “the registry operator’s affirmative conduct in its operation or use of a new gTLD that is identical or confusingly similar to the complainant’s mark, causes or materially contributes to the gTLD doing one of the following: (1) taking unfair advantage of the distinctive character or the reputation of the complainant's mark; or (2) impairing the distinctive character or the reputation of the complainant's mark; or (3) creating a likelihood of confusion with the complainant's mark.” [507] (paragraph 6.1 of the TM-PDDRP).

   At the second-level, complainants are required to demonstrate by “clear and convincing evidence” that “through the registry operator’s affirmative conduct: (a) there is a substantial pattern or practice of specific bad faith intent by the registry operator to profit from the sale of trademark infringing domain names, and (b) the registry operator’s bad faith intent to profit from the systematic registration of domain names within the gTLD that are identical or confusingly similar to the complainant’s mark, which: (i) takes unfair advantage of the distinctive character or the reputation of the complainant's trade mark, (ii) impairs the distinctive character or the reputation of the complainant's trade mark, or (iii) creates a likelihood of confusion with the complainant's trade mark”.

   If the registry operator is found liable by the expert panel, a number of remedies may be recommended, including remedial measures to prevent future infringing registrations; suspension of accepting new domain name registrations in the gTLDs at

[506] ICANN, “Uniform Rapid Suspension System (URS),” accessed 9 August 2018, https://newgtlds.icann.org/en/applicants/urs
[507] ICANN, *Trademark Post-Delegation Dispute Resolution Procedure (Trademark PDDRP)*,” 4 June 2012, accessed 9 August 2018, https://newgtlds.icann.org/en/program-status/pddrp, Section 6.1.

stake until the violation has ceased or for a set period of time prescribed by the panel; or termination of the Registry Agreement in cases where the registry operator has acted "with malice".[508] Ultimately, ICANN has the authority to impose the remedies it deems appropriate, if any.

To date, ICANN has appointed the following dispute resolution providers to resolve disputes under the TM-PPDRP: the Asian Domain Name Dispute Resolution Centre (ADNDRC), the National Arbitration Forum (NAF), and World Intellectual Property Organization (WIPO).[509]

2. **The Registry Restriction Dispute Resolution Procedure (RRDRP)** allows an established institution to file a complaint against a community-based new gTLD registry operator for failing to meet registration restrictions set out in its Registry Agreement. For a claim to be successful, a complainant must demonstrate by "preponderance of the evidence" that: "(i) the community invoked by the objector is a defined community; (ii) there is a strong association between the community invoked and the gTLD label or string; (iii) the TLD operator violated the terms of the community-based restrictions in its agreement; (iv) there is a measurable harm to the Complainant and the community named by the objector."[510] The remedies recommended by the expert panel are similar to those prescribed under the TM-PDDRP. Ultimately, ICANN has the authority to decide whether to impose such remedies.

3. **The Public Interest Commitments Dispute Resolution Procedure (PICDRP)** allows any person or entity (the "reporter") to file a complaint against a new gTLD registry operator for failure to comply with the Public Interest Commitment(s) in Specification 11 of its Registry Agreement. The Reporter must file a "PIC Report" with ICANN by completing an online form. The PIC Report must (1) identify which PIC(s) form the basis for the report; (2) state the grounds for non-compliance with one or more PICs and provide supporting evidence; and (3) state how the reporter has been harmed by the alleged noncompliance.[511] ICANN may undertake a compliance investigation or invoke a "Standing Panel." If the registry operator is found to be not in compliance with its PIC, it will have 30 days to resolve its noncompliance. If the registry operator fails to resolve the noncompliance issues, ICANN will determine the appropriate remedies.

Trademark Clearinghouse (TMCH)

The Trademark Clearinghouse (TMCH) is a centralized database of verified trademarks from around the world mandated by ICANN to provide protection to trademark holders under the new gTLDs. The TMCH performs several important functions, including authenticating and verifying trademark records, storing such trademark records in a database, and providing this information to new gTLD registries and registrars. The data contained in the TMCH supports RPMs such as Sunrise Services (which provide an opportunity to trademark holders to register domain names corresponding to their trademarks prior to general availability) and the Trademark Claims services (a notification service to domain name registrants and trademark holders of potentially infringing domain name registrations). Registration of a trademark in the TMCH is required to be able to participate not only in the Sunrise Period and Trademark

[508] Ibid., Section 18.
[509] ICANN, "Post-Delegation Dispute Resolution Procedures (PDDRP)," accessed 9 August 2018, https://newgtlds.icann.org/en/program-status/pddrp
[510] ICANN, *Registry Restriction Dispute Resolution Procedure (RRDRP)*, 4 June 2012, accessed 9 August 2018, https://newgtlds.icann.org/en/program-status/pddrp, Section 6.
[511] ICANN, *Public Interest Commitment Dispute Resolution Procedure*," 19 December 2013, accessed 9 August 2018, https://newgtlds.icann.org/en/program-status/pddrp

Claims services,[512] but also in other registry-specific RPMs, such as domain name blocking mechanisms (for instance, Donuts' "Domain Protected Marks List"). Registration of a trademark is optional for other RPMs, such as the URS. The TMCH is therefore an important tool to protect trademark rights under the New gTLD Program.

Consideration of these Mechanisms and Whether they have Helped Mitigate the Issues around the Protection of Trademark Rights and Consumers in this Expansion of gTLDs

The review team looked at whether these mechanisms have helped to mitigate the issues around the protection of trademark rights and consumers in this expansion of gTLDs, and have sought to obtain data to help assess the impact of the New gTLD Program on the cost and effort required to protect trademarks in the DNS.

The review team turned primarily to the data obtained by ICANN under the CCT Metrics Reporting page and the INTA Impact Study,[513] which, it was hoped, would provide additional data on the cost impact of new gTLDs on brand owners as well as existing data and commentary from the ICANN Rights Protection Mechanisms Review.[514] The Team also noted the parallel work by the ongoing GNSO working groups currently looking into RPMs, and sought not to duplicate or undermine their efforts.[515] The Team looks forward to the reports from those groups.

INTA Impact Study

The results of the International Trademark Association (INTA) Impact Study contain important information for the Community to consider regarding the impact of ICANN's New gTLD Program on the cost and effort required to protect trademarks in the DNS. INTA members and intellectual property owners have expressed concern on multiple occasions about the new gTLDs on the basis that such expansion would likely create additional and increased costs in enforcing intellectual property rights. The survey sought to assess what additional costs and efforts have been required to protect trademarks in the DNS.

The INTA is a global organization of 6,600 trademark owners and professionals from over 190 countries. As such, it was well-placed to respond to the Nielsen survey, which was informed by the review team's input. INTA members were asked to estimate all costs associated with protecting their trademarks in the DNS over a two-year period (2015 and 2016). Their cost estimates include:

- Both in-house and outside legal fees.
- Filing fees.
- Investigation costs.
- The total costs, including benefits, of personnel responsible for these activities.

[512] ICANN, "TLD Startup Information," accessed 9 August 2018, https://newgtlds.icann.org/en/program-status/sunrise-claims-periods
[513] Nielsen *(April 2017), INTA New gTLD Cost Impact Survey.*
[514] ICANN, *Rights Protection Mechanisms Review: Revised Report.*
[515] ICANN GNSO, "PDP Review of All Rights Protection Mechanisms in All gTLDs."

Respondents who completed the survey reported that compiling the data necessary to properly respond was a significant task. There were 33 respondents in total, including one not-for-profit. The response rate for the survey was actually above the norm for similar surveys,[516] especially considering the level of required effort to complete what respondents indicated was an onerous questionnaire. However, the sample size of completed surveys is small from a statistical standpoint and requires some caution in its interpretation. Nevertheless, the results are indicative of key themes and trends.[517]

Key Takeaways from the Impact Study:

1. While one of the goals of the New gTLD Program was to increase choice for brand owners, choice does not seem to be a prime consideration for why some brand owners elect to register in new gTLDs. Rather, the principal reason why the overwhelming majority (90 percent) of trademark owners who responded the survey are registering domain names in new gTLDs is for defensive purposes, i.e. to prevent someone else from registering.

2. Domain names registered by brand owners in new gTLDs are commonly parked and not creating value other than preventing unauthorized use by others.

3. According to the respondents, the New gTLD Program has increased the overall costs of trademark defense, with Internet monitoring and diversion actions being the largest expenditure. These costs have impacted small and big companies alike, with the most relevant cost-driving factor being the number of brands.

4. Respondents reported that the average total enforcement costs related to TLDs generally (both legacy and new) per company is $150,000 per year. Having said this, the costs varied widely among the survey respondents.[518] This is something that would benefit from further investigation in future surveys.

5. Regarding disputes, more than 75 percent of cases brought now involve privacy and proxy services and close to two-thirds encounter some level of inaccurate or incomplete WHOIS information.

6. While the new gTLDs account for one-sixth of the enforcement costs incurred by the survey respondents, they do not yet represent one-sixth of domain name registrations. In other words, the cost of enforcement actions for the survey respondents in new gTLDs is approximately 18 percent of overall TLD enforcement costs while the total numbers of new gTLD registrations compared to all TLDs is 10 percent at the time the Impact Study was conducted.[519] This data indicates that for the respondents, there is a disproportionate cost associated with new gTLD enforcement actions compared to overall enforcement actions. This provides further indication that there may be proportionately more trademark infringement in new gTLDs than in the legacy gTLDs.[520]

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[516] This statement is based on Nielsen's general experience with samples of customers or members.

[517] According to Nielsen, the total sample is sufficient to give directional information about those trends, but any statistical significance testing would be subject to a high margin of error.

[518] The range of total costs reported ran from zero to $5.2 million.

[519] Nielsen, *New gTLD Cost Impact Survey* . The average costs for all TLDs for 2 years = $292,000. The average costs for new gTLDs for 2 years = $53,690 (approximately 18 percent).

[520] Ibid,. slides 10 and 27. Nielsen explains that the figures for internet monitoring being one of the main costs should be qualified; these costs are general overall costs and not specific to new gTLDs. An entity will pay for monitoring across all TLDs. There is likely to be some incremental increase in monitoring costs given additional new gTLDs being in scope, and indeed there is anecdotal evidence that more brands have started monitoring

7. RPMs are generally considered to have been helpful in mitigating the risks anticipated with new gTLDs. In response to the question, "Please tell us why you feel the Rights Protection Mechanisms listed above have or have not mitigated the risks involved with new TLDs," the responses were varied, but provided a useful insight into the mindset of brand owners.[521] Two-thirds of the respondents surveyed feel that the UDRP and required Sunrise periods have helped mitigate risks, with 90 percent of respondents registering in new gTLDs during a Sunrise period. Of those who think that RPMs are effective, the ranking is as follows:

    a. Sunrise: 79 percent
    b. UDRP: 73 percent
    c. Claims: 66 percent
    d. URS: 49 percent
    e. PDDRP/RRDRP/PICDRP: 27 percent

There is nevertheless evidence that brand owners are reluctant purchasers of Sunrise registrations and many see it as a cost that is overly expensive:

> "Sunrise Periods have quickly become more a money-making product than a protective tool."[522]
>
> "Sunrise periods have only a minor effect because many registries target brand owners with discriminatory pricing while at the same time many offer the same domain name to non-brands at a much cheaper price."[523]
>
> "The .top registry raised the Sunrise fee by $30,000 for [company].top. We refused to register."[524]

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since the introduction of new gTLDs. However, since these costs were not broken down in the questionnaire, monitoring was basically treated as a sunk cost. It would thus be reasonable to assume that these costs have gone up rather than down. Thus, the total costs are likely to be above 18 percent.

[521] Some examples are summarized here. Respondents indicated that: 1) While the Sunrise Period allows trademark owners to purchase a domain incorporating a key trademark before anyone else can, Sunrise claims often come with a major cost to the brand owner; 2) Claims notices came too late (the name was already registered before the respondent was notified), and they do not prevent squatters from registering domain names despite notice of existing rights, which means that the same problems as exist in the legacy TLDs persist in the new gTLDs after registration has occurred; 3) the URS, although faster than the UDRP, has narrow criteria for action, a high burden of proof compared to the (more expensive) UDRP, requires multiple domains to make a claim, the name cannot be transferred as a result of adjudication, and it's costly to suspend—as opposed to transfer—the domain in dispute; 4) the Post-Delegation Dispute Resolution Procedure criteria are so narrow that the circumstances to invoke it are extremely unlikely to arise, and the procedure is onerous to carry out (it requires joint action on the part of various trademark holders to be effective); 5) the UDRP has well-defined criteria, has helped to provide a body of helpful case law, provided the ability to transfer a domain if a UDRP dispute was successful on the part of the claimant, but the price of filing a claim was a deterrent for all but the most egregious cases, and most claims were filed against .com, where the most infringing domains are found [according to one respondent]; 6) the Sunrise and trademark claim periods are too short, and companies need to implement additional measures to monitor their portfolio in numerous gTLDs; 7) the PDDRP, RRDRP, and PICDRP can be effective, but are not well understood as available options, leading them to have minor impacts on mitigating risks, and defensive registration is the only cost-effective recourse (although respondents indicated that this could be costly as well, just less so than filing URS or UDRP claims); 8) the TMCH at least provides a mechanism for trademark owners to register domains with their marks before they are registered by cybersquatters, but the claims procedure works only to a minor extent because it only captures filings for a very limited period of time, and a "blocking procedure" for trademarks would greatly mitigate the risks, Respondents in general indicated that the above are good, but incomplete mechanisms. One respondent provided a succinct summary: "The mechanisms [other than the URS, UDRP, and TMCH]… do not seem that effective and require a significant outlay of resources from trademark owners. We've not had the opportunity to use. Registrants are willing to risk a small registration fee to use a domain name with a famous trademark in it." (p. 59).

[522] Nielsen*, New gTLD Cost Impact Survey*, p. 52.

[523] Ibid. p. 59.

[524] Ibid. p. 50.

1. TMCH registrations are used by a majority of the respondents. Looking at the data, the majority of respondents (approximately 9 in 10) registered at least one trademark in the TMCH, with 6 in 10 registering 1-10. With regard to associated costs, these vary considerably across the respondents, ranging from less than USD $1,000 to USD $48,000, with the average being approximately USD $7,700.

2. The introduction of the URS process has provided an alternative to the UDRP, but it is less used. The most cited reasons for why it is less popular include the inability to transfer the domain name after a successful decision and the higher burden of proof.

3. With regard to premium pricing, three-quarters of the respondents evaluate premium pricing for domain names on a case-by-case basis, and two-thirds of their domain name registration decisions have been affected by premium pricing, with .sucks being mentioned the most as a TLD that respondents paid premium pricing for. However, 15 percent of respondents refused to pay premium pricing at all.

ICANN Competition, Consumer Trust, and Consumer Choice (CCT) Metrics Reporting

Numbers of Cases Filed (UDRP and URS)

It is clear from the data obtained by ICANN across all domain name dispute resolution providers that the total cases filed (UDRP and URS combined) from 2013-2016 increased considerably since the introduction of new gTLDs.[525] Concerning the UDRP, there has been a fairly substantial increase in the number of UDRP complaints filed, while the use of the URS has been more limited and has seen a slight decline in cases filed since its introduction and first use in new gTLDs in 2014.

The first new gTLDs entered the root in 2013,[526] but it was not until March 2014 that the first UDRP case was filed involving a new gTLD.[527] The first URS decision was filed in April 2014.[528] Taking into account the previous year without any new gTLD-related disputes as the baseline, there were a total of 3,371 disputes decided, all of which were UDRPs and all of which concerned only legacy gTLDs.

525 ICANN, "Competition, Consumer Trust and Consumer Choice (CCT) Metrics Reporting: Rights Protection Mechanisms," accessed 10 October 2017, https://www.icann.org/resources/pages/cct-metrics-rpm-2016-06-27-en#1.12.
526 ICANN, "First New gTLD Registries Receive Tokens for Root Zone Management System," accessed 10 October 2017, https://newgtlds.icann.org/en/announcements-and-media/announcement-22oct13-en.
527 WIPO, "Arbitration and Mediation Center Administrative Panel Decision: Canyon Bicycles GmbH v. Domains By Proxy, LLC / Rob van Eck Case No. D2014-0206," accessed 9 August 2018, http://www.wipo.int/amc/en/domains/search/text.jsp?case=D2014-0206.
528 ADR, "National Arbitration Forum URS Appeal Determination: Aeropostale Procurement Company, Inc. v. Michael Kinsey et al. Claim Number: FA1403001550933," accessed 9 August 2018, http://www.adrforum.com/Domaindecisions/1550933A.htm.

Table 14: Number of Cases Filed with UDRP and URS Providers through 2017[529]

	Total Split UDRP and URS	Total Cases Combined
2013	3,371 (UDRP)	3,371
2014	4,056 (UDRP) & 231 (URS)	4,287
2015	4,130 (UDRP) & 213 (URS)	4,343
2016	4,371 (UDRP) & 222 (URS)	4,590
2017	3,095 (UDRP) & 126 (URS)	3,221

In 2014, total cases (UDRP and URS combined) rose to 4,287, representing a 27 percent increase. In 2015, the total cases increased slightly again to 4,343 (1.3 percent higher than 2014), and in 2016, there was a further 5.7 percent increase, taking the total cases to 4,590. In 2017, total cases decreased to 3,221 (almost 30% lower than 2016).Thus, comparing total cases in 2013, the year before the first new gTLD dispute, and in 2016, we have a considerable increase of 36 percent in cases filed across all providers. However, this growing trend changed last year, with significantly fewer cases in 2017.

If only UDRP cases are considered, one sees a 20 percent rise from 2013 to 2014, a further 2 percent rise from 2014 to 2015, a further 5.8 percent rise from 2015 to 2016, and a 29.8 percent decrease from 2016 to 2017. Examining URS cases alone, the first thing to note is that their popularity as an RPM is and remains low, with 231 cases in 2014, 213 cases in 2015, and 222 cases in 2016, and 126 cases in 2017. Thus, around only five percent of the total cases are filed under the URS. In addition, there appears to be no significant rise in the number of complaints filed year on year. There was a decrease in URS cases filed when comparing 2016 to 2015, and even in 2017, the total number of URS cases filed remained lower than in 2014, the first year of operation for new gTLDs. Thus, this leads one to question whether URS is meeting its potential as a useful RPM.

It is important to note that the number of UDRP and URS cases filed reflect only part of the costs incurred by trademark owners in defending their brands. Significant enforcement costs may have been incurred in the form of defensive registrations, blocking, monitoring, cease and desist letters, and court action (although the review team did not have data to evaluate this). The INTA Impact Study, however, does provide some insight.

Complaints to ICANN Concerning Implementation of UDRP and URS Decisions

ICANN's role is to ensure that registrars and registries comply with the UDRP procedures and rules as well as those of the URS.

For example, a UDRP provider may file a UDRP complaint that a registrar did not lock a domain subject to a UDRP or respond to the provider's verification request in a timely manner. The complainant may then submit a complaint to ICANN if the registrar fails to implement a UDRP decision in a timely manner.

529 "CCT Metrics: Rights Protection Mechanisms: Metric 1.9.a: UDRP and URS Cases Filed Against Registrants," accessed 8 August 2018, https://www.icann.org/resources/pages/cct-metrics-rpm-2016-06-27-en#1.9.a

With regard to the URS, for example, a registry operator must also lock in a timely manner, and if applicable, suspend the relevant domain name in accordance with the URS determination and the URS procedure and rules. The prevailing complainant in the URS proceeding, and the URS provider, may submit a URS complaint regarding such alleged violations to ICANN via the URS compliance webform.[530]

Looking at the number of complaints made to ICANN concerning the implementation of UDRP and URS decisions,[531] the number of complaints concerning the UDRP declined between 2012 and 2014 by some 65 percent and, since then, has remained fairly static at between 250 and 227 complaints annually. URS complaints were relatively high in 2014, the first year in which the URS was available for new gTLDs, but from 2015 through 2017, the number of complaints has roughly halved.

Table 15: Total UDRP/URS Complaints to ICANN[532]

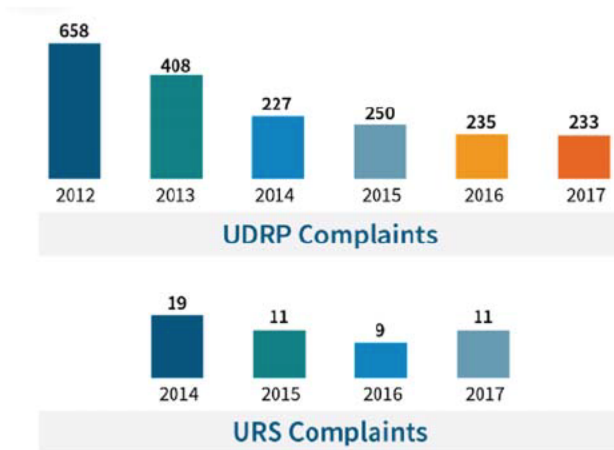
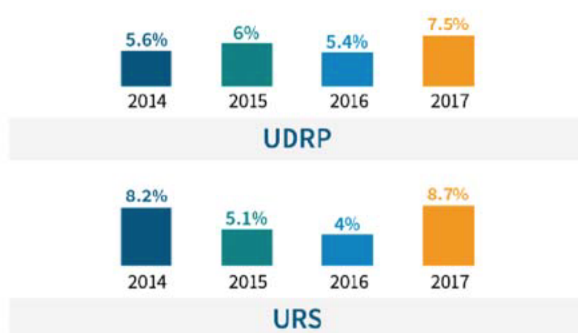


Table 16: Percent of Complaints to ICANN in each RPM Compared to Total Number of Domain Name Decisions in each RPM



[530] ICANN, "Uniform Rapid Suspension (URS) Form," accessed 9 August 2018, https://forms.icann.org/en/resources/compliance/registries/urs/form

[531] It should be noted that complaints regarding the merits of the decision are outside of ICANN's contractual scope.

[532] ICANN, "Competition, Consumer Trust and Consumer Choice (CCT) Metrics Reporting: Rights Protection Mechanisms: Metric 1.9.b: Combined UDRP and URS Complaints to ICANN," accessed 9 August 2018, https://www.icann.org/resources/pages/cct-metrics-rpm-2016-06-27-en#1.9.b.

In 2014, the year that the URS was introduced, there was a relatively high number of complaints to ICANN. When compared to the total number of URS complaints that year, the level was at roughly 8 percent. This compares to the complaint level for the UDRP in 2014 of 5.6 percent. The higher level of implementation complaints concerning the URS compared to the UDRP may have been down due to a number of factors including its relative newness, the complexity of the process, and recent adoption by registrars.

Moving through 2015 and 2016, the relative number of complaints for the URS decreases, and in 2016, the relative number of URS related complaints compared to the UDRP was actually less, at 4 percent compared to 5.4 percent for the UDRP. It may be that over time, the complexities of the URS had been understood by registrars, registries, and end-users.

Trademark Clearing House (TMCH)

ICANN commissioned Analysis Group to undertake an independent review of TMCH services based on the Governmental Advisory Committee ("GAC") recommendation in May 2011 that a comprehensive, post-launch review be performed.[533] The review sought to assess the strengths and weaknesses of the TMCH services in light of that recommendation and was based on an analysis of TMCH and third-party data sources, as well as interviews and surveys of TMCH stakeholders. The 2017 revised report[534] incorporated public comments into the draft report published on 25 July 2016.[535]

According to the report, the data obtained allowed for meaningful observations to be made about the use of the TMCH services studied. The research did not provide quantifiable information on the costs and benefits associated with the present state of the TMCH services. Indeed, the potential costs and benefits of expanding or altering the way the services function needed a concrete cost-benefit analysis, which was outside the scope of the Analysis Group report.

Summary of Findings

The report found that extending the Claims Service period, or expanding the matching criteria used for triggering the Claims Service notifications, may actually be of limited benefit to trademark holders. Indeed, such an extension would potentially be associated with increased costs to other stakeholder groups such as registries, registrars, and non-trademark-holder domain registrants. Data limitations prevented definitive conclusions being drawn.

The report noted that given the fact that a cost-benefit analysis had not been performed, a potential extension of the Claims Service or expansion of the matching criteria should consider the inevitable tradeoffs felt by different stakeholder groups. Indeed, the report stressed that when evaluating whether the Claims Service period should be extended, the number of potential registrations affected by the extension needs to be assessed. The effectiveness of the Claims Service notifications depends on how many registration attempts are being made; if there are few registration attempts, then there are fewer potentially infringing registrations being made.

[533] ICANN GAC, (26 May 2011), *GAC comments on the Applicant Guidebook (April 15th, 2011 version)*, accessed 9 August 2018, https://archive.icann.org/en/topics/new-gtlds/gac-comments-new-gtlds-26may11-en.pdf.
[534] Analysis Group (2017), *Independent Review of Trademark Clearinghouse (TMCH) Services Revised Report* (2017).
[535] Analysis Group (July 2016), *Independent Review of Trademark Clearinghouse (TMCH) Services Draft Report*, accessed 9 August 2018, https://newgtlds.icann.org/en/reviews/tmch/draft-services-review-25jul16-en.pdf.

The report found that registration activity declined after the 90-day Claims Service period ends, thus any additional months added to the Claims Service period will likely have diminishing value.

The report also found that according to the data, trademark holders appeared less concerned about variations of trademark strings and thus felt that an expansion of the matching criteria may in fact bring little benefit to trademark holders. On the contrary, the potential harm towards non-trademark holder domain registrants could increase. The latter could find themselves deterred from registering trademark string variations that would not be considered trademark infringement.

Finally, the report considered the Sunrise period and the questionnaire feedback. It seems that while trademark holders felt that there is value in the Sunrise periods, and many do use them, having recorded their marks in the TMCH, many trademark holders in fact do not utilize the Sunrise period. The report concluded that this could be due to the expense of Sunrise domain name registrations or because other protections of the TMCH service, such as the Claims Service, reduce the need for trademark holders to utilize Sunrise registrations. The CCT Review Team feels that it is also likely due to the sheer number of new gTLDs. Defensive registrations, when multiplied across many new gTLDs, become cost prohibitive and few brand owners are willing to engage in the same way with large-scale defensive domain name registrations. The review team questioned whether the extra expense of the TMCH was actually bringing value, and not acting as a deterrent itself as an additional cost for brand owners.

Trademark Post-Delegation Dispute Resolution Procedure (TM-PDDRP)

ICANN Contractual Compliance has received no complaints regarding a registry operator's non-compliance with the TM-PDDRP. However, it should be noted that there is currently a GNSO Working Group conducting a Policy Development Process (PDP) to review all RPMs in all gTLDs.[536] The Working Group is exploring possible impediments to implementation of the TM-PDDRP since there are no known PDDRP filings with arbitration providers to date.

Registry Restrictions Dispute Resolutions Procedure (RRDRP) Decisions

The RRDRP is intended to address circumstances in which a community-based new gTLD registry operator deviates from the registration restrictions outlined in its Registry Agreement. As of 17 July 2018, there have been no RRDRP cases.

Share of Sunrise Registrations and Domain Blocks to Total Registrations in Each TLD

As of 17 July 2018, the only available data on the number of Sunrise registrations compared to total registrations in new gTLDs are from ICANN. According to ICANN, there are no consolidated data available regarding commercial blocking services offered by registries.

Conclusion

The data above points to increasing numbers of disputes since the introduction of new gTLDs, with disputes rising year-on-year after their introduction. Indeed, in 2016, the total number

[536] ICANN GNSO, "PDP Review of All Rights Protection Mechanisms in All gTLDs."

cases filed (UDRP and URS combined) was 36 percent higher than in 2013, when the first new gTLD entered the root zone (25 percent higher if the average number of cases during 2012 and 2013 is used as the baseline).

However, a rising number of domain name disputes is not in itself surprising, with the increased number of domain name registrations worldwide continuing to increase as new gTLDs are introduced into the root and more registrations occur.

A more pertinent question is whether there is proportionately more trademark infringement in new gTLDs than in legacy TLDs. This is a more difficult issue, as there are many factors involved in assessing trademark infringement, and few data are available. The INTA Impact Study is a good example of the complexities of obtaining such information.

In addition to the UDRP and URS, trademark owners also use a variety of other means to deal with abusive domain name registrations, such as court action and cease and desist letters, which are not tracked centrally, nor are the costs associated with such actions available. It is not within ICANN's remit to track or attempt to track such data either. However, ICANN does collect data on the usage of the dispute resolution mechanisms, the UDRP, and the URS, across all domain name dispute providers. This data shows that domain name disputes are rising. ICANN also provides data on the number of new gTLD registrations compared to total gTLD registrations (including both legacy and new gTLDs). This data also shows that gTLD domain name registrations are rising. However, ICANN's metrics do not show a breakdown of the relative use of UDRPs, i.e. the use of UDRPs in new gTLDs as opposed to legacy TLDs.

Thus, in order to attempt to answer the question of whether there is proportionately more trademark infringement in new gTLDs than in legacy TLDs, publicly available data from WIPO, the major dispute resolution provider, are a useful resource.

The WIPO data for 2017 show that cybersquatting disputes relating to new gTLDs rose to 12 percent of WIPO's 2017 caseload.[537] Among these, the new gTLDs .STORE, .SITE and .ONLINE were the most common new gTLDs involved in such disputes.[538] In 2017, disputes in the legacy gTLDs .com, .net. .org. and .info accounted for more than 80 percent of WIPO's domain name caseload, and just over 15 percent of it involved new gTLDs.[539]
ICANN statistics on domain name registrations for March 2018 show 196,450,282 gTLD registrations and 23,348,286 new gTLD registrations.[540] Thus, new gTLDs account for 12 percent of the registration volume of gTLDs. This data provides a good indication that there is proportionately more trademark infringement presently in new gTLDs than in legacy TLDs.

Based on the analysis above, the review team cannot definitively conclude whether the URS is a valuable RPM given its low usage compared to the UDRP. The fact that the TM-PDDRP and RRDRP have not been invoked to date may on the one hand also bring their existence into question, but may equally underline that their mere existence is acting as a deterrent.

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[537] WIPO, "WIPO Cybersquatting Cases Reach New Record in 2017," 14 March 2018, accessed 9 August 2018, http://www.wipo.int/pressroom/en/articles/2018/article_0001.html
[538] Ibid.
[539] WIPO (2018), *Total Number of WIPO Domain Name Cases and Domain Names by Year*, accessed 9 August 2018, http://www.wipo.int/export/sites/www/pressroom/en/documents/pr_2018_815_annexes.pdf#annex1, Annex 2.
[540] ICANN, "Monthly Transaction Reports," accessed 9 August 2018, https://www.icann.org/resources/pages/registry-reports

Recommendations

Recommendation 26: A study to ascertain the impact of the New gTLD Program on the costs required to protect trademarks in the expanded DNS marketplace should be repeated at regular intervals to see the evolution of those costs over time. The CCT Review Team recommends that the next study be completed within 18 months after issuance of the CCT final report, and that subsequent studies be repeated every 18 to 24 months.

The CCT Review Team acknowledges that the Nielsen survey of INTA members in 2017 was intended to provide insight into this topic but yielded a lower response rate than anticipated. The Team recommends a more user-friendly and perhaps shorter survey to help ensure a higher and more statistically representative response rate.

Rationale/related findings: Costs will likely vary considerably over time as new gTLDs are delegated and registration levels evolve. Repeating the Impact Study would enable a comparison over time.

To: ICANN organization

Prerequisite or priority level: High

Consensus within team: Yes

Details: The evolution of costs required to protect trademarks over time will provide a more precise picture of the effectiveness of RPMs generally in the DNS.

Success measures: The results of future impact studies should provide significantly more data to the relevant working groups currently looking into RPMs and the TMCH, as well as to future working groups, thereby benefiting the Community as a whole. Recommendations would then also be able to evolve appropriately in future CCT Review Teams.

Recommendation 27: Since the Review Team's initial draft recommendation, the PDP Review of All RPMs in All gTLDs Working Group started reviewing the URS in detail and, at the time of writing, their review is ongoing. Given this ongoing review, the Review Team recommends that the Working Group continue its review of the URS and also looks into the interoperability of the URS with the UDRP.

The review team encountered a lack of data for complete analysis. The PDP Review of All RPMs appears to also be encountering this issue and this may well prevent it from drawing firm conclusions. If modifications are not easily identified, then the CCT Review Team recommends continued monitoring until more data is collected and made available for review at a later date.

Rationale/related findings: It is important for all gTLDs to have a level playing field, so the applicability of the URS should be considered for all gTLDs.

To: Generic Names Supporting Organization

Prerequisite or priority level: Prerequisite

Consensus within team: Yes

Details: A review of the URS should explore potential modifications, such as: (1) whether there should be a transfer option with the URS rather than only suspension; (2) whether two full systems should continue to operate (namely the UDPR and URS in parallel), considering their relative merits; (3) the potential applicability of the URS to all gTLDs; and (4) whether the availability of different mechanisms applicable in different gTLDs may be a source of confusion to consumers and rights holders.

Success measures: Based on the findings, a clear overview of the suitability of the URS and whether it is functioning effectively in the way originally intended.

Recommendation 28: A cost-benefit analysis and review of the TMCH and its scope should be carried out to provide quantifiable information on the costs and benefits associated with the present state of the TMCH services, and thus to allow for an effective policy review. Since the review team's initial draft recommendation, the PDP Review of All RPMs in All gTLDs Working Group has started reviewing the TMCH in detail and ICANN has appointed Analysis Group to develop and conduct the survey(s) to assess the use and effectiveness of the Sunrise and Trademark Claims RPMs. Provided that the PDP Working Group has sufficient data from this survey or other surveys and is able to draw firm conclusions, the review team does not consider that an additional review is necessary. However, the CCT Review Team reiterates its recommendation for a cost-benefit analysis to be carried out if such analysis can enable objective conclusions to be drawn. Such cost-benefit analysis should include, but not necessarily be limited to, looking at cost-benefits of the TMCH for brand owners, registries, and registrars now and going forward, as well as examine the interplay of the TMCH with premium pricing.

Rationale/related findings: The Independent Review of Trademark Clearinghouse (TMCH) Services Revised Report was unable to provide definitive conclusions on the relative utility of the TMCH due to data limitations. Analysis Group noted in the report that it was unable to perform a cost-benefit analysis of extending the Claims Service or expanding the matching criteria.[541]

To: Generic Names Supporting Organization

Prerequisite or priority level: Prerequisite

Consensus within team: Yes

Details: There appears to be considerable discussion[542] on whether the TMCH should be expanded beyond applying to only identical matches and if it should be extended to include

[541] Analysis Group (2017), *Independent Review of Trademark Clearinghouse (TMCH) Services Revised Report* (2017).

[542] Trademark Clearinghouse, "Fee Structure Summary 1.1," accessed 5 September 2018, http://trademark-clearinghouse.com/sites/default/files/files/downloads/trademarkclearinghouse_fee_structure_01-04-2015_2.pdf. "Recent developments It was decided on 20 March 2013 that most aspects of ICANN's "Strawman Solution" would be implemented in order to extend protections under the new gTLD program. One approved feature was the Trademark +50 (TM+50) abused variations model, whereby trademark owners are now permitted to attach up to 50 previously abused domain registrations to a TMCH record, which have been connected to a Uniform Domain-Name Dispute-Resolution Policy (UDRP) or court proceeding at the national level. These Labels are not eligible for Sunrise registration periods, but they do qualify for Trademark Claims." See Com Laude, "The Trademark Clearinghouse: Pinning labels on verified trademark records," 29 August 2013, accessed 5 September 2018, https://comlaude.com/news/trademark-clearinghouse-pinning-labels-verified-trademark-records-0.
"Expanding Matching Criteria to include non-exact matches may be of limited benefit: The dispute rate of completed registrations that are variations of trademark strings is very low. — "We also find that trademark holders infrequently dispute registrations that are variations of trademark strings. Given the low dispute rates, an

"mark+keyword" or common typographical errors of the mark in question. If an extension is considered valuable, then the basis of such extension needs to be clear.

Success measures: The availability of adequate data to make recommendations and allow an effective policy review of the TMCH.

expansion of the matching criteria may bring little benefit to trademark holders and only harm non trademark-holder domain registrants, who may be deterred from registering trademark string variations that would otherwise not be considered a trademark infringement by trademark holders or authorities who make such determinations." See Philip S. Corwin, "TMCH Review Recommends Status Quo," CircleID, 1 August 2016, accessed 5 September 2018, http://www.circleid.com/posts/20160801_tmch_review_recommends_status_quo/.

10 Application and Evaluation Process of the New gTLD Program

In addition to exploring the consumer welfare impact of the New gTLD Program, the CCT Review Team was charged with evaluating the "effectiveness" of the Application and Evaluation process.[543] Obviously, this is a potentially overbroad mandate, especially given the concurrent GNSO PDP on new gTLD subsequent procedures.[544] Therefore, instead of focusing on the possible inefficiencies of the application and evaluation process, the CCT Review Team decided to focus on possible inequities in the process. These include the potential for the process to favor some communities over others, some regions over others, or simply produce inconsistent and unpredictable results.

Applications and the "Global South"

One of the questions that the CCT Review Team addressed was whether the application and evaluation process was effective in serving the needs of previously underserved regions or communities, sometimes referred to as the "developing world." In particular, the review team endeavored to determine if these communities had special needs that were not met or resource deficiencies that were insufficiently supplemented to create a level playing field among all potential applicants. For purposes of this review, the Global South was defined to include Africa, Latin America, the Caribbean, India, and Southeast Asia, excluding China.[545]

Of course, the only "hard" data on applications from the Global South was their scarcity. In total, there were only 303 applications from the Global South and only 200 continued all the way to delegation.[546] To better understand the challenges faced by those applicants, the CCT Review Team commissioned a survey of applicants, conducted by Nielsen.[547] Unfortunately, low participation in the survey meant that only two respondents were from the Global South,[548] but these nonetheless identified some special problems that were faced by applicants from the Global South.

A trickier task was to determine why there were so few applications for new strings from these regions. There were a number of possible explanations: insufficient outreach by ICANN, insufficient funds for applicants, insufficient technical expertise, or possibly insufficient market confidence. Given the low penetration of ccTLD registrations in the Global South,[549] it might simply have been rational for potential applicants to adopt a "wait-and-see" posture. Moreover, to the extent that promotion of the New gTLD Program by ICANN would be considered part of

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[543] ICANN, *Affirmation of Commitments* (September 2009).
[544] ICANN GNSO, "PDP New gTLD Subsequent Procedures."
[545] "Global South" is a fluid and sometimes contested term used by social scientists to refer broadly to regions in Latin America, Asia, Africa, and Oceania. For an overview of the term's origins and use, see Nour Dados and Raewyn Connell, "The Global South," *Contexts: Journal of the American Sociological Association* [11, 1] (2012): http://journals.sagepub.com/doi/pdf/10.1177/1536504212436479
[546] ICANN, "Competition, Consumer Trust and Consumer Choice (CCT) Metrics Reporting: Registries," accessed 10 August 2018, https://www.icann.org/resources/pages/cct-metrics-registries-2016-06-27-en.
ICANN, "Program Statistics", accessed 25 January 2017, https://newgtlds.icann.org/en/program-status/statistics. The total number of applications received from the Global South excludes 41 applications from China.
[547] Nielsen (December 2016), *ICANN Application Process Survey*, accessed 10 August 2018, https://community.icann.org/download/attachments/56135378/2016%20ICANN%20Application%20Process%20Report.pdf?version=1&modificationDate=1482246915000&api=v2.
[548] Ibid.
[549] ICANN, "Zooknic ccTLD data," accessed 10 August 2018, https://community.icann.org/display/CCT/Studies%2C+Research%2C+and+Background+Materials?preview=/56135378/60492555/Zooknic%20ccTLD%20data.xlsx.

the "application and evaluation" process, it is certainly useful to understand what kinds of information were available to potential applicants from the Global South.

To that end, the Review Team commissioned a study by AMGlobal, which included evaluating the characteristics of those entities from the Global North that had applied for new strings, identifying similar entities in the Global South that had not applied, and conducting a phone survey of a sample of those entities to better understand their reasons for nonparticipation.[550] Although it was not feasible to conduct a statistically valid survey of potential applicants, the anecdotal data (largely from Latin America) suggest a number of areas for improvement in outreach and facilitation efforts by ICANN in any future rounds. In particular, the review team wanted to explore the program outreach and applicant support, both financial and non-financial.

Program Outreach

The AMGlobal Study indicated that limited awareness of the New gTLD Program and unfamiliarity with ICANN were key factors limiting participation from the Global South. Fewer than half of the interviewees described having moderate to high levels of awareness of the Program and many said that despite having some information, they felt they did not have needed details. Almost one-third all interviewees said that they had almost no knowledge of the Program or had never heard about it at all. Many interviewees who had heard "something" noted they had no understanding of the Program's connection to ICANN, and about one-third of all interviewees had no knowledge of ICANN at all. Given the newness of the idea of new gTLDs in many emerging markets, this lack of information was a significant issue.[551]

ICANN carried out a promotional campaign for the Program that included online advertising and outreach through its regional centers. These included live presentations, live consultations, and webinars.[552] It chose to eschew what might be considered "sales" in favor of general information, arguing that it was not in its remit to convince the market to apply for strings, but rather to make it known that applications were being accepted.[553] Many in the Community believed that these outreach efforts were insufficient,[554] and the responses from the AMGlobal Study appear to bear that out.

One barrier to entry, especially in Latin America, was the limited time window between the provision of information to the close of the new round. While many in the ICANN Community have been waiting for the start of a new gTLD round, it was news to many in the Global South. A number of interviewees in the AMGlobal Study admonished ICANN for providing information too late, thus providing inadequate time for decision-making.[555] This seemed to have especially affected decision-making at large conglomerates and government entities, which suggested that they might need six months or more to fully explore, socialize, and win approval for a new gTLD initiative. As a number of Latin American respondents suggested, it could take time to find the right home or champion within a large organization for an initiative as new as

550 AMGlobal, *New gTLDs and the Global South.*
551 Ibid.
552 ICANN, "New gTLD Program Global Consultation and Outreach Events," accessed 10 August 2018, https://archive.icann.org/en/topics/new-gtlds/consultation-outreach-en.htm.
553 Ibid.
554 Avri Doria, "The need for a remedial gTLD program for #newgtlds," accessed 10 August 2018, http://avri.doria.org/post/74920388723/the-need-for-a-remedial-gtld-program-for-newgtlds; Constantine Roussos, "Role of influencers and media in ICANN's TLD global awareness campaign: How ICANN can create a strong value proposition with new Top-Level Domain extensions to benefit the Internet," 9 July 2011, accessed 10 August 2018, http://mytld.com/articles/3018-influencers-media-icann-top-level-domains-tld-benefits-internet.html.
555 AMGlobal, *New gTLDs and the Global South*, p. 10.

a new gTLD.[556] Time issues were cited by nearly 19 of the 37 respondents, with 11 citing this as their number one constraint to participation. Many interviewees either heard about the Program too late or said they simply did not have enough time to fully explore the idea.[557]

Applicant Informational Support

Many respondents who were aware of the Program cited a lack of complete information and/or clear communication as key constraints to participation.[558] Communications around the Program were described by interviewees as "complicated" and "dense," and "more for insiders than for me or the general public."[559] Information around Program deadlines, application costs, and longer-term costs were all cited as areas where information was either hard to understand or poorly understood. Inadequate information about the Program was mentioned by 30 of the 37 respondents as a constraint, with 10 of them ranking the lack of information as their number one concern.[560] The Nielsen survey of applicants revealed a general insufficiency of information from ICANN, with only 49 percent of applicants saying they got enough information from ICANN.[561]

Given the high propensity to use some form of consulting services—62 percent of applicants indicated they did so—it stands to reason that such services would be in even higher demand in underserved markets.[562] It is not clear the sufficient support was available to potential applicants in the Global South.

The Applicant Support Program (ASP) is a program that was conceptualized by the Joint Applicant Support Working Group (JASWG) in order to provide assistance to gTLD applicants in underserved regions and communities to ensure worldwide accessibility and competition within the New gTLD Program.[563] Entities interested in the ASP had three options:

- Access to *pro bono* services for startup gTLD registries through the Applicant Support Directory: New gTLD applicants, particularly from developing countries, were able to obtain financial and technical information or assistance from members of the ICANN Community who had agreed to provide financial or nonfinancial *pro bono* services.[564]

- Financial assistance: reduced evaluation fees were provided to qualified applicants.

- The Applicant Support Fund: a $2,000,000 seed fund was set aside by ICANN to help applicants who demonstrated need.

The non-financial support aspect of the ASP called for Community volunteers to provide *pro bono* services to potential applicants. In total, 20 entities volunteered to provide these services.[565] Approximately 40 potential applicants expressed interest in *pro bono* support, with

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556 Ibid., p. 10.
557 Ibid., p. 10.
558 Ibid., p. 9.
559 Ibid., p. 9.
560 Ibid., pp. 9-10.
561 Nielsen, *ICANN Application Process Survey* .
562 Ibid.
563 ICANN, "Understanding the Applicant Support Program," accessed 25 January 2017, https://newgtlds.icann.org/en/applicants/candidate-support.
564 ICANN, "Applicant Support Directory," accessed 10 August 2018, https://newgtlds.icann.org/en/applicants/candidate-support/non-financial-support#organizations-offering-support
565 ICANN, "Applicant Support Directory," accessed 25 January 2017, https://newgtlds.icann.org/en/applicants/candidate-support/non-financial-support#organizations-offering-support

half of these potential applicants from the Global South.[566] Unfortunately, efforts by the review team to obtain information from either the volunteers or applicants for support about these efforts were unsuccessful. Consequently, the efficacy of this program cannot be evaluated, and better coordination and data collection in subsequent procedures for new gTLDs is called for.

Despite the availability of such services, the AMGlobal research revealed concerns centered around the lack of an obvious business plan for a new gTLD for potential applicants from the Global South. This issue was cited by the vast majority (31 out of 37 of respondents), although others—citing time or information concerns, which were often the first issues raised—ranked it as a somewhat lower priority concern (only nine respondents said this was their primary or secondary driver).[567]

A number of applicants across different regions—and especially in Asia and the Middle East—also cited concerns about customer confusion as a major constraint to submitting an application. They wondered if customers would understand and use a new gTLD and expressed concern about the impact of a new gTLD on search engine optimization (SEO).[568]

New gTLD Application and Program Costs

Another concern for potential applicants in the Global South was cost, both of the application process itself as well as running a new gTLD. Accordingly, the JASWG also specified a discounted application fee of only $47,000.[569] However, there were only three applicants for financial support,[570] so it is difficult to assess the effectiveness of the support program.

Price and longer-term running cost were important issues expressed by many interviewees.[571] Although many of the interviewees said they believed their organizations could probably afford the kind of investment needed, almost none had a clear sense of the real costs involved in applying for or running a new gTLD, and many felt the cost was too high for them or potential applicants like them. Consequently, it is difficult to assess the role of cost in decisions not to apply. It seems as though uncertainty surrounding costs was as big an issue as the costs themselves, especially the application fee.

Still, as the ICANN Program Implementation Review notes, "given the low number of applications submitted, consideration should be given to exploring how the Program can be improved to serve its intended purpose."[572]

Recommendations

A number of factors appear to have contributed to the low participation in the New gTLD Program by actors in the Global South. These include insufficient information about the Program, market uncertainty, and financial uncertainty. While the need for more clarity and more substantial outreach may be necessary to increase participation in future rounds, the ICANN Community must determine whether increased participation is the ultimate goal. Given

566 Ibid.
567 AMGlobal, *New gTLDs and Global South*, p. 10.
568 Ibid., p. 11.
569 ICANN, "Understanding the Applicant Support Program."
570 ICANN, *Program Implementation Review*.
571 AMGlobal, *New gTLDs and Global South*, p. 12.
572 ICANN, *Program Implementation Review*, p. 159.

the low participation in the DNS itself in the Global South,[573] reflected in registrations in existing TLDs, some caution should be exercised in the promotion of subsequent procedures in underserved regions. Some have called for "capacity building" to lay the necessary groundwork for new registries,[574] but, absent market demand for domains in general, efforts to expand participation in these markets might be better placed elsewhere.

One counterpoint is that several respondents in the AMGlobal survey indicated interest in applying for a string in a future round.[575] This suggests that the provision of more and better information by ICANN might increase the number of applicants.

Improved Outreach

Beginning the communications process earlier was a common refrain expressed by respondents to the AMGlobal survey.[576] This would allow information about the applicant process to find its way to less technical decision-makers and perhaps even the public. Of course, a more extensive public outreach program would represent a considerable commitment by ICANN, but the added time might lead to a greater number of applications. In addition, expanded participation in conferences and events where the audience already exists, for example, by targeting conferences of professional associations, might have a similar effect.[577]

Informational Content

Another deficiency reported in the AMGlobal Survey related to outreach efforts concerns the content that was provided. This might have been unavoidable given the newness of the Program, but an emphasis on risk mitigation in outreach efforts seems designed more to put already engaged interests at ease rather than to broadening the appeal of the program.[578] Instead, content focused on successful case studies and business model templates might embolden more tentative players to explore their options.[579] Recognizing that this is challenging (given the need for ICANN as an institution to remain neutral in the competitive landscape), the AMGlobal Survey suggests that there may be a real demand for documentation of success cases that can be shared with the potential applicant community. The information needs to be straightforward and aimed at audiences with different levels of technical expertise, with a goal of answering one simple question: if our group, association, or organization decides to go forward, what path(s) can we take and what would we get out of it? This is one of most important issues mentioned across numerous markets, and if at all possible, one ICANN needs to address.

Program Costs

There appear to be efforts already underway to reduce application costs and inefficiencies generally. However, the Applicant Support Program, while well intentioned, appears to have

[573] ICANN, "Zooknic ccTLD data."
[574] Doria, "The need for a remedial gTLD program for #newgtlds."
[575] AMGlobal, *New gTLDs and Global South*, p. 13.
[576] Ibid., p. 16.
[577] Reaching out via professional and trade associations about new gTLDs and the application process was the top recommendation regarding outreach from respondents to the AMGlobal Survey. See p. 16.
[578] Philip Corwin, Internet Commerce Association, "ICANN Road Show Opens on Broadway to Mixed Reviews," 14 July 2009, accessed 10 August 2018, http://www.internetcommerce.org/icann-road-show-opens-broadway-mixed-reviews/.
[579] AMGlobal, *New gTLDs and Global South*.

missed the mark either in its design or execution. This suggests that greater study on how to subsidize participation from underserved markets is necessary, perhaps, as the ICANN Program Implementation Review suggests, by looking at existing programs from institutions such as the World Bank.[580]

That said, cost was rarely given as the primary rationale for the failure to participate. Instead, cost appears to have been be primarily an informational issue. With a clear business model and sufficient assistance in navigating the application process, it is possible that there will be greater participation in future rounds by applicants from the Global South.

Recommendations

Recommendation 29: Set objectives/metrics for applications from the Global South.

Rationale/related findings: Applications were few, but there was no concerted effort to encourage them.

To: New gTLD Subsequent Procedures PDP Working Group/Generic Supporting Names Organization

Prerequisite or priority level: Prerequisite—objectives must be set

Consensus within team: Yes

Details: The New gTLD Subsequent Procedures Working Group needs to establish clear, measurable goals for the Global South, including whether or when applications and even number of delegated strings should be objectives. It is possible that short-term objectives should be around second-level participation.

Success measures: Increased participation by the Global South as demonstrated by increased applications and delegations.

Recommendation 30: Expand and improve outreach into the Global South.

Rationale/related findings: Low understanding of New gTLD Program in the Global South

To: ICANN organization

Prerequisite or priority level: Prerequisite

Consensus within team: Yes

Details: If increased applications from the Global South is determined to be an objective for a future round of applications, outreach to the Global South requires a more comprehensive program of conference participation, thought leader engagement, and traditional media. The work of AMGlobal should be built upon to identify targets, outlets, and venues for better outreach. This outreach should include cost projections, potential business models, and resources for further information. Furthermore, the review team recommends that the outreach program begin significantly earlier to facilitate internal decision-making by potential applicants.

580 ICANN, *Program Implementation Review*, p. 159. For example, see The World Bank, "What We Do," accessed 10 August 2018, http://www.worldbank.org/en/about/what-we-do

Success measures: Ideally, success would be measured in appreciable growth in applications from the Global South. In the absence of such growth, ICANN should survey entities in the Global South again to determine the sources of the difficulties that continue to be faced by potential applicants.

Recommendation 31: The ICANN organization to coordinate the *pro bono* assistance program.

Rationale/related findings: Despite the registration of both volunteers and applicants, there is no evidence of interaction.

To: ICANN organization

Prerequisite or priority level: Prerequisite

Consensus within team: Yes

Details: Again, if additional applications from the Global South is determined to be an objective of a future round, the *pro bono* assistance program would be coordinated by the ICANN organization to ensure that communication is successful between volunteers and applicants.

Success measures: Both volunteers and applicants should be surveyed by the ICANN organization on the success of the interaction between them so that future reforms can be based on better information.

Recommendation 32: Revisit the Applicant Financial Support Program.

Rationale/related findings: Only three applicants applied for support.

To: New gTLD Subsequent Procedures Working Group

Prerequisite or priority level: Prerequisite

Consensus within team: Yes

Details: The total cost of getting a new gTLD string far exceeds the USD $185,000 application fee. Beyond efforts to reduce the application fee for all applicants, efforts should be made to further reduce the overall cost of application, evaluation, and conflict resolution, including additional subsidies and dedicated support for applicants from the Global South.

Success measures: Greater participation in the Applicant Support Program.

Preventing Delegations That Would Be Confusing or Harmful

To ensure that the New gTLD Program would not only contribute to competition, consumer trust, and consumer choice in the DNS marketplace, it was important that the introduction of new gTLDs not be confusing or harmful either to the DNS itself or to potential users. While ICANN's initial assessment of applications for new gTLDs was intended to assess whether new gTLD strings that had been applied for might adversely affect DNS security or stability, there was also the possibility for the Governmental Advisory Committee (GAC) to provide formal advice to the ICANN Board (following its usual procedures)[581] or via "Early Warnings" to applicants that certain new gTLD applications might be confusing or harmful.[582] There were no limitations or restrictions on the nature or type of GAC Early Warnings, although the GAC had indicated that strings that could raise sensitivities include those that "purport to represent or that embody a particular group of people or interests based on historical, cultural, or social components of identity, such as nationality, race or ethnicity, religion, belief, culture or particular social origin or group, political opinion, membership of a national minority, disability, age, and/or a language or linguistic group (non-exhaustive)" and "those strings that refer to particular sectors, such as those subject to national regulation (such as .bank, .pharmacy) or those that describe or are targeted to a population or industry that is vulnerable to online fraud or abuse."[583]

The idea behind GAC Early Warnings was that advance indications of potential problems would either stop particularly problematic applications at an early stage (thus permitting the applicant to recover the bulk of its application fee) or be adjusted to meet the public policy concerns raised by the Early Warning. [584]

The review team assessed whether GAC Early Warnings influenced or affected the new gTLD applications by ensuring that delegations that might be confusing or harmful were stopped or limited. The Warnings had an influence on a number of new gTLD applications regarding consumer protection or applicable law and were instrumental in withdrawals of some applications involving geographic names.[585]

The review team looked at the number of GAC Early Warnings that were made with respect to withdrawn applications, the reasons for those withdrawals, and whether any Early Warning was directly responsible for applications being put on hold and the reasons why that was the case. Of the 1,930 applications, 575 were withdrawn by the applicants.[586] Of the 187 applications that received an Early Warning as of December 2016, 89 were delegated and 65 were withdrawn.[587] Most withdrawn applications related to multiple applications for the same string. Most substantive withdrawals related to conflicts with geographic names, for example, .guangzhou, .roma and .zulu. This is a limited number, and the majority of withdrawals do not appear to be directly related to Early Warnings *per se*, but rather to multiple applications for the same name.
Another issue addressed by the review team was whether GAC Early Warning advice was associated with the addition of Public Interest Commitments (PICs) intended to reduce

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[581] ICANN, *gTLD Applicant Guidebook* (2012). The AGB addressed the procedures for GAC Advice on new gTLDs in section 1.1.2.7 and 3.1. See also ICANN, "GAC Early Warning," accessed 10 August 2018, https://newgtlds.icann.org/en/applicants/gac-early-warning and ICANN GAC, "GAC Early Warnings, accessed 10 August 2018, https://gacweb.icann.org/display/gacweb/GAC+Early+Warnings
[582] Ibid, Section 1.1.2.4. GAC EW had to be submitted during the public comment period, did not require consensus of other GAC members (unlike GAC advice to the Board), had to be submitted via the ICANN Board, and did not constitute a formal objection. GAC EW advice was intended to "address applications…identified by governments to be problematic, e.g., that potentially violate national law or raise sensitivities."
[583] ICANN, *gTLD Applicant Guidebook* (2012), p. 1-8.
[584] Ibid, p. 1-42. The refund available to an applicant within 21 days of a GAC Early Warning was 80 percent of the application fee, or US$148,000.
[585] The introduction of Public Interest Commitments, which was the subject of GAC advice to the ICANN Board on the New gTLD Program, is addressed in the "Public Interest Commitments" section of this report.
[586] It should be noted that these include multiple applications for the same string. The number of withdrawn applications, and applications that received GAC Early Warnings, is calculated as of December 2016. See ICANN, "New gTLD Current Application Status," accessed 10 August 2018, https://gtldresult.icann.org/application-result/applicationstatus. The page contains a search function with a capability to filter applications on the basis of whether they've received a GAC Early Warning.
[587] Ibid. See also ICANN, "Program Statistics."

potential harm to consumers and whether Early Warning advice resulted in any other changes to new gTLD applications. Of the 84 delegated gTLDs that received Early Warnings, 50 added PICs, primarily for sensitive or regulated sectors like .tax, .doctor, and .casino. It is possible that the specific GAC Early Warning advice in these cases encouraged the applicants to add PICs intended to protect consumers.[588]

Two other cases involved .halal and .islam. GAC Early Warning advice, which initially resulted in the delegation being put on hold, are now the subject of Independent Review proceedings.[589] In a 4 November 2013 letter from the Organization of Islamic Cooperation (OIC) to the GAC Chair, the OIC requested that its letter be considered an "official opposition of the Member States of the OIC towards probable authorization by the GAC allowing the use of […] .ISLAM and .HALAL by any entity not representing the collective voice of the Muslim people."[590] In a 7 February 2014 letter, ICANN noted to the applicant that there seems to be a conflict between the commitments made in the applicant's letters and the concerns raised in letters to ICANN urging ICANN not to delegate the strings. Given these circumstances, the NGPC stated that it would not address the applications further until the conflicts have been resolved.[591]

Overall, GAC Early Warnings appear to have been a useful and timely component of the public comment period, permitting applicants to ensure that public policy or related concerns could be addressed prior to delegation. It also permitted withdrawal of an application and reimbursement of part of the application fee in certain cases.

Recommendation

Recommendation 33: As required by the October 2016 Bylaws, GAC consensus advice to the Board regarding gTLDs should also be clearly enunciated, actionable, and accompanied by a rationale, permitting the Board to determine how to apply that advice.[592] ICANN should provide a template to the GAC for advice related to specific TLDs in order to provide a structure that includes all of these elements. In addition to providing a template, the Applicant Guidebook should clarify the process and timelines by which GAC advice is expected for individual TLDs.

Rationale/related findings: The GAC Early Warnings helped applicants to improve delegated gTLDs by ensuring that public policy or public interest concerns were addressed and should continue to be an element of any future expansion of the gTLD space. Applicants could

[588] A further review of the linkages between PICs relating to consumer protection and GAC Advice can be found in the "Public Interest Commitments" section of this report.
[589] See: ICANN, "Independent Review Process Documents," accessed 10 August 2018, https://www.icann.org/resources/pages/accountability/irp-en; ICANN, "Asia Green IT Systems Bilgisayar San. ve Tic. Ltd. Sti. v. ICANN (.ISLAM/.HALAL)," accessed 10 August 2018, https://www.icann.org/resources/pages/irp-agit-v-icann-2015-12-23-en; "GAC Early Warning – Submitted Halal-AE-60793," accessed 10 August 2018, https://gacweb.icann.org/display/gacweb/GAC+Early+Warnings?preview=/27131927/27197890/Halal-AE-60793.pdf; "GAC Early Warning – Submitted Islam-AE-23450," accessed 10 August 2018, https://gacweb.icann.org/display/gacweb/GAC+Early+Warnings?preview=/27131927/27197891/Islam-AE-23450.pdf; "GAC Early Warning – Submitted Islam-IN-23459," accessed 10 August 2018, https://gacweb.icann.org/display/gacweb/GAC+Early+Warnings?preview=/27131927/27197989/Islam-IN-23459.pdf, "GAC Early Warning – Submitted Halal-IN-60793," accessed 10 August 2018, https://gacweb.icann.org/display/gacweb/GAC+Early+Warnings?preview=/27131927/27197987/Halal-IN-60793.pdf.
[590] Steve Crocker ([former] Chair, ICANN Board of Directors), "RE: Letter from the Secretary General of of the Organisation of Islamic Cooperation," letter to GAC Chair, 11 November 2013, https://www.icann.org/en/system/files/correspondence/crocker-to-dryden-11nov13-en.pdf.
[591] "2013-11-20-islam-halal-GAC Register of Advice," accessed 10 August 2018, https://gacweb.icann.org/display/GACADV/2013-11-20-islam-halal.
[592] ICANN, "Bylaws," (2016). Section 3.6.

withdraw their applications if they determined that the response or action required to respond to GAC Early Warning advice was either too costly or too complex, and to do so in a timely manner that would permit them to recover 80 percent of the application cost.[593]

Where general GAC advice was provided by means of communiqués to the ICANN Board, it was sometimes not as easy to apply to the direct cases.[594] Applying for a gTLD is a complex and time-consuming process, and the initial AGB was amended even after the call for applications had closed. Given the recommendations to attempt to increase representation from applicants from the Global South, it would be appropriate to ensure that the clearest possible information and results from the last round are made available.[595]

To: New gTLD Subsequent Procedures PDP Working Group, GAC, ICANN organization

Prerequisite or priority level: Prerequisite

Consensus within team: Yes

Details: While the details should be left to the Subsequent Procedures PDP Working Group, the CCT Review Team believes there should be a mechanism created to specifically allow objections and means to challenge assertions of fact by individual members of the GAC. Finally, some sort of appeals mechanism is imperative.

Success measures: This recommendation stems from a more qualitative assessment by the review team and anecdotal feedback from applicants. Consequently, the measures for success will be similarly qualitative as the next CCT Review Team evaluates the process of gTLD application moving forward. That said, the proof will lie in the implementation of the recommendation. With a structured process and template for the submission of GAC advice, and a process for objection and appeal, the most frequently voiced concerns of applicants regarding such advice will be addressed.

[593] In 2 of the 187 GAC Early Warning cases, the applications were withdrawn within 21 days of receiving the Warning, which permitted the applicants to receive the 80 percent refund. See ICANN, *Program Implementation Review*, p. 43.
[594] ICANN's *Program Implementation Review* (p. 96) shows that although 187 applications received GAC Early Warning advice, some 355 applications were subject to GAC advice via communiqués to the ICANN Board only, and did not have the same advantage of GAC Early Warning specificity or predictability.
[595] See also the discussion on "Application and the Global South" earlier in this chapter.

Table 17: Applications Receiving GAC Early Warning Advice[596]

GAC Early Warning advice and application status

1,930 Total applications	**586** Total withdrawn
12,116 Total delegated	**187** Total GAC Early Warnings

Of the applications with GAC Early Warnings:

92 Delegated (of which 50 added PICs—primarily for sensitive or regulated sectors like .tax, .doctor, .casino etc.)

67 Withdrawn	**6** In String Contention	**2** In PDT
12 "Will not proceed" (so will not be delegated, but not withdrawn)		**9** "On Hold"

Allowing Specific Communities to Be Served by a Relevant TLD

The Applicant Guidebook included a special provision for applications for new gTLDs that could be designated as serving a specific community.[597] Any application wishing to be designated as a community-based gTLD had to show "an ongoing relationship with a clearly delineated community," that the string applied for was "strongly and specifically related to the named community," that there were dedicated registration and use policies for registrants including security verification, and show that the application was endorsed by one or more communities representing the community-based gTLD.[598] All other applications were not presumed to be community-based. However, formal objections on community grounds could be raised against any application, even if it had not been submitted as a community application. Of the 62 community objections raised, the the International Chamber of Commerce (a primary dispute resolution provider) found in favor of the community in 12 gTLDs, the objectors failed for 31 gTLDs, and objections were dropped for 19 gTLDs.[599]

Where a community had applied for a community-based gTLD and a "standard" applicant had applied for the same gTLD, a different evaluation process and criteria applied. The criteria and process for Community Priority Evaluation (CPE) were established to determine whether the community gTLD should be awarded priority in a contention set.[600]

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596 ICANN, "New gTLD Current Application Status page," (updated as of 23 February 2017). Note that one application with GAC Early Warning is both on hold and in string contention.
597 ICANN, *Applicant Guidebook* (2012), Section 1.2.3.1: "Community-based applications are intended to be a narrow category, for applications where there are unambiguous associations among the applicant, the community served, and the applied-for gTLD string. Evaluation of an applicant's designation as community-based will occur only in the event of a contention situation that results in a community priority evaluation. However, any applicant designating its application as community-based will, if the application is approved, be bound by the registry agreement to implement the community-based restrictions it has specified in the application. This is true even if there are no contending applicants."
598 Ibid.
599 See International Chamber of Commerce, "Pending Cases," https://iccwbo.org/dispute-resolution-services/icann-gtld-process/pending-cases/ and "Expert Determinations," https://iccwbo.org/dispute-resolution-services/icann-gtld-process/expert-determinations/, accessed 10 August 2018.
600 ICANN, "Community Priority Evaluation," accessed 10 August 2018, https://newgtlds.icann.org/en/applicants/cpe. The community applicant had to score at least 14 points to prevail in a CPE. If those 14 points were not attained, then there was no "priority" for the community that claimed it and the contention was treated in the standard way.

The special priority awarded to successful community-based applications meant that other, even well-qualified or highly-rated, contending applications would be eliminated. For that reason, the AGB indicated that "very stringent requirements for qualification of a community-based application" would apply, although it was underlined that not meeting the scoring threshold was "not necessarily an indication the community itself is in some way inadequate or invalid."[601]

Of the 84 community-based applications, a very large majority (some 75 percent) did not prevail in CPE, in part because of the assessment by the external independent evaluator (the Economist Intelligence Unit) of whether or not the applicant(s) adequately represented the specific community.[602]

Having noted the disproportionate number of failed applications for the community-based applications, and the queries on the process raised by the GAC and other interested parties, the review team considered the ICANN Ombudsman's "Own Motion Report."[603] That report assessed both the Applicant Guidebook information and the process for assessing applications. While it found that the process outlined in the Guidebook was not unfair to applicants, the processing of applications could have been clearer, and while there had been no inherent unfairness, there is certainly room for improving the process in the future, both to ensure a better rate of success of community applications, to avoid inconsistencies between standard and community applicants, and to ensure that expectations of applicants were not unnecessarily raised. The Ombudsman's report concluded that some problems had arisen in the CPE process, which, while not inherently unfair or warranting rejection of the outcomes, did lead to recommendations for changes in any future round.[604] These include "better scope of understanding what community-based applications were for and what sort of persons or organizations would benefit from the use of a community-based top-level domain. Some consideration should have been given to the types of community which could use their own top-level domain, whether these were to be charitable, community organizations or perhaps even NGOs or others."[605]

In addition, the more recent Council of Europe report of November 2016 raises a number of observations and recommendations on the process for evaluating and assessing such applications.[606]

Recommendation

Recommendation 34: A thorough review of the procedures and objectives for community-based applications should be carried out and improvements made to address and correct the concerns raised before a new gTLD application process is launched. Revisions or adjustments should be clearly reflected in an updated version of the 2012 Applicant Guidebook.

601 ICANN, *Applicant Guidebook*, Section 4.9.
602 Applications had to show an ongoing relationship with a clearly delineated community, the string itself had to be specifically related to the named community and had to have dedicated registration and use policies for registrants, and the application had to be endorsed by the named community.
603 ICANN Ombudsman Blog, "EIU Own Motion Report," 11 October 2015, accessed 10 August 2018, https://omblog.icann.org/index.html%3Fm=201510.html.
604 Ibid.
605 Ibid.
606 Council of Europe (November 2016), *Applications to ICANN for Community-Based New Generic Top-Level Domains (gTLDs): Opportunities and Challenges from a Human Rights Perspective*, accessed 10 August 2018, https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=09000016806b5a14

Rationale/related findings: Given the assessment carried out by the Ombudsman's Own Motion Report, the results of community-based objections, the Council of Europe report on the human rights perspective of those applications, and the interest raised by the ICANN community regarding the relative lack of success of community-based applications (an area where the ICANN community had intended to provide a special entry for communities to gTLDs of particular interest and use for them), it could be expected that there would be a higher rate of success for community-based applications.

To: New gTLD Subsequent Procedures PDP Working Group

Prerequisite or priority: Prerequisite

Consensus within team: Yes

Effectiveness of the Dispute Resolution Process in Cases of Formal String Objection

The application and evaluation process for the New gTLD Program was described in the ICANN gTLD Applicant Guidebook of 4 June 2012: this was based on the policies developed by the Community on the demand, benefits, and risks of new gTLDs, the selection criteria that should be applied, how gTLDs should be allocated, and the contractual conditions that should be required for new gTLD registries.

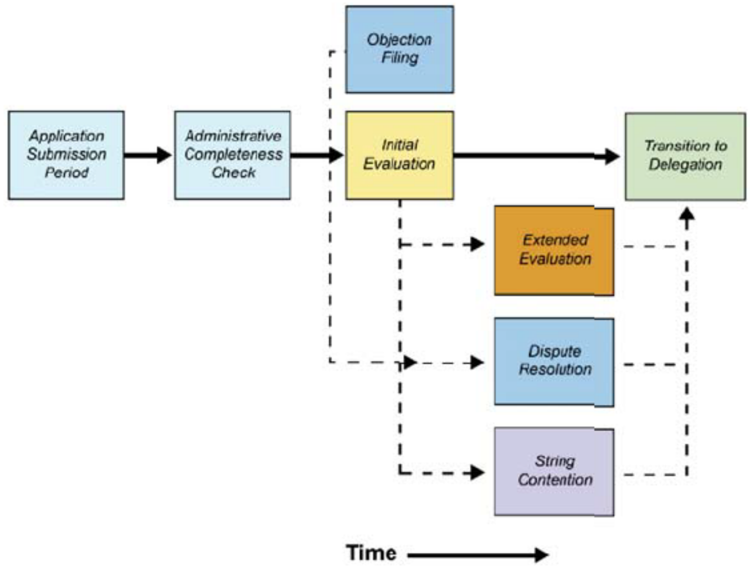
After the close of the application submission deadline, ICANN began assessing administrative completeness of each application and posted for public comment the public portions of complete applications in order to allow the Community to submit observations to be considered during the Initial Evaluation review (also carried out by ICANN). Evaluation criteria for the Initial Review included “string reviews” to determine whether the security or stability problems might arise, including those that might be caused due to “similarity to existing TLDs or reserved names.”[607] These comments and the evaluation were distinct from formal objections that could be raised concerning issues going beyond the evaluation criteria.

During the same open comment period, the ICANN Governmental Advisory Committee (GAC) could issue Early Warning notices that an application was potentially sensitive or problematic for government(s). These early warnings were not formal objections, but their substance might be developed into a formal objection if not resolved.[608]

In addition to the public comments, objections could be filed by third parties to protect specific rights and via a dispute resolution mechanism established to resolve cases that went beyond ICANN's initial evaluation of applications.[609]

[607] ICANN, *Applicant Guidebook*, Section 1.1.2.5. Initial evaluation panels were established to review string similarity, DNS stability and geographic names. The Initial Review also included an assessment of the required technical, operational and financial capability of the applicant. As noted in the section on competition, the use of back-end providers means that technical capability of an applicant could be achieved by using third-party assistance.
[608] See the “Preventing Delegations that Would Be Confusing or Harmful” section of this report for a review of the GAC Early Warning process.
[609] ICANN, *Applicant Guidebook*, pp. 1-12, 1-14, Sections 1.1.2.6 and 1.1.2.9.

Table 18: Application Process Stages[610]



Once submitted to ICANN, applications will pass through multiple stages of processing.

The grounds for objection were developed to implement the GNSO recommendations relating to string confusion, community objections, limited public interest, or violation of legal rights and were explained in the Applicant Guidebook. Dispute resolution proceedings were carried out by three different service providers selected by a public call for expressions of interest.[611]

In order to provide a rough assessment of the effectiveness of the process, the review team analyzed both the number and nature of objections that were filed after the initial assessment by the ICANN organization and the outcomes of those objections.[612] In particular, the Team assessed the results of singular/plural string confusion objections and identified some improvements that might be made to the process of application and evaluation in any new launch of gTLDs.

Four types of objections (after initial ICANN assessment) were possible:

- **String confusion**, which also involved singular and plural versions of the same word).[613]

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[610] ICANN, *gTLD Applicant Guidebook*, pp. 1-4.

[611] ICANN, Program Implementation Review (2016), p. 104. The following organizations carried out the proceedings: International Center for Dispute Resolution (ICDR) for string confusion, Arbitration and Mediation Center of the World Intellectual Property Organisation for legal rights objections, and International Center for Expertise of the International Chamber of Commerce for community objections and limited public interest objections.

[612] ICANN, *Applicant Guidebook*, Sections 2-2, 2-4. An initial evaluation was carried out by ICANN, which looked at "String similarity, Reserved names, DNS stability and Geographic names.." and in particular "Whether the applied-for gTLD string is so similar to other strings that it would create a probability of user confusion; Whether the applied-for gTLD string might adversely affect DNS security or stability; and Whether evidence of requisite government approval is provided in the case of certain geographic names."

[613] The GAC advised that single and plural versions of the same word could create confusion for consumers and should be avoided. See ICANN GAC, *Beijing Communiqué.*

- **Community objections,** where there was substantial opposition from a significant portion of the community that the string targets.[614]

- **Limited Public Interest Objections**, which were objections on the grounds that the gTLD applied for contradicted generally accepted legal norms of morality and public order recognized under principles of international law.

- **Legal rights**, which the objector could claim would be violated if a particular string was delegated.[615]

The review team's analysis of the outcome of the dispute resolutions relating to string confusion objections showed that there were 230 exact match sets (i.e., multiple applicants for the same gTLD), and in some cases up to 13 applicants for the same gTLD (for example, .app, .book, and .blog), the majority of which were resolved.[616] However, a few are still on hold at the time of writing, including, for example: gay, .home, .cpa, .llp, .hotel, .llc, .mail, .llc, .inc, and .corp. It should be noted that many applications had objections filed on more than one ground (for example, community plus limited public interest, or confusability plus community).

String confusion objections were brought before the International Centre for Dispute Resolution (ICDR), the international division of the American Arbitration Association (AAA). From the cases reviewed by the review team of the outcome of ICDR panels on objections to new gTLD applications regarding similarity between the singular and plural version of the same gTLD, it would appear there was not a clear, consistent ruling in all cases. In some cases, singular and plural versions were not considered to be confusingly similar (for example .car/.cars), whereas in other cases the plural was considered to be confusingly similar (for example .pet/.pets; .web/.webs; .game/.games).[617]

It would appear that inconsistency in outcome on singular/plural cases arose because the dispute resolution process allowed for different expert panelists to examine individual cases, even though they were based on similar situations. Although this was intended to give the panelists latitude to consider the facts of each individual application, it also meant that different expert panelists could come to different conclusions in cases that otherwise might have been considered to have similar characteristics. This could be avoided in future by ensuring that all similar cases of plural versus singular strings were examined by the same expert panelist, or by determining in advance that strings would not be delegated for singular and plurals of the same gTLD. All such similar applications would be resolved either by negotiation between the parties, for example, via a private auction, or by ICANN auction. Whatever the option chosen, it should be made clear in the Applicant Guidebook in advance of any future round of new gTLDs.

Furthermore, there was no appeal mechanism foreseen after the dispute resolution panel had taken its decision. This meant that some unsuccessful objectors then sought to have their cases considered either by the ICANN Board or the ICANN Ombudsman for resolution via ICANN Accountability Mechanisms.[618] In order to avoid different solutions to similar problems and consistency of outcome, and to ensure a fairer process overall in all objection cases,

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[614] See the "Allowing Specific Communities to be Served by a Relevant TLD" section of this report for a review of community objections.
[615] ICANN, *Program Implementation Review*, p. 104.
[616] Ibid., p. 64.
[617] International Center for Dispute Resolution, "ICANN New gTLD Program: Listing of String Confusion Objections Filed and Determinations," accessed 10 August 2018, http://info.adr.org/icanngtld/
[618] ICANN, "Accountability Mechanisms," accessed 10 August 2018, https://www.icann.org/resources/pages/mechanisms-2014-03-20-en

introducing a post-dispute resolution panel review mechanism (as proposed in the ICANN Program Implementation Review) should be considered.[619]

Recommendation

From the initial information available, the conclusions are:

Recommendation 35: The Subsequent Procedures PDP should consider adopting new policies to avoid the potential for inconsistent results in string confusion objections. In particular, the PDP should consider the following possibilities:

1. Determining through the initial string similarity review process that singular and plural versions of the same gTLD string should not be delegated.

2. Avoiding disparities in similar disputes by ensuring that all similar cases of plural versus singular strings are examined by the same expert panelist.

3. Introducing a post-dispute resolution panel review mechanism.

Rationale/related findings: From a review of the outcome of singular and plural cases, it would appear that discrepancies in outcomes arose because the dispute resolution process allowed for different expert panelists to examine individual cases, although they were based on similar situations. This meant that different expert panelists could come to different conclusions in cases that otherwise might have been considered to have similar characteristics

The ICANN Program Implementation Review found that there was no recourse after a decision was reached by an expert panel. Given that there appear to be inconsistencies in the outcomes of different dispute resolution panels, it would be useful to establish a review mechanism.

There appear to be inconsistencies in the outcomes of different dispute resolution panels regarding singular and plural versions of the same word, which should be avoided in order to avoid confusing consumers.[620]

To: New gTLD Subsequent Procedures PDP Working Group

Prerequisite or priority level: Prerequisite

Consensus within team: Yes

Details: While the details should be left to the New gTLD Subsequent Procedures Working Group, the CCT Review Team believes there should be a mechanism created to specifically allow for objections by individual members of the GAC and means to challenge assertions of fact by GAC members. Finally, some sort of appeals mechanism is imperative.

Success measures: No string confusion objections are filed for cases of singular and plural versions of the same string. Or, should singular and plural versions be allowed, objection panels evaluate all such cases with a consistent approach so that all single or plural disputes are resolved in the same manner.

[619] ICANN, *Program Implementation Review*, p. 114.
[620] This was also mentioned in the GAC's *Beijing Communiqué.*

Table 19: List of Single/Plural Strings Applied for and Delegated (in Yellow Highlight)[621]

.tour	.tours
.web	.webs
.sport	.sports
.kid	.kids
.gift	.gifts
.game	.games
.deal	.deals
.coupon	.coupons
.car	.cars
.fan	.fans
.home	.homes
.hotel	.hotels
.hotel	.hoteles
.loan	.loans
.market	.markets
.watch	.watches
.pet	.pets
.photo	.photos
.property	.properties
.review	.reviews
.supply	.supplies
.work	.works
.auto	.autos
.cruise	.cruises
.career	.careers
.accountant	.accountants

[621] See ICANN, "New gTLD Current Application Status," accessed 10 August 2018, https://gtldresult.icann.org/application-result/applicationstatus. The page contains a search function with a capability to filter applications on the basis of whether are part of a contention set.

11 Appendices

Appendix A: Glossary of Terms

Term	Acronym (if applicable)	Definition
Applicant Guidebook	AGB	A document describing the requirements of the new gTLD application and evaluation processes.
American Standard Code for Information Exchange	ASCII	Character encoding based on the English alphabet.
Botnet Command-and-Control	Botnet C2	Using domain names as a way to control and update botnets, which are networks of thousands to millions of infected computers under the common control of a criminal. Botnets can automate and amplify the perpetration of many forms of DNS abuse.
Compromised Domains		Domains in which a malicious actor has broken into the web hosting of a registrant for the express purpose of engaging in DNS abuse.
Country Code Top-Level Domain	ccTLD	A class of top-level domains only assignable to represent countries and territories listed in the ISO 3166-1 standard. See http://www.iana.org/domains/root/db.
DNS Abuse		Intentionally deceptive, conniving or unsolicited activities that actively exploit the DNS and/or the procedures used to register domain names.
DNS Security Abuse		DNS abuse related to cybersecurity, such as malware distribution, phishing, pharming, botnet command-and-control, and high volume spam.
Domain Name System	DNS	The global hierarchical system of domain names.
Governmental Advisory Committee	GAC	An ICANN committee comprising appointed representatives of national governments, multinational governmental organizations and treaty organizations, and distinct economies. Its function is to advise the ICANN Board on matters of concern to governments. The GAC operates as a forum for the discussion of government interests and concerns, including consumer interests. As an Advisory Committee, the GAC has no legal authority to act for ICANN, but will report its findings and recommendations to the ICANN Board.
Generic Names Supporting Organization	GNSO	ICANN's policy development body for generic TLDs and the lead in developing policy recommendations for the introduction of new gTLDs. The GNSO is the body of six constituencies: the Commercial and Business Constituency, the gTLD Registry Constituency, the Internet Service Provider(ISP) Constituency, the Non-Commercial Constituency, the Registrar Constituency, and the Intellectual Property (IP) Constituency.
Generic Top-Level Domain	gTLD	Generic top-level domains (gTLDs) are one of the categories of top-level domains (TLDs) maintained by

		the Internet Assigned Numbers Authority (IANA) for use in the Domain Name System of the Internet. They have three or more characters, and can be used for general purposes.
Internet Assigned Numbers Authority	IANA	IANA is the authority originally responsible for overseeing Internet Protocol (IP) address allocation, coordinating the assignment of protocol parameters for Internet technical standards, managing the DNS (including delegating top-level domains), and overseeing the root name server system. Under ICANN, IANA distributes addresses to Regional Internet Registries, coordinates with the IETF and other technical bodies to assign protocol parameters, and oversees DNS operation.
Internationalized Domain Name	IDN	A domain name consisting, in whole or in part, of characters used in the local representation of languages other than the basic Latin alphabet (a–z), European-Arabic digits (0–9) and the hyphen (-).
Malicious Registrations		Domains registered by malicious actors for the express purpose of engaging in DNS abuse.
Malware		Software intended to damage, disable or otherwise gain access to the computer systems of others in order to engage in various forms of DNS abuse.
Public Interest Commitment	PIC	PICs are safeguards enumerated in Specification 11 of the Registry Agreement, which are intended to hold registry operators to certain standards. PICs are a mechanism to allow registry operators to commit to binding contractual obligations that may be enforced by ICANN Compliance and via the Public Interest Commitments Dispute Resolution Procedure (PICDRP).
Public Interest Commitment Dispute Resolution Procedure	PICDRP	A dispute resolution procedure established to address complaints that a Registry Operator may not be complying with the Public Interest Commitments set forth in Specification 11 of its Registry Agreement.
Phishing		A form of DNS abuse in which a website address or link is sent via email to Internet users to direct them to a website that fraudulently presents itself as a trustworthy site with the purpose of deceiving those users into divulging sensitive information (e.g., online banking credentials or email passwords). The goal of phishing is usually the theft of funds or other valuable assets.
Registry Agreement	RA	The agreement executed between ICANN and successful gTLD applicants.
Registry Services Evaluations Policy/Registry Services Evaluation Process	RSEP	RSEP is ICANN's process for evaluating proposed gTLD registry services or contractual modifications for security, stability or competition issues.
Registry Services Provider	RSP	A company that manages the operations of a TLD on behalf of the TLD owner or licensee. The RSP keeps the master database and generates zone files to allow computers to route Internet traffic using the DNS.
Security and Stability Advisory Committee	SSAC	An advisory committee to the ICANN Board composed of technical experts from industry and academia, as well as operators of Internet root servers, registrars and TLD registries.

Spam		Bulk unsolicited emails sent from domains that are used to advertise websites. Spam is often an avenue for phishing and malware distribution.
Top-Level Domain	TLD	A name at the top of the DNS naming hierarchy. It appears in domain names as the string of letters following the last dot, such as “net” in www.example.net. The TLD administrator controls which second-level names are recognized in that TLD. The administrators of the root domain or root zone control which TLDs are recognized by the DNS.
Trademark Clearinghouse	TMCH	A repository for trademark data supporting rights protection services offered by new gTLD registries.
Uniform Domain Name Dispute Resolution Policy	UDRP	A policy under which challenges to domain name registrations are resolved by a mandatory online arbitration based upon written statements and arguments. All ICANN-accredited registrars follow a uniform dispute resolution policy.
Uniform Rapid Suspension	URS	The URS provides trademark holders with a streamlined and quick mechanism to "take down" clear cases of infringements domain names. A successful proceeding will result in the suspension of the domain name for the balance of its registration term. Compliance with URS decisions is mandatory for all new ICANN-accredited gTLD operators.

Appendix B: Review Process

Founding Documents

The CCT prepared Terms of Reference[622] and several iterations of the Work Plan[623], which was regularly updated, to guide its work. The two founding documents were adopted in March 2016. The Terms of Reference set the review team's mandate, includes detailed definitions of key concepts, outlines the expected deliverables, and establishes ground rules pertaining to the process, engagement, and tools used to conduct work. The Work Plan identifies milestones and deliverables in the CCT Review's lifecycle, lists data elements to be considered, and establishes timelines.

The CCT adopted a conflict of interest policy in March 2016.[624] All members' declarations were submitted in accordance with the policy and made public on the CCT wiki.[625] All CCT calls began with a request to provide updates to statements of interests.[626]

Modus Operandi

The CCT conducted its work on publicly archived mailing lists.[627] Its meetings and conference calls were open to silent observers. Observers were also welcome to subscribe to mailing lists (with viewing rights only). Activities of the review team are documented on a public wiki space.[628]

The CCT operated in a consensus fashion.

Subteams

Its mandate being threefold, the CCT decided to conduct its work by establishing three subteams: (1) Competition and Consumer Choice; (2) Safeguards and Consumer Trust; and (3) the Application and Evaluation Process of the New gTLD Program.

- The **Competition and Consumer Choice** subteam – led by Jordyn Buchanan – was tasked with reviewing the available data on competition and consumer choice, requesting additional data or other resources that may assist in their review, and reporting to the larger CCT Review Team on its findings and recommendations. The group utilized the work of Analysis Group, which conducted an ICANN-commissioned

[622] Competition, Consumer Trust and Consumer Choice Review Team (23 March 2016), *Terms of Reference,* accessed 10 August 2018, https://community.icann.org/download/attachments/58727379/CCTRTToRDRAFTv6.pdf?version=1&modificationDate=1458753064411&api=v2

[623] Competition, Consumer Trust and Consumer Choice Review Team (23 March 2016), *Work Plan,* accessed 10 August 2018, https://community.icann.org/download/attachments/58727379/DRAFT%20workplan%20v2.pdf?version=1&modificationDate=1458753104114&api=v2

[624] Competition, Consumer Trust and Consumer Choice Review Team (9 March 2016), *Conflict of Interest Policy*, accessed 10 August 2018, https://community.icann.org/download/attachments/58732354/CoIPolicy-CCTReviewTeam-revised9March2016.pdf?version=1&modificationDate=1459161203000&api=v2

[625] ICANN, "Composition of Review Team," accessed 10 August 2018, https://community.icann.org/display/CCT/Composition+of+Review+Team

[626] The statements of interest of the review team members can be found at https://community.icann.org/display/CCT/Composition+of+Review+Team.

[627] ICANN, "Email Archives," accessed 10 August 2018, https://community.icann.org/display/CCT/Email+Archives

[628] ICANN, "Competition, Consumer Trust and Consumer Choice," accessed 10 August 2018, https://community.icann.org/display/CCT/Competition%2C+Consumer+Trust+and+Consumer+Choice

economic study on the competitive effects of the New gTLD Program on the domain name marketplace. [629]The Competition and Consumer Choice subteam conducted work on a dedicated mailing list[630] and calls.[631]

- The **Safeguards and Trust** subteam – led by Laureen Kapin and Andrew Bagley – was created to explore two key areas of the review as outlined in section 9.3 of the Affirmation of Commitments: (1) consumer trust; (2) effectiveness of safeguards put in place to mitigate issues involved in the introduction or expansion of new gTLDs. The Safeguards and Consumer Trust subteam conducted work on a dedicated mailing list[632] and calls.[633]
- Although the **Effectiveness of the Application and Evaluation Process of the New gTLD Program** is considered a subteam, it assembles all the members of the full review team. Application and Evaluation Process-related discussions were held on plenary calls. The subteam – led by Jonathan Zuck – focused its activities around three tracks: (1) successful applicants, determining the challenges successful applicants faced, the support they received and an assessment of the impact of the GAC early warnings on the process; (2) unsuccessful applicants, assessing causes of failure and the support received; (3) missing applicants, with an emphasis on the developing world, to better understand why these would-be registries did not submit an application.
- An **INTA Impact Study** subteam - led by David Taylor - was limited in time as it was formed to analyze and draw conclusions on the INTA Impact Study results. The subteam held three dedicated calls.[634]

Template

Building on readings and discussions, the CCT Review Team formulated sets of high-level questions to be addressed and developed a list of discussion papers. To ensure consistency in the subteams' work leading to draft recommendations, the CCT Review Team adopted a template that framed the drafting effort.[635] The CCT made its recommendations on fact-based findings.

Consensus

The draft report and recommendations were developed according to a bottom-up, multistakeholder approach. The Draft Report was circulated for review and comment by the CCT from December 2016 to January 2017. The first reading took place during the 7 December 2016 plenary meeting and the final on 16 February 2017. Following the final reading, the draft report was sent to the CCT for a 24-hour period to relay any additional edits. The draft report is the outcome of extensive work by the CCT conducted during the first 12 months of its work, during which it held 81 calls or meetings. It represents a careful consideration of the data received and a diligent attention to the input received.

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629 Analysis Group, *Phase I Assessment* (2015) and Analysis Group, *Phase II Assessment* (2016)
630 ICANN, "The cctreview-competition Archives" accessed 10 August 2018, http://mm.icann.org/pipermail/cctreview-competition/
631 ICANN, "Competition and Consumer Choice - Calls," accessed 10 August 2018, https://community.icann.org/pages/viewpage.action?pageId=58737630
632 ICANN, "The cctreview-safeguards Archives," accessed 10 August 2018, http://mm.icann.org/pipermail/cctreview-safeguards/
633 ICANN, "Safeguards and Trust - Calls," accessed 10 August 2018, https://community.icann.org/pages/viewpage.action?pageId=58737319
634 ICANN, "INTA Impact Study - Calls" https://community.icann.org/x/oGjwAw
635 Competition, Consumer Trust and Consumer Choice Review Team,, *CCTRT Discussion Paper Worksheet,"* accessed 10 August 2018, https://community.icann.org/download/attachments/58727456/Revised%20template%20%28adopted%29.docx?version=1&modificationDate=1471445497000&api=v2

Consultations and Outreach Efforts

An outreach plan was designed to ensure that the CCT's work was discussed by the entire ICANN community in a robust and timely fashion.

The CCT sought input from the global multistakeholder community throughout the development of its draft report. Consultation was conducted through (but not limited to) the following channels:

- Engagement sessions at ICANN meetings, e.g., the CCT sought input on its interim recommendations at ICANN57[636]
- Updates to Supporting Organizations and Advisory Committees through membership representation

In addition, the CCT posted blogs, communiqués, and videos to document its progress and establish resources for further engagement.

Any community member may contact the CCT to share input or ask questions. Any submission to the list input-to-cctrt@icann.org is publicly archived.[637]

In light of the synergies between the CCT and New gTLD Subsequent Procedures PDP Working Group mandates, regular coordination calls were held between leadership of both groups to ensure no significant overlap occurs and to complement each other's work. The CCT invited the Subsequent Procedures PDP Working Group to provide input on the applicant survey questions prior to its launch and sought input on its interim recommendations.

In addition, the CCT sought input from ICANN's Global Domains Division on the feasibility of implementing its recommendations, to be shared after the publication of the draft report.[638]

Budget Management

Further to an exchange held with ICANN CFO Xavier Calvez, the CCT appointed Jonathan Zuck – CCT Chair – as the assigned budget manager in an effort to be fiscally responsible and accountable for its budget management. The budget manager works with the ICANN organization to meet the budget restrictions in place.

[636] ICANN, "ICANN57 Hyderabad: Input to Competition, Consumer Choice, Consumer Trust Review Team," accessed 10 August 2018, https://icann572016.sched.com/event/8czO/input-to-competition-consumer-choice-consumer-trust-review-team

[637] ICANN, "The Input-to-CCTRT Archives," accessed 10 August 2018, http://mm.icann.org/pipermail/input-to-cctrt/

[638] ICANN (19 May 2017), *ICANN Organization Inputs: Competition, Consumer Trust and Consumer Choice Review Team Draft Report*, accessed 10 August 2018, https://mm.icann.org/pipermail/comments-cct-rt-draft-report-07mar17/attachments/20170520/06db1b61/ICANNInputsonCCTRTRecs-19May2017.pdf and ICANN (15 January 2018), *ICANN Org Inputs: Competition, Consumer Trust and Consumer Choice Review Team Draft Report*, https://mm.icann.org/pipermail/comments-cct-recs-27nov17/attachments/20180126/b9ad18cc/CCT-NewRecs-Input-26jan18-0001.pdf

Appendix C: Surveys and Studies

Several surveys and studies were commissioned prior to the launch of the CCT to inform its work. These are referenced in footnotes throughout the report, and can also be viewed in the bibliography:

- An Implementation Advisory Group was convened by the ICANN Board in 2013 to examine a series of potential metrics that were proposed by the Generic Names Supporting Organization (GNSO) and the At-Large Advisory Committee (ALAC). This team, referred to as the IAG-CCT, evaluated the feasibility, utility and cost-effectiveness of adopting several recommended metrics produced by these two groups and issued a set of 66 metrics, which the ICANN Board adopted for the CCT to consider.[639] ICANN organization has continued to collect data on many of these metrics.[640] Of the 66 recommended metrics, several included baseline figures that capture a snapshot of behaviors and activity in the domain name marketplace prior to the introduction of new gTLDs. Depending on the metric, the baseline period may span from one year to multiple years prior to the delegation of new gTLDs.

  - The IAG-CCT determined that a subset of the metrics was best evaluated using a consumer and registrant survey. Nielsen's Wave 2 Consumer Survey results were released in June 2016.[641] The study measured Internet users' current attitudes about the gTLD landscape and the DNS, as well as changes in these consumers' attitudes from Nielsen's Wave 1 Consumer Survey, which was conducted in 2015.[642] Internet users were asked about aspects of consumer awareness, consumer choice, experience, and trust. The consumer survey's respondents included a representative sample of Internet users from all five ICANN regions and was conducted in each sampled country's relevant language. Results of the Phase 2 study revealed more than half of respondents (52 percent) were aware of at least one new gTLD, and overall, trust of the domain name industry relative to other technology-related industries has improved.

  - Similarly, Nielsen conducted a global domain name registrant survey, which targeted those who have at least one registered domain name. Survey participants were questioned about their awareness of new gTLDs, as well as their perceived sense of choice, experience, and trust related to the current gTLD landscape. Nielsen's Wave 1 Registrant Survey results were issued in September 2015.[643] The CCT received the Wave 2 Registrant Survey results on 15 September 2016.[644] Results revealed that new gTLDs included in both phases of the survey to have similar awareness levels, with higher awareness reported in South America and Asia Pacific, and that trust in the domain name industry generally remains high, particularly in Asia.

  - A second subset of IAG-CCT metrics aims to measure competition in the new gTLD marketplace based on an analysis of pricing data and other, non-price-related indicia. ICANN contracted with Analysis Group to conduct an economic study with two primary aims: 1) gauge the pricing practices for domains in new gTLDs against those in the legacy space; and 2) provide a qualitative analysis of other non-price competition indicators, like technical or other business innovations. Analysis Group's Phase 1

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[639] Implementation Advisory Group for Competition, Consumer Trust, and Consumer Choice (2014), *Final Recommendations*
[640] ICANN, "Competition, Consumer Trust and Consumer Choice (CCT) Metrics Reporting."
[641] Nielsen, Consumer Research Wave 2 (2016).
[642] Nielsen, Consumer Research (2015).
[643] Nielsen, Registrant Survey (2015).
[644] Nielsen, Registrant Survey Wave 2 (2016).

Assessment results were delivered in September 2015.[645] Analysis Group's Phase II Assessment describes how the competition metrics established in the Phase I Assessment have changed (or remained the same) as the New gTLD Program expanded over the course of one year (review team members provided feedback to Analysis Group on its methodology and approach prior to beginning the Phase II analysis) .[646] Results of the Phase II economic study, which were delivered in October 2016, revealed a decline in the share of new gTLD registrations attributable to the four and eight registries with the most registrations. They also revealed volatility in the registration shares held by registry operators.

- To help the review team assess the effectiveness of the New gTLD Program's application and evaluation processes, as well as safeguards put in place to mitigate abuse, ICANN organization collaborated with the community to draft the following reports:
  - The *Revised Program Implementation Review*, published in January 2016, examines the effectiveness and efficiency of ICANN's implementation of the New gTLD Program from the ICANN organization perspective.[647]
  - The *New gTLD Program Safeguards Against DNS Abuse: Revised Report* explores methods for measuring the effectiveness of safeguards to mitigate DNS abuse that were implemented as part of the New gTLD Program. It outlines which activities may constitute DNS abuse and provides a preliminary literature review examining rates of abuse in new gTLDs and the DNS as a whole.[648]
  - The *Rights Protection Mechanisms Review*: *Revised Report* evaluates data on key protection mechanisms such as the Trademark Clearinghouse, the Uniform Rapid Suspension System, and Post-Delegation Dispute Resolution Procedures. The interaction between Rights Protection Mechanisms and other elements of the New gTLD Program are also considered.[649]
- To supplement the existing data, the CCT requested additional surveys and studies to further inform its work:
  - The Competition and Consumer Choice subteam requested data on pricing and registration analyses from Analysis Group and ICANN organization to help answer research questions on the effectiveness of the New gTLD Program in promoting price competition among gTLD operators, registrars, and resellers.
  - The Competition and Consumer Choice subteam sought legacy gTLD parking data to complement the new gTLD parking data available on ntldstats.com. The parking data allowed the subteam to see a more accurate picture of registrations in each registry by controlling for registration numbers that do not reflect "active" registrations. The subteam also obtained ccTLD registration data from CENTR and Zooknic.[650]
  - At the request of the review team, ICANN contracted with SIDN Labs to conduct a study analyzing rates of abusive, malicious, and criminal activity in new and legacy gTLDs. The *Statistical Analysis of DNS Abuse in gTLDs: Final Report* compares rates

[645] Analysis Group, *Phase I Assessment* (2015)
[646] Analysis Group, *Phase II Assessment* (2016)
[647] ICANN, *Program Implementation Review* (2016)
[648] ICANN Operations and Policy Research, *New gTLD Program Safeguards Against DNS Abuse: Revised Report* (July 2016.
[649] ICANN, *Rights Protection Mechanisms Review* (2015)
[650] ICANN CCT Wiki, "Studies, Research, and Background Materials."

of these activities between new and legacy gTLDs, as well as employs inferential statistical analysis to measure the effects of DNSSEC, domain parking, and registration restrictions on abuse rates using historical data covering the first three full years of the New gTLD Program (2014 – 2016).[651]

- At its third face-to-face meeting in June 2016, the CCT requested that an applicant survey be commissioned. In addition to addressing topics pertaining to competition, consumer choice and trust, the survey was also tasked with reviewing the effectiveness of the application and evaluation process of the New gTLD Program. The CCT sought answers to gain a better understanding of applicants' views on the application process among those who completed the process, are actively in progress, and those who withdrew their applications.

- To help inform its assessment of the application and evaluation process, the CCT requested that AMGlobal Consulting research and conduct interviews with firms, organizations and other institutions in the "Global South" that did not apply for new gTLDs, but who may have been considered good candidates for the program as cohorts of similar entities that did apply.[652] The purpose of this research was to obtain a deeper understanding of consumer awareness of the New gTLD Program, as well as why more firms from the Global South did not apply to the Program. The report was delivered in November 2016. It included recommendations such as creating outreach tools for non-expert audiences to answer their questions on cost, application process, timing, and about ICANN itself. Another recommendation was to provide the community with a full explanation of the different uses for new gTLDs in order to address business model and use case questions the community might have. Regarding future application rounds, the report proposed to develop additional research on the best ways to reach the general public in the Global South, build dialogue around new gTLDs in the public-private sphere, and, to the greatest extent possible, start preparing the public for the next round as soon as possible.

- In addition, the CCT used the results from a survey commissioned by the International Trademark Association (INTA). The survey, conducted between January and February 2017, received responses from 33 INTA corporate members, non-INTA corporate members, and IP owners who responded to questions on the costs incurred by their clients related to the expansion of the TLD space. The survey, which was sent to 1,096 potential respondents, provided insight into these trademark holders' experiences with the Program.[653]

[651] SIDN Labs and the Delft University of Technology (August 2017), *Statistical Analysis of DNS Abuse in gTLDs.*
[652] AMGlobal, *New gTLDs and Global South* (2015).
[653] Nielsen (April 2017), *INTA New gTLD Cost Impact Survey.*

Appendix D: Public Comments

With its Initial Report, the review team provided a relatively granular set of recommendations to encourage input via public comment.[654] The review team received a total of twenty three comments on the first part of its Draft Report, and seventeen comments on the second part of its draft report.[655] These comments were submitted from sixteen stakeholder groups and constituencies and by five individuals, two governments or governmental agencies, five companies, ten coalitions, and the ICANN Organization and Board. All comments were made available to the entire review team and its relevant subgroups. Each group examined the public comments as they related to each proposed recommendation. ICANN organization assisted in this process by creating a spreadsheet that noted the applicability of each public comment to a specific review team recommendation.[656] Finally, the review team explored comments not tied to a specific recommendation but instead to the underlying findings of the report.

While there was general support for most of the recommendations, a few themes stood out in the public comments. First, it became clear that the review team needed to be specific about which actors in the community would be called on to implement a recommendation, while leaving room for those actors to determine the best way to implement it. Accordingly, the review team endeavored to identify the most appropriate actors while rewriting several recommendations to allow more flexible implementation. Second, it was clear from the comments on the Initial Report that the review team made recommendations for research with no clear practical value. Several of those recommendations were modified or eliminated.

The review team engaged in a systematic process of reviewing the public comments, summarizing them for the entire review team and assessing what revisions should be made to the proposed recommendations, if any. Any proposed changes were discussed and agreed upon by the both the applicable subteam and the entire review team. Any final recommendations that lacked full consensus would be noted in this Final Report. The comments received comprised varying, and in certain instances, conflicting views. Although the review team considered every comment received, it only revised recommendations when the full Review agreed that revision was necessary to clarify, amend, or further improve the recommendation. The ICANN organization and the review team created two spreadsheets to track the review team's consideration of the public comments.[657]

The review team appreciates the thoughtful public comments it received, which reflected a genuine effort on the part of commenters to provide constructive input and guidance. Although the review team did not accept every comment offered, the review team is grateful for the good faith effort to provide diverse perspectives. The review team believes this Final Report

[654] ICANN, "Competition, Consumer Trust and Consumer Choice Review Team Draft Report of Recommendations for New gTLDs," accessed 10 August 2018, https://www.icann.org/public-comments/cct-rt-draft-report-2017-03-07-en
[655] Ibid. and ICANN, "Competition, Consumer Trust, and Consumer Choice Review Team – New Sections to Draft Report of Recommendations," accessed 10 August 2018, https://www.icann.org/public-comments/cct-rt-draft-report-2017-03-07-en
[656] ICANN, "Competition, Consumer Trust and Consumer Choice Review Team Draft Report of Recommendations for New gTLDs: Staff Report of Public Comment Proceeding," 10 July 2017, accessed 10 August 2018, Section IV (click "Summary of Comments" hyperlink to download the spreadsheet).
[657] ICANN CCT Wiki,"Plenary Drafts/Documents" accessed 5 September 2018, https://community.icann.org/download/attachments/58727456/CCTRT%20Public%20Comment%20-%20Draft%20Report%20-%2010July2017%20Approved.xlsx?version=1&modificationDate=1536147730041&api=v2, and https://community.icann.org/download/attachments/58727456/CCTRT%20Public%20Comment%20-%20New%20Sections%20-%2015Feb2018%20Approved.xlsx?version=1&modificationDate=1536142801000&api=v2.

contains improved recommendations that reflect the constructive feedback it received as part of the public comment process.

Draft Report Public Comment Period

The review team submitted its Draft Report for public comment, which included 50 draft recommendations, from 7 March 2017 to 19 May 2017.[658] The review team presented its draft recommendations and sought input from the community at ICANN58 and on various occasions, including:

- Two webinars held on 3 April 2017[659]
- A Community engagement session at ICANN58[660]

A summary of the 23 public comments received was published on 10 July 2017, which the review team used as a basis to review and update its draft recommendations.[661]

Draft Report With New Sections Public Comment Period

Following the results of the INTA survey and the publication of the DNS Abuse Study, the CCT added new sections to its previous report pertaining to DNS abuse, costs to trademark holders, parking and consumer choice. Ten recommendations were submitted for public comment from 27 November 2017 to 15 January 2018.[662]

The review team sought input from the community at ICANN60 during an engagement session, had individual outreach sessions, and also held a webinar to discuss the new sections.[663]

A summary of the 17 public comments received was published on 15 February 2018, which the review team used as a basis to review and update its draft recommendations.[664]

All outreach and engagement actions from the review team are available on its wiki page.[665]

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658 ICANN, "Competition, Consumer Trust and Consumer Choice Review Team Draft Report of Recommendations for New gTLDs,"
659 ICANN CCT Wiki, "Webinars: CCTRT Draft Recommendations," 3 April 2017, accessed 10 August 2018, https://community.icann.org/display/CCT/Webinars%3A+CCTRT+Draft+Recommendations+-+3+April+2017
660 ICANN CCT Wiki, "Community Discussion – ICANN58," 12 March 2017, accessed 10 August 2018, https://community.icann.org/display/CCT/Community+Discussion+-+ICANN58
661 ICANN, "Competition, Consumer Trust and Consumer Choice Review Team Draft Report of Recommendations for New gTLDs."
662 ICANN, "Competition, Consumer Trust, and Consumer Choice Review Team – New Sections to Draft Report of Recommendations."
663 ICANN CCT Wiki, "Webinar: CCTRT New Sections of Draft Report," 18 December 2017, accessed 10 August 2018, https://community.icann.org/display/CCT/Webinar%3A+CCTRT+New+Sections+of+Draft+Report+-+18+December+2017+@+16%3A00+UTC
664 ICANN, "Competition, Consumer Trust, and Consumer Choice Review Team – New Sections to Draft Report of Recommendations."
665 ICANN CCT Wiki, "Outreach and Engagement," accessed 10 August 2018, https://community.icann.org/pages/viewpage.action?pageId=58729463

Appendix E: Terms of Reference

The Affirmation of Commitments

The Affirmation of Commitments signed on 30 September 2009 between ICANN and the U.S. Department of Commerce (the "AoC") contain specific provisions for periodic review of four key ICANN objectives, including "promoting competition, consumer trust, and consumer choice."

Under the AoC, ICANN agreed to ensure that as it contemplated expanding the top-level domain space, the various issues that are involved (including competition, consumer protection, security, stability and resiliency, malicious abuse issues, sovereignty concerns, and rights protection) would be adequately addressed prior to implementation. In Section 9.3 of the AoC, ICANN committed to the following:

> *…when new gTLDs (whether in ASCII or other language character sets) have been in operation for one year, ICANN will organize a review that will examine the extent to which the introduction or expansion of gTLDs has promoted competition, consumer trust and consumer choice, as well as effectiveness of (1) the application and evaluation process and (2) safeguards put in place to mitigate issues involved in the introduction or expansion. ICANN will organize a further review of its execution of the above commitments two years after the first review, and then no less frequently than every four years. The reviews will be performed by volunteer community members and the review team will be constituted and published for public comment, and will include the following (or their designated nominees): the Chair of the GAC, the CEO of ICANN, representatives of the relevant Advisory Committees and Supporting Organizations, and independent experts. Composition of the review team will be agreed jointly by the Chair of the GAC (in consultation with GAC members) and the CEO of ICANN. Resulting recommendations of the reviews will be provided to the Board and posted for public comment. The Board will take action within six months of receipt of the recommendations.*

This appendix details the terms of reference that the CCT will use to carry out its duties under the AoC.

The goal of the CCT is to assess the impact of the expansion of the DNS marketplace on competition, consumer trust and consumer choice. In addition, this review shall examine the effectiveness of the application and evaluation process used for the 2012 round of gTLD applications, and the effectiveness of the safeguards enacted to mitigate issues involved in the introduction of new gTLDs. The review defines effectiveness as, "to what degree the process (of implementing the New gTLD Program) was successful in producing desired results/achieving objectives." The CCT will analyze both quantitative and qualitative data to produce recommendations for the ICANN Board to consider and adopt.

This inaugural review will lay the groundwork for recurring reviews, which the AoC requires no less frequently than every three years, subject to potential revision of the ICANN Bylaws. These recurring reviews will play an important role in assessing how ICANN continues to meet its commitments in the areas of competition, consumer trust, and consumer choice. This first review will examine the initial impact of the New gTLD Program in these three areas.

Background

ICANN has anticipated this review since the AoC was signed with the U.S. Department of Commerce in 2009. Since that time, the ICANN Board has turned to the community for its input on metrics that may be used for data-based recommendations. To that end, the ICANN Board tasked the GNSO and ALAC to propose metrics in December 2010. In June 2011, at the ICANN meeting in Singapore, a working group was formed to come up with recommended metrics for the CCT review. The working group's goal was to provide the ICANN Board with definitions, measures, and targets that could be useful to the CCT Review Team. In December 2012, the group presented the Board with a document detailing 70 recommended metrics, with proposed definitions and three-year targets.

The ICANN Board formed the IAG-CCT in September 2013 to review those recommended metrics and make recommendations to the review team based on an evaluation of the feasibility, utility and cost-effectiveness of each of the proposed 70 metrics. The group first met in November 2013, via conference call, then in person at the ICANN 48 meeting in Buenos Aires. In March 2014, the IAG-CCT made an interim recommendation to commission a survey of Internet users and registrants to gauge their sense of trust and choice, and an economic study on gTLD pricing and marketplace. The ICANN Board adopted those recommendations. In September 2014, the IAG-CCT submitted its final recommendations to the ICANN Board, which adopted those recommendations in February 2015. Those recommendations included the collection of 66 metrics related to competition, consumer trust and consumer choice. The IAG-CCT also revised the original recommendations from the GNSO-ALAC working group.

Framework

ICANN's commitment to promoting competition, consumer trust and consumer choice within the New gTLD Program requires a clear understanding of the program's history and its role in ICANN, followed by a focused examination of its development and implementation. As one of the four key objectives to be evaluated as part of the AoC, the CCT review will also help frame how ICANN may approach future rounds of new gTLDs.

Scope

This review shall assess the New gTLD Program's impact on competition, consumer trust and consumer choice. This includes reviewing the implementation of policy recommendations from the launch of the program through delegation and on to general availability. To conduct the evaluation, review team members may be asked to review data derived from processes related to the program, as well as broader inputs on marketplace indicators and consumer trends and feedback from the community. While these other inputs are not related to this particular review, the findings and information produced from these may be useful to the CCT's work. For those efforts for which this review is critical, to complete their work, the CCT shall endeavor to issue its findings and recommendations in a timely manner such that those efforts may take these into consideration. Efforts under way that will rely on the findings and recommendations from this group may follow its progress on the CCT wiki page: https://community.icann.org/display/CCT/Competition%2C+Consumer+Trust+and+Consumer+Choice.

Data and Metrics

With the ICANN Board's February 2015 adoption of the IAG-CCT's 66 recommended metrics for collection, the ICANN organization has been continuously gathering and publishing data related to most of these metrics on the ICANN website: https://www.icann.org/resources/reviews/cct/metrics.

The February 2015 Board resolution also noted that the IAG-CCT, in its final report, set aside a group of metrics to be revisited by the CCT, when it began its work, as they required additional contextual analysis, or might require additional resources to capture the data. These metrics are noted in Table 4 of the IAG-CCT final report (https://community.icann.org/download/attachments/48349551/IAG-CCT%20Final%20report.docx?version=1&modificationDate=1418863127000&api=v2). The ICANN organization may provide their recommendations on feasibility for internal data collection and resources required for metrics that may require external data gathering.

ICANN Evaluation Reports

The AoC mandates an examination of the effectiveness of the application and evaluation processes used in the 2012 round of gTLD applications, including ICANN's implementation of the policy recommendations made for the New gTLD Program. To help inform the CCT, ICANN organization has compiled and published the Program Implementation Review report to provide staff perspective on the execution of the New gTLD Program, as well as incorporating feedback from stakeholders including applicants, service providers and other community members.

Finally, the review will also consider the effectiveness of safeguards enacted to mitigate abuse. This is understood to include a review of the rights protection mechanisms that were implemented in the program, as well as other efforts to mitigate DNS abuse (such as the various Public Interest Commitments incorporated into Registry Agreements). Reports produced on these topics will provide detailed insight to help the CCT enhance its recommendations and establish a proposed order of priority for implementation, as recommended by Recommendation 9 of the CCWG-Accountability proposal.

Definitions

An assessment of this type requires a common understanding of the terms associated with the review: consumer, competition, consumer trust and consumer choice.

Consumer: The term generally refers to a natural person, acting primarily for personal, family or household purposes and may, depending on the context, include businesses and government agencies as well. For the purposes of this review, consumers generally fall into two categories: (1) Internet users and other market participants who make use of domains through DNS resolution, such as by navigating to a URL or sending an email and (2) registrants (and potential registrants).

Consumer trust: The confidence Consumers have in the function, reliability, safety, security, and authenticity of the Domain Name System. This includes (1) trust in the consistency of name resolution; (2) confidence by Internet users that they can safely navigate to a domain name to find and safely use the site they intend to reach; (3) confidence that a TLD registry operator is fulfilling the registry's stated purpose and (4) confidence by a registrant in a domain's registration process and life cycle.

Consumer choice: The range of meaningful options arising from new entrants and innovations over incumbent offerings available to Consumers for domain names (including in their preferred languages and scripts.)

Competition: The rivalry between two or more parties in the domain name ecosystem (including but not limited to registries, registrars, resellers, registry service providers and registrants) acting independently to secure the business of a third party by offering innovative products and services and or the most favorable terms.
Relevant Market: For the purpose of this review, the CCT shall consider the competitive effects, costs, and benefits of the introduction of new gTLDs on the international domain name marketplace, which also includes legacy gTLDs and ccTLDs. Furthermore, the team may explore the impact of the New gTLD Program on the broader "internet identity" (social media, WIX, etc.) market. However, competitive dynamics in the domain name ecosystem unrelated to the introduction of new gTLDs are not in the scope of this review. The review team may break down the overall market by sector or region for its review and recommendations.

Process

CCT work will be conducted in English via teleconference calls, Adobe Connect web meetings and in person.

Communications and Transparency

1. Teleconferences will be recorded, subject to the right of a member of the CCT to take the discussion "off the record." Face to face meetings will be streamed, to the extent practicable and subject to the right of a member of the CCT to take the discussion "off the record." Wherever a meeting is taken "off the record," however, the record shall reflect this decision, as well as the underlying considerations that motivated such action.

2. The CCT will endeavor to post (a) action items within 24 hours of any telephonic or face to face meeting and (b) streaming video and/or audio recordings as promptly as possible after any such meeting, subject to the limitations and requirements described in subsection (1) above.

3. The CCT will maintain a public website, https://community.icann.org/display/CCT/Competition%2C+Consumer+Trust+and+Consumer+Choice, on which it will post: (a) minutes, correspondence, meeting agendas, background materials provided by ICANN, members of the RT, or any third party; (b) audio recordings and/or streaming video; (c) the affirmations and/or disclosures of members of the CCT under the CCT's conflict of interest policy; (d) input, whether from the general public, from ICANN stakeholders, from the ICANN organization or Board members, governments, supporting organizations and advisory committees, etc. Absent overriding privacy or confidentiality concerns, all such materials should be made publicly available on the CCT website within two business days of receipt.

4. Email communications among members of the CCT shall be publicly archived automatically via the CCT-review email cct-review@icann.org.

ICANN Organization Input

CCT staff will facilitate additional data gathering and coordinate dialogue with additional staff to provide expertise regarding certain elements of the program or its operations, as appropriate. To inform the CCT's work, staff will also solicit outside expertise as requested by CCT members and as budget and resources permit.

The ICANN organization may provide written responses to any questions posed by the CCT, and/or provide input to the CCT in connection with issues that the CCT did not raise but which, in the estimation of staff, are relevant to the work of the CCT.

The ICANN organization will also provide draft review team guidelines and procedures developed with Board oversight, to assist the CCT in its deliberations to cover additional topics beyond those identified in this Terms of Reference.

Community Consultations

Staff will also assist the CCT leadership at their request with materials, meeting arrangements and facilitating outreach with other ICANN supporting organizations and advisory committees and the ICANN Board, as well as individual community members through comment periods, questionnaires and surveys. The CCT will explore other avenues for outreach to the public to engage and collect inputs with respect to this review. This may include community sessions both in person at ICANN meetings or online in Adobe Connect web sessions or any other agreed technology that is convenient to all members, and has the requisite capabilities such as recording of sessions.

Work of Review Team

Decision-Making Within the CCT

Under the AoC, the CCT is to make recommendations regarding how the New gTLD Program impacted competition, consumer trust and consumer choice.

The CCT will seek, but will not require, full consensus with respect to such recommendations. To the extent that the CCT is unable to achieve consensus with respect to any such recommendations, its reports and recommendations will reflect the variety and nature of the CCT views. (See GNSO types of consensus as noted in Section 3.6 of the GNSO Guidelines for examples.)

Any conflicts of interest that may affect the views of a CCT member must be disclosed and addressed in accordance with the conflict of interest policy discussed above. The CCT will ensure that all documents are full consensus documents, i.e., they accurately reflect the discussion held.

Meetings

1. Face to Face Meetings: The CCT intends to hold its meetings concurrent with ICANN meetings and as needed to advance and complete its review. The CCT shall meet in person in Los Angeles on 22–23 February 2016; in Marrakech on 9–10 March 2016; and on additional dates as needed.

2. Telephonic Meetings: In between face to face meetings, the CCT and/or working groups of the CCT shall conduct regular telephonic meetings. All such meetings shall be publicly noticed on the CCT wiki as far in advance as possible, and agendas for each such meeting will be published no fewer than 2 days in advance.

Reporting

1. Members of the CCT are, as a general matter, free to report back to their constituencies and others with respect to the work of the CCT, unless the information involves confidential information.

2. While the CCT will strive to conduct its business on the record to the maximum extent possible, members must be able to have frank and honest exchanges among themselves, and the CCT must be able to have frank and honest exchanges with stakeholders and stakeholder groups. Moreover, individual members and the CCT as a whole must operate in an environment that supports open and candid exchanges, and that welcomes re-evaluation and repositioning in the face of arguments made by others.

3. Accordingly, the CCT will retain the authority to determine that an interaction will be held under the Chatham House Rule: "When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed."

4. Members of the CCT are volunteers, and each will assume a fair share of the work of the team.

5. Members of the CCT shall execute the investigation according to the plan, based on best practices for fact-based research, analysis and drawing conclusions.

6. Where appropriate, and with the consensus of the CCT, the ICANN organization will be used to provide administrative support services related to travel, meeting logistics, and technology. To preserve the independence and integrity of the CCT, however, the ICANN organization will perform substantive tasks (e.g., report drafting, etc.) with respect to the work of the CCT, as requested. If necessary, the Chair and Vice Chairs of the CCT shall propose an approach to providing appropriate support to the CCT efforts.

Participation

1. Members could be assisted by parties outside the CCT and the ICANN organization when necessary (e.g., for translation purposes), although the emphasis must remain on direct interaction between the named members. CCT Observers should not intervene themselves, nor should they be able to substitute for a member who is unable to participate. This applies to conference calls as well as face-to-face meetings. Remote participation possibilities should be provided in cases where a member is unable to attend a face-to-face meeting. Independent experts are deemed to be full Members of the CCT.

2. The CCT leadership (Chair and Issue Leads) of the working group will coordinate the work of the CCT, and will serve as full participants in the substantive deliberations of the CCT and in the development of the CCT's deliverables. All members of the CCT will have equivalent voting rights.

3. External Experts (if applicable). The External Experts are third parties that may be engaged with to support the CCT work. These experts would be those engaged aside from the independent experts, who were chosen to participate in the review. Selection of the experts to support the work of the CCT will follow ICANN procurement processes and be conducted by an open ICANN Request for Proposal (RFP). The RFP will be based upon the criteria and expertise that the CCT has determined.

Tools /Means of Communications

The CCT will endeavor to use online communications capabilities to further its work. In particular, the review team will use Adobe Connect meeting rooms in connection with its telephonic meetings. The materials available in these settings will be made available to the public in keeping with open and transparent processes and the policies contained in this methodology.

Indicators/Metrics

A set of indicators of competition, consumer trust and consumer choice has been adopted by the ICANN Board for consideration in this review.
The CCT may identify a methodology for analyzing these metrics. In addition, the CCT will take into account reports created to support review of Program Implementation, Rights Protection Mechanisms, and safeguards against DNS abuse. In addition, the CCT may identify other sources of data it wishes to help inform in its review.
Finally, the CCT may request additional data or reports be generated to support unanticipated aspects of the review.

Deliverables

INTERIM RECOMMENDATIONS

The CCT might make interim recommendations to the GNSO and/or Board to launch new policy development initiatives, or further implementation work on existing policies, in tandem with the review where there is full consensus among the review team to do so.

FINDINGS

The CCT will present and document its findings on the degree to which the New gTLD Program did or did not enhance overall competition, consumer trust and consumer choice in the gTLD space. Further, the CCT will present and document the successes and challenges experienced by the community in the application process and the attempt to mitigate the adverse consequences of the New gTLD Program.

FINAL RECOMMENDATIONS

7. The CCT will try to post its draft prioritized recommendations in December 2016 in order to solicit public comment. Recommendations should be clear, concise, concrete, prioritized and implementable.

4. The recommendations will fall into two categories: those which can be implemented directly by staff and those which require further policy development by the community.

5. These recommendations will be limited to those designed to:

    a. Enhance competition, consumer trust and consumer choice in the gTLD marketplace
    b. Improve elements of the application and evaluation processes
    c. Advance efforts to mitigate abusive activity in the DNS

6. The team will document the rationale it has employed for any individual recommendation, and where possible, provide a quantitative target or metric for measurement of the recommendations' success.

RECOMMENDATIONS TO NEXT REVIEW PANEL(S)

Based on substantive review of its work, the CCT will provide recommendations regarding the procedures and conduct of future reviews as called for in the AoC. To facilitate the collection of this feedback, a survey will be conducted of all CCT members to gather information on the process, methodology and procedures used (so that the next CCT Review may be conducted using these lessons learned, and so that lessons learnt are available to subsequent CCT Review Teams).

Conflicts of Interest

The CCT has adopted the conflict of interest policy set forth in Attachment A to this Methodology. All member declarations submitted in accordance with the conflict of interest policy will be made public and posted on the CCT website.

At every meeting the CCT members confirm if declaration has changed.

Timeline

The review team will issue the draft report for public comment in December 2016 and solicit input from the community and stakeholders.

The review team will review the comments received on its draft recommendations and refine the report with the goal of producing the final recommendations by April 2017.

Appendix F: Fact Sheets

The ICANN organization publishes fact and expense sheets on a quarterly basis, as well as participation and milestones updates on a monthly basis. These documents bring transparency and accountability to the community on how review team resources and time are being used.

The Fact Sheet captures attendance of review team members, costs associated with professional services and travel to attend face-to-face meetings, milestones and participation.

Definitions are as follows:

Professional Services: Approved budget for the review team to use for services of independent experts, as noted in Bylaws Section 4.6(a)(iv). Review teams may also solicit and select independent experts to render advice as requested by the review team. ICANN shall pay the reasonable fees and expenses of such experts for each review contemplated by this Section 4.6 to the extent such fees and costs are consistent with the budget assigned for such review. Guidelines on how review teams are to work with and consider independent expert advice are specified in the Operating Standards.

Travel: Amount approved for review team travel for face-to-face meetings. Examples of travel expenditures include, but are not limited to, charges for airfare, hotel, per diem reimbursement, venue meeting costs, audio-visual/tech support, and catering. These expenses include Review Team and the ICANN organization support travel.

ICANN Organization Support: Amount approved in the budget for the ICANN organization to contract outside services to support the work of the review team.

Spent to Date: Amounts include quarterly financials since inception of the work by the review team through the most recent quarter end.

Committed Services:
1. Travel: Estimated expenses for approved face-to-face meetings.
2. Professional Services: Included services from signed contracts to be provided or invoiced. These are typically for non-employee related support services provided by contractors.

Total Spent and Committed to Date: This is the sum of the "Spent to Date" and "Committed Services" amounts through the most recent quarter end. The "Committed Services" amount does not include the "Spent to Date" amounts. Remaining Budget: This is the difference between the "Approved Budget" and the "Total Spent and Committed to Date" amounts.

Fact sheet archives may be viewed at: https://community.icann.org/display/CCT/Fact+Sheet.

Competition, Consumer Trust and Consumer Choice (CCT) Review

Fact sheet as of: 7-Sep-2018

Overview:
ICANN is committed to ensuring that, as it contemplates expanding the top-level domain space, the various issues that are involved will be adequately addressed prior to implementation.

These include issues such as competition, consumer protection, security, stability and resiliency, malicious abuse issues, sovereignty concerns, and rights protection.

The AoC also requires ICANN to convene a community-driven review to examine the extent to which the introduction or expansion of gTLDs has promoted competition, consumer trust and consumer choice, as well as the effectiveness of: The application and evaluation process and safeguards put in place to mitigate issues involved in the introduction or expansion.

Wiki Page:	CCT Wiki Home Page
CCT-RT Email:	input-to-cctrt@icann.org
Review Questions:	reviews@icann.org

CCT Chair	Jonathan Zuck
Competition and Consumer Choice Subteam Chair:	Jordyn Buchanan
Safeguards & Trust Subteam Chair:	Laureen Kapin

Review Status *(as of 07 Sept 2018)*

Start Date:	13-Jan-2016	Review Duration to Date:	32 Months
Expected Completion:	8-Sep-2018	Total Expected Duration:	32 Months

0% — 100%: 100% Complete, Based on Duration

100% Budget Spent/Committed

Section I: People *(as of 07 Sept 2018)*

Review Team members: 15

Volunteer Participation Rate: 64% (0% — 100%)

ICANN Org (individuals involved at various times throughout Review): 13

Face-to-face meetings:	8 Meetings
Calls (plenary and subteam):	142 Calls
Volunteer meeting & call time:	3,366 Hours
Personnel support time [1] (estimated hours and cross-organizational)	11,653 Hours

[1] Does not include time for Executives, Legal, IT Personnel and Other Organizational Support

Section II: Financial Resources *(as of 07 Sept 2018)*

Direct Review Costs [1]	FY19 Approved Budget [3]	FY19 Budget Spent to Date [2]	Committed FY19 Services [4]	Remaining FY19 Budget	Actual Expenses: Review to Date [2]	Total Spent and Committed to Date
Professional Services - IAG-CCT	$ -	$ -	$ -	$ -	$ 210,000	$ 210,000
Professional Services - CCT	$ -	$ -	$ -	$ -	$ 1,540,000	$ 1,540,000
Travel	$ -	$ 5,490	$ -	$ (5,490)	$ 420,000	$ 420,000
Total	$ -	$ 5,490	$ -	$ (5,490)	$ 2,170,000	$ 2,170,000

[1] Excludes ICANN Organization and overhead allocation.

[2] Based on the most recent month end financials (may not include recent expenditures). Represents expenses incurred since inception of work.

[3] Includes incremental approved professional services budget of $160,000.

[4] Professional services includes services from signed contracts to be provided or invoiced; travel includes upcoming scheduled meetings: ICANN60.

Section III: Milestones (as of 07 Sept 2018)

Project Management
20% of total effort (0% — 100%)

- ☑ Adopt terms of reference
- ☑ Adopt work plan
- ☑ Assemble subteams
- ☑ Prepare templates
- ☑ Solidify list of projects
- ☑ Adopt discussion paper template
- ☑ Adopt report shell/framework

Research and Studies
20% of total effort (0% — 100%)

- ☑ Identify data/sources needed for work
- ☑ Analyze data from research and studies

Draft Report
25% of total effort (0% — 100%)

- ☑ Assemble initial conclusions
- ☑ Populate discussion papers with findings and potential recs.
- ☑ Reach agreement on discussions papers
- ☑ Discuss/approve/consolidate findings and interim recommendations
- ☑ Approve interim recommendations
- ☑ Seek Board/ICANN Organization input on implementability of interim recommendations
- ☑ Circulate interim recommendation to Subsequent Procedures PDP WG
- ☑ Socialize interim recommendations with community
- ☑ Build and approve Draft Report for public comment
- ☑ Issue draft report for public comment and socialize draft recommendations with
- ☑ Produce summary of public comment received
- ☑ GDD to provide input on draft recommendations

New Sections
10% of total effort (0% — 100%)

- ☑ Review studies' input and incorporate as appropriate
- ☑ Produce additional recommendations/new sections, as appropriate and edit report
- ☑ Approve additional recommendations
- ☑ Publish new sections of the report for public comment
- ☑ Socialize changes to report with community
- ☑ Seek ICANN Org and Board Caucus WG input on implementability of recommendations
- ☑ Circulate to New gTLD Subsequent Procedures PDP WG
- ☑ Produce summary of public comments

Final Report
25% of total effort (0% — 100%)

- ☑ Review public comment input received and incorporate as appropriate
- ☑ Seek Board/ICANN Organization input on implementability of final recommendations
- ☑ Circulate final recommendations to Subsequent Procedures PDP WG for input
- ☑ Finalize Report
- ☑ Adopt final recommendations and report
- ☑ Send final report to ICANN Board

TOTAL:

100% Milestones Completed (0% — 100%)

Appendix G: Participation Summary

Name	Affiliation	Plenary Calls	Face-to-Face Meetings (in days)	Competition and Consumer Choice Subteam Calls	Safeguard and Trust Subteam Calls	Nielsen Subteam Calls	Application and Evaluation Process Subteam Calls	INTA Impact Study Subteam Calls
Total Number of Calls/Meetings		**67**	**16**	**27**	**38**	**4**	**3**	
Drew Bagley	Independent Expert	59	14	2	31			
Stanley Besen[1]	Independent Expert	21	12	13	1	1		
Calvin Browne	GNSO	48	15	2	21			
Jordyn Buchanan	GNSO	63	15	27		3	1	3
Dejan Djukic	ccNSO	44	15	21			1	2
Jamie Hedlund	ICANN President and CEO rep.	49	10	6	22			
Kaili Kan	ALAC	59	15	18				
Laureen Kapin	GAC Chair rep.	59	15		32	2	2	
Gao Mosweu	ccNSO	44	15		28		1	
Carlos Raul Gutierrez	GNSO	39	15	5	16	2		
Megan Richards	GAC	37	12	12				
Carlton Samuels	ALAC	45	15		26			2
N. Ravi Shankar[2]	Independent Expert	2	0					
Waudo Siganga	GNSO	55	15	20		2	1	1
Fabro Steibel	Independent Expert	22	10		12	3		
David Taylor	GNSO	41	15	1	24			3
Jonathan Zuck	GNSO	58	15	23	23	3	2	

[1] Resigned from CCTRT on June 25, 2017
[2] Resigned from CCTRT on October 18, 2017

Appendix H: Possible Questions for a Future Consumer Survey

As referenced in the Data Analysis chapter, the CCT would have found it useful to have answers to the following questions, which the review team recommends incorporating in the next iteration of a survey of domain name registrants:

1. What proportion of the registrants in the new gTLDs were previously registrants in a legacy gTLD but gave up their registrations when they registered in a new gTLD? This will provide some indication of the importance of *switching costs*.

2. What proportion of the registrants in the new gTLDs had not previously been registrants in any gTLD? This will provide some indication of the extent to which the introduction of new gTLDs expanded the number of individual registrants.

3. What proportion of the registrants in the new gTLDs are entities that continued to have registrations in legacy gTLDs? This will provide some indication of whether registrations in legacy and new gTLDs are complements as opposed to substitutes.

4. What proportion of the registrants in the new gTLDs registered primarily: (a) for defensive reasons, i.e., they felt compelled to register in a new gTLD because they existed but obtained no benefits from doing so and what proportion registered primarily or (b) for the benefits that they received, perhaps because doing so permitted them to reach users that would have otherwise been inaccessible? This will provide some indication of whether, on balance, the introduction of new gTLDs resulted in net costs or net benefits to registrants.

5. What are the characteristics of the new gTLDs that attracted registrants primarily because of the benefits that they offered? This will provide some indication of the sources of the benefits that the new gTLDs provided, e.g., new allowable characters, service to a specific community, higher levels of security or customer service, ability to offer domain names to noncompeting entities.

The CCT recommends that ICANN conduct a survey of registrants that would include the following questions:

6. Did you register a new domain name in the last 12 months?

7. For each name that you registered, did you register it in a new gTLD or in a legacy gTLD?

8. For each name that you registered in a new gTLD [Check one]

   - Was the registration a newly registered name?
   - Did the registration replace a registration in a legacy gTLD?
   - Did the registration duplicate a registration in a legacy gTLD?

9. For each name that you registered in a new gTLD, was the closest alternative that you considered another gTLD or a legacy gTLD? What was the identity of that gTLD?

10. For each name that you registered in a legacy gTLD, did you consider registering in a new gTLD as an alternative?

11. For each name that duplicated a registration in a legacy gTLD, was the registration intended primarily to prevent the name from being used by another registrant?

12. For each name that you registered, indicate whether it is currently parked.

Although definitions of parking vary, the general idea is that parked domains are not currently being used as identifiers for Internet resources. Examples of behaviors that could be considered parking include:

- The domain name does not resolve.
- The domain name resolves, but attempts to connect via HTTP return an error message.
- HTTP connections are successful, but the result is a page that displays advertisements, offers the domain for sale, or both. In a small number of cases, these pages may also be used as a vector to distribute malware.
- The page that is returned is empty or otherwise indicates that the registrant is not providing any content.
- The page that is returned is a template provided by the registry with no customization offered by the registrant.
- The domain was registered by an affiliate of the registry operator and uses a standard template with no unique content.
- The domain redirects to another domain in a different TLD.

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EXHIBIT KM-29

Redacted – Third Party Designated Confidential Information

EXHIBIT KM-30

Verisign, Market Capitalization, Bloomberg (2016)

EXHIBIT KM-31

CORPORATE FINANCE

FOURTH EDITION

JONATHAN BERK
STANFORD UNIVERSITY

PETER DEMARZO
STANFORD UNIVERSITY

Pearson

To Rebecca, Natasha, and Hannah, for the love and for being there —J. B.

To Kaui, Pono, Koa, and Kai, for all the love and laughter —P. D.

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6 18

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Thus, the only effect of depreciation is to reduce the firm's taxable income. Indeed, we can rewrite Eq. 8.5 as

$$\text{Free Cash Flow} = (\text{Revenues} - \text{Costs}) \times (1 - \tau_c) - \text{CapEx} - \Delta NWC + \tau_c \times \text{Depreciation} \tag{8.6}$$

The last term in Eq. 8.6, $\tau_c \times$ Depreciation, is called the **depreciation tax shield**. It is the tax savings that results from the ability to deduct depreciation. As a consequence, depreciation expenses have a *positive* impact on free cash flow. Firms often report a different depreciation expense for accounting and for tax purposes. Because only the tax consequences of depreciation are relevant for free cash flow, we should use the depreciation expense that the firm will use for tax purposes in our forecast.

Calculating the NPV

To compute HomeNet's NPV, we must discount its free cash flow at the appropriate cost of capital.[8] As discussed in Chapter 5, the cost of capital for a project is the expected return that investors could earn on their best alternative investment with similar risk and maturity. We will develop the techniques needed to estimate the cost of capital in Part 4. For now, we assume that Cisco's managers believe that the HomeNet project will have similar risk to other projects within Cisco's router division, and that the appropriate cost of capital for these projects is 12%.

Given this cost of capital, we compute the present value of each free cash flow in the future. As explained in Chapter 4, if the cost of capital $r = 12\%$, the present value of the free cash flow in year t (or FCF_t) is

$$PV(FCF_t) = \frac{FCF_t}{(1+r)^t} = FCF_t \times \underbrace{\frac{1}{(1+r)^t}}_{t\text{-year discount factor}}. \tag{8.7}$$

We compute the NPV of the HomeNet project in the spreadsheet in Table 8.5. Line 3 calculates the discount factor, and line 4 multiplies the free cash flow by the discount factor to get the present value. The NPV of the project is the sum of the present values of each free cash flow, reported on line 5:[9]

$$NPV = -16{,}500 + 4554 + 5740 + 5125 + 4576 + 1532 = 5027$$

TABLE 8.5 SPREADSHEET **Computing HomeNet's NPV**

		Year	0	1	2	3	4	5
	Net Present Value ($000s)							
1	**Free Cash Flow**		(16,500)	5,100	7,200	7,200	7,200	2,700
2	Project Cost of Capital	12%						
3	Discount Factor		1.000	0.893	0.797	0.712	0.636	0.567
4	**PV of Free Cash Flow**		(16,500)	4,554	5,740	5,125	4,576	1,532
5	**NPV**		**5,027**					

[8]Rather than draw a separate timeline for these cash flows, we can interpret the final line of the spreadsheet in Table 8.3 as the timeline.

[9]We can also compute the NPV using the Excel NPV function to calculate the present value of the cash flows in year 1 through 5, and then add the cash flow in year 0 (i.e., "$=NPV(r, FCF_1{:}FCF_5)+FCF_0$").

Terminal or Continuation Value. Sometimes the firm explicitly forecasts free cash flow over a shorter horizon than the full horizon of the project or investment. This is necessarily true for investments with an indefinite life, such as an expansion of the firm. In this case, we estimate the value of the remaining free cash flow beyond the forecast horizon by including an additional, one-time cash flow at the end of the forecast horizon called the **terminal** or **continuation value** of the project. This amount represents the market value (as of the last forecast period) of the free cash flow from the project at all future dates.

Depending on the setting, we use different methods for estimating the continuation value of an investment. For example, when analyzing investments with long lives, it is common to explicitly calculate free cash flow over a short horizon, and then assume that cash flows grow at some constant rate beyond the forecast horizon.

EXAMPLE 8.7 Continuation Value with Perpetual Growth

Problem

Base Hardware is considering opening a set of new retail stores. The free cash flow projections for the new stores are shown below (in millions of dollars):

0	1	2	3	4	5	6	...
$-\$10.5$	$-\$5.5$	$0.8	$1.2	$1.3	$\$1.3 \times 1.05$	$\$1.3 \times (1.05)^2$	

After year 4, Base Hardware expects free cash flow from the stores to increase at a rate of 5% per year. If the appropriate cost of capital for this investment is 10%, what continuation value in year 4 captures the value of future free cash flows in year 5 and beyond? What is the NPV of the new stores?

Solution

Because the future free cash flow beyond year 4 is expected to grow at 5% per year, the continuation value in year 4 of the free cash flow in year 5 and beyond can be calculated as a constant growth perpetuity:

$$\begin{aligned}\text{Continuation Value in Year } 4 &= PV(\text{FCF in Year 5 and Beyond})\\ &= \frac{FCF_4 \times (1+g)}{r-g} = \$1.30 \text{ million} \times \frac{1.05}{0.10 - 0.05}\\ &= \$1.30 \text{ million} \times 21 = \$27.3 \text{ million}\end{aligned}$$

Notice that under the assumption of constant growth, we can compute the continuation value as a multiple of the project's final free cash flow.

We can restate the free cash flows of the investment as follows (in thousands of dollars):

Year	0	1	2	3	4
Free Cash Flow (Years 0–4)	(10,500)	(5,500)	800	1,200	1,300
Continuation Value					27,300
Free Cash Flow	(10,500)	(5,500)	800	1,200	28,600

The NPV of the investment in the new stores is

$$NPV = -10{,}500 - \frac{5500}{1.10} + \frac{800}{1.10^2} + \frac{1200}{1.10^3} + \frac{28{,}600}{1.10^4} = \$5597$$

or $5.597 million.

without very high levels of debt, the interest tax shield is likely to be the most important market imperfection affecting the capital budgeting decision. Hence, the third assumption is a reasonable starting point to begin our analysis.

Of course, while these three assumptions are reasonable in many situations, there are certainly projects and firms for which they do not apply. The remainder of the chapter therefore relaxes these assumptions and shows how to generalize the methods to more complicated settings. In Section 18.5, we adjust these methods for projects whose risk or debt capacity is substantially different from the rest of the firm. These adjustments are especially important for multidivisional firms, such as GE. In Section 18.6, we consider alternative leverage policies for the firm (rather than maintaining a constant debt-equity ratio) and adapt the APV method to handle such cases. We consider the consequence of other market imperfections, such as issuance, distress, and agency costs, on valuation in Section 18.7. Finally, in Section 18.8, we investigate a number of advanced topics, including periodically adjusted leverage policies and the effect of investor taxes.

CONCEPT CHECK

1. What are the three methods we can use to include the value of the tax shield in the capital budgeting decision?
2. In what situation is the risk of a project likely to match that of the overall firm?

18.2 The Weighted Average Cost of Capital Method

The WACC method takes the interest tax shield into account by using the after-tax cost of capital as the discount rate. When the market risk of the project is similar to the average market risk of the firm's investments, then its cost of capital is equal to the firm's weighted average cost of capital (WACC). As we showed in Chapter 15, the WACC incorporates the benefit of the interest tax shield by using the firm's *after-tax* cost of capital for debt:

$$r_{wacc} = \frac{E}{E+D} r_E + \frac{D}{E+D} r_D (1 - \tau_c) \tag{18.1}$$

In this formula,

E = market value of equity r_E = equity cost of capital

D = market value of debt (net of cash) r_D = debt cost of capital

τ_c = marginal corporate tax rate

For now, we assume that the firm maintains a constant debt-equity ratio and that the WACC calculated in Eq. 18.1 remains constant over time. Because the WACC incorporates the tax savings from debt, we can compute the *levered value* of an investment, which is its value including the benefit of interest tax shields given the firm's leverage policy, by discounting its future free cash flow using the WACC. Specifically, if FCF_t is the expected free cash flow of an investment at the end of year t, then the investment's initial levered value, V_0^L, is[1]

$$V_0^L = \frac{FCF_1}{1 + r_{wacc}} + \frac{FCF_2}{(1 + r_{wacc})^2} + \frac{FCF_3}{(1 + r_{wacc})^3} + \dots \tag{18.2}$$

[1] See this chapter's appendix for a formal justification of this result.

EXHIBIT KM-32

VeriSign Inc (VRSN US Equity)

Create News Alert | Create Report | Watchlist

Key Financial Ratios

Period Quarterly

Key Ratios	Jun 2019 Q2	Mar 2019 Q1	Dec 2018 Q4	Sep 2018 Q3	Jun 2018 Q2
EMPLOYEE DATA					
Actual Assets per Employee	N/A	N/A	2,127,226.67	N/A	N/A
Actual Net Income per Employee	N/A	N/A	202,438.89	N/A	N/A
Number of Employees	N/A	N/A	900.00	N/A	N/A
Sales per Employee	N/A	N/A	341,613.33	N/A	N/A
LIQUIDITY					
Current Ratio	1.39	1.40	1.39	1.35	1.33
Quick Ratio	1.32	1.34	1.35	1.30	1.28
Total Debt/Total Capital	484.91	462.72	446.74	465.52	442.85
Working Capital	360.70	373.99	369.44	322.35	307.69
PER SHARE DATA					
BEst EPS	1.29	1.25	1.21	1.20	1.14
Book Value per Share	-12.02	-11.78	-11.54	-11.56	-11.30
Dividend Yield	0.00	0.00	0.00	0.00	0.00
Price Earnings Ratio (P/E)	43.00	38.59	33.37	38.08	34.32
PROFITABILITY					
Operating Margin	65.85	65.36	63.09	63.77	63.82
Pretax Margin	62.19	61.95	76.08	58.31	54.51
Return on Assets	33.14	25.32	23.99	20.99	22.57
Return on Capital	181.59	87.79	87.02	77.94	111.93
RISK					
Altman's Z-Score	-5.95	-6.49	-7.34	-7.42	-7.88

EXHIBIT KM-33

Rightside™

Investor Presentation

May 2017

NASDAQ: NAME

Disclaimer: Forward-Looking Statements

This presentation contains forward-looking statements. All statements other than statements of historical facts contained in this presentation, including statements regarding Rightside Group, Ltd.'s ("Rightside" or the "Company") future results of operations and financial position, business strategy, plans and objectives for future operations, are forward-looking statements. The Company has based these forward-looking statements largely on its current expectations and projections about future events and financial trends that it believes may affect its financial condition, results of operations, business strategy, short-term and long-term business operations and objectives and financial needs. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described under the heading "Risk Factors" in the Company's periodic reports filed with the Securities and Exchange Commission ("SEC"). Moreover, the Company operates in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for the Company's management to predict all risks, nor can the Company assess the impact of all factors on its business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements the Company may make. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this presentation may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

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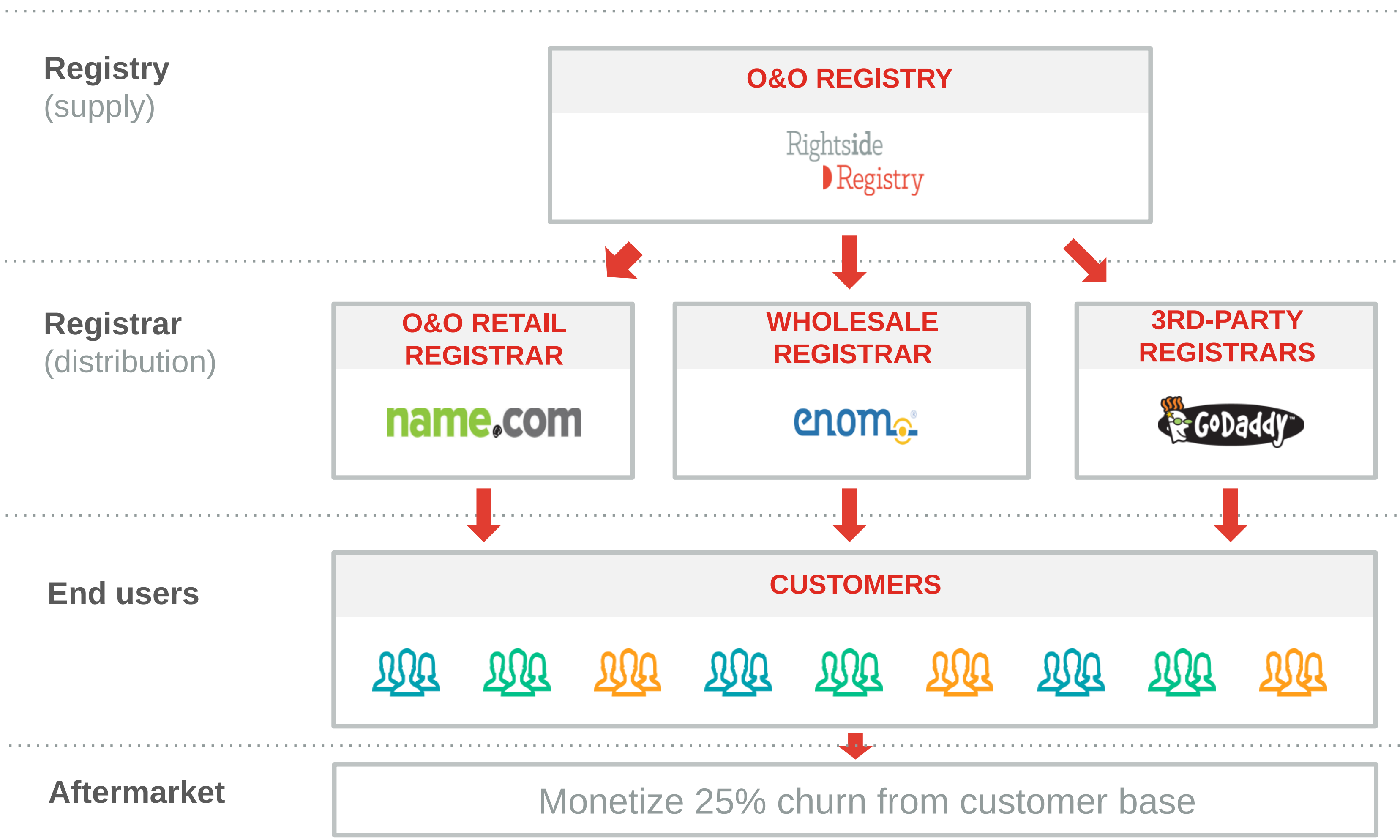
Rightside™

Investment highlights

- **Industry leading position** in the Internet domain name services market
- **Recurring revenue** stream with strong **renewal rates**
- **Margin expansion** driven by new gTLDs and our retail registrar business
- **Significant scale** with investments to drive market and brand development
- **Strategic relationships** with key partners

Domain industry at a glance



Rightside

Divestiture of eNom

Total Consideration

- $83.5 million received for the capital stock of eNom
- Cash proceeds from the transaction, net of working capital adjustments and deal related expenses, of approximately $72 million

Key Terms

- Transaction includes the eNom business, eNom's expiry stream related revenue, and eNom's 50% ownership in the NameJet joint venture
- As part of Tucows, eNom will continue to be a distribution partner for Rightside's new gTLDs
- Closed Friday, January 20, 2017
- Both companies providing certain transition services following close

Use of Proceeds

- Repaid all of the debt outstanding
- Announced up to $50 million Share Repurchase Program
- Invest in growth

Company snapshot

Business Segments

Rightside Registry

- A unique portfolio of 40 Top Level Domains
- Scalable, best in class registry backend platform for over 200 TLDs
- Built for TAM, meaning & premiums
- Focus on recurring book of business

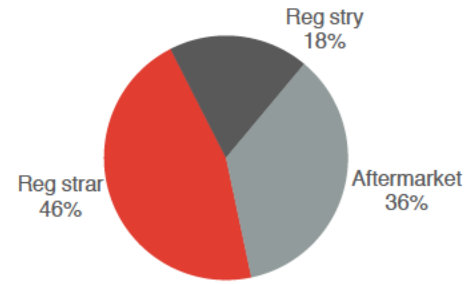
name.com

- Approximately 1.9mm DUM
- 240,000+ active end customer accounts
- Key to vertical integration strategy

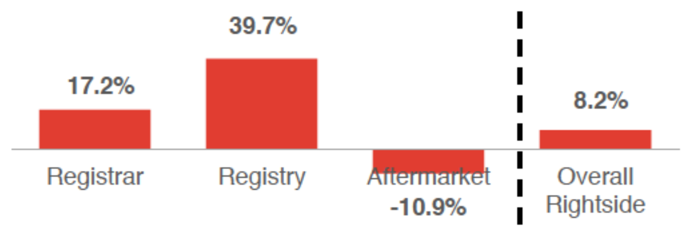
Rightside Aftermarket

- O&O domain portfolio
- Portfolio of ~230k domains
- Cash flow & engagement with premium buyers

2016 Revenue Mix

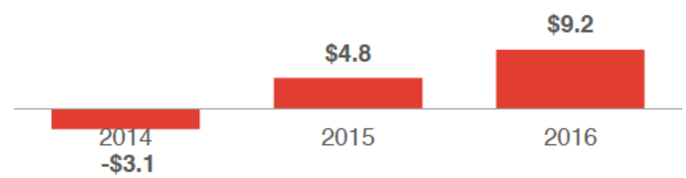


2016 YoY Growth



Total Adjusted EBITDA

($ in mm)



Rightside's mission

Mission: *"Our Mission at Rightside is to advance the way businesses and individuals define and present themselves online."*

SMBs

- Existing market
- Better domain names for websites
- Enhance specificity right of dot
- Better calls to action for advertising domain name

Individuals

- Large, growing untapped market
- Rethink VAS
- Connect with third-party platforms (LNKD, FB, etc)

What makes Rightside unique

TLD Portfolio

- Unique portfolio that addresses large markets
- Our "horizontals" are fun and brandable
- Our "verticals" map to large, global populations
- Built for standard and premium "digital real estate" registrations

Vertical Integration & Data

- Registrar customer base that has been successfully converted to new TLD believers
- Growing the market for new TLDs through best in class merchandizing
- Data gold mine that can be better utilized to grow registrations
- Premium outlet
- Sharing data with channel partners to advance the industry

Premium Business Model

- Rightside poised for long term success due to its TLDs and business plan of capitalizing on the maturing premium market

Our TLD portfolio was built using data and deep analysis

DATA

- Registration Data
- Search Data
- Industry Level Analysis
- Census Data
- Premium Identification
- Advertising Data

ANALYSIS

- ADDRESSABILITY
- PURCHASE INTENT
- ACCESSIBILITY
- VALUE / ROI

Rightside Registry

.AIRFORCE .ARMY .CONSULTING .ENGINEER .family .games .lawyer + .attorney .LIVE .NAVY .news .ROCKS .STUDIO .VIDEO

- Our portfolio uniquely addresses large SMBs + individual markets
- Pursued 133 gTLD applications
- Currently own 40 gTLDs
- 10 gTLDs applications still in contention

Our TLD portfolio was built to align with existing & new market opportunities

BUSINESS	
.Games	2.9mm gaming and Mobile Apps
.social	30mm SMB pages on Facebook
.LIVE	1.7mm TV & radio stations with 500+ employees
.CONSULTING	400K+ domains that contain 'consulting'
.STUDIO	700K+ domains that contain 'studio'
.news	550K+ domains that contain 'news'

INDIVIDUAL	
275K+ domains that contain 'games'	.Games
5.3bn social media profiles	.social
10mm Periscope users	.LIVE
1.6mm consultants & videographers	.CONSULTING
>2mm paying Ancestry subscribers	.family
1.3mm+ lawyers in the U.S.	.lawyer + .attorney
1.5mm+ engineering graduates in India per year	.ENGINEER

Rightside

Our portfolio of gTLDs provides a unique mix of vertical and horizontal options

PROFESSIONAL
~35K

.actor
.republican
.lawyer
.army
.attorney
.airforce
.engineer
.navy
.dentist
.vet
.democrat

SMB VERTICAL
~135K

.dance
.moda
.futbol
.pub
.haus
.software
.immobilien
.video
.games

PPC
~10K

.degree
.mortgage
.rehab

BIZ. HORIZONTAL
~205K

.reviews
.market
.social
.auction
.consulting
.forsale
.gives
.sale
.kaufen
.news
.studio

HORIZONTAL CONSUMER
~225K

.ninja
.rocks
.rip
.band
.live
.family

EOP Domains Registered

40
gTLDs n our portfo o

6*
Interest n add t ona app cat ons yet to be awarded to u t mate operator

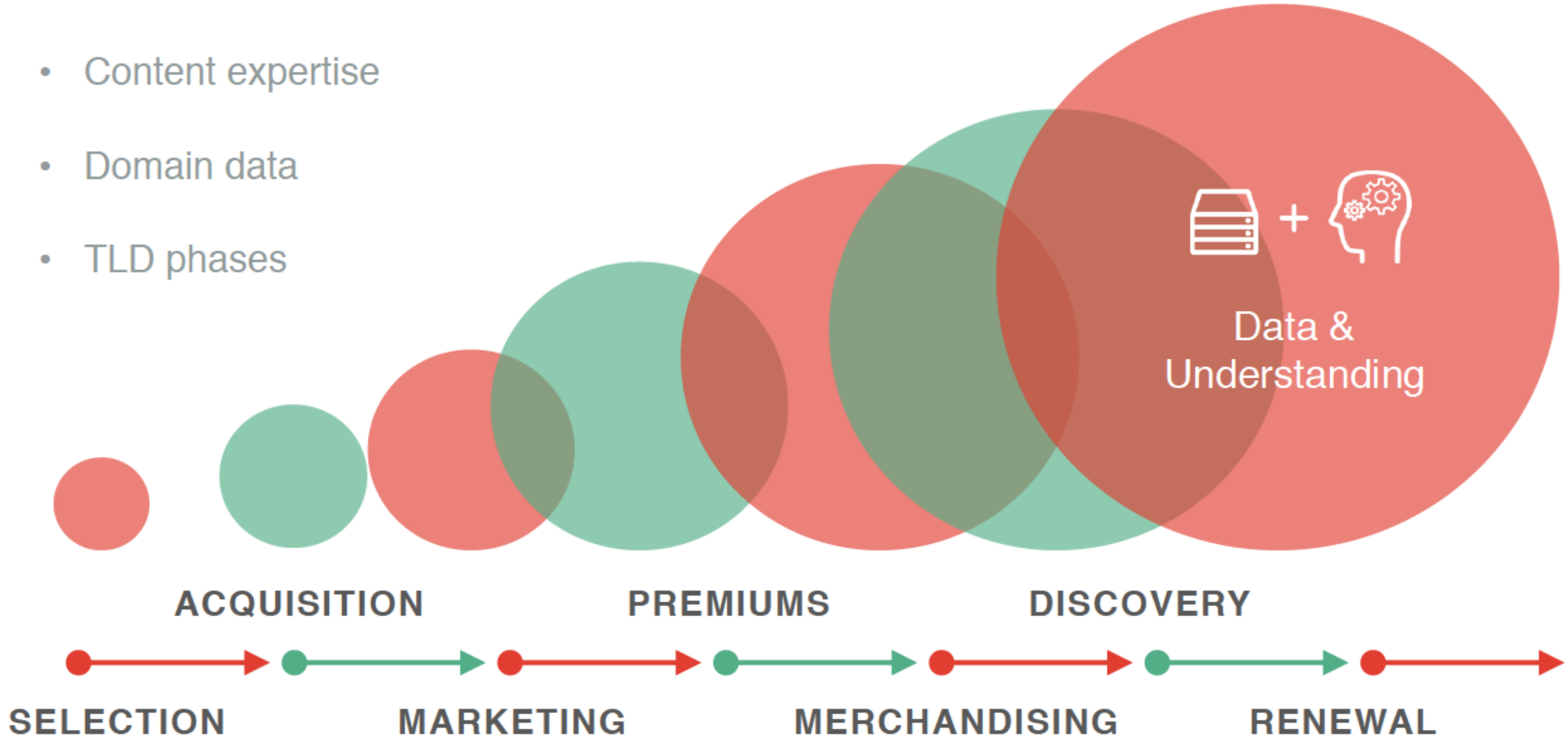
~40
O&O gTLDs expected

*Exc udes app cat on nterests n 4 add t ona gTLDs he d up by ICANN

Rightside™

Our vertical integration gives us strategic data, insights & capabilities

- Content expertise
- Domain data
- TLD phases



The premium opportunity is massive

BUY IT NOW
"PREMIUM"

Available at a premium price through any partner registrar

$30-$7,000

MAKE AN OFFER
"PLATINUM"

Reserved for auction, brokerage, or other partnerships

Flexibility on pricing and distribution

$7,000+

Sold over $10 million worth of premiums to date

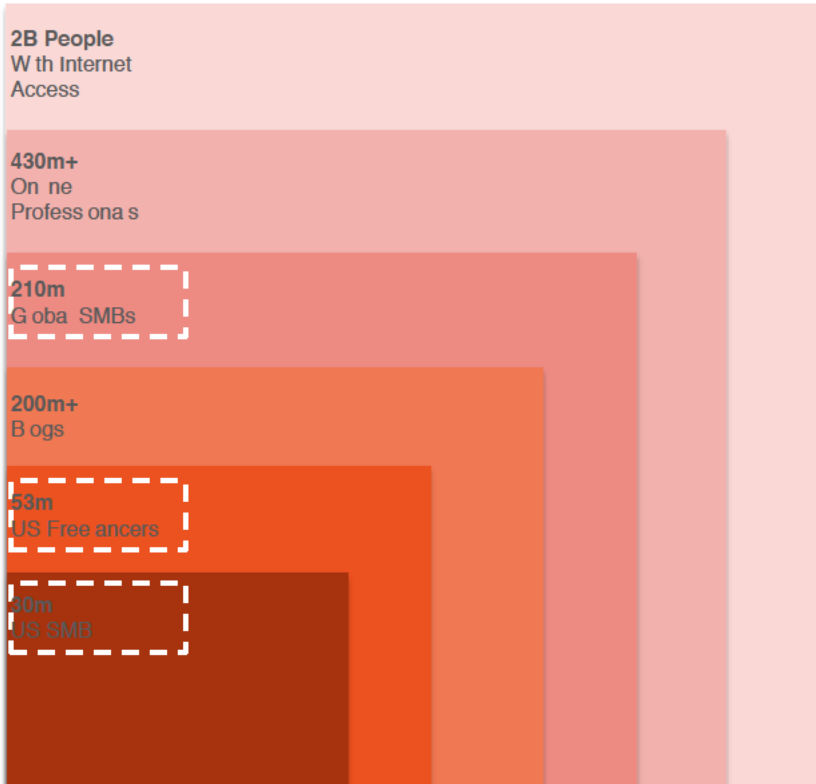
Domain Industry Outlook

Rightside®

Domain industry outlook

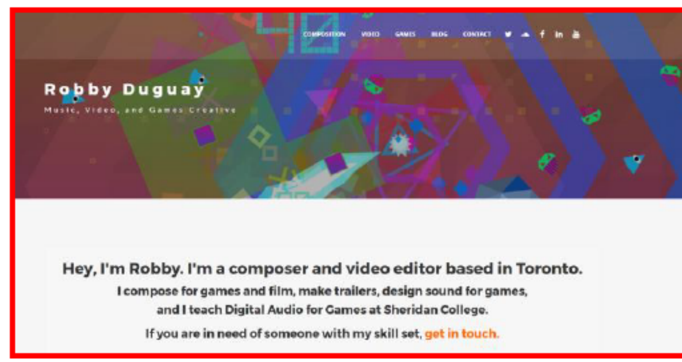
- The SMB market is large & growing
- New TLD awareness will grow significantly
- Registrar merchandising will evolve
- Developing markets will be huge
- Premium domain names are valuable “digital real estate”
- New domain distribution opportunities will emerge
- The “individual” market for domains is game changing

The SMB market is large & growing



- ~50% of US SMBs lack a web presence
- ~70% of Global SMBs lack a web presence

jacksonville.ATTORNEY

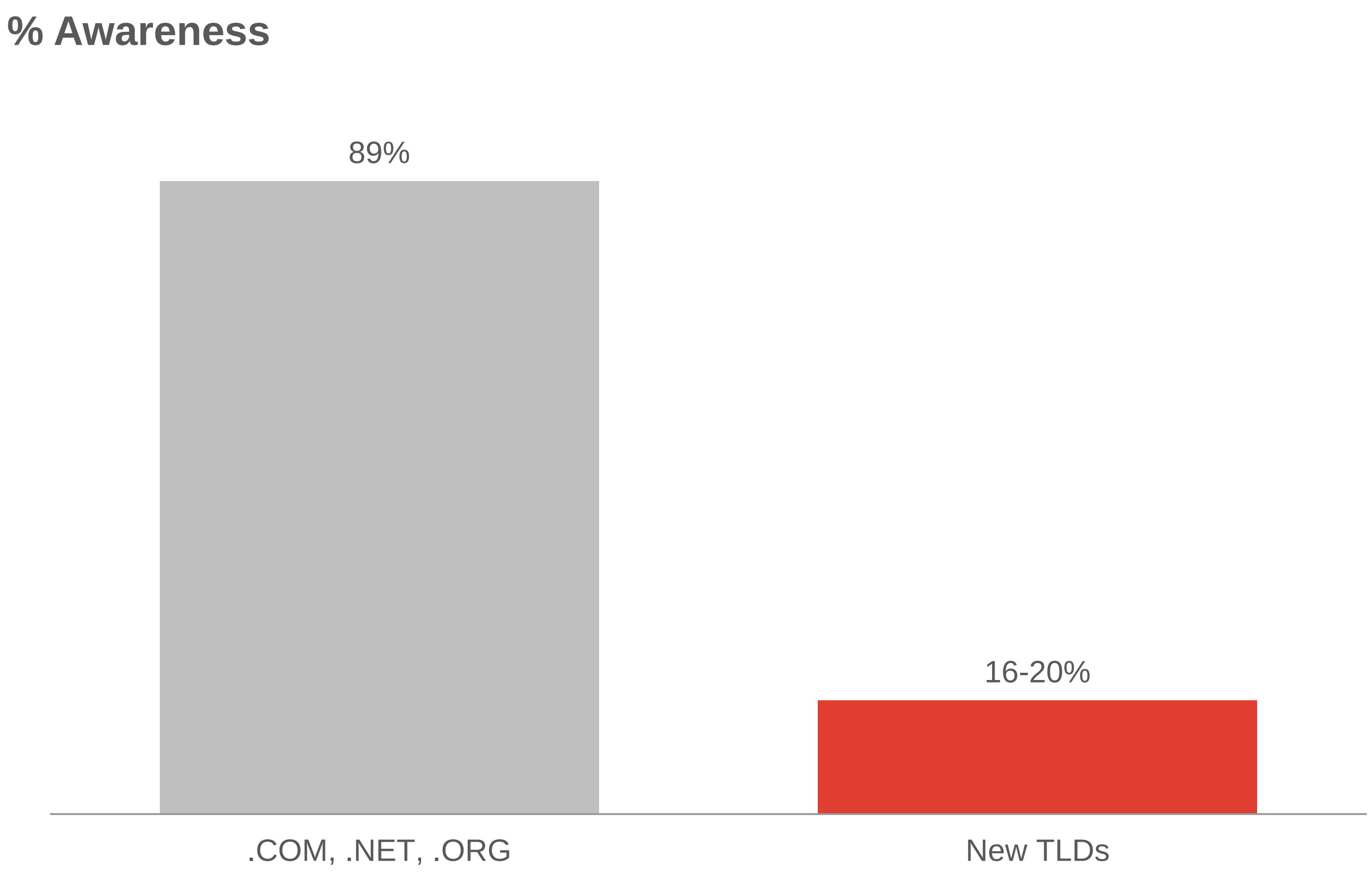


composer.GAMES

Source: Wall Street Research NH Investment & Securities IDC LinkedIn

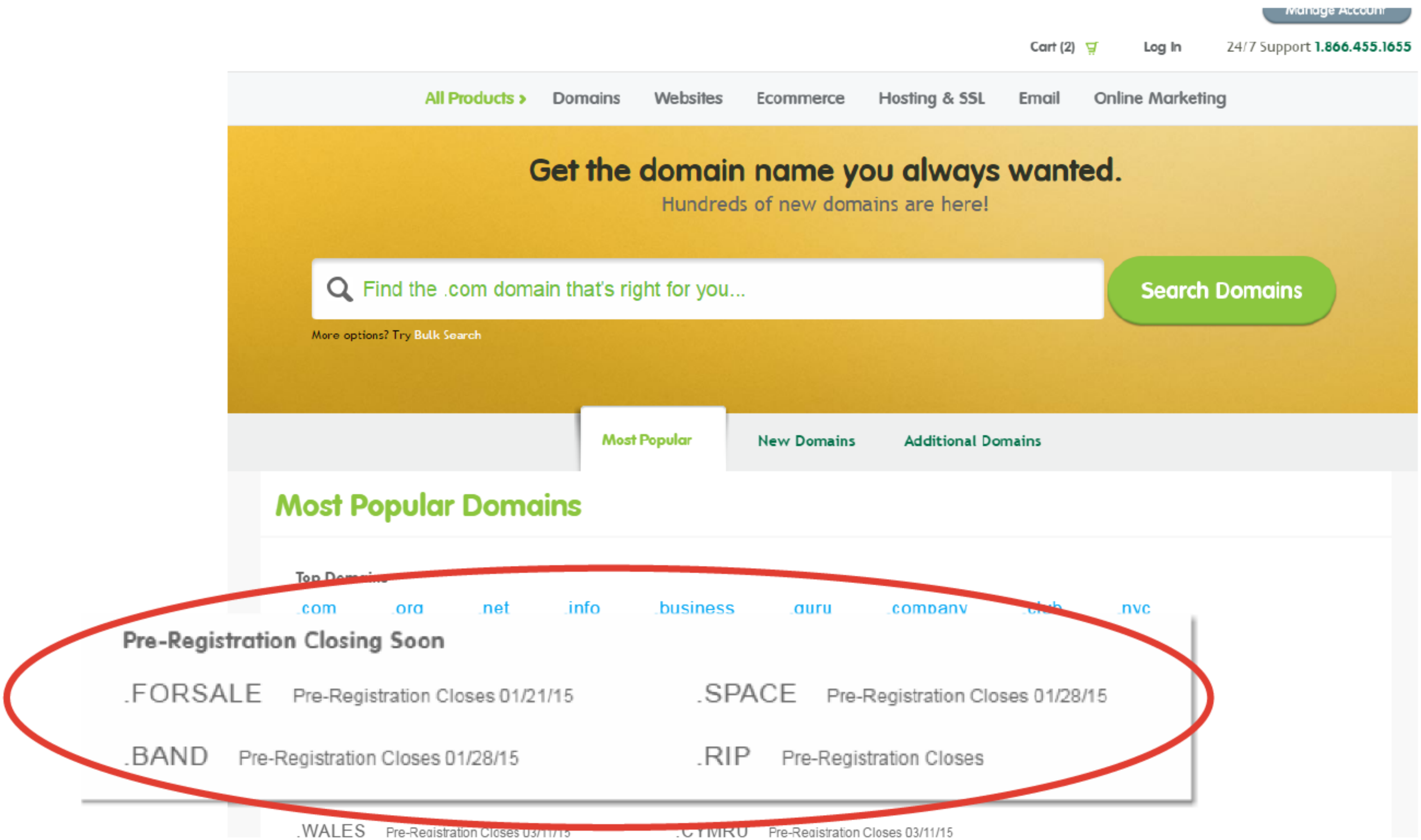
Rightside

New TLD awareness will grow significantly



Source: ICANN Global Consumer Research Study

Registrar merchandising will improve



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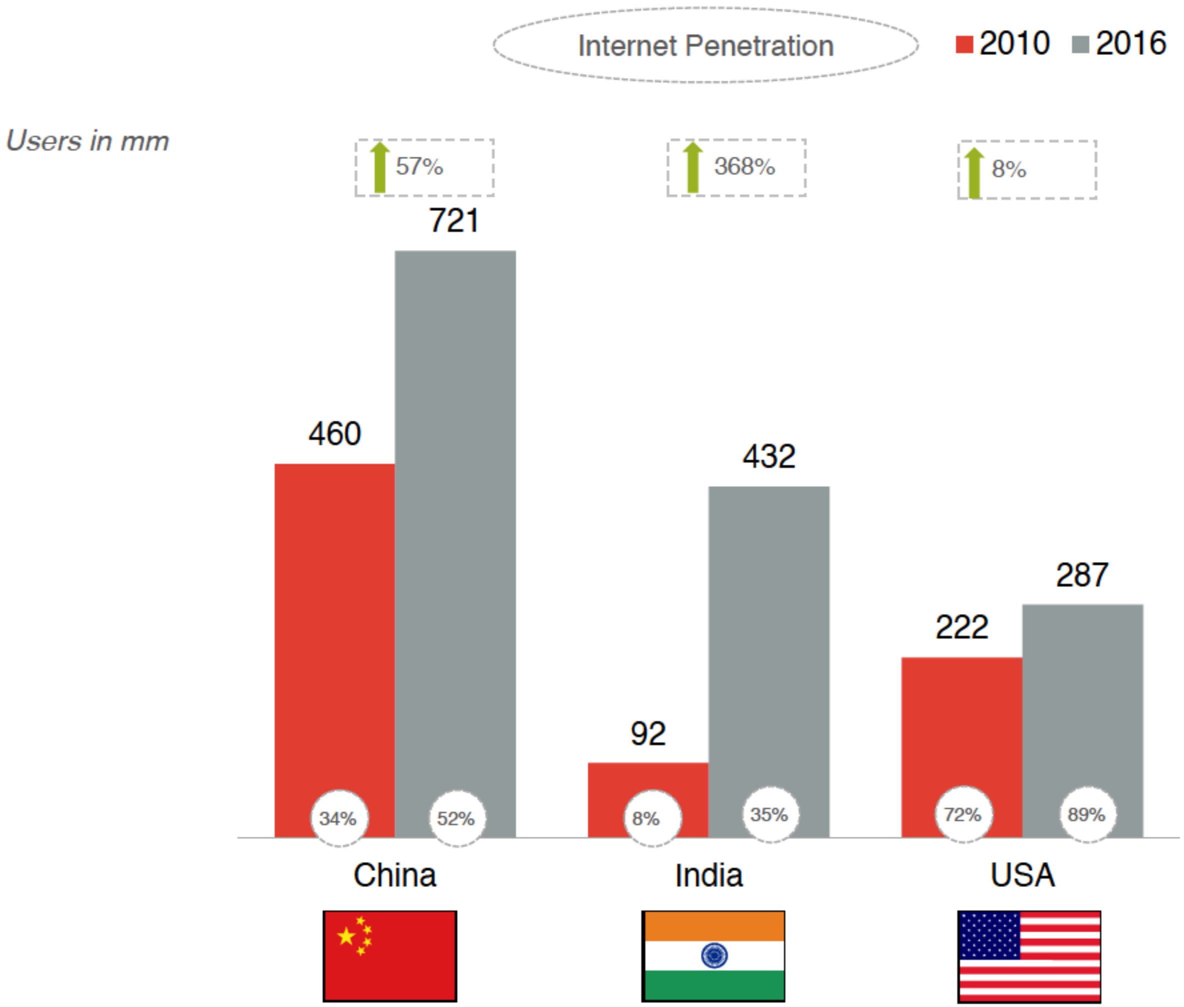
Developing markets will be huge



Source: namecorp com Sedo internetlivestats com

Rightside™

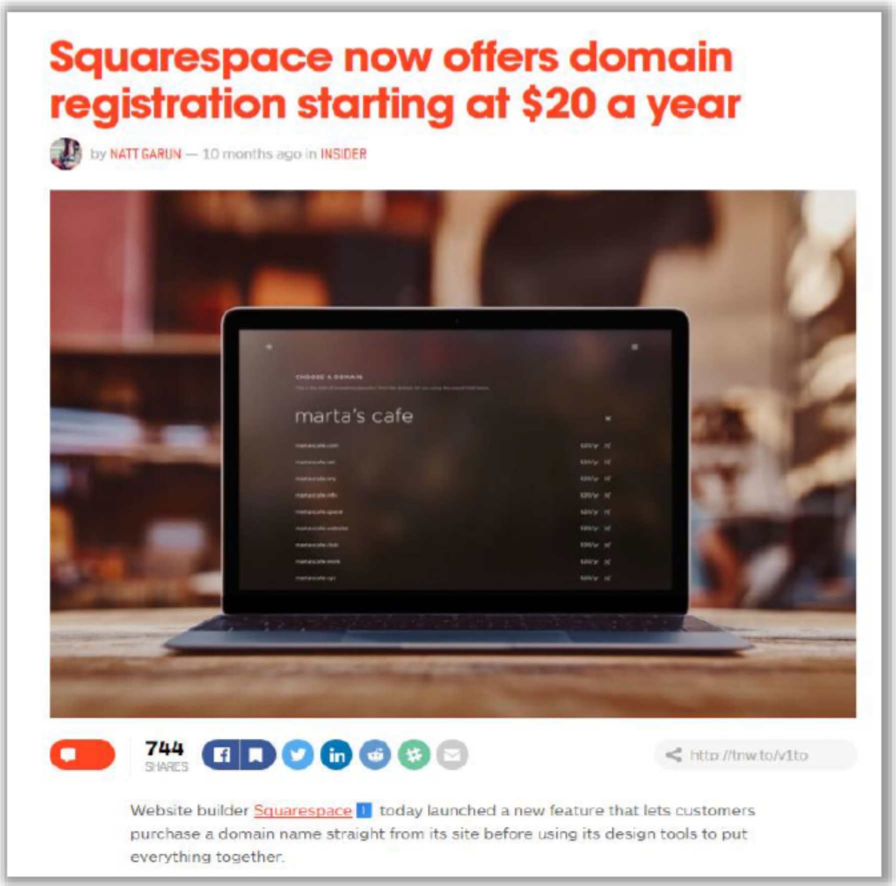
Premium domains are valuable

Rightside®

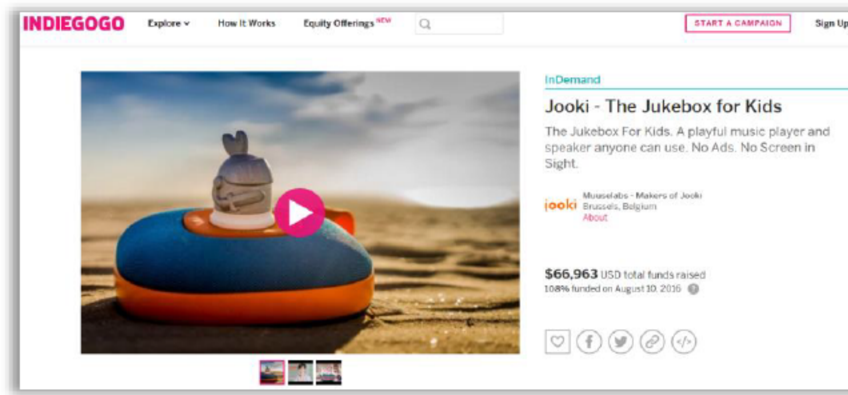
Video.GAMES	Prices Ranging from $50,000 to $180,000+
Sex.LIVE	
Dui.LAWYER	
Dui.ATTORNEY	
Homes.FORSALE	
Personalinjury.ATTORNEY	
Job.MARKET	
For.SALE	
Free.GAMES	
Art.MARKET	
TOTAL	~$1MM

Rightside premiums have driven 3% of registration volume, but over 40% of revenue

New domain distribution opportunities & use cases are emerging



apple.NEWS

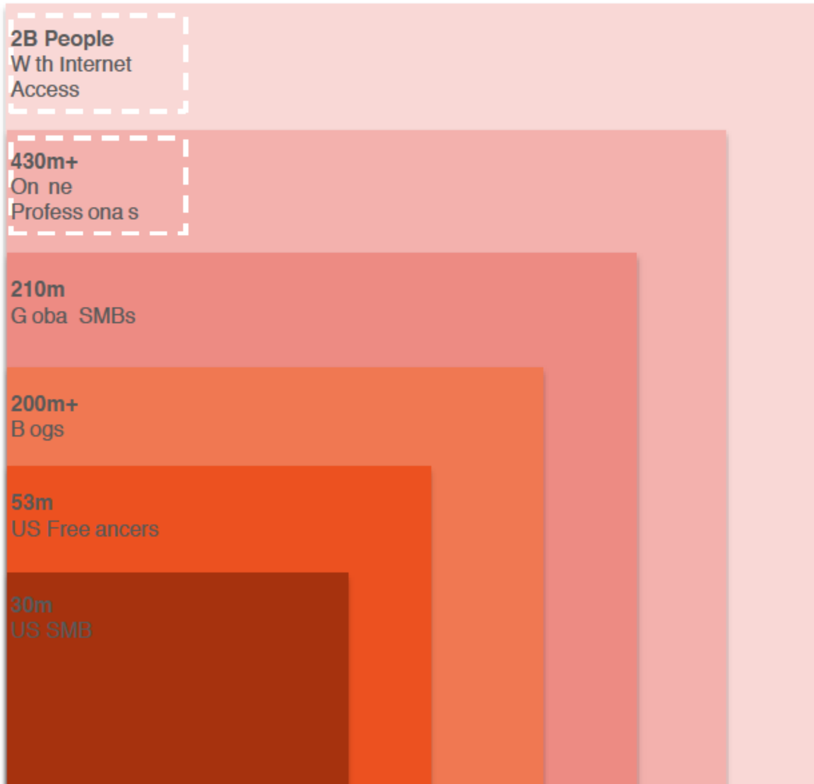


jooki.ROCKS

Rightside

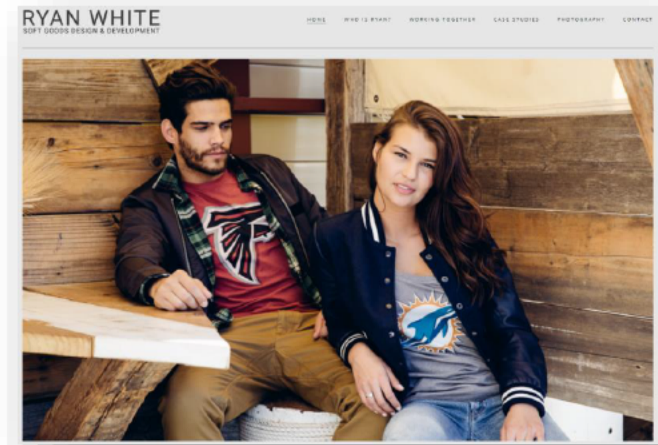
The "Individual" market is game changing

Domains represent a large and growing market



- ~ 430m+ professionals are utilizing LinkedIn and would benefit from utilizing a direct web presence
- Freelancers comprise 34% of the US labor market

Source: Wall Street Research NH Investment & Securities IDC LinkedIn



RyanWhite.STUDIO

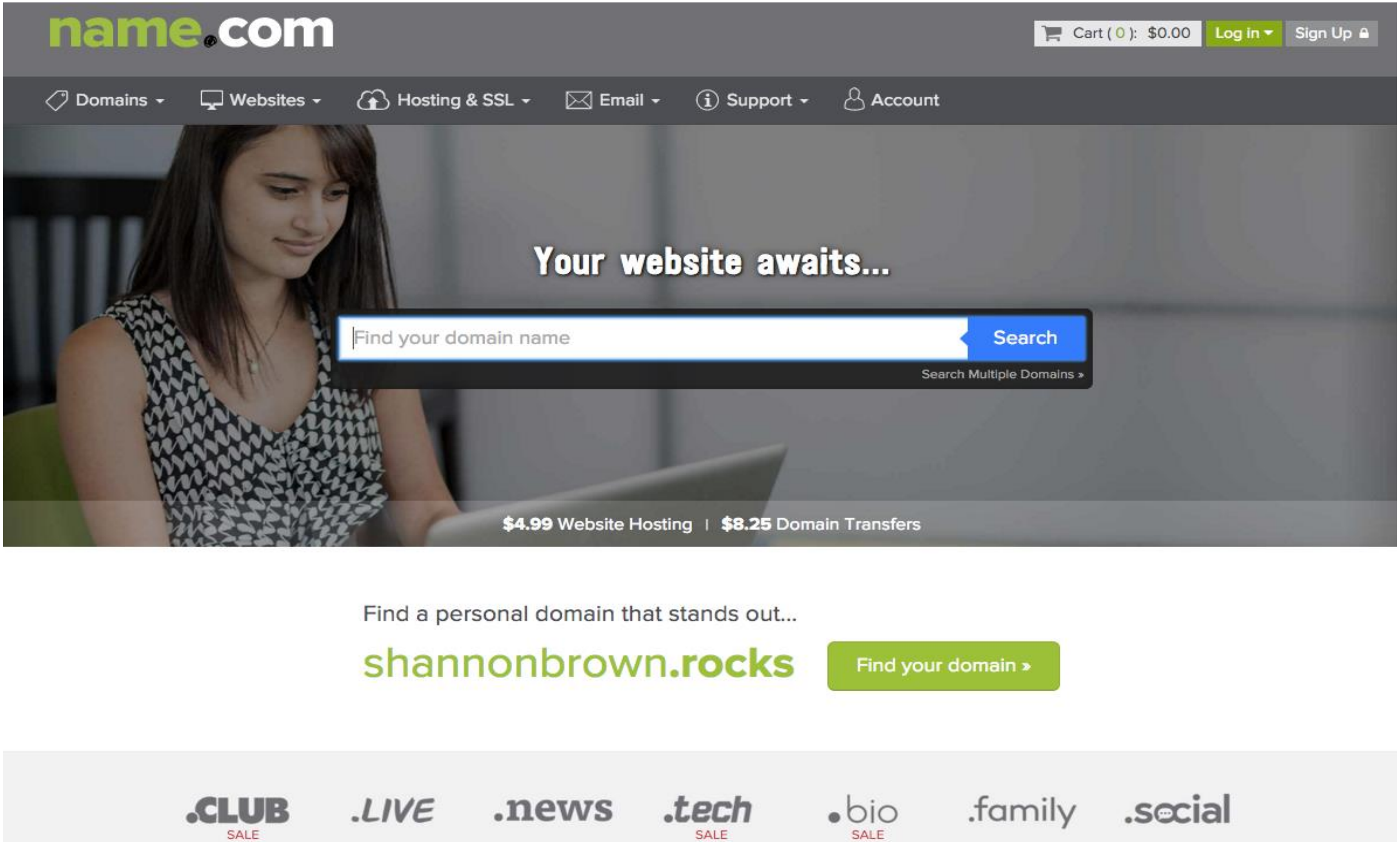
DaleyBlind.SOCIAL

Rightside™

Positioned to Capitalize: Vertical Integration

Rightside®

Our retail storefronts help us merchandise



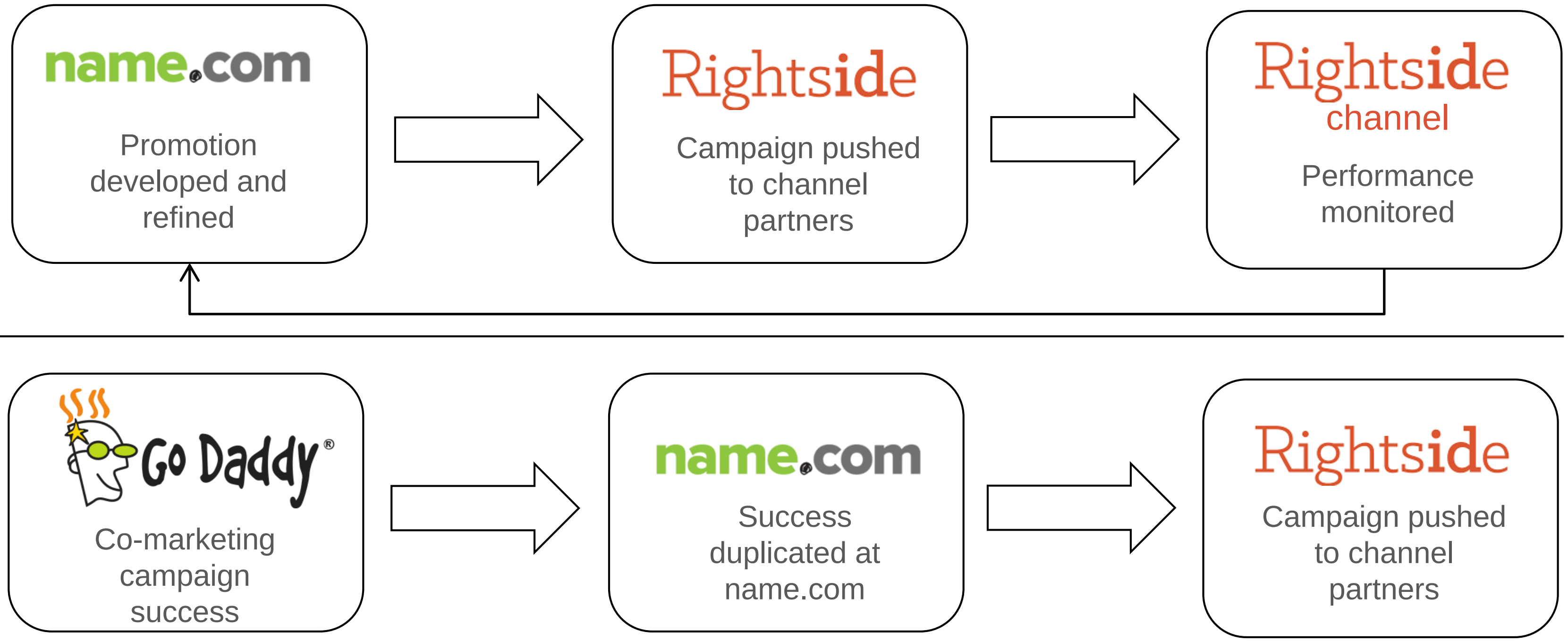
Rightside™

Our retail storefronts help us drive premium sales

	Name.com
% of Industry DUM	0.5%
Cash Premium and Platinum Revenue	>$1MM

"Pound for Pound" success at Name.com shows how big the premium and platinum opportunity will be as broader integration occurs and as awareness grows.

Name.com helps us accelerate evolution with the channel



- Consumers are 20% more likely to search for a nTLD after seeing one in search results
- 52% of searches are highly related to nTLDs
- 30k searches for Rightside Platinum domains in Q4 2016
- 6% of searches are ‘Personal Identity’

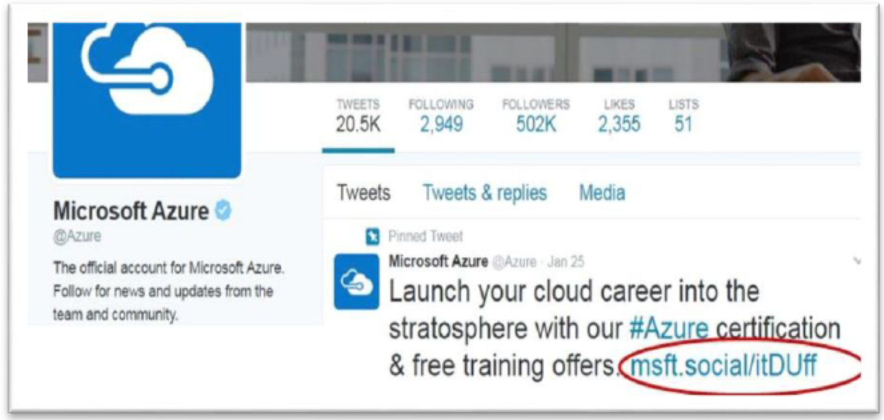
Source: Company platform data and statistics

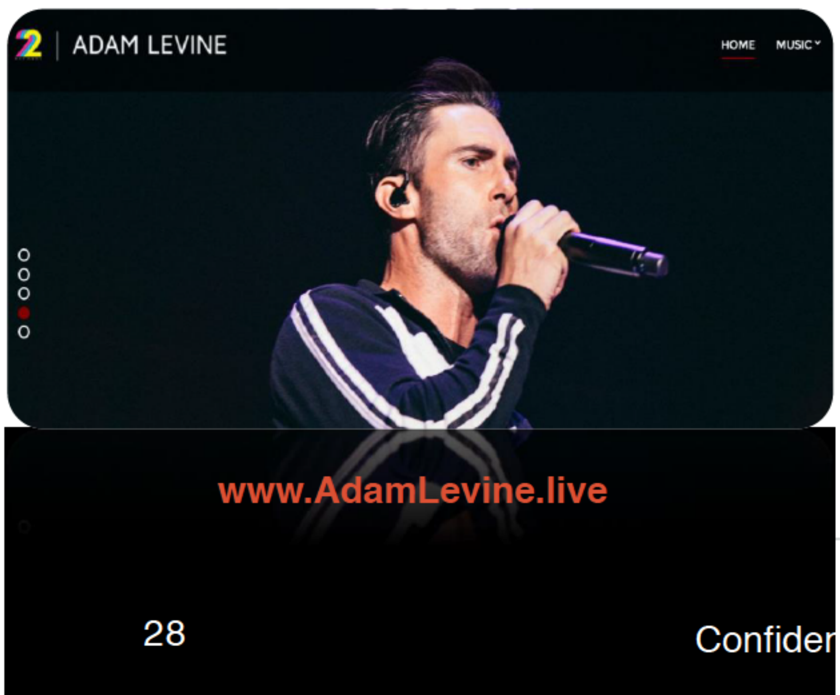
Our O&O results highlight the industry opportunity

Channel	Annualized New Registrations	New TLDs as a % of Total New Reg.
Name.com	520K	>15%
GoDaddy	~20MM	<5%
Other	~80MM	
Total	**~100MM**	**<5%**

Sources: Stifel GoDaddy Research Report, Verisign Industry Brief, ntldstats.com and internal reporting

Big brands are adopting and using new TLDs





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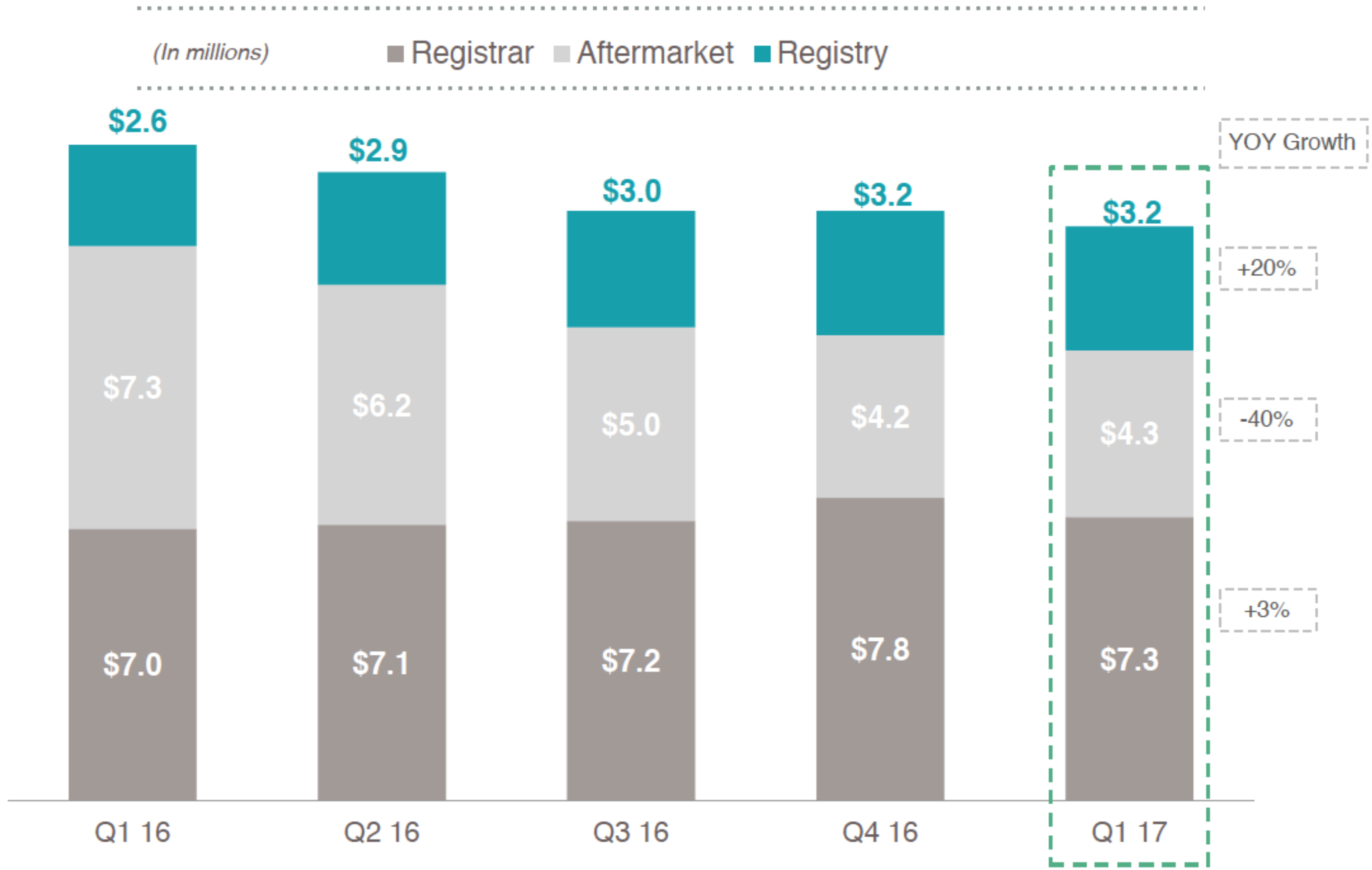
Financial Overview

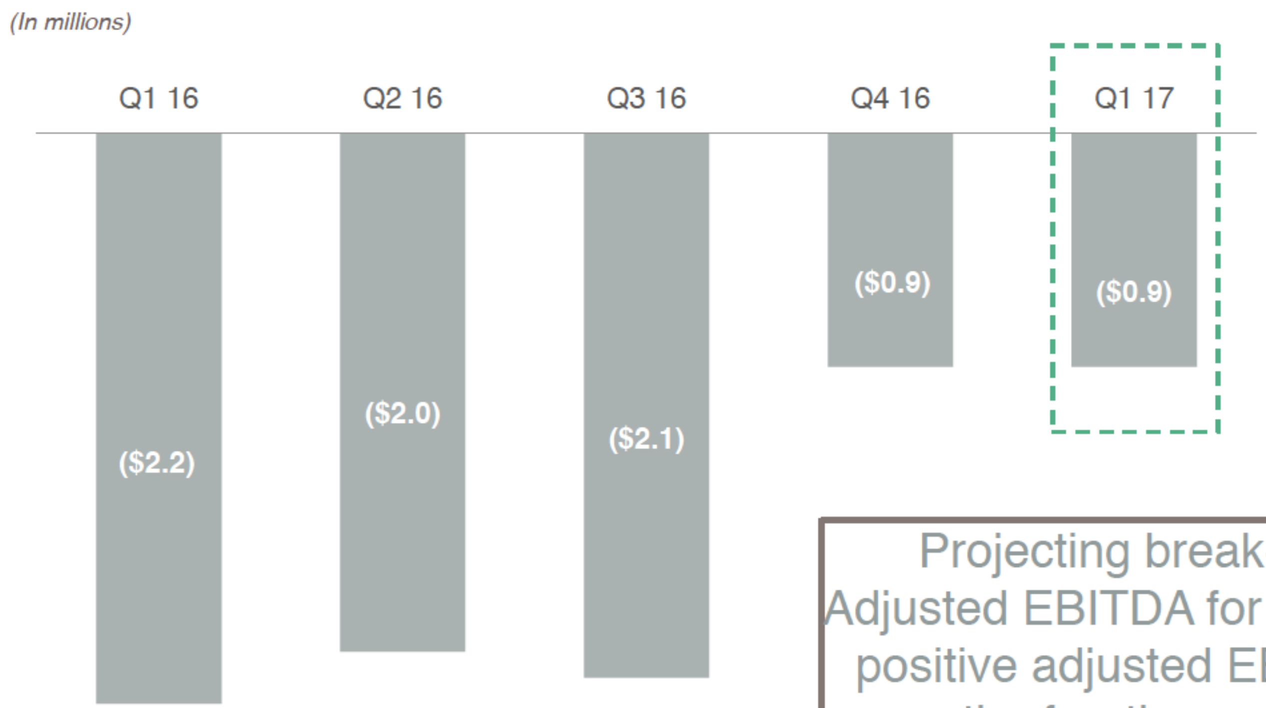
Revenue by business line*



*Revenue by business line excludes the elimination of revenue charged from our registry business to our registrar business.
Note: All financials are reported on a continuing operations basis to reflect the recent sale of eNom.

Rightside™

Adjusted EBITDA* from continuing operations improving as we grow registry revenue and reduce cost



Projecting break-even Adjusted EBITDA for 2017 with positive adjusted EBITDA in the fourth quarter.

*Please refer to the GAAP to Non-GAAP Reconciliation in the appendix for Adjusted EBITDA reconciliation.

Long-term target model

	Annual Registry Revenue	Total Company Adjusted EBITDA Margin
2015 FY	$8.4 Million	
2016 FY	$11.8 Million	
2019 - 2021 FY	$50 - 75 Million	35%

Primary Drivers of Adjusted EBITDA Margin Expansion:

- **Growing registry** revenue base which has 90% gross margin.
- **Profitability initiatives** including already implemented pricing optimization and increasing operating efficiencies.

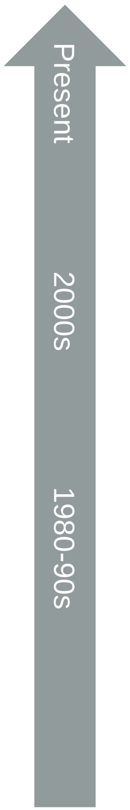
**Please refer to the GAAP to Non-GAAP Reconciliation in the appendix for Adjusted EBITDA reconciliation.*

Example performance of our TLDs

Example Rightside gTLD	Months in GA	Domains Under Management (000s)[1]	Wholesale Price	APPROXIMATE CASH REVENUE TO DATE [2][3]			
				Wholesale	Premium	Vertical Integration Benefit [4]	Total
.LIVE	17	84	$15	$880K	$1,320K	$120K	$2,320K
.NEWS	20	65	$15	$1,915K	$810K	$95K	$2,820K
.LAWYER + .ATTORNEY	30	19	$25	$1,650K	$1,570K	$185K	$3,405K
.ROCKS	32	74	$8	$1,310K	$110K	$75K	$1,495K
.MARKET	29	14	$20	$440K	$1,050K	$35K	$1,525K
.CONSULTING	32	19	$20	$975K	$240K	$35K	$1,250K
.SOCIAL	34	19	$20	$1,000K	$220K	$25K	$1,245K
.STUDIO	17	25	$15	$445K	$220K	$20K	$685K
.REVIEWS	34	17	$15	$850K	$350K	$165K	$1,365K
.GAMES	5	11	$12	$265K	$495K	$5K	$765K

1 *DUM through Mar 31st 2017*
2 *Revenue data through Mar 31st 2017*
3 *Wholesale & Premium revenue include revenue from the Sunrise and Landrush/EAP Phases*
4 *Benefit from vertical integration defined as margin to our O&O registrars on sales of our O&O TLDs*

Internet personalization continues to evolve



Category	Domain Range	Examples	Year Introduced	# of Domains (000s)	Est. Wholesale Price	Est. Annual Registry Revenue ($M)
New gTLDs	< 1K – 6M+	**.club**	2014	855	$5.00	$4.0–$6.0
		.bike	2014	14	20	0.2–0.4
		.guru	2014	60	20	1.0–1.5
Existing gTLDs	100K–1M	**.xxx**	2011	99	62	6.0–6.5
		.asia	2007	218	10	2.0–2.5
		.mobi	2005	562	7.25	4.0–4.5
		.name	2000	151	5.77	0.8–1.2
ccTLDs	100K–1M+	**.cn**	1990	10,860	4.86	50–60
		.de	1986	14,364	4.37	60–70
		.uk	1985	10,190	5.86	55–65
Legacy TLDs	1M+	**.info**	2001	5,789	8.16	40–50
		.biz	2001	2,108	8.63	18–20
		.net	1985	15,182	7.46	110–120
		.com	1985	128,354	7.85	900–1,000

Sources: ICANNWiki, DomainTools, nTLDstats, Company estimates

Investment highlights

- **Industry leading position** in the Internet domain name services market
- **Recurring revenue** stream with strong **renewal rates**
- **Margin expansion** driven by new gTLDs and our retail registrar business
- **Significant scale** with investments to drive market and brand development
- **Strategic relationships** with key partners

Investor Contacts
The Blueshirt Group
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Allise Furlani, 212.331.8433
IR@rightside.rocks

Thank you

Rightside™

Appendix

Domains explained

GENERIC TOP LEVEL DOMAIN (gTLD)

Sold by ***registry*** operators

www.smithandjackson.com

SECOND LEVEL DOMAIN (SLD)

Sold by ***registrar*** operators

Before: limited options

After: available, relevant, and memorable options

smithandjackson.lawyer

employment.lawyer

nydui.attorney

Availability on the left side of the dot.

Specificity on the right side of the dot.

Non-GAAP financial measures & footnotes

To provide investors, analysts and others with additional information regarding the Company's financial results, this presentat on nc udes adjusted earn ngs before nterest, income taxes, depreciation and amortization, or "Adjusted EBITDA", a non-GAAP f nanc a measure. A reconc at on of th s non-GAAP f nanc a measure to the most d rect y comparable GAAP financial measure has been included in the Appendix to this presentation. The Company's non-GAAP Adjusted EBITDA f nanc a measure d ffers from GAAP net ncome (oss) n that t exc udes certa n expenses such as nterest, ncome taxes, ga n on sa e of marketab e secur t es, ga n on other assets, net, deprec at on, amort zat on, stock-based compensat on, and the f nanc a mpact of acqu s t on and rea gnment costs.

The Company uses th s non-GAAP f nanc a measure to understand and eva uate ts f nanc a performance and operat ng trends, nc ud ng per od to per od compar sons, to prepare and approve ts annua budget and to deve op short and ong term operat ona p ans. The exc us on of certa n expenses n ca cu at ng Adjusted EBITDA can prov de a useful measure for period to period comparisons of the Company's underlying recurring revenue and operating costs which is focused more c ose y on the current costs necessary to ut ze prev ous y acqu red ong- ved assets. In add t on, management be eves that t can be usefu to exc ude certa n non-cash charges because the amount of such expenses s the resu t of ong-term nvestment dec s ons n prev ous per ods rather than day-to-day operat ng dec s ons.

Accord ng y, the Company be eves that th s non-GAAP f nanc a measure prov des usefu nformat on to nvestors and others n understanding and evaluating the Company's operating results in the same manner as the Company's management and in comparing financial results across accounting periods and to those of peer compan es.

The use of th s non-GAAP f nanc a measure has certa n m tat ons because t does not ref ect a tems of ncome and expense that affect the Company's operations. The Company compensates for these m tat ons by reconc ng the non-GAAP f nanc a measure to the most comparab e GAAP f nanc a measure as set forth n the Append x to th s presentat on. Th s non-GAAP f nanc a measure shou d be cons dered n add t on to, not as a subst tute for, measures prepared n accordance w th GAAP. Further, th s non-GAAP measure may d ffer from the non-GAAP nformat on used by other compan es, nc ud ng peer compan es, and therefore f nanc a comparab ty may be m ted. The Company encourages investors and others to review the Company's financial information in its entirety and not rely on a single f nanc a measure.

Rightside™

GAAP to non-GAAP reconciliation – Adjusted EBITDA

Reconciliation of Loss from continuing operations to Adjusted EBITDA from continuing operations	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017
Loss from continuing operations	$ (6,252)	$ (4,447)	$ (6,954)	$ (23,399)	$ (5,632)
Add (deduct):					
Income tax expense (benefit)	(1,945)	(1,384)	(2,164)	12,839	247
(Gain) loss on other assets, net (1)	1	(2,219)	1,271	94	(120)
Interest expense	1,235	1,218	1,211	4,891	124
Depreciation and amortization	3,178	3,335	3,004	3,143	2,537
Stock-based compensation expense (2)	1,234	1,450	1,564	1,580	1,462
Acquisition and realignment costs (3)	314	-	-	-	437
Adjusted EBITDA from continuing operations	**$ (2,235)**	**$ (2,046)**	**$ (2,068)**	**$ (854)**	**$ (945)**

Notes:

Some figures in this presentation may not foot due to rounding.

(1) Net gains on withdrawals of interest in generic Top Level Domain (gTLD) applications, included in gain on other assets, net.

(2) Represents the fair value of stock-based awards and certain warrants to purchase our stock included in our GAAP results of operations.

(3) Acquisition and realignment costs include such items, when applicable, as (a) non-cash GAAP purchase accounting adjustments for certain deferred revenues and costs, (b) legal, accounting and other professional fees directly attributable to acquisition activity, & (c) employee severance and other payments attributable to acquisition or corporate realignment activities.

EXHIBIT KM-34

mmx.co

annual report 2016

Minds + Machines Group Limited ("MMX" or the "Company") is a BVI incorporated company, which is traded on the AIM Market operated by the London Stock Exchange ("AIM"). The Company and its subsidiaries (the "Group") is the owner and operator of a world class portfolio of top-level domain assets (gTLDs). As a sales and marketing-led registry business, the Company is focused on commercializing its portfolio in partnership with its expanding global network of distribution partners.

The MMX portfolio is currently focused around geographic domains (e.g. .london, .boston, .miami, .bayern), professional occupations (e.g. .law, .abogado, and .dds), consumer interests (e.g. .fashion, .wedding, .vip), lifestyle (e.g. .fit, .surf, .yoga), outdoor activities (e.g. .fishing, .garden, .horse) and generic names (e.g. .work and .casa). As a business, the Company works through its expanding international network of registrars and distribution partners to bring the benefits of affinity based domain addresses to B2B and consumer audiences. For more information on MMX, please visit www.mmx.co.

contents

financial highlights
a year of growth

1.2m

Domains under management
including committed orders
up from 821,000 as of 31.12.16
(31.12.15: 289,000)

$15.8m

FY 2016 gross billings
up 100%
(FY 2015: $7.9million)

$15.3m

Cash and cash equivalents
as at 31.12.2016

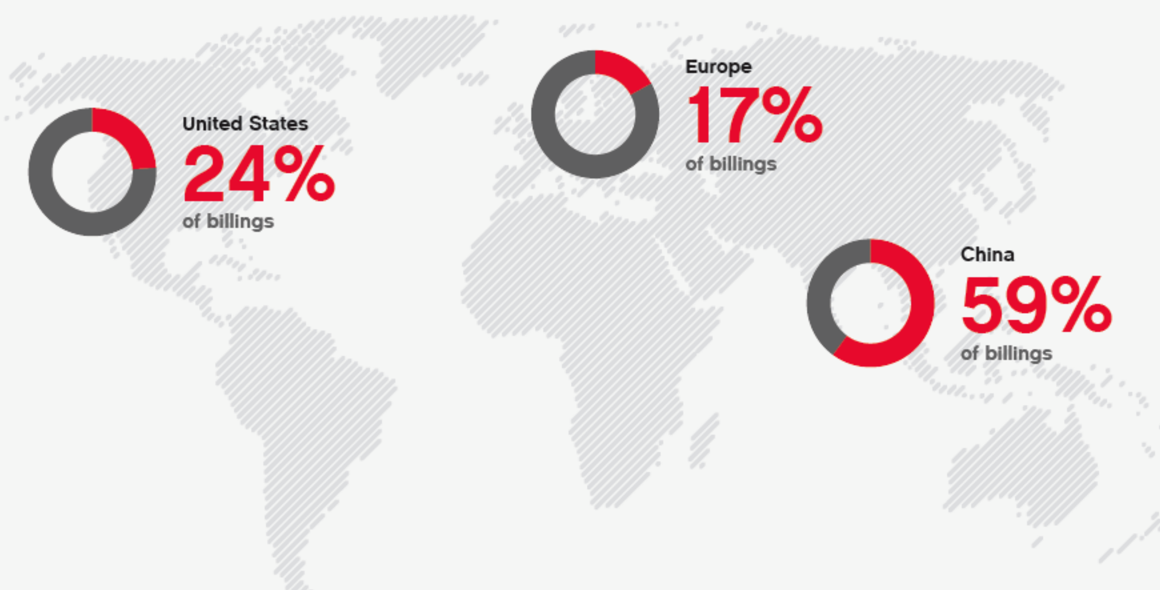
$4.2m

FY 2016 billings operating EBITDA profit
before one-off restructuring costs
(FY 2015 billings EBITDA loss of $6.6million – excluding one-off private auction proceeds)

$45.6m

Intangible assets
(still based on book value)

operational highlights
key regions of growth



With over 5,000 distributions partners selling our domains we've enjoyed considerable growth and market presence.

executives summary

Toby Hall
Chief Executive Officer

Michael Salazar
Chief Operating Officer/
Chief Financial Officer

Dear Shareholders,

Much has been discussed already about the successful restructuring of the Group's ongoing operations into a pure-play registry and its accessing of China by the new management team over the last 12 months – the results of which, speak loudly for themselves:

- FY 2016 billings up 100% to \$15.8million (2015: \$7.9million);
- FY 2016 revenue less partner payments up 146% to \$13.5million (2015: \$5.5million);
- FY 2016 gross profit up 159% to \$10.9million (2015: \$4.2million);
- FY 2016 ongoing operating costs cut 44% to \$6.5million (2015: \$11.7million) with the current OPEX run-rate now below the \$6.0million target;
- FY 2016 operating EBITDA before one-off restructuring costs up 1257% to \$3.6million delivering FY 2016 EBITDA profit before restructuring costs of \$3million compared to a FY2015 loss of \$4.4million;
- FY 2016 Billings Operating EBITDA before restructuring costs up to \$4.2million from FY 2015 Billings Operating EBITDA loss of \$6.6million
- Cash & cash equivalents post share buy-backs, tender offer, foreign currency charges, share payments and costs associated to discontinued operations and restructuring of \$15.3million (2015: \$34.7million);
- Intangible assets \$45.6million based on their book value;
- Ongoing operations Earning per Share, on Operating EBITDA (before restructuring costs), of 0.49 cents.

Of equal importance is the significant registration growth we are now seeing across our portfolio and the wider continued growth of the new gTLD sector. In particular,

- In China we have experienced a 44% registration growth year-to-date with currently over 817,000 registrations in .vip;
- In our US and European portfolio we are now seeing real indications of meaningful development with a 37% registration growth year-to-date when confirmed sales are taken into account, with existing and committed registrations now at circa 350,000; and
- Significantly, new gTLD market growth is up circa 6% year-to-date in 2017 at over 29 million domains under management (source nTLDStats.com), this following on from last year where net new registrations in new gTLDs outstripped those in .com/.net by nearly seven-fold, and those in country codes by nearly four-fold.

Net Registrations	31 Dec 2016	31 Dec 2015	Net Growth
Verisign (.com, .net)	142.2m	139.8m	2.4m
Country codes	142.7m	138.1m	4.6m
New gTLDs	27.6m	11.2m	16.4m

Source: Verisign

In short, we are a young business experiencing significant growth in a rapidly expanding, but still nascent, industry that has the potential to match .com/.net or the country codes (142.2m and 142.7m registrations respectively at 31 December 2016) within a five to ten timeframe.

Likewise, the registration growth that we are now achieving is being done without MMX adopting the "freemium" strategy favored by many of our competitors, where first year registrations are effectively given away for free. Our new registrations are real sales generating revenue and profits in their first year of registration.

Our portfolio and its strengths

As a registry operator, we currently operate or have financial interests in 23 launched new gTLDs – of which 20 we wholly or majority own.

We own an additional five TLDs that remain unlaunched.

We also have interests in seven TLDs that remain contested, .eco having been awarded to another applicant, some of which may be resolved via private auctions in 2017.

It should be noted, a basic core strength of our portfolio is its diversity – both in terms of underlying standard name price points, geography, and target audiences. It has allowed us to establish strong footprints in China and Europe as well as the US.

In 2016, the geographic break-down of gross billings was China 59%, US 24%, Europe 17%. In 2017, MMX anticipates China will account for approximately 50% of Group billings, with growing contributions from North America and Europe.

As can be expected, each geography and domain extension sector has its own dynamics. In essence, we see four complementary dynamics emerging:

- High volume lower standard-priced generics (e.g., .work) and Asia specific domains (e.g., .vip) where premium inventory rises in popularity broadly in-line with the number of paid standard name registrations achieved;
- Mid volume, higher priced geographic domains (e.g., .bayern) where renewal rates typically trend significantly above industry norms and which present significant opportunities to strategic partners;
- Lower volume, mid-priced vertical interest domains (e.g., .fashion, .beer) where the Board believes there is significant scope for deeper market penetration, particularly in the US over the coming 18 months; and
- High priced, low volume specialist interest domains (e.g.,.law) where usage and renewal rates also trend significantly above industry norms.

However, given that in commercial terms many of the extensions within MMX's portfolio are still in their infancy, we believe it is not appropriate to provide more granular break-downs per category at this stage of the Group's development other than to indicate each group is materially contributing to both the blended top-line billings and renewal rates currently being experienced by the Group where top-line registrations are up 44% year to date in China and 37% in Europe and US when new orders are taken into account. Likewise, renewal rates in US/ Europe for a significant majority of our TLDs are currently trending above 75% with early indications from China being that renewal rates for .vip will be significantly ahead of new gTLD renewal rates for that region, given investors of certain key categories of .vip names have confirmed they will be renewing all of their inventory in these categories.

In terms of unrealized asset value, it should also be noted that our portfolio is listed at its book value - $45.6million which the Board believes does not accurately reflect it's true potential. For example, in context to the wider market, the unlaunched .shop top-level domain was acquired via public auction for $41.5million and .web for $135million; as it relates to the MMX portfolio - .vip was won at an ICANN auction for $3.1 million and recouped that investment within the first four weeks of launch and subsequently has derived significantly more in revenue within its first 11 months since launch.

Key market drivers

To understand the key market drivers of the new gTLD industry that saw net new registrations outstrip those in .com and the country codes combined in 2016, it is important to recognize trends both from within the industry as well as external factors. It is therefore central to our strategy that we are positioned to support the three end markets that management sees are looking to benefit from those trends through our registrar partners – namely:

> “We remain confident of our ability to deliver meaningful value as we continue to grow our DUMs and resulting revenues and transition the Group into a highly predictable annuity based business of scale.

executives summary
continued

- New-start SME's that are coming online for the first time, as well as established businesses already online;
- Digital entrepreneurs that are looking to develop significant new markets and applications based around domain address conventions; and
- Domain investors who serve both as early pioneers, as well as marketeers, of new extensions.

We believe much of the business development work and tests we have been conducting over the last 12 months are now providing the backdrop to the growth the portfolio is now enjoying and will, we believe, continue to enjoy.

Our revenue model

Much work has been carried out over the last 12 months so that we have the appropriate pricing and revenue models in place to allow us to deliver the growth we are now experiencing.

As a business, we have both premium and standard inventory. Premium inventory are names that carry specific meaning or interest to given audiences where we are able to charge a higher first year amount with annual renewal fees then reverting to the standard rate. Standard inventory is where the first and following year charges remain constant.

Across our portfolio of TLDs, the value of our not yet released or sold premium names, based on values achieved in 2016, remains significant and has the potential to be multiples of the current book value of our underlying portfolio of top-level domains. Meanwhile our standard name inventory per TLD is potentially limitless, it being made up of any letter or number combination an end-user may want.

Therefore, over the next three to five years our monetisation strategy is to achieve accelerated high-margin earnings in the early years of each TLD's development through the sale of correctly priced premium and high-value sequences of standard name inventory, whilst allowing standard renewals and sales volume to grow over the same period. This will ensure that revenue from standard names are able to account for the majority of a domain's revenue by the end of the development phase of each top-level domain. In short, it is a model designed to allow us to achieve high-margin sales in the early years which can then morph into a highly predictable annuity based model, such as Verisign's, based on standard registrations and renewals as each TLD properly establishes itself.

Critical to this strategy is finding the appropriate pricing points for our premium inventory across our portfolio of TLDs. If we set the first year pricing, or equally the renewal pricing, too high then both sales and renewals can be adversely impacted. To that end, significant work has been conducted over the last six months to better structure the pricing of our premium inventory, and this new pricing will be introduced to the market shortly.

It should also be noted that under this model, first year sales can provide a healthy yard-stick by which to gauge where the likely registration levels might be for a TLD as it matures. For example, the success of .vip in its first eleven months would indicate a target of 2.5 million standard registrations being readily achievable over the next five years, a target we believe we are on track to meet and hopefully exceed.

In line with management's expectations, premium sales in 2016 accounted for 66% of our total billings. We would anticipate this percentage trending down in future years as standard renewal and new registration revenue grows.

Development programme

Core to MMX's ongoing development of top-line billings and renewal revenues will be:

- The successful launch of new extensions;
- The ongoing development of first year premium sales in areas of the portfolio where there has been historic under-performance; and
- The ongoing expansion of MMX's geographic footprint.

To that end, MMX is pleased to confirm:

- .boston will formally enter General Availability in mid September;
- The completion and relaunch of MMX's premium inventory to the US and European markets;
- The application to MIIT, China's industry regulator, of up to 8 wholly-owned MMX extensions; and
- The ongoing evaluation of opportunities in India, South East Asia and South America.

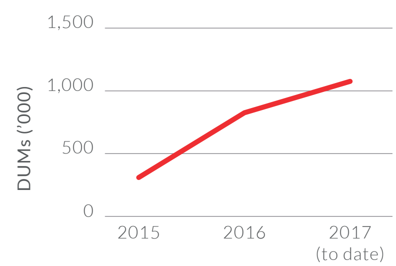
As stated earlier, the Group's monetisation strategy is to achieve accelerated high-margin earnings in the early years of each TLD through the sale of correctly priced premium inventory whilst allowing standard renewals and sales volume to grow over the same period to allow for balanced and measurable revenue growth as each TLD matures.

Key performance indicators ("KPI's")

The Board sees the following as the business's KPI's:

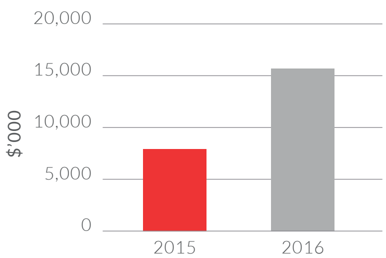
- Domains under management ("DUM"s) (the number of registrations we have);
- Annual gross billings;
- Gross margin;
- Annual renewals - $ amount and percentage of OPEX; and
- Billings operating EBITDA

1. Domains under management ("DUMs")



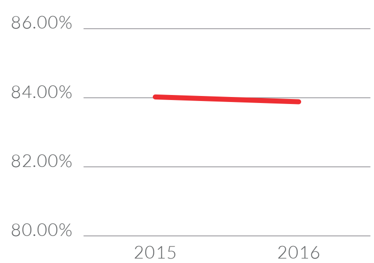
In 2016, our domains under management grew nearly threefold from approximately 289,000 as of 31 December 2015 to approximately 821,000 at 31 December 2016. As at the time of writing registrations, including committed orders, now stand at approximately 1.2million DUMs.

2. Annual gross billings



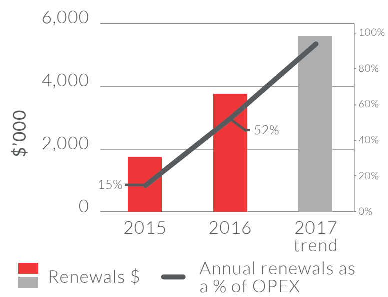
This is a key measurement for management as it presents the underlying incoming cash from domain sales from domain sales for the year. In 2016 we experienced a 100% increase to 15.8million (2015: $7.9million).

3. Gross margin



In April 2016, we gave guidance that cost of sales would be contained to within 20% of top-line billings (i.e. before partner payments). We are pleased to report this has been achieved for 2016, cost of sales being flat at 16.08% ($2.5million) of top line billings compared to 15.96% of top line billings ($1.3million) in 2015, delivering a gross profit margin against top-line billings of 84% for FY2016 and a reported gross margin profit of 81% net of partner payments. We aim to target gross profit margins against top line billings of 80% or above on a go-forward basis.

4. Annual renewals - $ amount & as percentage of OPEX



In 2015, revenue from renewals stood at $1.8million, growing to $3.8million in 2016. As our DUMs grow, we expect renewal revenue to increase in line with this growth. Trend to date in 2017 reinforces management's expectation and target for renewal revenue to cover the Group's fixed operating expenditure ("OPEX") over the next eighteen to twenty-four months, meaning that once this point has been reached, revenue from new registrations after partner payments and cost of sale, drops directly to the bottom line.

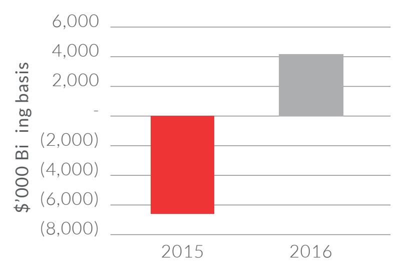
This objective has been aided by the significant steps taken in 2016 to reduce OPEX, it being cut from $11.5million (FY 2015) to $6.5million (FY 2016) with the Group now operating within its $6.0million OPEX target. Indeed, as a percentage of gross billings, OPEX has been reduced to 45% from 148% in FY 2015. Management's target moving forward is that OPEX should not exceed 33% of gross billings in a stable state environment.

In relation to managing OPEX, management does not, however, subscribe to the notion of simply stripping the business down to a skeleton staff simply to inflate EBITDA numbers. We will continue to manage our costs, and likewise invest in talented staff, so that the business can continue to be profitably grown within our stated OPEX guidelines. To that end, we are pleased to report that consultancy fees and commissions, which in 2016 accounted for over $700,000, have been reduced to just under $250,000 for 2017.

5. Billings Operating EBIDTA, before profits on gTLD auctions and restructuring costs for 2016

Billings Operating EBITDA is a key metric for the management team as it is based on current year billings against current year costs and provides a better snapshot of current year performance than accounting Operating EBITDA where billings are subject deferred revenue calculations.

Given the significant restructuring that occurred in 2016 to transition MMX into a pure-play registry, for the purposes of presenting a clear picture of our ongoing operations, we are focusing on Billings Operating EBITDA before profits on gTLD auctions and the one-off restructuring costs for the year under review. In 2017, we will simply report Billings Operating EBITDA as a KPI.



As can be seen, on a like-for-like basis, the combination of increased gross billings growth and a restructuring of the business and its operating costs has resulted in a significant turnaround in Billings Operating EBITDA, before profits on gTLD auctions and restructuring costs, up from a loss of $6.6million in 2015 to a profit of $4.2million in 2016. It should be noted there was no one-off revenue from gTLD auctions in 2016.

executives summary
continued

Financials – Ongoing Operations

As we have indicated in previous financial statements and above, accounting rules dictate that revenue generated from domain billings are subject to deferred revenue calculations which can distort an investor's perspective of Group performance over the short term i.e., over the financial reporting year. Accordingly, Billings Operating

EBITDA, which is based on current year billings against current year costs, is provided below. Management believes that the Billings Operating EBITDA provides a better snapshot of current year performance.

Billing operating EB TDA	FY 2016 $000 s	FY 2015 $ 000 s	Change %
Billings(1)	15,800	7,922	100%
Partner payments	(1,868)	(1,487)	26%
Revenue less partner payments	13,932	6,435	117%
Cost of sales	(2,541)	(1,264)	101%
Gross margin	**11,391**	**5,171**	**120%**
Gross margin %	82%	80%	
Cash expenditure			
Operating expenses – ongoing	(6,536)	(11,745)	(44%)
Operating expenses – forfeited	(646)	-	N/A
Bi ing Operating EB TDA (before restructuring costs)(2)	**4,209**	**(6,574)**	**(164%)**

(1) Billings refer to total sales generated during the year (not deferred for accounting purposes)

(2) Operating earnings before interest, tax, depreciation & amortization and other non-cash charges where earnings are calculated on the basis of billings as opposed to accounting revenue. It should be noted that for accounting purposes Operating EBITDA before restructuring was $3.6 million as highlighted in the Group's 2016 Income Statement.

By transitioning into a pure-play registry and focusing our attention to registry revenue growth, we have successfully been able to double our top line billings in 2016 to $15.8million from $7.9million in 2015 while reducing our overall cost base significantly to $6.5million in 2016 from $11.7million in 2015. Included in the Group's income statement is $0.7million of forfeited operating expenses, which are expenses that the Group is no longer expected to incur in 2017. Going into 2017, we remain committed to running an effective and efficient cost base with operating costs expected to be below the management's stated $6.0million cap.

The net result, which reflects the underlying strength of the Group's restructured business, is that Billings Operating EBITDA has grown to $4.2million compared to a loss of $6.6million in 2015.

Restructuring and one-offs

There are three major areas to highlight in relation to the one-off costs incurred in 2016.

Discontinued operations

As highlighted in our financials, we have separated the reporting of the revenue and costs associated with running the discontinued registrar operations. The registrar operation was a large undertaking by the previous management team with considerable investments in software development, staffing and other resources. It was a strategy that did not prove to be a profitable venture.

In Q3 2016, having successfully navigated an extensive ICANN process, the Group:

- Sold the registrar's customers to Uniregistry in exchange for a perpetual ongoing affiliate commission from the renewal of those domains;
- Worked with our reseller customer, join.gop to move their back-end to another registrar platform; and
- Completed the outsourcing of the reseller business for .law (i.e. join.law) to Instra, a leading registrar.

In our H1 2016 interims we indicated that the registrar operations had incurred a loss of $2.0million and gave guidance that registrar losses in H2 would be less than $0.5million. We are pleased to report that H2 losses were less than indicated with annual losses from the registrar standing at $2.3million versus $2.5million. It should be noted that a significant portion of the loss can be attributed to writing off capitalized software development costs of $1.0million which is a non-cash item.

Restructuring - operations

A significant restructuring of the Group was carried out in 2016. A summary of the key points are:

- A significant reduction in personnel where, as of 24 April 2017, there are now 20 personnel, of which 11 reside in the US compared to 43 at the beginning of 2016;
- outsourcing our technical registry service provider operations to Nominet completed in November with great success and within budget;
- Our US offices consolidated into a single location in Seattle, Washington and the office footprint in Dublin decreased; and
- As highlighted in Discontinued operations, the registrar operations closed down.

As indicated in our H1 2016 interim financials, we had incurred restructuring costs of $0.9 million in the first half and gave guidance that restructuring costs in H2 would be less than $0.4 million. We are pleased to report that H2 restructuring costs were below this target at $0.3million, bringing total restructuring costs to $1.2million for the full year. Restructuring activities will result in ongoing operational savings of approximately $1.5million on an annualised basis.

Restructuring – contracts

In very early 2012, at the time when ICANN was still accepting new generic Top Level Domain applications, the then Executive Team entered into an overly ambitious agreement that it believed would provide value to the overall profile of the Group. The agreement had very significant financial commitments over the life of the contract and did not include any clauses that could allow the Group to renegotiate those commitments should the specific top-level domain not perform to the agreed financial projections. The growth of this top-level domain has not come close to meeting those expectations and the agreement has proven – and would have continued proving - to be a significant drag on the Group's ability to generate positive cashflow from the given TLD.

In late Q4 of 2016 the current Executive team was able to successfully conclude renegotiations of certain components of the agreement by either restructuring or buying out certain financial commitments thus making it more economically viable going forward. As a result of the renegotiation effort, the Group has revised its modeling and believes that it can derive future economic benefit from the renegotiated contract. Accordingly, based on Management's review, a portion of the buy out ($3.8million) has been expensed as a one-off restructuring cost while the remaining portion ($3.9million) will be capitalized as an intangible asset with future economic benefit.

Use of cash

As at the year-end cash stood at $15.3 million compared to $34.7 million at the start of the year.

The change is as a direct result of significant outflows relating to the share buy program ($20.3 million), acquisition of intangible assets ($1.8 million), Executive severance packages and option payouts ($1.2 million), one-time restructuring operating costs of $1.2 million, financing the Group's registrar business which has been shut down and is treated as discontinued operations ($1.3 million), the paying off trade payables (approximately $0.4 million), and finally the restructuring of an economically challenging contract, which resulted in a cash payout in 2016 ($1.9 million).

However, the cash balance was boosted by the share issuance to HONY Capital which amounted to $6.5 million and the net cash flow contribution from continuing operations of $4.2 million to cash (of which approximately $2.0 million is collectible as trade receivables at the year end).

We have seven contended applications remaining (.eco was awarded by ICANN to another applicant) with the possibility that some may be resolved via a private auction. As such the Board believes that maintaining its existing cash reserves better positions the Group's ability to participate in the resolution of these contended applications.

It is also evident that there are increasing opportunities for consolidation in the industry and maintaining a strong balance sheet is beneficial in this regard. Indeed, it is the Board's belief that the ultimate winners in the currently fragmented new gTLD arena will be those that can achieve significant scale both in terms of top-line billings and renewal growth.

The Board also remains committed to returning surplus cash to shareholders whether in the form of a share buy-back, a special dividend, the introduction of a progressive dividend policy or mechanism that is believed to be in the best interest of the Group's shareholders at that time. An example of such an event, beyond the ongoing cashflow generation of operations, may be one-off cash proceeds from the private auction process from the Group's remaining seven contested new gTLD applications.

Conclusion

In conclusion:

- We are a young business that is experiencing significant growth in a rapidly expanding, but still nascent, industry that has the potential to match .com/.net or the country codes (142.2million and 142.7million registrations respectively at 31 December 2016) within a 5-10 year time-frame;
- MMX's registrations are already up over 40% year to date, following a near three-fold increase of registrations in 2016;
- A loss making business has been transformed into a profitable one - Billings Operating EBITDA before one off restructuring costs has grown to $4.2million compared to a loss of $6.6million in 2015;
- We have an expanding global foot-print and distribution partner network; and
- We continue to have significant scope for billings and revenue improvement as the Group's premium and standard name inventory across its world-class portfolio of top-level domains is better monetized.

In short, the progress we made in 2016 to transformationally restructure the business into a pure-play registry and cost efficiently enter new markets has built strong foundations for the current year and beyond. We therefore remain confident of our ability to deliver meaningful value as we continue to grow our DUMs and resulting revenues and transition the Group into a highly predictable annuity based business of scale.

Toby Hall
Chief Executive Officer
24 April 2017

Michael Salazar
Chief Operating Officer/
Chief Financial Officer
24 April 2017

strategic report

to the members of Minds + Machines Group Limited

Cautionary statement

This Strategic Report has been prepared solely to provide additional information to shareholders to assess the Group's strategies and the potential for those strategies to succeed.

This Strategic Report contains certain forward-looking statements. These statements are made by the directors in good faith based on the information available to them up to the time of their approval of this report and such statements should be treated with caution due to the inherent uncertainties, including both economic and business risk factors, underlying any such forward-looking information.

This Strategic Report has been prepared for the Group as a whole and therefore gives greater emphasis to those matters, which are significant to MMX and its subsidiary undertakings when viewed as a whole.

Review of the Group's Business

The Business Model

Minds + Machines Group Limited operates in the domain name industry and provides end-to-end domain services generating revenues across multiple business lines.

In total, 23 of the 28 uncontested domains in which the Group has a commercial interest have entered General Availability, resulting in the Group having over 820,000 domains under management at the year end.

The Group currently has an interest in 7 contested generic top-level domains (gTLDs). The Group:

- Wholly-owns, or majority owns, 6 contested gTLDs; and
- Is in partnership for one gTLD.

Registry Business

A registry is the authoritative master database of all Domain Names registered for each TLD operated by a Registry. The registry allows the Domain Name System to route internet traffic to and from connected devices anywhere in the world.

The registry generates revenue by selling domain names to registrars on a recurring subscription basis. Registrars in turn sell domain names directly to consumers. Prices from the registry to the registrar are considered wholesale prices, which are set by the registry. Each registration, known as a second level domain (SLD), has a registration period from 1 to 10 years. At the end of each registration period, in order for the SLD to continue working, the consumer must renew it by paying a registration renewal fee. As required by ICANN, a Registry must wholesale SLDs to all ICANN-accredited Registrars on the same pricing, terms, and conditions.

Pricing for each SLD is based on the Group's determination of whether it is a geographical gTLD, a defined and restricted market (e.g. .law), a niche market (e.g. .yoga), or a generic market (e.g. .work). Pricing is further adjusted by other factors such as the pricing of other SLDs in other new gTLDs that end-users are likely to view as being comparable (e.g. .site vs. .web vs. .website), or pricing to match the targeted market of the gTLD (for instance .luxe focuses on the luxury market which demands premium prices). Further, some SLDs are considered premium names (e.g. hotel.TLD) which command a higher annual price.

The Group shares wholesale revenues from its geographic gTLDs and retains all the wholesale revenue for its non-geographic, wholly-owned gTLDs.

Registry Service Provider

Minds + Machines Group currently has legacy Registry Service Provider clients however, the systems and processes necessary to manage this function have been outsourced to Nominet. Minds + Machines still maintains a small revenue stream from its two clients to manage Nominet on their behalf.

Reseller Registrar Business

The Group discontinued its previous retail registrar business in 2016. The Group will continue to provide 'Reseller' services for .law and .abogado second level domain names, however it has outsourced the back-end platform to a third-party provider, Instra.

Future developments, strategy and objectives

Please see the Executive Summary.

Key performance indicators

We track several Key Performance Indicators (KPI) against set KPI targets to help the Board and management evaluate the performance of our overall business. Please refer to the Executives Summary.

Principal risks and uncertainties

There are a number of potential risks and uncertainties, which could have a material impact on the Group's long-term performance and could cause actual results to differ materially from expected and historical results. The Group's risk management policies and procedures are also discussed in the Corporate Governance Statement.

The market for gTLDs is uncertain, the Group may fail to attract sufficient new customers

The level of demand for new second level domain names for those gTLDs in respect of which the Group either provides registry services or has an economic interest as the gTLD applicant may be less than expected or the new gTLDs may not generate the levels of second level domain name sales anticipated by the Board in which case the Group's revenues and profitability may be adversely affected.

The Group closely monitors the industry to judge the level of interest and potential revenue and acts accordingly to ensure that it retains sufficient capital to operate.

The Group derives significant revenue from certain geographic regions that are subject to strict compliance requirements

The Group derives significant revenue from China where as a registry, it is subject to strict reporting requirements and where its customers may be subject to certain currency restrictions. These requirements could impact the Group's ability to pursue business opportunities in the region.

The Group maintains a strong presence in the region with offices in Xiamen and Beijing and employs highly qualified and well connected personnel. In addition, the Group has forged strong relationships with several Chinese based business partners to ensure that opportunities are taken advantage of as presented.

The Group may fail to meet certain contractual obligations

The Group currently has certain contractual commitments for specific TLDs that provide for minimum revenue guarantees. If total revenues from those specific TLDs do not reach the minimum annual revenue targets the Group must reallocate revenues from other areas of its portfolio to ensure appropriate payment of such commitments. Further, the commitments may create a significant barrier to achieving overall profitability and could result in certain impairments to future financial statements.

The Group is currently renegotiating its current contractual commitments with a view towards ensuring that their requirements are reasonably met and the impact of such commitments to the Group's overall profitability is minimized.

The Group depends on technology and advanced information systems, which may fail or be subject to disruption

As a registry, the Group is dependent on the performance of software registry system and underlying databases, together with its back-up systems and disaster recovery plans, to ensure that critical registry functions are available to end users, registrars and other parties that must have access to those functions in the event any circumstance arises that materially impacts the operation of the primary registry system. The integrity, reliability and operational performance of the Group's IT systems, whether in-house or outsourced, are therefore critical to the Group's operations. The Group's IT systems may be damaged or interrupted by increases in usage, human error, unauthorized access, natural hazards or disasters or similarly disruptive events. Furthermore, Group's current systems may be unable to support a significant increase in online traffic or increased customer numbers, whether as a result of organic or inorganic growth of the business. Any failure of the Group's IT infrastructure or the telecommunications and/or other third party infrastructure on which such infrastructure relies could lead to significant costs and disruptions that could reduce revenue, harm the Company's business reputation and have a material adverse effect on the operations, financial performance and prospects of the Group. The Group has in place business continuity procedures, disaster recovery systems and security measures to protect against network or IT failure or disruption. However, those procedures and measures may not be effective to ensure that the Group is able to carry on its business in the ordinary course if they fail or are disrupted, and they may not ensure the Group can anticipate, prevent or mitigate a material adverse effect on the Group's operations, financial performance and prospects resulting from such failure or disruption. In addition, the Group's controls may not be effective in detecting any intrusion or other security breaches, or safeguarding against sabotage, hackers, viruses and cybercrime.

The Group has invested and continues to invest in ensuring that its technology and advanced information systems, whether in-house or outsourced, are performing as expected and can support growth of the business.

Dependence on key personnel

The Group has a small management team and the loss of any key individual or the inability to attract appropriate personnel could adversely impact upon the Group's future performance.

The Group offers competitive compensation package's including share options to retain and attract key personnel.

The Group depends on a number of third parties for the operation of its business

The Group relies on cloud based services from third parties suppliers in order to provide its registry and RSP services which, if faulty and thereby causes errors or a service failure, could adversely affect the Group's operating results or harm its reputation. Furthermore, the Group has key contractual relationships with a number of third parties including suppliers, partners, banks and payment processors. In particular, the Group relies on key suppliers in order to carry on its operations including, but not limited to, DNS services, co-location facilities, DDoS migration services, security vulnerability assessment services, site and data escrow. The failure of one or more of these third parties may have an adverse impact on the financial and operational performance of the Group. Similarly, the failure of one or more of these third parties to fulfill its obligations to the Group for any other reason may also cause significant disruption and have a material adverse effect on its operations, financial performance and prospects.

The Group puts in place contracts with certain key clients to ensure continued business relationships. The Group also meets with individual management from our strategic partners periodically throughout the year to ensure the continued alignment of business goals and objectives.

Going concern basis

The Group's forecasts and projections, taking account of the gTLD program being managed by ICANN, show that the Group should be able to operate within the level of its current funding. At the year-end, the Group had $15.3 million held as cash and cash equivalents (excluding letters of credits required by ICANN).

The Group will use these resources to both fund operations, to secure additional gTLD assets and where appropriate return cash to shareholders.

The Directors have a reasonable expectation that the Company and the Group have adequate resources to continue operational existence for the foreseeable future. Thus they continue to adopt the going concern basis of accounting in preparing the annual financial statements.

Approval

This report was approved by the Board of Directors on 24 April 2017 and signed on its behalf by:

Michael Salazar
Chief Operating Officer/Chief Financial Officer
24 April 2017

directors' report

The Directors present their annual report on the affairs of the group, together with the financial statements and auditor's report, for the year ended 31 December 2016. The Corporate Governance Statement set out on pages 13 to 14 forms part of this report.

Details of significant events since the balance sheet date are contained in note 31 to the financial statements. An indication of likely future developments in the business of the company and details of research and development activities are included in the Strategic Report.

Information about the use of financial instruments by the company and its subsidiaries is given in note 28 to the financial statements.

Dividends

The Directors do not recommend payment of a dividend as a result of the financial performance for the year ended 2016 (2015: Nil).

Capital Structure

Details of the issued share capital, together with details of the movement in the Company's issued share capital during the year are shown in note 26. The company has one class of ordinary shares, which carry no right to fixed income. Each share carries the right to one vote at general meetings of the Company.

There are no specific restrictions on the size of a holding nor on the transfer of shares, which are both governed by the general provisions of the Articles of Association and prevailing legislation. The directors are not aware of any agreement between holders of the Company's shares that may result in restrictions on the transfer of securities or on voting rights.

Details of employee share schemes are set out in note 27.

No person has any special rights of control over the Company's share capital.

With regard to the appointment and replacement of directors, the company is governed by its Articles of Association, the BVI Companies Act and related legislation.

Directors

The Directors who served during the period and since year end are set out below:

Executive Directors	Date of Appointment	Date of Resignation
Toby Hall	26 April 2016	
Michael Salazar		
Antony Van Couvering		19 February 2016
Caspar von Veltheim		2 February 2016

Non-Executive Directors	Date of Appointment	Date of Resignation
Guy Elliott		
Henry Turcan	2 February 2016	
Ke th Teare		2 February 2016
Elliot Noss		2 February 2016
David de Jongh Weill		2 February 2016

Directors' Remuneration

The Group remunerates the Directors at a level commensurate with the size of the Group and the experience of its Directors. The Remuneration Committee has reviewed the Directors' remuneration and believes it upholds the objectives of the Group with regard to this issue. Details of Directors' emoluments and payments made for professional services rendered are set out in Note 11 to the financial statements.

Directors' Interests

The total beneficial interests of the serving Directors at the yearend in the shares and options of the Company during the period to 31 December 2016 were as follows:

Director	31 December 2016		31 December 2015	
	Shares	Options*	Shares	Options*
Guy Elliott	20,250,000	-	21,650,000	-
Toby Hall	500,000	7,500,000	N/A	N/A
Michael Salazar	1,975,050	7,500,000	1,630,000	8,500,000
Henry Turcan	-	-	-	-
Antony Van Couvering**	N/A	N/A	1,017,689	23,000,000
Caspar Ve theim**	N/A	N/A	916,613	2,512,500
Ke th Teare**	N/A	N/A	-	750,000
Elliot Noss**	N/A	N/A	-	750,000
David de Jongh Weill**	N/A	N/A	-	-

* Terms of the options have been disc osed in Note 27 to the financia statements.

** These directors did not serve for the fu financia year and were not Directors of the company at the year end.

Directors' Indemnities

The company has made qualifying third-party indemnity provisions for the benefit of its directors, which were made during the year and remain in force at the date of this report.

Corporate Governance

A statement on Corporate Governance is set out on pages 13 to 14.

Environmental Responsibility

The Company is aware of the potential impact that it and its subsidiary companies may have on the environment. The Company ensures that it, and its subsidiaries at a minimum comply with the local regulatory requirements and the revised Equator Principles with regard to the environment.

Employment Policies

The Group is committed to promoting policies which ensure that high-calibre employees are attracted, retained and motivated, to ensure the ongoing success for the business. Employees and those who seek to work within the Group are treated equally regardless of sex, sexual orientation, marital status, creed, colour, race or ethnic origin.

Health and Safety

The Group's aim is to achieve and maintain a high standard of workplace safety. In order to achieve this objective the Group will provide training and support to employees and set demanding standards for workplace safety.

Annual General Meeting ("AGM")

This report and financial statements will be presented to shareholders for their approval at the AGM. The Notice of the AGM will be distributed to shareholders together with the Annual Report.

Statement of disclosure of information to auditor

As at the date of this report the serving directors confirm that:

- So far as each director is aware, there is no relevant audit information of which the Company's auditor is unaware, and
- they have taken all the steps that they ought to have taken as directors in order to make themselves aware of any relevant audit information and to establish that the Company's auditor are aware of that information.

Auditor

Mazars LLP have expressed their willingness to continue in office as auditor and a resolution to reappoint them will be proposed at the forthcoming Annual General Meeting.

Statement of Directors' Responsibilities

The directors are responsible for preparing the Directors' Report and the financial statements in accordance with applicable law and regulations.

The Directors are required to prepare financial statements for each financial year. The Directors must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the group and company and of the profit or loss of the group and company for that period.

In preparing these financial statements, the directors are required to:

- select suitable accounting policies and then apply them consistently;
- make judgments and accounting estimates that are reasonable and prudent;
- state whether IFRS has been followed, subject to any material departures disclosed and explained in the financial statements;
- provide additional disclosures when compliance with specific requirements in IFRS is insufficient to enable users to understand the impact of particular transactions, and other events and conditions on the Group and Company's financial position and financial performance; and
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the company will continue in business

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the Company's transactions and disclose with reasonable accuracy at any time the financial position of the Company and enable them to ensure that the financial statements comply with applicable law. They are also responsible for safeguarding the assets of the company and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Electronic communication

The maintenance and integrity of the Company's website is the responsibility of the Directors. The work carried out by the auditor does not involve consideration of these matters and, accordingly, the auditor accepts no responsibility for any changes that may have occurred to the financial statements since they were initially presented on the website.

The Company's website is maintained in accordance with AIM Rule 26. Legislation in the British Virgin Islands governing the preparation and dissemination of the financial statements may differ from legislation in other jurisdictions.

By order of Board:

Michael Salazar
Chief Operating Officer/Chief Financial Officer
24 April 2017

corporate governance

The Board is committed to maintaining high standards of corporate governance. Whilst the company is not required to adopt the UK Corporate Governance Code, the Company's corporate governance procedures take due regard of the principles of Good Governance set out in the 2014 UK Corporate Governance Code in relation to the size and the stage of development of the Company.

Board of Directors

The Board of Directors currently comprises two Executive Directors and two Non-Executive Directors, one of whom is the Chairman. The Directors are of the opinion that the Board comprises a suitable balance and that the recommendations of the Combined Code have been implemented to an appropriate level. The Board, through the CEO and COO / CFO in particular, maintains regular contact with its advisers and public relations consultants in order to ensure that the Board develops an understanding of the views of major shareholders about the Company.

Board Meetings

The Board meets regularly throughout the year. For the year ended 31 December 2016, the Board met ten times in relation to normal operational matters. The Board is responsible for formulating, reviewing and approving the Company's strategy, financial activities and operating performance. Day to day management is devolved to the Executive Directors who are charged with consulting the Board on all significant financial and operational matters.

All Directors have access to the advice of the Company's solicitors and other professional advisers, as necessary, and information is supplied to the Directors on a timely basis to enable them to discharge their duties effectively. All Directors have access to independent professional advice, at the Company's expense, as and when required.

Board Committees

The Board has established the following committees, each which has its own terms of reference:

Audit Committee

The Audit Committee considers the Group's financial reporting (including accounting policies) and internal financial controls. The Audit Committee comprises of two Non-Executive Directors, Henry Turcan (Chairman) and Guy Elliot. The Audit Committee is responsible for ensuring that the financial performance of the Group is properly monitored and reported on.

Remuneration Committee

The Remuneration Committee is responsible for making recommendations to the Board on Directors' and senior executives' remuneration. It comprises of two Non-Executive Directors, Guy Elliott (Chairman of the Remuneration Committee), and Henry Turcan. Non-Executive Directors' remuneration and conditions are considered and agreed by the Board. Financial packages for Executive Directors are established by reference to those prevailing in the employment market for executives of equivalent status both in terms of level of responsibility of the position and their achievement of recognized job qualifications and skills. The Committee will also have regard to the terms, which may be required to attract an equivalent experienced executive to join the Board from another company.

Internal controls

The Directors acknowledge their responsibility for the Group's systems of internal controls and for reviewing their effectiveness. These internal controls are designed to safeguard the assets of the Company and to ensure the reliability of financial information for both internal use and external publication. Whilst they are aware that no system can provide absolute assurance against material misstatement or loss, in light of increased activity and further development of the Company, continuing reviews of internal controls will be undertaken to ensure that they are adequate and effective.

Risk Management

The Board considers risk assessment to be important in achieving its strategic objectives. There is a process of evaluation of performance targets through regular reviews by senior management to forecasts. Project milestones and timelines are regularly reviewed.

Risks and uncertainties

The principal risks facing the Group are set out below. Risk assessment and evaluation is an essential part of the Group's planning and an important aspect of the Group's internal control system.

Business risk

- The market for gTLDs is uncertain and the Group may fail to attract significant new customers;
- The Group derives significant revenue from certain geographic regions that are subject to strict compliance requirements
- The Group may fail to meet certain contractual obligations;
- The Group depends on technology and advanced information systems, which may fail or be subject to disruption;
- Dependence on key personnel; and
- The Group depends on a number of third parties for the operation of its business.

General and economic risks

Contractions in the world's major economies or increases in the rate of inflation resulting from international conditions;

- Movements in the equity and share markets in China, United States, and United Kingdom and throughout the world;
- Weakness in global equity and share markets in particular, in the United Kingdom, and adverse changes in market sentiment towards the internet and technologies industry;
- Currency exchange rate fluctuations and, in particular, the relative prices of US Dollar, the Euro, and the UK Pound Sterling;
- Exposure to interest rate fluctuations; and
- Adverse changes in factors affecting the success of internet and development operations, such as increases in expenses, to delays in the development or adoption of new standards and protocols to handle increased levels of Internet activity or due to increased governmental regulation.

Funding risk

The Group or the companies in which it has invested may not be able to raise, either by debt or further equity, sufficient funds to enable completion of planned expansion, investment and/or development projects.

Content risk

The Company may be affected by the regulatory and legal environment relating to the content control and access. Regulation both current and future could cause additional expense and have a material impact on the Company's business, the extent of which cannot be predicted. Certain jurisdictions may attempt to make the Company responsible for the content which it facilitates or may be held responsible for content.

Intellectual property

Monitoring and defending the Company's intellectual rights can entail substantial costs with no certainty of outcome. The Company relies on its rights in intellectual property and other rights such as confidentiality, and there is a risk of their infringement, which may have a material adverse effect on the Company's business, operation and/or financial condition. The Company's ability to ensure adequate protection for its intellectual property rights may be limited and it is possible that the Company's competitors may independently develop similar technology, which could encroach upon the Company's operations.

The Company may also become subject to claims from third parties for infringement of their intellectual property rights. Such claims (meritorious or otherwise) may be costly and time consuming, and if any action against the Company is successful it may result in the Company being required to cease certain activities, alter its technology, or enter into royalty or licensing agreements, which may or may not be available on terms acceptable to the Company.

Market risk

The ability of the Group (and the companies it invests in) to continue to secure sufficient and profitable sales contracts to support its operations is a key business risk.

Key personnel

The ability of the Group to attract and retain key personnel.

Treasury Policy

The Group finances its operations through equity and holds its cash as a liquid resource to fund the obligations of the Group. The Board approves decisions regarding the management of these assets. Refer to Note 28 for further information.

Securities Trading

The Board has adopted a Share Dealing Code that applies to Directors, senior management and any employee or consultant who is in possession of inside information. All such persons are prohibited from trading in the Company's securities if they are in possession of inside information. Subject to this condition and trading prohibitions applying to certain other periods, trading can occur provided the relevant individual has received the appropriate prescribed clearance.

Relations with Shareholders

The Board is committed to providing effective communication with the shareholders of the Company. Significant developments are disseminated through stock exchange announcements and regular updates of the Company website. The Board views the AGM as a forum for communication between the Company and its shareholders and encourages their participation in its agenda.

independent auditor's report

Independent Auditor's Report to the Members of Minds + Machines Group Limited

We have audited the financial statements of Minds + Machines Group Limited for the year ended 31 December 2016 which comprise the Group and Company Statements of Comprehensive Income, Group and Company Statements of Financial Position, Group and Company Cash Flow Statements, the Group and Company Statements of Changes in Equity and the related notes. The financial reporting framework that has been applied in their preparation is applicable law and International Financial Reporting Standards (IFRSs).

Respective responsibilities of directors and auditor

As explained more fully in the Statement of Directors' responsibilities set out on page 12, the directors are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view.

Our responsibility is to audit and express an opinion on the financial statements in accordance with applicable law and International Standards on Auditing (UK and Ireland). Those standards require us to comply with the Auditing Practices Board's Ethical Standards for Auditors. This report is made solely to the company's members, as a body. Our audit work has been undertaken so that we might state to the company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the company and the company's members as a body for our audit work, for this report, or for the opinions we have formed.

Scope of the audit of the financial statements

An audit involves obtaining evidence about the amounts and disclosures in the financial statements sufficient to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or error. This includes an assessment of: whether the accounting policies are appropriate to the group's and the parent company's circumstances and have been consistently applied and adequately disclosed; the reasonableness of significant accounting estimates made by the directors and the overall presentation of the financial statements. In addition, we read all the financial and non-financial information in the Annual Report and Accounts to identify material inconsistencies with the audited financial statements and to identify any information that is apparently materially incorrect based on, or materially inconsistent with, the knowledge acquired by us in the course of performing the audit. If we become aware of any apparent material misstatements or inconsistencies we consider the implications for our report.

Opinion on the financial statements

In our opinion:

- the financial statements give a true and fair view of the state of the group's and of the parent company's affairs as at 31 December 2016 and of the group's and the parent company's loss for the year then ended; and
- the financial statements have been properly prepared in accordance with IFRSs.

Mazars LLP
Chartered Accountants and Statutory Auditor
Tower Bridge House
St Katharine's Way
London
E1W 1DD
24 April 2017

group statement of comprehensive income
for the year ended 31 December 2016

	Notes	Year Ended 31 Dec 2016 $ 000 s	Restated Year Ended 31 Dec 2015 $ 000 s
Billings		15,800	7,922
Continuing Operations:			
Of which:			
Revenue		15,001	6,324
Less: Partner Payments	3	(1,520)	(844)
Revenue ess partner payments		**13,481**	**5,480**
Cost of sales	4	(2,541)	(1,264)
Gross Profit		**10,940**	**4,216**
Gross Profit Margin %		**81%**	**77%**
Profit on gTLD auctions	22	-	7,943
Loss on withdrawal of gTLD applications	22	(148)	(148)
Operating expenses - ongoing	8	(6,536)	(11,745)
Operating expenses - forfeited	8	(646)	-
Operating earnings before interest, taxation, depreciation and amortisation (Operating EBITDA) before restructuring costs		**3,610**	**266**
Foreign exchange gain / (loss)		251	(1,240)
Loss on disposal of fixed assets		(18)	(161)
Share based payments	27	(745)	(3,235)
Share of (loss) / results of joint venture	21	(25)	1
Earnings / (oss) before interest, taxation, depreciation and amortisation (EBITDA) before restructuring costs	9	**3,072**	**(4,369)**
Restructuring costs - operating	5	(1,166)	-
Restructuring costs - contracts	6	(3,748)	-
Loss before interest, taxation, depreciation and amortisation (EBITDA)		**(1,842)**	**(4,369)**
Depreciation and amortisation charge	18/19	(285)	(417)
Finance revenue	12	39	82
Finance costs	13	-	(18)
Loss on disposal of joint ventures	21	(276)	-
Loss before taxation		**(2,364)**	**(4,722)**
Income tax	14	195	52
Loss from the year from continuing operations		**(2,169)**	**(4,670)**
Loss from discontinued operations	7	**(2,332)**	**(4,684)**
Retained oss for the period		**(4,501)**	**(9,354)**

	Notes	Year Ended 31 Dec 2016 $ 000 s	Restated Year Ended 31 Dec 2015 $ 000 s
Other comprehensive income			
Items that may be reclassified subsequently to profit or loss:			
Currency translation differences		(648)	732
Other comprehensive (loss) / income for the year net of taxation		(648)	732
Tota comprehensive oss for the year		**(5,149)**	**(8,622)**
Retained oss for the period attributab e to:			
Equity holders of the parent		(4,508)	(9,335)
Non-controlling interests		7	(19)
		(4,501)	**(9,354)**
Tota comprehensive oss for the period attributab e to:			
Equity holders of the parent		(5,169)	(8,639)
Non-controlling interests		20	17
		(5,149)	**(8,622)**
Loss per share (cents)			
From continuing operations			
Basic	16	(0.29)	(0.56)
Diluted	16	(0.29)	(0.56)
From discontinued operations			
Basic	16	(0.31)	(0.56)
Diluted	16	(0.31)	(0.56)

All operations are considered to be continuing.

The notes set out on pages 25 to 63 form an integral part of these financial statements.

company statement of comprehensive income

for the year ended 31 December 2016

	Notes	Year Ended 31 Dec 2016 $ 000 s	Restated Year Ended 31 Dec 2015 $ 000 s
Billings		13,817	4,121
Of which:			
Revenue		12,417	2,092
Less: Partner payments		(1,049)	(496)
Revenue ess partner payments		**11,368**	**1,596**
Cost of sales		(1,446)	(835)
Gross profit		**9,922**	**761**
Gross profit margin %		**87%**	**48%**
Profit on gTLD auctions	22	-	7,943
Loss on withdrawal of gTLD applications	22	(148)	(148)
Operating expenses		(8,098)	(2,747)
Operating earnings before interest, taxation, depreciation and amortisation (Operating EBITDA)		**1,676**	**5,809**
Foreign exchange profit / (loss)		317	(2,781)
Impairment of investment in subsidiaries	20	(6,859)	-
Share based payment expense		(794)	(2,017)
Earnings before interest, taxation, depreciation and amortisation (EBITDA) before restructuring costs		**(5,660)**	**1,011**
Restructuring costs - operating	5	(80)	-
Earnings before interest, taxation, depreciation and amortisation (EBITDA)		**(5,740)**	**1,011**
Depreciation and amortisation charge	18	(73)	(61)
Finance revenue	12	39	82
Loss on disposal of joint ventures	21	(276)	-
(Loss) / profit before taxation		**(6,050)**	**1,032**
Income tax	14	-	-
Retained (oss) / profit for the period		**(6,050)**	**1,032**
Other comprehensive income		-	-
Tota comprehensive (oss) / income for the year		**(6,050)**	**1,032**

All operations are considered to be continuing.

The notes set out on pages 25 to 63 form an integral part of these financial statements.

group statement of financial position
as at 31 December 2016

	Notes	31 Dec 2016 $ 000 s	Restated 31 Dec 2015 $ 000 s	Restated 31 Dec 2014 $ 000 s
ASSETS				
Non-current assets				
Goodwill	17	2,828	2,828	2,828
Intangible assets	18	45,603	41,291	40,597
Fixtures & equipment	19	89	189	871
Interest in joint ventures	21	385	835	833
Other-long term assets	22	3,327	3,448	5,982
Tota non-current assets		**52,232**	**48,591**	**51,111**
Current assets				
Trade and other receivables	24	7,953	5,606	4,638
Cash and cash equivalents	23	15,275	34,651	45,796
Tota current assets		**23,228**	**40,257**	**50,434**
TOTAL ASSETS		**75,460**	**88,848**	**101,545**
LIABILITIES				
Current iabi ities				
Trade and other payables	25	(14,984)	(8,972)	(6,314)
Obligations under finance lease		-	(2)	(342)
Tota current iabi ities		**(14,984)**	**(8,974)**	**(6,656)**
NET ASSETS		**60,476**	**79,874**	**94,889**
EQUITY				
Share capital	26	-	-	-
Share premium	26	60,060	73,816	82,866
Foreign exchange reserve		742	1,403	707
Retained earnings		4	4,987	11,665
		60,806	**80,206**	**95,238**
Non-controlling interests		(330)	(332)	(349)
TOTAL EQUITY		**60,476**	**79,874**	**94,889**

The notes set out on pages 25 to 63 form an integral part of these financial statements.

These financial statements were approved by the Board of Directors on 24 April 2017 and signed on its behalf by:

Toby Hall
Chief Executive Officer

Michael Salazar
Chief Operating Officer/Chief Financial Officer

company statement of financial position
as at 31 December 2016

	Notes	31 Dec 2016 $ 000 s	Restated 31 Dec 2015 $ 000 s	Restated 31 Dec 2014 $ 000 s
ASSETS				
Non-current assets				
Intangible assets	18	39,389	39,463	38,835
Investment in subsidiaries	20	39,384	4,189	3,548
Interest in joint ventures	21	486	911	911
Other-long term assets	22	3,327	3,448	5,962
Tota non-current assets		82,586	48,011	49,276
Current assets				
Trade and other receivables	24	8,519	39,901	39,384
Cash and cash equivalents	23	10,544	23,990	26,952
Tota current assets		19,063	63,891	66,336
TOTAL ASSETS		101,649	111,902	115,612
LIABILITIES				
Current iabi ities				
Trade and other payables	25	(13,880)	(3,852)	(2,201)
Tota current iabi ities		(13,880)	(3,852)	(2,201)
NET ASSETS		87,769	108,050	113,411
EQUITY				
Share capital	26	-	-	-
Share premium	26	60,060	73,816	82,866
Retained earnings		27,709	34,234	30,545
TOTAL EQUITY		87,769	108,050	113,411

The notes set out on pages 25 to 63 form an integral part of these financial statements.

These financial statements were approved by the Board of Directors on 24 April 2017 and signed on its behalf by:

Toby Hall
Chief Executive Officer

Michael Salazar
Chief Operating Officer/Chief Financial Officer

group cash flow statement
for the year ended 31 December 2016

	Notes	Year Ended 31 Dec 2016 $ 000 s	Restated Year Ended 31 Dec 2015 $ 000 s
Net cash flow from operating activities	**23**	**(629)**	**(10,745)**
Cash flows from investing activities			
Interest received	12	39	82
Interest paid	13	-	(18)
Amounts transferred from restricted cash		(64)	684
Payments to acquire intangible assets		(3,796)	(1,139)
Receipts from the disposal of intangible assets		-	47
Payments to acquire fixtures & equipment		(28)	(108)
Receipts from the disposal of tangible assets		90	-
Amounts received in gTLD auctions		-	9,155
Net cash flow from investing activities		**(3,759)**	**8,703**
Cash flows from financing activities			
Repayments of obligations under finance lease		-	(360)
Issue of ordinary shares	26	6,811	-
Share issue costs	26	(300)	-
Purchase of own shares	26	(20,267)	(9,050)
Repurchase of vested equity instruments		(1,129)	(577)
Net cash flow from financing activities		**(14,976)**	**(9,987)**
Net decrease in cash and cash equivalents		(19,364)	(12,029)
Cash and cash equivalents at beginning of period		34,651	45,796
Exchange (loss)/gain on cash and cash equivalents		(12)	884
Cash and cash equiva ents at end of period		**15,275**	**34,651**

The notes set out on pages 25 to 63 form an integral part of these financial statements

company cash flow statement
for the year ended 31 December 2016

	Notes	Year Ended 31 Dec 2016 $ 000 s	Restated Year Ended 31 Decr 2015 $ 000 s
Net cash flow from operating activities	23	**7,490**	**(3,800)**
Cash flows from investing activities			
Interest received	12	39	82
Amounts transferred from restricted cash		-	684
Payments to acquire intangible assets		-	(500)
Investment in subsidiaries		(7,218)	-
Amounts received in gTLD auctions		-	9,155
Net cash flow from investing activities		**(7,179)**	**9,421**
Cash flows from financing activities			
Issue of ordinary shares	26	6,811	-
Share issue costs	26	(300)	-
Purchase of own shares	26	(20,267)	(9,050)
Net cash flow from financing activities		**(13,756)**	**(9,050)**
Net decrease in cash and cash equivalents		**(13,445)**	**(3,429)**
			-
Cash and cash equivalents at beginning of period		23,990	26,952
Exchange (loss)/gain on cash and cash equivalents		(1)	467
Cash and cash equiva ents at end of period		**10,544**	**23,990**

The notes set out on pages 25 to 63 form an integral part of these financial statements

group statement of changes in equity
for the year ended 31 December 2016

	Share Capital $ 000 s	Share premium reserve $ 000 s	Shares to be issued $ 000 s	Foreign currency translation reserve $ 000 s	Retained earnings $ 000 s	Total $ 000 s	Non-controlling interest $ 000 s	Total equity $ 000 s
At 1 January 2015, as previously reported	-	82,866	-	707	11,461	95,034	(349)	94,685
Cumulative effect of change in accounting policy for partner payments	-	-	-	-	204	204	-	204
As restated	-	**82,866**	-	**707**	**11,665**	**95,238**	**(349)**	**94,889**
Loss for the year	-	-	-	-	(9,335)	(9,335)	(19)	(9,354)
Currency translation differences	-	-	-	696	-	696	36	732
Tota comprehensive income / (oss)	-	-	-	**696**	**(9,335)**	**(8,639)**	**17**	**(8,622)**
Acquisition of own shares	-	(9,050)	-	-	-	(9,050)	-	(9,050)
Credit to equity for equity-settled share based payments	-	-	-	-	3,223	3,223	-	3,223
Share based payments (repurchase of vested equity instruments)	-	-	-	-	(566)	(566)	-	(566)
As at 31 December 2015	-	**73,816**	-	**1,403**	**4,987**	**80,206**	**(332)**	**79,874**
Loss for the year	-	-	-	-	(4,508)	(4,508)	7	(4,501)
Currency translation differences	-	-	-	(661)	-	(661)	13	(648)
Tota comprehensive (oss) / income	-	-	-	**(661)**	**(4,508)**	**(5,169)**	**20**	**(5,149)**
Additions to share premium	-	6,811	-	-	-	6,811	-	6,811
Cost of share issue	-	(300)	-	-	-	(300)	-	(300)
Acquisition of own shares	-	(20,267)	-	-	-	(20,267)	-	(20,267)
Credit to equity for equity-settled share based payments	-	-	-	-	653	653	(2)	651
Share based payments (repurchase of vested equity instruments)	-	-	-	-	(1,128)	(1,128)	-	(1,128)
Adjustment arising from change in Non-Controlling Interest	-	-	-	-	-	-	(16)	(16)
As at 31 December 2016	-	**60,060**	-	**742**	**4**	**60,806**	**(330)**	**60,476**

The notes set out on pages 25 to 63 form an integral part of these financial statements.

- Share premium – This reserve includes any premiums received on issue of share capital. Any transaction costs associated with the issue of shares are deducted from share premium
- Foreign exchange translation reserve – This reserve represents gains and losses arising on the translation of foreign operations into the Group's presentational currency.
- Retained earnings – This reserve represents the cumulative profits and losses of the Group.
- Non-controlling interests reserve – This reserve represents the share of the interest held by the non-controlling shareholders of the subsidiary undertakings.

company statement of changes in equity

for the year ended 31 December 2016

	Share capital $ 000 s	Share premium reserve $ 000 s	Shares to be issued $ 000 s	Retained earnings $ 000 s	Total $ 000 s
At 1 January 2015 (as previously reported)	-	82,866	-	30,545	113,411
Effect of change in accounting policy for partner payments	-	-	-	-	-
Profit for the year (restated)	-	-	-	1,032	1,032
Tota comprehensive income	-	-	-	**1,032**	**1,032**
Acquisition of own shares	-	(9,050)	-	-	(9,050)
Credit to equity for equity-settled share based payments	-	-	-	3,223	3,223
Share based payments (repurchase of vested equity instruments)	-	-	-	(566)	(566)
As at 31 December 2015	-	**73,816**	-	**34,234**	**108,050**
Loss for the year	-	-	-	(6,050)	(6,050)
Tota comprehensive income	-	-	-	**(6,050)**	**(6,050)**
Additions to share capital / premium	-	6,811	-	-	6,811
Cost of share issue	-	(300)	-	-	(300)
Acquisition of own shares	-	(20,267)	-	-	(20,267)
Credit to equity for equity-settled share based payments	-	-	-	653	653
Share based payments (repurchase of vested equity instruments)	-	-	-	(1,128)	(1,128)
As at 31 December 2016	-	**60,060**	-	**27,709**	**87,769**

The notes set out on pages 25 to 63 form an integral part of these financial statements.

- Share premium – This reserve includes any premiums received on issue of share capital. Any transaction costs associated with the issue of shares are deducted from share premium
- Retained earnings – This reserve represents the cumulative profits and losses of the Group.

notes to financial statements

for the year ended 31 December 2016

1 Summary of Significant Accounting Policies

(a) General information

Minds + Machines Group Limited is a company is registered in the British Virgin Islands under the BVI Business Companies Act 2004 with registered number 1412814. The Company's ordinary shares are traded on the AIM market operated by the London Stock Exchange. The nature of the Group's operations and its principal activities are set out in note 2 and in the Strategic Report on pages 8 to 10.

These financial statements are presented in US Dollars and rounded to the nearest thousand.

Foreign operations are included in accordance with the policies set out in note 1(l).

(b) Statement of compliance with IFRS

The Group's and Company's financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB).

Adoption of new and revised standards

The Group's and Company's financial statement have been prepared on the basis of accounting policies consistent with those applied in the financial statement for the year ended 31 December 2015 except for the change in the partner payments accounting policy as set out in note 1(k) and for the implementation of a number of minor adjustments issued which applied for the first time in 2016. These new pronouncements do not have a significant impact on the accounting policies, methods of computation or presentation applied by the Group and Company and therefore prior-year financial statements have not been restated for these pronouncements.

Future changes in accounting policies

At the date of authorization of these financial statements, the following Standards and Interpretations which have not been applied in these financial statements were in issue but not yet effective:

Mandatory for 2017	
Amendments to IAS 12	Amendments to IAS 12 Recognition of Deferred Tax Asset for Unrealized Losses. These amendments on the recognition of deferred tax assets for unrealized losses clarify how to account for deferred tax assets related to debt instruments measured at fair value
IAS 7	IAS 7 Statement of Cash flows, Narrow-scope amendments. The amendments introduce an additional disclosure that will enable users of financial statement to evaluate changes in liabilities arising from financial activities
Mandatory for 2018	
IFRS 15	IFRS 15 Revenue from Contracts with Customers. The core principle of IFRS 15 is that an entity recognizes revenue to depict the transfer to promised goods or services when control of the goods or services passes to customers. The amount of revenue recognized should reflect the consideration to which the entity expects to be entitled in exchange for those goods or services. A modified transitional approach is permitted under which a transitional adjustment is recognized in retained earnings at the date of implementation of the standard without adjustment of comparatives. The new standard will only be applied to contracts that are not completed at that date.
IFRS 9	IFRS 9 Financial Instruments. This standard includes a single approach for the classification of financial assets, based on cash flow characteristics and the entity's business model, which requires expected losses to be recognized when financial instruments are first recognized. The standard amends the rules on hedge accounting to align the accounting treatment with the risk management practices of an entity.

Mandatory for 2019

IFRS 16	IFRS 16 Leases. Under the new standard, a lessee is in essence required to: a) Recognize all lease assets and liabilities (including those currently classed as operating leases) on the balance sheet, initially measured at the present value of unavoidable lease payments; b) Recognize amortization of lease assets and interest on lease liabilities in the income statement over the lease term; and Separate the total amount of cash paid into a principal portion (presented within financial activities) and interest (which companies can choose to present within operating or financing activities consistent with presentation of any other interest paid) in the cash flow statement.

The directors do not expect that the adoption of the Standards and Interpretations listed above will have a material impact on the financial statements of the Group in future periods, except that:

- IFRS 9 will impact both the measurement and disclosure of Financial Instruments; and
- IFRS 16 will impact on the recognition of those leases currently classified as operating leases. Information on the undiscounted amount of the Group's operating lease commitments under IAS 17, the current lease standard, is disclosed in note 26. Under IFRS 16, the present value of these commitments would be shown as a liability on the balance sheet together with an asset representing the right of use.

Beyond the information above, it is not practicable to provide a reasonable estimate of the effect of these standards until a detailed review has been completed.

(c) Basis of accounting

The consolidated financial statements have been prepared on the historical cost basis.

(d) Basis of consolidation

The consolidated financial information incorporates the results of the Company and entities controlled by the Company (its subsidiaries) (the "Group") made up to 31 December each year. Control is achieved when the Company:

- has the power over the investee;
- is exposed or has rights, to variable return from its involvement with the investee; and
- has the ability to use its power to affect its returns.

The company reassesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control listed above.

Consolidation of a subsidiary begins when the Company obtains control over the subsidiary and ceases when the Company losses control of the subsidiary. Specifically, the results of subsidiaries acquired or disposed of during the year are included in the consolidated income statement from the date the Company gains control until the date when the Company ceases to control the subsidiary.

Profit or loss and each component of other comprehensive income are attributed to the owners of the Company and to the non-controlling interests. Total comprehensive income of the subsidiaries is attributed to the owners of the Company and to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

Where necessary, adjustments are made to the financial statements of subsidiaries to bring the accounting policies used into line with the Group's accounting policies.

All intragroup assets and liabilities, equity, income, expenses and cash flows relating to transactions between the members of the Group are eliminated on consolidation.

Non-controlling interests in subsidiaries are identified separately from the Group's equity therein. Those interests of non-controlling shareholders that are present ownership interests entitling their holders to a proportionate share of net assets upon liquidation may initially be measured at fair value or at the non-controlling interests' proportionate share of the fair value of the acquiree's identifiable net assets. The choice of measurement is made on an acquisition-by-acquisition basis. Other non-controlling interests are initially measured at fair value. Subsequent to acquisition, the carrying amount of non-controlling interests is the amount of those interests at initial recognition plus the non-controlling interests' share of subsequent changes in equity. Total comprehensive income is attributed to non-controlling interests even if this results in the non-controlling interests having a deficit balance.

Changes in the Group's interests in subsidiaries that do not result in a loss of control are accounted for as equity transactions. The carrying amount of the Group's interests and the non-controlling interests are adjusted to reflect the changes in their relative interests in the subsidiaries. Any difference between the amounts by which the non-controlling interests are adjusted and the fair value of the consideration paid or received is recognized directly in equity and attributable to the owners of the Company.

When a Group loses control of a subsidiary, the gain or loss on disposal recognized in profit or loss is calculated as the difference between the aggregate of the fair value of the consideration received and the fair value of any retained interest and the previous carrying amount of the assets (including goodwill), less liabilities of the subsidiary and any non-controlling interests. All amounts previously recognized in other comprehensive income in relation to that subsidiary are accounted for as if the Group had directly disposed of the related assets or liabilities of the subsidiary (i.e. reclassified to profit or loss or transferred to another category of equity as specified / permitted by applicable IFRS). The fair value of any investment retained in the former subsidiary at the date when control is lost is regarded as the fair value on initial recognition for subsequent accounting under IAS 39 Financial Instruments: Recognition and Measurement or, when applicable, the costs on initial recognition of an investment in an associate or jointly controlled entity.

When a separate identifiable segment meets the definition of Discontinued Operations (i.e. when agreement has either been reached to sell a component of the Group's business or the sale has taken place in the reporting period), results of that segment are accounted for, in line with those applicable accounting standards, as discontinued operations on the Group Statement of Total Comprehensive Income. Prior period results are also disclosed on a like for like basis. Any assets in still held by the group at the end of the reporting period are in respect of these discontinued operations are classified as held for sale in the Group Statement of Financial Position.

(e) Going concern

The directors have, at the time of approving the financial statements, a reasonable expectation that the Company and the Group have adequate resources to continue in operational existence for the foreseeable future. Thus they continue to adopt the going concern basis of accounting in preparing the financial statements. Further detail is contained in the Strategic Report on page 8.

(f) Business combinations

Acquisition of subsidiaries and business are accounted for using the acquisition method. The consideration transferred in a business combination is measured at fair value, which is calculated as the sum of the acquisition-date fair values of assets transferred by the Group, liabilities incurred by the Group to the former owners of the acquiree and the equity interest issued by the Group in exchange for control of the acquire. Acquisition-related costs are recognized in profit or loss as incurred.

At the acquisition date, the identifiable assets acquired and the liabilities assumed are recognized at their fair value at the acquisition date, except that:

- deferred tax assets of liabilities and assets or liabilities related to employee benefits arrangement are recognized and measured in accordance with IAS 12 Income Taxes and IAS 19 Employee Benefits respectively; and
- assets (or disposal groups) that are classified as held for sale in accordance with IFRS 5 Non-current Assets Held for Sale and Discontinued Operations are measured in accordance with that Standard.

Goodwill is measured as the excess of the sum of the consideration transferred, the amount of any non-controlling interests in the acquiree, and the fair value of the acquirer's previously held equity interest in the acquiree (if any) over the net of the acquisition-date amounts of the identifiable assets acquired and liabilities assumed.

(g) Joint Ventures

A joint venture is an entity where the group has joint control and have rights to the net assets of the arrangement. The group has interests in joint ventures, which are jointly controlled entities, whereby the ventures have a contractual arrangement that establishes joint control over the economic activities of the entity. The contractual agreement requires unanimous agreement for financial and operating decisions among ventures.

The Group's interests in jointly controlled entities are accounted for by using the equity method. Under the equity method, the investment in the joint venture is carried in the statement of financial position at cost plus post acquisition changes in the Group's share of net assets of the joint venture. The income statement reflects the share of the results of operations of the joint venture. The financial statements of the joint venture are prepared for the same reporting period as the Group. Adjustments are made where necessary to bring the accounting policies in line with those of the Group.

Losses on transactions are recognized immediately if the loss provides evidence of a reduction in the net realizable value of current assets or an impairment loss. The joint venture is accounted for using the equity method until the date on which the Group ceases to have joint control over the joint venture.

Upon loss of joint control, the Group measures and recognizes its remaining investment at its fair value. Any difference between the carrying amount of the former jointly controlled entity upon loss of joint control and the fair value of the remaining investment and proceeds on disposal are recognized in profit or loss. When the remaining investment constitutes significant influence, it is accounted for as investment in an associate.

(h) Goodwill

Goodwill is initially recognized and measured as set out above.

Goodwill is not amortized but is reviewed for impairment at least annually. For the purpose of impairment testing, goodwill is allocated to each of the Group's cash-generating units expected to benefit from the synergies of the combination. Cash-generating units to which goodwill has been allocated are tested for impairment annually, or more frequently when there is an indication that the unit may be impaired. If the recoverable amount of the cash-generating unit is less than the carrying amount of the unit, the impairment loss is allocated first to reduce the carrying amount of any goodwill allocated to the unit and then to other assets of the unit pro-rata on the basis of the carrying amount of each asset in the unit. An impairment loss recognized for goodwill is not reversed in a subsequent period.

On disposal of a subsidiary, the attributable amount of goodwill is included in the determination of the profit or loss on disposal.

(i) Leases (the group as a lessee)

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

Assets held under finance leases are recognized as assets of the group at their fair value or, if lower, at the present value of the minimum lease payments, each determined at the inception of the lease. The corresponding liability to the lessor is included in the balance sheet as a finance lease obligation.

Lease payments are apportioned between finance expenses and reduction of the lease obligation so as to achieve a constant rate of interest on the remaining balance of the liability. Finance expenses are recognized immediately in profit or loss.

Rentals payable under operating leases are charged to income on a straight-line basis over the term of the relevant lease except where another more systematic basis is more representative of the time pattern in which economic benefits from the lease assets are consumed. Contingent rentals arising under operating leases are recognized as an expense in the period in which they are incurred.

In the event that lease incentives are received to enter into operating leases, such incentives are recognized as a liability. The aggregate benefit of incentives is recognized as a reduction of rental expense on a straight-line basis over the lease term, except where another systematic basis is more representative of the time pattern in which economic benefits from the leased assets are consumed.

(j) Revenue Recognition

Revenue is measured at the fair value of the consideration received or receivable and represents amounts receivable for services provided in the normal course of business, net of discounts, VAT and other sales-related taxes. Revenue is reduced for estimated customer rebates and other similar allowances.

Registry revenue

Registry revenue primarily arise from fixed fees charged to registrars for the initial registration or renewal of domain names.

Where the fee from the initial registration matches the fee from the renewal, the fee from both the initial registration and renewal is recognized on a straight line basis over the registration term.

Where the fee from the initial registration is higher than the renewal fee (arising mainly from 'premium name'), the 'premium' (the difference between the first year fee and ongoing renewal fee) is recognized as revenue immediately with the balance recognized on a straight line basis over the registration period. The renewal fee carries on to be recognized on a straight line basis as well.

Fees from renewals are deferred until the new incremental period commences.

Rendering of services (Registry service provider ("RSP") revenue and consultancy services)

Revenue is generated by providing RSP and consultancy services over a period of time. Fees for these services are deferred and/or accrued and recognized as performance occurs, typically on a straight-line basis over that period.

(k) Partner Payments

Partner payments represents the expense relating to certain TLDs where royalty and similar payments are required to be made.

Such payments are based on the Group's and Company's billing and are deferred in line with accounting revenue.

This represents a change in the Group's and the Company's accounting policy. Previously the Group and the Company did not defer such payments, recognizing the payment immediately as an expense.

The change in accounting policy has been made to more accurately reflect the Group's and Company's performance in relation to its revenue. The change has been applied retrospectively. As such, a "third" balance sheet is presented showing the opening position of the 31 December 2015 period.

The change in accounting policy impacted the partner payment expense with the corresponding impact on either prepayments (trade and other receivables) or accruals (trade and other payables), as follows:

	2016 $ 000 s	2015 $ 000 s
Increase/(decrease) in partner payments	569	(643)

The cumulative impact prior to 2015 was a decrease in partner payments of $204k.

	2016 $ 000's	2016 $ 000's	2015 $ 000's	2015 $ 000's
	As reported in these financial statements (cents)	As reported or as would have been reported if there were no change in accounting policy (cents)	As reported in these financial statements (cents)	As reported or as would have been reported if there were no change in accounting policy (cents)
Basic EPS (continuing operations)	(0.29)	0.17	(0.56)	(0.64)
Diluted EPS (continuing operations)	(0.29)	0.16	(0.56)	(0.64)

(l) Foreign Currencies

Functional and presentation currency

The individual financial statements of each group company are presented in the currency of the primary economic environment in which it operates (its functional currency). For the purpose of the consolidated financial statements, the results and financial position of each group company are expressed in US Dollars, which is the presentation currency for the consolidated financial statements. The Company's functional currency is US Dollars.

Transactions and balances

In preparing the financial statements of the individual companies, transactions in currencies other than the entity's functional currency (foreign currencies) are recognized at the rates of exchange prevailing on the dates of transactions. At each balance sheet date, monetary assets and liabilities that are denominated in foreign currencies are retranslated at the rate prevailing at that date. Non-monetary items carried at fair value that are denominated in foreign currencies are translated at the rates prevailing at the date when the fair value was determined. Non-monetary items that are measured in terms of historical cost in foreign currencies are not retranslated.

Exchange differences are recognised in profit and loss in the period in which they arise.

For the purpose of presenting consolidated financial statements, the assets and liabilities of the Group's foreign operations are translated at exchange rates prevailing on the balance sheet date. Income and expense items are translated at the average exchange rates for the period, unless exchange rates fluctuate significantly during that period, in which case the exchange rates at the date of the transactions are used. Exchange differences arising, if any, are recognized in other comprehensive income and accumulated in equity (attributed to non-controlling interests as appropriate).

On the disposal of a foreign operation (i.e. a disposal of the Group's entire interest in a foreign operation, or a disposal involving loss of control over a subsidiary that includes a foreign operation, loss of joint control over a jointly controlled entity that includes a foreign operation, or loss of significant influence over an associate that includes a foreign operation), all of the accumulated exchange differences in respect of that operation attributable to the Group are reclassified to profit or loss.

In addition, in relation to a partial disposal of a subsidiary that includes a foreign operation that does not result in the Group losing control over the subsidiary, the proportionate share of accumulated exchange differences are re-attributed to non-controlling interests and are not recognized in profit or loss. For all other partial disposals (i.e. partial disposals of associates or joint arrangements that do not result in the Group losing significant influence or joint control), the proportionate share of the accumulated exchange differences is reclassified to profit or loss.

(m) Intangible assets

Intangible assets acquired separately

Intangible assets with finite useful lives that are acquired separately are carried at cost less accumulated amortization and accumulated impairment losses. Amortization is recognized on a straight-line basis over their estimated useful lives. The estimated useful life and amortization method are reviewed at the end of each reporting period, with the effect of any changes in estimate being accounted for on a prospective basis. Intangible assets with indefinite useful lives that are acquired separately are carried at cost less accumulated impairment loss.

Internally generated intangible assets–research and development expenditure

Expenditure on research activities is recognized as an expense in the period in which it is incurred.

An internally generated intangible asset arising from the development (or from the development phase of an internal project) is recognized if, and only if all of the following conditions have been demonstrated:

- the technical feasibility of completing the intangible asset so that it will be available for use or sale;
- the intention to complete the intangible asset and use or sell it;
- the ability to use or sell the intangible asset;
- how the intangible asset will generate probable future economic benefits;
- the availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset; and
- the ability to measure reliably the expenditure attributable to the intangible asset during its development.

The amount initially recognized for internally generated intangible assets is the sum of the expenditure incurred from the date when the intangible asset first meets the recognition criteria listed above. Where no internally generated intangible asset can be recognized, development expenditure is recognized in profit or loss in the period in which it is incurred.

Subsequent to initial recognition, internally generated intangible assets are reported at cost less accumulated amortization and accumulated impairment losses, on the same basis as intangible assets that are acquired separately.

Useful live and amortisation

Amortization is recognized so as to write off the cost of assets less their residual values over their useful lives, using the straight-line method, on the following basis.

- Generic Top Level Domains – indefinite life (not amortized)
- Contractual based intangible assets – indefinite life (not amortized)
- Software and development costs – over 3 or over its useful life (as below)

Software and development costs are amortized over their useful economic life. The amortization period and the amortization method for an intangible asset with a finite useful life are reviewed when circumstances indicate a change to its useful life. Changes in the expected useful life are accounted for by charging the amortization period and treated as a change in accounting estimate. As a consequence, certain software and development costs are amortized over eight months (previously over 3 years).

(n) De-recognition of intangible assets

An intangible asset is de-recognized on disposal, or when no future economic benefits are expected from use or disposal. Gains and losses arising from de-recognition of an intangible asset, measured as the difference between the net disposal proceeds and the carrying amount of the asset, are recognized in profit or loss when the asset is de-recognized.

(o) Fixtures & equipment

Fixtures & equipment is stated at cost less accumulated depreciation and any accumulated impairment losses. Depreciation is recognized so as to write off the cost or valuation of assets less their residual values over their useful lives, using the straight line method, on the following basis.

- Fixtures & equipment – over 3 to 7 years

(p) Impairment of fixtures & equipment and intangible assets excluding goodwill

At each balance sheet date, the Group reviews the carrying amounts of its tangible and intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated to determine the extent of the impairment loss (if any). Where the asset does not generate cash flows that are independent from other assets, the group estimates the recoverable amount of the cash-generating unit to which the asset belongs. When a reasonable and consistent basis of allocation can be identified, corporate assets are also allocated to individual cash-generating units, or otherwise they are allocated to the smallest group of cash-generating units for which a reasonable and consistent allocation basis can be identified.

An intangible asset, with an indefinite useful life is tested for impairment at least annually and whenever there is an indication that the asset may be impaired.

Recoverable amount is the higher of fair value less cost to sell and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset for which estimates of future cash flows have not been adjusted.

If the recoverable amount of an asset (or cash-generating unit) is estimated to be less that its carrying amount, the carrying amount of the asset (or cash-generating unit) is reduced to its recoverable amount. An impairment loss is recognized immediately in profit or loss, unless the relevant asset is carried at a re-valued amount, in which case the impairment loss is treated as a revaluation decrease.

Where an impairment loss subsequently reverses, the carrying amount of the asset (or cash-generating unit) is increased to the revised estimate of its recoverable amount, but so that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognized for the asset (or cash-generating unit) in prior years. A reversal of an impairment loss is being recognized immediately in profit or loss, unless the relevant asset is carried at a re-valued amount, in which case the reversal of the impairment loss is treated as a revaluation increase.

(q) Critical accounting judgements and key sources of estimation uncertainty

In the application of the Group's accounting policies, described in this note, the directors are required to make judgements, estimates and assumptions about the carrying amounts of assets and liabilities that are not readily apparent from other sources. The estimates and associated assumption are based on historic experience and other factors that are considered to be relevant. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an on-going basis. Revisions to accounting estimates are recognized in the period in which the estimate is revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods.

Critical judgements in applying the Group's accounting policies

The Group does not have any critical judgements, apart from those involving estimations (which are dealt with separately below).

Key sources of estimation uncertainty

The key assumptions concerning the future, and other key sources of estimation uncertainly at the balance sheet date, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year, are discussed below, in particular: Impairment of goodwill and intangible assets; Financial instruments; Taxation; provisions; Share-based payment transactions; and Investment in subsidiary undertakings.

(r) Impairment of goodwill and intangible assets

Determining whether goodwill is impaired requires an estimation of the value in use of the cash-generating units to which goodwill and intangible assets have been allocated. The value in use calculation requires the entity to estimate the future cash flows expected to arise from the cash-generating unit and a suitable discount rate in order to calculate present value. Goodwill and intangible assets have not been impaired.

Details of goodwill and intangible assets are set out in note 17 and 18 respectively.

(s) Finance costs/revenue

Interest expenses are recognized using the effective interest method.

Finance revenue is recognized using the effective interest method.

(t) Financial instruments

Financial assets and financial liabilities are recognized in the Group's balance sheet when the Group becomes party to the contractual provision of the instrument.

Financial assets and financial liabilities are initially measured at fair value. Transaction costs that are directly attributable to the acquisition or issue of financial assets and financial liabilities (other than financial assets and financial liabilities at fair value through profit or loss) are added to or deducted from the fair value of the financial assets or liabilities, as appropriate, on initial recognition. Transaction costs directly attributable to the acquisition of financial assets or financial liabilities at fair value through profit of loss are recognized immediately in profit or loss.

Financial assets

All financial assets are recognized and derecognized on a trade date where the purchase or sale of a financial asset is under a contract whose terms require delivery of the financial assets within the timeframe established by the market concerned, and are initially measured at fair value, plus transaction costs, except for those financial assets classified as at fair value through profit or loss, which are initially measured at fair value.

Financial assets are classified into the following specified categories: 'available for sale' financial assets and 'loans and receivables'. The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition.

Effective interest method

The effective interest method is a method of calculating the amortized cost of a debt instrument and of allocating interest income over the relevant period. The effective interest rate is the rate that exactly discounts estimates future cash receipts (including all fees and points paid or received that form an integral part of the effective interest rate, transaction costs and other premium or discounts) through the expected life of the debt instrument, or, where appropriate, a shorter period, to the net carrying amount on initial recognition.

Income is recognized on an effective interest basis for debt instrument.

Loans and other receivables

Trade receivables, loans and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables'. Loans and receivables are measured at amortized cost using the effective interest method, less Impairment. Interest income is recognized by applying the effective interest rate, except for short-term receivables when recognition of interest would be material.

Loans and receivables include cash and cash equivalents. Cash and short-term deposits in the balance sheet comprise cash at bank and in hand and short-term deposits with an original maturity of three months or less. For the purposes of the Cash Flow Statement, cash and cash equivalents consist of cash and cash equivalents as defined above, net of outstanding bank overdrafts.

Impairment of financial asset

Financial assets are assessed for indicators of impairment at each balance sheet date. Financial assets are impaired where there is objective evidence that, as a result of one or more events that occurred after the initial recognition of the financial asset, the estimated future cash flows of the investment have been affected.

For all other financial assets objective evidence of impairment could include:

- significant financial difficulty of the issuer or counterparty; or
- default of delinquency in interest or principal payments; or
- it becoming probable that the borrower will enter bankrupt or financial re-organization.

For Financial assets carried at amortized cost, the amount of the impairment is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the financial asset's original effective rate.

The carrying amount of the financial asset is reduced by the impairment loss directly for all financial assets with the exception of trade receivables, where the carrying amount is reduced through the use of an allowance account. When a trade receivable is considered uncollectible, it is written off against the allowance account. Changes in the carrying amount of the allowance account are recognized in profit and loss.

With the exception of available for sale equity instruments, if, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognized, the previously recognized impairment loss is reversed through profit or loss to the extent that the carrying amount of the investment at the date the impairment is reversed does not exceed what the amortized cost would have been had the impairment not been recognized.

De-recognition of financial assets

The Group derecognizes a financial asset only when the contractual rights to the cash flows from the asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another entity. If the Group neither transfers nor retains substantially all the risks and rewards of ownership and continues to control the transferred asset, the Group recognizes its retained interest in the asset and an associated liability for amounts it may have to pay. If the Group retains substantially all the risks and rewards of ownership of a transferred financial asset, the Group continues to recognize the financial asset and also recognizes a collateralized borrowing for the proceeds received.

On de-recognition of a financial asset in its entirety, the difference between the asset's carrying amount and the sum of the consideration received and receivable and the cumulative gain or loss that had been recognized in other comprehensive income and accumulated in equity is recognized in profit or loss.

Financial liabilities and equity

Debt and equity instruments are classified as either financial liabilities or as equity in accordance with the substance of the contractual arrangement.

Equity instruments

An equity instrument is any contract that evidences a residual interest in the assets of an entity after deducting all of its liabilities. Equity instruments issued by the Group are recognized at the proceeds received net of direct issue costs.

Financial liabilities

Financial liabilities are classified as other financial liabilities.

Other financial liabilities

Other financial liabilities, including borrowings, are initially measured at fair value, net of transaction costs.

Other financial liabilities are subsequently measured at amortized costs using the effective interest method, with interest expense recognized on a effective yield basis.

The effective interest method is a method of calculating the amortized costs of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments through the expected life of the financial liability, or, where appropriate, a shorter period, to the net carrying amount on initial recognition.

De-recognition of financial liabilities
The Group de-recognizes financial liabilities when, and only when, the Group's obligations are discharged, cancelled or they expire.

(u) Taxation

The tax expense represents the sum of the tax currently payable and deferred tax.

Current tax
The tax currently payable is based on taxable profit for the year. Taxable profit differs from net profit as reported in the income statement because it excludes items of income or expense that are taxable or deductible in other years and it further excludes items that are never taxable or deductible. The Group's liability for the current year is calculated using jurisdictional tax rates that have been enacted or substantively enacted by the balance sheet date.

Deferred tax
Deferred tax is the tax expected to be payable or recoverable on differences between the carrying amounts of assets and liabilities in the financial statements and the corresponding tax bases used in the tax computations, and is accounted for using the balance sheet liability method. Deferred tax liabilities are generally recognized for all taxable temporary differences and deferred tax assets are recognized to the extent that it is probable that taxable profits will be available against which deductible temporary differences can be utilized.

Deferred tax is calculated at the tax rates that are expected to apply in the period when the liability is settled or the asset is realized. Deferred tax is charged or credited in the income statement, except when it relates to items charged or credited directly to equity, in which case it is also dealt with in equity.

Current and deferred tax for the year
Current and deferred tax are recognized in profit of loss, except when they relate to items that are recognized in other comprehensive income or directly in equity, in which case, the current and deferred tax are also recognized on other comprehensive income or directly inequity respectively.

(v) Provisions

Provisions are recognized when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

The amount recognized as a provision is the best estimate of the consideration required to settle the present obligation at the balance sheet date, taking into account the risks and uncertainties surrounding the obligation. Where a provision is measured using the cash flows estimates to settle the present obligation, its carrying amount is the present value of those cash flows (when the effect of the time value of money is material).

When some or all of the economic benefits required to settle a provision are expected to be recovered from a third party, a receivable is recognized as an asset if it is virtually certain that reimbursement will be received and the amount of the receivable can be measured reliably.

(w) Share-based payment transactions

Equity-settled share-based payments to employees are measured at the fair value of the equity instrument at the grant date. The fair value excludes the effect of non market-based vesting conditions. The fair value is determined by using the Black-Scholes model. Details regarding the determination of the fair value of equity-settled share-based transactions are set out in Note 27.

The fair value determined at the grant date of the equity-settled shared-based payments is expensed on a straight-line basis over the vesting period, based on the Group's estimate of the equity instruments that will eventually vest. At each balance sheet date, the Group revises its estimate of the number of equity instruments expected to vest as a result of the effect of non market-based vesting conditions. The impact or the revision of the original estimates, if any, is recognized in profit or loss such that the cumulative expense reflects the revised estimate, with a corresponding adjustment to equity reserves.

The dilutive effect, if any, of outstanding options is reflected as additional share dilution in the computation of earnings per share (see Note 16)

(x) Investment in subsidiary undertakings

In the parent company financial statements, fixed asset investment in subsidiaries and joint ventures are shown at cost less provision for impairment.

2 Operating segments – Group

Information reported to the Group's management and internal reporting structure (including the Group's Chief Executive Officer) for the purpose of resources allocation and assessment of segment performance is focused on the category for each type of activity. The principal categories (and the Group's segments under IFRS 8) are:

- Registry ownership ('Registry') – applicant of top level domain name from ICANN and wholesaler of domain names of those top level domain names
- Registry service provider ('RSP') and consulting services – back end service provider for a registry

Segment revenues and results

2016	Registry $ 000 s	RSP $ 000 s	Other $ 000 s	Elimination $ 000 s	Total $ 000 s
Revenue					
External sales	13,818	1,058	125	-	15,001
Tota Revenue	**13,818**	**1,058**	**125**	**-**	**15,001**
Operating EBITDA	12,031	401	(169)	(8,653)	3,610
Foreign exchange gain					251
Loss on disposal of tangible assets					(18)
Share based payment expense					(745)
Share of loss of joint venture					(25)
EBITDA before Restructuring					3,073
Restructuring costs - operating					(1,166)
Restructuring costs - contract					(3,748)
EBITDA					(1,841)
Amortisation and depreciation					(285)
Finance revenue					39
Loss on disposal of joint venture					(276)
Profit before tax					(2,363)
Income tax					195
Profit after tax					(2,168)

Inter-segment sales are charged at prevailing market prices.

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2015 - Restated	Registry $ 000 s	RSP $ 000 s	Other $ 000 s	Elimination $ 000 s	Total $ 000 s
Revenue					
External sales	3,705	2,554	65	-	6,324
Tota Revenue	3,705	2,554	65	-	6,324
Operating EBITDA	4,250	(3,155)	(237)	(592)	266
Foreign exchange gain					(1,240)
Loss on disposal of tangible assets					(161)
Share based payment expense					(3,235)
Share of loss of joint venture					1
EBITDA before Restructuring					(4,369)
Restructuring costs					-
EBITDA					(4,369)
Amortisation and depreciation					(417)
Finance revenue					82
Finance costs					(18)
Profit or loss on disposal of subsidiaries					-
Loss on disposal of joint venture					-
Profit before tax					(4,722)
Income tax					52
Profit after tax					(4,670)

* Included within Operating EBITDA is Profit on gTLD auctions of $7,943k allocated to the Registry segment and loss on withdrawal of gTLD applications $148k allocated to RSP.

Inter-segment sales are charged at prevailing market prices.

Other segment information

	Segment assets		Depreciation and amortisation	
	2016 $ 000 s	Restated 2015 $ 000 s	2016 $ 000 s	Restated 2015 $ 000 s
Registry	66,143	73,114	278	61
RSP	5,736	9,446	4	356
Other	3,581	6,288	3	-
Tota	75,460	88,848	285	417

For the purpose of monitoring segment performance and allocating resources between segments, the Group's Chief Executive Officer monitors the tangible, intangible and financial assets attributable to each segment. All assets are allocated to reportable segments with the exception of interest in joint ventures. Goodwill has been allocated to reportable segments as described in note 17.

Geographical information

The Group's information about its segment assets by geographic location are detailed below.

	Revenue from external customers		Non-current assets		Additions to Non-current assets	
	2016 $ 000 s	Restated 2015 $ 000 s	2016 $ 000 s	Restated 2015 $ 000 s	2016 $ 000 s	Restated 2015 $ 000 s
British Virgin Islands	3,858	2,303	43,103	43,751	3	500
Ireland	2,278	120	49	807	35	631
United Kingdom	1,047	2,434	3,817	8	3,815	-
Germany	1,483	1,143	452	333	165	-
Hungary	-	-	174	181	-	-
USA	6,335	324	4,637	3,511	1,561	801
Tota	15,001	6,324	52,232	48,591	5,579	1,932

Included in revenues arising from the Registry segment are revenues of $1,963k (2015: $589k), which arose from sales to the Group's largest customer.

Revenue for the Company is all derived from the Registry segment.

3 Partner payments

	Group		Company	
	2016 $ 000 s	Restate 2015 $ 000 s	2016 $ 000 s	Restated 2015 $ 000 s
Partner Payments	1,520	844	1,049	496

Partner payments represents the expense relating to certain TLDs where royalty and similar payments are required to be made. Such payments are based on the Group's and Company's billing and are deferred in line with accounting revenue. This represents a change in the Group's and the Company's accounting policy. Previously the Group and the Company did not defer such payments, recognizing the payment immediately as an expense. See note 1 (k) for further details.

4 Cost of sales

	Group		Company	
	2016 $ 000 s	2015 $ 000 s	2016 $ 000 s	2015 $ 000 s
Third Party Fees	918	295	190	59
ICANN Fees	882	813	642	647
Other	741	156	614	129
Tota	2,541	1,264	1,446	835

5 Restructuring costs – operating

	Group		Company	
	2016 $ 000 s	2015 $ 000 s	2016 $ 000 s	2015 $ 000 s
Executive severance pay-outs	522	-	-	-
Employee severance pay-outs	247	-	-	-
Relocation costs	118	-	-	-
Migration costs	279	-	80	-
Tota	**1,166**	**-**	**80**	**-**

The nature of the restructuring activities and costs are detailed in the Executive Summary.

6 Restructuring costs – contracts

	Group		Company	
	2016 $ 000 s	2015 $ 000 s	2016 $ 000 s	2015 $ 000 s
Restructuring contracts	3,748	-	-	-

Restructuring costs – contracts, relates to costs incurred to re-negotiate certain contracts. See the Executive Summary for further details.

7 Discontinued operations

During the year, the group entered into a sale agreement to dispose of the registrar customer list effectively closing down the registrar business. The disposal was affected to pursue the group's strategy of being a pure play registry. The disposal was completed during the year.

	Group	
	2016 $ 000 s	2015 $ 000 s
Revenue	-	-
Expenses	(1,312)	(3,883)
Gross Loss	**(1,312)**	**(3,883)**
Amortization	(1,020)	(801)
Loss before tax from discontinued operations	**(2,332)**	**(4,684)**
Income tax	-	-
Loss after tax from discontinued operations	**(2,332)**	**(4,684)**

Discontinued operations contributed to a cash outflow of $1,312k (2015: $3,883k) to the group's net operating cash flows.

8 Operating expenses – ongoing / forfeited

Operating expenses have been separated into "ongoing" and "forfeited". Ongoing operating expenses represent expenses that the restructured Group and Company would have incurred for the current year.

Forfeited expenses represent expenses that the Group and Company would not have incurred under a restructured business, separate to those specifically allocated to restructuring costs (note 5). Forfeited expenses are mainly comprised of employee costs for employees and certain expenses no longer required under the restructured business.

During the year, the Group paid costs of $504k to Patrimoine International Limited of which $200k has been recognized within operating expenses, $90k within cost of goods sold and the remainder allocated to cost of cash issue in equity. In addition, Patrimoine International Limited was granted 2,500,000 share options, vesting over 3 years with an exercise price of 13 pence (15.9 cents) with a calculated fair value of $94k. The contract with Patrimoine was terminated in Q1 2017.

9 EBITDA before restructuring costs

EBITDA before restructuring costs is arrived at after charging:

	Group		Company	
	2016 $ 000 s	2015 $ 000 s	2016 $ 000 s	2015 $ 000 s
Auditors' remuneration – current year auditors				
Audit of these financial statements	68	71	68	69
Audit of the financial statements of subsidiaries	35	36	-	-
Tax compliance	11	5	-	-
Other services	20	4	-	-
Directors' emoluments – fees and salaries	1,610	2,172	438	226
Operating lease rentals	237	770	-	-
Foreign exchange gain	(251)	1,240	(317)	2,781

10 Employee information (excluding directors)

	Group		Company	
	2016 $ 000 s	2015 $ 000 s	2016 $ 000 s	2015 $ 000 s
Staff costs comprised of:				
Wages and salaries	3,670	5,581	-	-
Share based payment (credit) / expense	(71)	1,539	-	-
Tota	**3,599**	**7,120**	**-**	**-**

	Group		Company	
Monthly average number of employees:				
Administration	12	13	-	-
Finance	6	5	-	-
Sales & Marketing	7	9	-	-
Engineering	6	21	-	-
Tota	**31**	**48**	**-**	**-**

11 Directors' emoluments

	Group		Company	
	2016 $ 000 s	2015 $ 000 s	2016 $ 000 s	2015 $ 000 s
Directors emoluments	1,610	2,172	482	226
Share based payment expense (Note 27)	528	1,597	528	96
Tota	**2,138**	**3,769**	**1,010**	**322**

Group

2016	Salaries & Fees $ 000 s	Redundancy $'000	Bonus $ 000 s	Benefits in kind $ 000 s	Directors emoluments $ 000 s	Share Option Pay-out $'000	Total $ 000 s
Executive Directors							
Toby Hall (#)	199	-	100	-	299	-	299
Michael Salazar	326	-	100	29	455	75	530
Antony Van Couvering (#)	137	522	-	-	659	556	1,215
Caspar Veltheim (#)	14	-	-	-	14	-	14
Non-Executive Directors							
Guy Elliott	100	-	-	-	100	-	100
Henry Turcan (#)	53	-	-	-	53	-	53
David Weill (#)	10	-	-	-	10	-	10
Keith Teare (#)	10	-	-	-	10	56	66
Elliot Noss (#)	10	-	-	-	10	-	10
Tota	817	522	242	29	1,610	687	2,297

(#): These Directors were not emp oyed for the fu 2016 financia period.

Group

2015	Salaries & Fees $ 000 s	Redundancy $'000	Bonus $ '000	Benefits in kind $ 000 s	Directors emoluments $ 000 s	Share Option Pay-out $'000	Total $ 000 s
Executive Directors							
Antony Van Couvering	373	-	325	28	726	-	726
Michael Salazar	330	-	152	50	532	-	532
Caspar Veltheim	152	-	88	20	260	-	260
Frederick Krueger (#)	149	-	260	19	428	-	428
Non-Executive Directors							
Guy Elliott (#)	21	-	-	-	21	-	21
David Weill (#)	21	-	-	-	21	-	21
Keith Teare (#)	92	-	-	-	92	-	92
Elliot Noss	92	-	-	-	92	-	92
Tota	1,230	-	825	117	2,172	-	2,172

(#): These Directors were not emp oyed for the fu 2015 financia period.

2016	Salaries & Fees $ 000 s	Redundancy $'000	Bonus $ 000 s	Benefits in kind $ 000 s	Directors emoluments $ 000 s	Share Option Pay-out $'000	Company Total $ 000 s
Executive Directors							
Toby Hall (#)	199	-	100	-	299	-	299
Michael Salazar	-	-	-	-	-	-	-
Caspar Veltheim (#)	-	-	-	-	-	-	-
Antony Van Couvering (#)	-	-	-	-	-	-	-
Non-Executive Directors							
Guy Elliott	100	-	0	-	100	-	100
Henry Turcan (#)	53	-	-	-	53	-	53
David Weill (#)	10	-	-	-	10	-	10
Keith Teare (#)	10		-	-	10	56	66
Elliot Noss (#)	10	-	-	-	10	-	10
Tota	340	-	142	-	482	56	538

(#): These Directors were not emp oyed for the fu 2016 financia period.

2015	Salaries & Fees $ 000 s	Redundancy $ 000	Bonus $ 000 s	Benefits in kind $ 000 s	Directors emoluments $ 000 s	Share Option Pay-out $ 000	Company Total $ 000 s
Executive Directors							
Antony Van Couvering	-	-	-	-	-	-	-
Michael Salazar	-	-	-	-	-	-	-
Caspar Veltheim	-	-	-	-	-	-	-
Frederick Krueger (#)	-	-	-	-	-	-	-
Non-Executive Directors							
Guy Elliott (#)	21		-	-	21	-	21
David Weill (#)	21	-	-	-	21	-	21
Keith Teare (#)	92	-	-	-	92	-	92
Elliot Noss	92	-	-	-	92	-	92
Tota	226		-	-	226	-	226

(#): These Directors were not emp oyed for the fu 2015 financia period.

No pension benefits are provided for any Director.

Details of Directors' share options exercised have been disclosed in note 27 to the accounts.

12 Finance revenue

	Group 2016 $ 000 s	Group 2015 $ 000 s	Company 2016 $ 000 s	Company 2015 $ 000 s
Bank interest	35	82	35	82
Other interest received	4	-	4	-
Tota	39	82	39	82

Finance revenues relate to assets classified as loans and receivables.

13 Finance costs

	Group 2016 $ 000 s	Group 2015 $ 000 s	Company 2016 $ 000 s	Company 2015 $ 000 s
Interest on obligations under finance lease	-	18	-	-

14 Income tax expense – Group

	2016 $ 000 s	2015 $ 000 s
Current tax credit	195	52
Deferred tax	-	-
	195	52

	2016 $ 000 s	Restated 2015 $ 000 s
Loss before tax on continuing operations	(2,363)	(4,722)
Tax at the BVI tax rate of 0%	-	-
Research and development tax credit	212	52
Income Tax	(17)	-
	195	52

The charge for the current year can be reconciled to the loss per the Company statement of comprehensive income as follows:

ncome tax expense - Company	2016 $ 000 s	Restated 2015 $ 000 s
Current tax	-	-
Deferred tax	-	-
	-	-

	2016 $ 000 s	Restated 2015 $ 000 s
Profit before tax on continuing operations	(6,050)	1,032
Tax at the BVI tax rate of 0%	-	-
	-	-

The British Virgin Islands under the IBC (international business company) imposes no corporate taxes or capital gains. However, the Company as a group may be liable for taxes in the jurisdictions where it is operating.

No deferred tax asset has been recognized because there is insufficient evidence of the timing of suitable future profits against which they can be recovered. Tax losses carried forward, which may be utilized indefinitely against future taxable profits amount to $17m (2015: $12.9m) in the USA, $1.7m (2015: $2.2m) in Germany, $6.8m (2015: $5.9m) in Ireland, $10.4 (2015: $6.6m) in the United Kingdom, $31k (2015: $Nil) in Hungary and $22k (2015: $Nil) in China.

15 Dividends

No dividends were paid or proposed by the Directors (2015: $Nil).

16 Loss per share

The calculation of earnings per share is based on the profit / (loss) after taxation divided by the weighted average number of shares in issue during the period.

Earnings / (loss)	2016 $ 000 s	Restated 2015 $ 000 s
Loss for the purpose of the basic and diluted earnings per share		
Loss from continuing operations	(2,175)	(4,651)
Loss from discontinued operations	(2,332)	(4,684)
Tota oss for the year	(4,507)	(9,335)

Number of shares	2016 million	2015 million
Weighted average number of ordinary shares used in calculating basic loss per share	743.00	829.34
Effect of dilutive potential ordinary shares – share options and warrants	-	-
Weighted average number of ordinary shares for the purpose of di uted earnings per share	743.00	829.34

Loss per share from continuing operations	2016 cent	Restated 2015 cent
Basic	(0.29)	(0.56)
Diluted	(0.29)	(0.56)

Loss per share from discontinued operations	2016 cent	Restated 2015 cent
Basic	(0.31)	(0.56)
Diluted	(0.31)	(0.56)

All potential shares were anti-dilutive for 2016 and 2015 continuing and discontinued operations due to the loss reported.

17 Goodwill

Cost	Group $ 000 s
31 December 2015 and 31 December 2016	2,828

Goodwill acquired in a business combination is allocated, at acquisition, to the cash generating units that are expected to benefit from that business combination. Goodwill has been allocated to the 'Registry' segment (a single 'CGU').

Impairment review

The Group tests goodwill annually for impairment, or more frequently if there are indicators that goodwill might be impaired.

At 31 December 2016, the Directors have carried out an impairment review and have concluded that no impairment is required.

The recoverable amount of the CGU is determined from value in use calculations. The key assumptions for the value in use calculations are those regarding the discount rates, growth rates and expected changes to selling prices and direct costs. Management estimate discount rates using pre-tax rates that reflect current market assessments of the time value of money and the risks specific to the CGU.

The Group prepares cash flow forecasts derived from the most recent financial budgets approved by management for the next five years and extrapolates cash flows into perpetuity based on an estimated growth rate of 5% (2015: 5%). The growth rate of 5% is appropriate to the new gTLD market that the Group operates in. The rate used to discount the forecast cash flows is 10% (2015: 9%).

The Group has carried out sensitivity analysis on the growth rate and discount rate. A 2% change in either rate would not give any indication of impairment.

18 Intangible assets

Group

	generic Top Level Domains $ 000 s	Software & development costs $ 000 s	Development costs (Assets under construction) $ 000 s	Contract based intangible assets $ 000 s	Other $ 000 s	Total $ 000 s
Cost						
At 1 January 2015	39,063	1,423	148	-	162	40,796
Additions	500	88	541	-	10	1,139
Transfer from other long term assets	551	-	-	-	-	551
Transfer from assets under construction	-	666	(666)	-	-	-
Exchange differences	(36)	(107)	(23)	-	(1)	(167)
At 31 December 2015	**40,078**	**2,070**	**-**	**-**	**171**	**42,319**
Additions	1,500	261	-	3,185	-	5,576
Exchange differences	(17)	(34)	-	-	(1)	(52)
At 31 December 2016	**41,561**	**2,297**	**-**	**3,815**	**170**	**47,843**
Accumu ated Amortization						
At 1 January 2015	-	(199)	-	-	-	(199)
Charge for the year	-	(677)	-	-	(171)	(848)
Exchange differences	-	19	-	-	-	19
At 31 December 2015	**-**	**(857)**	**-**	**-**	**(171)**	**(1,028)**
Charge for the year	-	(1,171)	-	-	-	(1,171)
Exchange differences	-	(42)	-	-	1	(40)
At 31 December 2016	**-**	**(2,070)**	**-**	**-**	**(170)**	**(2,240)**
Carrying amount						
At 31 December 2016	**41,561**	**227**	**-**	**3,815**	**-**	**45,603**
At 31 December 2015	40,078	1,213	-	-	-	41,291

Company

	generic Top Level Domains $ 000 s	Software & development costs $ 000 s	Other $ 000 s	Total $ 000 s
Cost				
At 1 January 2015	38,694	51	99	38,844
Additions	500	-	-	500
Transfers from other long term assets	185	-	-	185
At 31 December 2015	**39,379**	**51**	**99**	**39,529**
Additions	-	3	-	3
At 31 December 2016	**39,379**	**54**	**99**	**39,532**
Accumu ated amortization				
At 1 January 2015	-	(9)	-	(9)
Charge for the year	-	(19)	(42)	(61)
At 31 December 2015	**-**	**(28)**	**(42)**	**(70)**
Charge for the year	-	(16)	(57)	(73)
At 31 December 2016	**-**	**(44)**	**(99)**	**(139)**
Carrying amount				
At 31 December 2016	**39,379**	**10**	**-**	**39,389**
At 31 December 2015	39,379	27	57	39,463

generic Top Level Domains

In 2012, the Group applied for new generic Top Level Domains to the Internet Corporation for Assigned Names and Numbers (ICANN), see note 19 for further details. Successful applications are transferred from other long-term assets to Intangible assets. The Group capitalises the full cost incurred to pursue the rights to operate generic Top Level Domains including amounts paid at auction to gain this right where there is more than one applicant to ICANN for the same generic Top Level Domain.

The disposal in 2014 reflects the sale of a future revenue stream of a certain generic Top Level Domain where the funds from the sale of that revenue share was used to fund its acquisition.

This class of intangible assets are assessed to have an indefinite life as it is deemed that the application fee and amounts paid at auction give the Group indefinite right to this generic Top Level Domain.

The Group tests intangible assets with an indefinite life (generic Top Level Domains) annually for impairment, or more frequently if there are indicators that the asset might be impaired.

Impairment review of intangible assets

The Directors carried out an impairment review as at 31 December 2016 and have concluded that no impairment is required. The recoverable amounts of each group of generic Top Level Domains (the grouping of generic Top Level Domains is based on its characteristics), software, contract based intangible assets and other intangible assets are determined from value in use calculations. The key assumptions for the value in use calculations are those regarding the discount rates, growth rates and expected changes to the selling process and direct costs. Management estimate discount rates using pre-tax rates that reflect current market assessments of the time value of money and the risk specific to the asset.

The group prepares cash flow forecasts derived from the most recent financial budgets approved by management for the next five years, with the excpetion of Contract based intangible assets where cash flows over the next eight years is used, and extrapolates cash flows into perpetuity based on an estimated growth rate of 5% (2015: 5%). The rate used to discount the forecast cash flow is 10% (2015: 9%).

The group has carried out sensitivity analysis on the growth rate and discount rate. A 2% change in either rates would not give any indication of an impairment for all classes of intangible assets, with the exception of contract based intangible assets, where a 2% change in either rate would indicate an impairment of:

- Growth rate decrease by 2% - $1,620k
- Discount rate increase by 2% - $2,160k

19 Fixtures and equipment

	Fixtures & equipment $ 000 s
Cost	
At 1 January 2015	1,196
Additions	108
Disposal	(855)
Exchange differences	(61)
At 31 December 2015	**388**
Additions	28
Disposal	(99)
Exchange differences	(7)
At 31 December 2016	**310**
Depreciation	
At 1 January 2015	(325)
Depreciation charge for the period	(367)
Disposal	476
Exchange differences	17
At 31 December 2015	**(199)**
Depreciation charge for the period	(64)
Disposal	36
Exchange differences	6
At 31 December 2016	**(221)**
Carrying amount	
At 31 December 2016	**89**
At 31 December 2015	189

20 Investment in subsidiaries

nvestments in group undertakings company	Company 2016 $ 000 s	2015 $ 000 s
Cost		
At the beginning of the year	4,189	3,548
Movement in the year	42,054	641
Impairment	(6,859)	-
At 31 December	**39,384**	**4,189**

The movement in the year of $42,054k represents inter-company loans receivable by the Company now treated as investments in subsidiaries.

The Impairment in the year, relates to the impairment of the Company's subsidiary, Minds and Machines Ltd (UK). The recoverable amount of the subsidiary is calculated using a value in use method. The Company prepares cash flow forecasts derived from the most recent financial budgets approved by management for the next eight years and extrapolates cash flows into perpetuity based on an estimated growth rate of 5% (2015: n/a). The rate used to discount the forecast cash flow is 10% (2015: n/a).

A 2% change in either rate would result in a further impairment charge of:

- Growth rate decreased by 2% - $1,620k
- Discount rate increase by 2% - $2,160k

Details of the Company's subsidiaries are as follows:

Name	Place of ncorporation (or registration and operation)	Principal activity	Proportion of ownership interest (%)	Proportion of voting power (%)
Minds + Machines US, Inc. (DE)	US	Holding company	100	100
Minds + Machines LLC (3)	US	Registry	100	100
Minds + Machines LLC (FL) (3)	US	Registry	100	100
Bayern Connect GmbH	Germany	Registry	80	100
Minds and Machines GmbH	Germany	Registry	80	100
Minds + Machines Ltd (Ireland)	Ireland	RSP	100	100
Minds and Machines Ltd (UK)	England & Wales	RSP	100	100
Minds + Machines Registrar Ltd (IE) (4)	Ireland	Dormant	100	100
Minds and Machines Registrar UK Ltd	England and Wales	Registrar	100	100
Emerald Names Limited (2)	Ireland	Dormant	100	100
Dot Wedding Registry Limited (2)	Ireland	Dormant	100	100
Minds + Machines Hungary	Hungary	Registry	100	100
Emerald Names Inc	US	Registry	100	100
Boston TLD Management LLC	US	Registry	99	99
Dot Law Inc (3)	US	Registrar	100	100
Beijing MMX Tech Co. Ltd (1)	China	Registry	100	100

(1) Subsidiary incorporated in the year
(2) During the year, these entities were deregistered
(3) Minds + Machines LLC (CA), Minds + Machines LLC (FL) and Dot Law, Inc. are direct subsidiaries of Minds + Machines US, Inc (DE)
(4) Minds + Machines Registrar Limited (Ireland) is a direct subsidiary of Minds + Machines Ltd (Ireland).

21 Interest in joint venture

At the start of the year, the group had a 50% interest in 4 joint ventures; Rugby Domains Ltd, Basketball Domains Ltd, Entertainment Names Inc and Dot Country LLC. These joint ventures were formed to sell second-level domain names to registrars. During the year, the group disposed of its interest in Basketball Domains Ltd and Rugby Domains Ltd, no proceeds were received from the disposal of both. The loss on disposal of the two joint ventures was $276k.

		Group
Share of interest in assets / liabilities	**2016 $ 000 s**	**2015 $ 000 s**
Assets		
- Non-current	379	379
- Current	421	470
	800	849
Liabilities		
- Current	(415)	(14)
Share of interest in assets	385	835
- Revenue	16	29
- Cost of sales	(15)	(25)
- Expenses	(26)	(3)
(Loss) / profit after income tax	(25)	1

There are no commitments arising in the joint ventures.

There are no contingent liabilities relating the Group's interest in the joint ventures, and no contingent liabilities of the venture itself.

Each joint venture is individually immaterial.

The principal place of business for Rugby Domains Ltd, Basketball Domains Ltd and, Entertainment Names Inc. is the British Virgin Islands. The principal place of business for Dot Country LLC is the Cayman Islands.

Company

Interests in joint ventures are accounted for at cost of $486k (2015: $911k) in the Company financial statements.

22 Other long-term assets

	Group and Company	
	2016 $ 000 s	2015 $ 000 s
Restricted cash	2,217	2,153
Other long-term receivables	1,110	1,295
Tota	3,327	3,448

The Group capitalizes the costs incurred to pursue the rights to operate certain gTLD strings as these are deemed to provide probable future economic benefit.

During the application process capitalized payments for gTLD applications are included in Other Long Term Assets. While there is no assurance that MMX will be awarded any gTLDs, long-term receivables payments will be reclassified as intangible assets once the gTLD strings are available for their intended use, which is expected to occur following the delegation of gTLD strings by ICANN. In general, MMX does not expect to withdraw any of its applications unless the application has not passed the evaluation process and there is no further recourse or there is an agreement to sell or dispose of its interest in certain applications.

During the 2012 financial period, the Group paid US$13.5 million in application fees to the Internet Corporation for assigned Names and Numbers (ICANN) under ICANN's New generic Top Level Domain (gTLD) Program and deposited US$3.6 million to fund the letters of credit required by ICANN.

In 2013, 11 such applications were withdrawn either as a result of participation in auctions or management decision. A further application was transferred to a joint venture. As a result, application fees paid to ICANN as at 31 December 2013 amounts to $11,100k and deposits to fund letters of credit amounts to $3,248k.

In 2014, 22 further applications were withdrawn either as a result of participation in auctions or management decisions. As a result, application fees paid to ICANN as at 31 December 2014 amounts to $3,145k. Due to the withdrawal on several applications deposits to fund letters of credit decreased to $2,837k.

In 2015, 7 further applications were withdrawn either as a result of participation in auctions or management decisions. As a result, application fees paid to ICANN as at 31 December 2015 amounts to $1,295k. Due to the withdrawal on several applications deposits to fund letters of credit decreased to $2,153k. Of the applictaions withdrawn, 6 applications were withdrawn as a result of participation in private auction where the Group did not win but received a portion of the auction proceeds. Such auction proceeds, less amounts not recovered from the Group's withdrawal of the application to ICANN are accounted for on the profit and loss account as profit on participation in gTLD auctions and amounted to $7,943k."

In 2016, one further application was withdrawn due to management decision. As a result, application fees paid to ICANN as at 31 December 2016 amounts to $1,110k and deposits to fund letters of credit increased to $2,217k due to the funding of Boston. Deposits to fund letters of credit increased to $2,217k due to additional funding required for a TLD.

Where MMX receives a partial cash refund for certain gTLD applications and/or to the extent the Group elects to sell or dispose of its interest in certain gTLD applications throughout the process, it may incur gains or losses on amounts invested. In such cases the application fee will be reclassified from a long-term asset. Refunds received will be properly recorded when received, gains on the sale of the Group's interest in gTLD applications will be recognized when realized, and losses will be recognized when deemed probable. Other costs incurred by MMX as part of its gTLD initiative not directly attributable to the acquisition of gTLD operator rights are expensed as incurred.

Of the application which was withdrawn, $37k of the application fee is recoverable, the amount not received from ICANN as a result of such withdrawals are accounted for on the profit and loss account as Loss in withdrawal of gTLD applications and amounted to $148k (2015: $148k).

Restricted cash is interest bearing and is therefore stated at fair value. Other long-term receivables are stated at amortized cost.

23 Cash and cash equivalents

Net cash outflows from operations

	Group		Company	
	2016 $ 000 s	Restated 2015 $ 000 s	2016 $ 000 s	Restated 2015 $ 000 s
Operating EBITDA	3,610	266	1,676	5,809
Adjustments for:				
Loss from discontinued operations (note 6)	(1,312)	(3,883)	-	-
Restructuring costs	(1,166)	-	(80)	-
(Increase) / decrease in trade and other receivables including long term receivables	(1,926)	662	(4,495)	838
(Decrease) / increase in trade and other payables	(350)	205	10,026	(169)
Profit on gTLD auction	-	(7,943)	-	(7,943)
Loss on withdrawal of gTLD application	148	148	148	148
Foreign exchange (gain) / loss	276	332	215	(2,483)
Net cash outf ows from operations	(720)	(10,745)	7,490	(3,800)

Restricted cash

Included in the Group and company's cash and cash reserves is restricted funds of $1million (2015: $Nil) held in escrow to satisfy certain vendor requirements, to be released back to the Group and Company over the next five years.

24 Trade and other receivables

	Group		Company	
Current trade and other receivables	2016 $ 000 s	Restated 2015 $ 000 s	2016 $ 000 s	Restated 2015 $ 000 s
Trade receivables	3,992	2,791	3,048	1,908
Other receivables	1,969	916	732	62
Prepayments	1,943	1,893	859	691
Balances due from subsidiaries	-	-	3,831	37,234
Due from joint ventures	49	6	49	6
Tota	7,953	5,606	8,519	39,901

The loans due from subsidiaries are interest free and have no fixed repayment date. The loans have been classified to current receivables in the current year as the directors assess these balances to be recoverable in 2017. The difference between the carrying value and the fair value of the loan at the reporting date is deemed to be immaterial.

Trade receivables – Group

Trade receivables disclosed above are classified as loans and receivables and are therefore measured at amortized cost.

Ageing of past due but not impaired receivables:

	2016 $ 000 s	2015 $ 000 s
1 – 30 days	-	-
31 – 60 days	1,766	210
61-90 days	398	514
91 days and over	594	951
Tota	2,758	1,675

Included in the ageing of past due but not impaired receivables of 91 days and over an amount of $239k receivable from one customer was received after the year end.

Trade receivables - Company

Trade receivables disclosed above are classified as loans and receivables and are therefore measured at amortized cost.

Ageing of past due but not impaired receivables:

	2016 $ 000 s	2015 $ 000 s
1 – 30 days	-	-
31 – 60 days	1,635	194
61-90 days	398	502
91 days and over	354	42
Tota	2,387	738

Included in the ageing of past due but not impaired receivables of 91 days and over an amount of $239k receivable from one customer was received after the year end.

25 Trade and other payables

	Group		Company	
	2016 $ 000 s	2015 $ 000 s	2016 $ 000 s	2015 $ 000 s
Trade payables	878	211	181	114
Due to joint ventures	70	18	65	13
Due to subsidiaries	-	-	8,798	-
Taxation liabilities	171	206	-	-
Other liabilities	5,917	2	228	-
Deferred revenue	6,095	5,613	3,523	2,225
Accruals	1,853	2,922	1,085	1,500
Tota	14,984	8,972	13,880	3,852

All trade and other payables are due within one year and approximate their fair value.

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26 Share capital and premium

Called up, allotted, issued and fully paid ordinary shares of no par value	Number of shares	Price per share (cents/pence)	Total $ 000
As at 1 January 2014	650,558,522		49,481
30 January 2014 – cash on issue of shares	175,000,000	19.89/12	34,801
Options and warrants exercised:			
4 April 2014 for cash on exercise of options	3,000,000	6.7/4	201
13 July 2014 for cash on exercise of options	738,299	18.1/11	134
14 July 2014 for cash on exercise of options	350,000	15.4/9	54
25 July 2014 for cash on exercise of options	350,000	15.8/9	55
12 September 2014 for cash on exercise of options	350,000	15.4/9	54
22 October 2014 for cash on exercise of warrants	1,622,664	6.5/4	106
14 November 2014 for cash on exercise of options	4,000,000	6.8/4	273
			877
Cost of share issue			(2,293)
As at 31 December 2014	835,969,485		82,866
Shares repurchased	(68,864,800)	13/8.6	(9,050)
As at 31 December 2015	**767,104,685**		**73,816**
Shares repurchased	(10,658,568)	11/7.7	(1,179)
Share warrants exercised:			
24 May 2016 for cash on exercise of options	1,103,753	8.7/6	95
Shares repurchased:			
3 October 2016 Tender Offer	(100,000,000)	16.9/13	(19,088)
Shares issued:			
10 October 2016 Shares issued for cash	42,307,692	16.2/13	6,716
Cost of share issue			(300)
As at 31 December 2016	**698,753,809**		**60,060**

27 Share-based payments

Share-based payment expense	2016 $ 000 s	2015 $ 000 s
Equity settled share based payments	653	3,223
Expense as a result of modification of equity settled share based payments	92	12
Tota	745	3,235

The company has the following share option schemes in place:

- Directors and Employees Share Option Scheme – this scheme was previously open to all directors and employees of the scheme. Current employees are now enrolled under a new 'Restricted Share Option' (RSU) scheme (see below) whilst this current scheme is only open to Directors and certain senior executives.
- Restricted Share Option ('RSU') scheme – the group opened a new scheme for all employees of the group with the exclusion of Directors and certain senior executives.

Directors and Employees Share Option Scheme

		2016		2015
	Number of share options	Weighted average exercise price (cents / pence)	Number of share options	Weighted average exercise price (cents / pence)
Outstanding at the beginning of the year	55,207,318	9.8/8.0	23,712,500	9.5/6.4
Granted during the year	15,000,000	9.8/8.0	41,950,000	13.17/8.88
Forfeited during the year (1)	(15,244,818)	8.5/6.9	(10,455,182)	12.06/8.14
Exercised during the year (2)	(25,150,000)	8.7/7.0	-	N/A
Expired during the year	-	N/A	-	N/A
Outstanding at the end of the year	**29,812,500**	**14.7/11.9**	**55,207,318**	**11.78/7.95**
Exercisable at the end of the year	9,575,000	9.4/7.6	34,353,056	10.69/7.21

1. Included within the number of share options forfeited in the year are 8,500,000 (2015: Nil) share options issued to Directors that were forfeited and settled in cash. This change was treated as a modification of a share based payment from equity settled to cash settled. The amounts payable under this settlement amounted to $75k, which has already been recognized as an expense in the prior years and therefore reduced from equity in the current year as a repurchase of equity instrument. No additional amounts were expensed.
2. Included within the number of share options exercised during the year are 25,150,000 (2015: Nil) share options issued that were settled in cash. This change was treated as a modification of a share based payment from equity settled to cash settled. The amount payable under this settlement amounted to $676k, of which $639k had already been recognized as a share based payment expense in the prior years and therefore reduced from equity in the current year as a repurchase of equity instrument. The balance of $37k was expensed.

The weighted average contractual life of outstanding options at the end of the year is 1.5 years (2015: 8.2 years). There were 15,000,000 options granted in 2016 (2015: 41,950,000). The aggregate of the estimated fair values of the options granted under this scheme during 2016 is $2,058k (2015: $3,311k).

The general terms of the share options, under the company share options scheme, vest over 3 years (quarterly vesting, 1/12th of options vest every quarter) and are exercisable over ten years from the date of grant if the employee remains within the company. The exercise price is determined by the average share price over the 30 days preceding the date of the grant.

STRATEGIC REPORT GOVERNANCE FINANCIAL STATEMENTS

Directors and employee share option scheme – share options granted in the year:

	2016	2015
Weighted average share price (cents/pence)	11.0/9.0	12.6/8.3
Weighted average exercise price (cents/pence)	10.7/8.7	13.6/8.9
Expected volatility	43.25%	54.69%
Expected life	3 years	10 years
Risk-free rate	2%	2%
Expected dividend yield	Ni	Nil

Expected volatility was determined by calculating the historic volatility of the Group's share price over the previous year. Volatility over earlier years is not representative and has therefore not been used to calculated volatility. The expected life used in the model has been adjusted, based on management's best estimate.

Restricted Share Option Scheme

	2016		2015	
	Number of share options	Weighted average exercise price (cents / pence)	Number of share options	Weighted average exercise price (cents / pence)
Outstanding at the beginning of the period	7,133,333	-	-	-
Granted during the period	-	-	16,500,000	-
Forfeited during the period	(2,737,496)	-	(4,841,667)	-
Exercised during the period	(3,595,836)	-	(4,525,000)*	-
Expired during the period	-	-	-	-
Outstanding at the end of the period	**800,001**	**-**	**7,133,333**	**-**
Exercisable at the end of the period	183,334	-	770,833	-

* All share options exercised during under the Restricted Shared Option Scheme were settled in cash. This change was treated as a modification of a share based payment from equity settled to cash settled. The amount payable under this settlement amounted to $458k, of which $466k had already been recognized as a share based expense in prior years and therefore reduced from equity in the current year as a repurchase of equity instrument. The balance of $23k was expensed.

The weighted average contractual life of outstanding options at the end of the year is 0.64 years (2015: 1.68 years). There were no options granted in 2016 (2015:16,500,000). The aggregate of the estimated fair values of the share options granted under the RSU scheme in 2015 was $2,121k.

The general terms of the share options, under the RSU scheme, vest over 3 years (quarterly vesting, 1/12th of options vest every quarter) and are exercisable over three years from the date of grant if the employee remains within the company, at a nil exercise price.

Restricted Share Option Scheme – share options granted in the year:

	2016	2015
Weighted average share price (cents/pence)	N/A	13.4/8.75
Weighted average exercise price (£)	N/A	Nil
Expected volatility	N/A	N/A
Expected life	N/A	3 years
Risk-free rate	N/A	2%
Expected dividend yield	N/A	Nil

The market price of the ordinary shares at 31 December 2016 was $0.13 / £0.11 (2015: $0.12 / £0.08) and the range during the year was $0.10 / £0.07 to $0.17 / £ 0.13 (2015: $0.11 / £0.07 to $0.16 / £ 0.11).

Directors' share options

Details of options for Directors' who served during the year are as follows:

	1 Jan 2016	Granted	Forfeited	Exercised	Expired	31 Dec 2016
Antony Van Couvering (1)*	23,000,000	-	-	(23,000,000)	-	-
Michael Salazar (2)	8,500,000	7,500,000	(8,500,000)	-	-	7,500,000
Toby Hall (3)	-	7,500,000	-	-	-	7,500,000
Caspar Veltheim (4)*	2,512,500	-	-	-	-	2,512,500
Keith Teare (5)*	1,050,000	-	-	(1,050,000)	-	-
Elliott Noss (6)*	750,000	-	-	-	-	750,000
Tota	35,512,500	15,000,000	(8,500,000)	(23,750,000)	-	18,262,500

* These directors were not employed for the full 2016 financial period

(1) 2,626,347 options - exercise price – £0.04, exercisable from – 27 May 2009, expires on – 24 June 2014, 7,000,000 options exercise price - £0.09, exercisable from - 22 May 2010, expires on – 24 June 2014. 3,025,143 options – exercisable from 13 May 2013, expires on 13 February 2023 (quarterly vesting beginning 13 May 2013 of 1/12 of options). 9,474,857 options – exercisable from 13 February 2013, expires on 13 February 2023. 10,500,000 options granted in the year – exercise price - £0.08, exercisable from 1 August 2014, expires on – 31 July 2024 (quarterly vesting beginning 1 August 2014 of 1/12 of options).

(2) At the beginning of the year 1,250,000 options -Exercise price – £0.062, exercisable from – 1 Jun 2013, expires on – 30 Nov 2022 (quarterly vesting beginning at 1 Jun 2013 of 1/12 of options) and 7,250,000 options – exercise price - £0.08, exercisable from 1 August 2014, expires on – 31 July 2024 (quarterly vesting beginning 1 August 2014 of 1/12 of options). During the year, these options were forfeited and a further grant of 7,500,000 options were awarded – Nil exercise price – exercisable on the publication of the 2018 financial statements.

(3) 7,500,000 options granted in the year – exercise price Nil, exercisable on the publication of the 2018 financial statements.

(4) 312,500 options – exercise price – £0.07, exercisable from – 1 Aug 2012, expires on 31 Jul 2022 (quarterly vesting beginning at 1 Nov 2012 of 1/12 of options). 2,200,000 options – exercise price - £0.08, exercisable from 1 August 2014, expires on – 31 July 2024 (quarterly vesting beginning 1 August 2014 of 1/12 of options).

(5) 300,000 options – exercise price - £0.08, exercisable from 1 August 2014, expires on – 31 July 2024 (quarterly vesting beginning 1 August 2014 of 1/12 of options) 300,000 options exercised in 2016.

(6) 750,000 options – exercise price - £0.08, exercisable from 1 August 2014, expires on – 31 July 2024 (quarterly vesting beginning 1 August 2014 of 1/12 of options).

There have been no variations to the terms and conditions or performance criteria for share options during the financial year.

Total warrants outstanding

As at 31 December 2016 the outstanding unexercised warrants in issue were:

Exercise Price	Expiry Date	Number of warrants
10p	06 May 2019	8,000,000
12p	12 February 2017	1,047,089
15p	18 March 2021	650,000
13p	31 October 2019	2,500,000

In 2016 1,103,753 (2015:Nil) warrants were exercised at an exercise price of 8.7 cents / 6 pence.

As at the 31 December 2015 the outstanding unexercised warrants in issue were:

Exercise Price	Expiry Date	Number of warrants
10p	06 May 2019	8,000,000
6p	3 June 2016	1,103,753
12p	12 February 2017	1,047,089
15p	19 March 2021	650,000

28 Financial instruments

Capital risk management

The Group and Company manages its capital to ensure that entities in the Group will be able to continue as going concerns while maximizing the return to stakeholders through the optimization of the debt and equity balance. The Group and Company's overall strategy remains unchanged from 2015.

The capital structure of the Group and Company consists cash and cash equivalents and equity attributable to equity holders of the parent, comprising issued capital, reserves, and retained earnings.

The Group and Company is not subject to any externally imposed capital requirements.

The Group and Company's strategy is to ensure availability of capital and match the profile of the Group and Company's expenditures. To date the Group has relied upon equity funding to finance operations. The Directors are confident that adequate cash resources exist to finance operations to commercial exploitation, but controls over expenditure are carefully managed.

The Group and Company has a policy of not using derivative financial instruments for hedging purposes and therefore is exposed to changes in market rates in respect of foreign exchange risk, However, it does review its currency exposures on an ad hoc basis. Currency exposures relating to monetary assets held by foreign operations are included within the foreign exchange reserve in the Group Balance Sheet.

Categories of financial instruments

Group

Financial assets	2016 $ 000 s	Restated 2015 $ 000 s
Cash and bank balances	15,275	34,651
Loans and receivables (including long term receivables)	8,178	6,707
Financial liabilities		
Other financial liabilities at amortised cost	6,792	213

Company

Financial assets	2016 $ 000 s	Restated 2015 $ 000 s
Cash and bank balances	10,544	23,990
Loans and receivables (including long term receivables)	9,828	42,013
Financial liabilities		
Other financial liabilities at amortised cost	9,205	114

There are no material differences between the book values of financial instruments and their market values.

Financial risk management objectives

The Group and Company's Finance function provides services to the business, co-ordinates access to domestic and international financial markets, monitors and manages financial risks related to the operations of the Group and Company through internal risk reports, which analyses exposures by degree and magnitude of risks. These risks include market risk, credit risk, liquidity risk, and cash flow interest rate risk.

It is, and has been throughout 2016 and 2015, the policy of both the Group and the Company that no trading derivatives are contracted.

The main risks arising from the Group and the Company's financial instruments are foreign currency risk, credit risk, liquidity risk, interest rate risk and capital risk. Management reviews and agrees policies for mitigating each of these risks, which are summarised below.

Market risk

The Group and Company's activities expose it primarily to the financial risks of changes in foreign currency exchange rates and interest rates. The risk is managed by the Group and Company by maintaining an appropriate mix of cash and cash equivalents in the foreign currencies it operates in. The Group and Company's management did not set up any financial instruments policy to manage its exposure to interest rates and foreign currency risk.

Foreign currency risk

The Group and Company undertakes transactions denominated in foreign currencies; consequently, exposures to exchange rate fluctuations arise. The Group and Company evaluates exchange rate fluctuations on a periodic basis to take advantage of favorable rates when transferring funds between accounts denominated in different currencies.

The carrying amount of the Group and Company's foreign currency denominated monetary assets and monetary liabilities at the reporting date is as follows:

Group		Liabilities		Assets
	2016 $ 000 s	Restated 2015 $ 000 s	2016 $ 000 s	Restated 2015 $ 000 s
Sterling	5,682	159	3,708	7,541
USD	1,065	35	18,047	30,297
Euro	45	19	1,698	3,520
As at 31 December	6,792	213	23,453	41,358

Company		Liabilities		Assets
	2016 $ 000 s	Restated 2015 $ 000 s	2016 $ 000 s	Restated 2015 $ 000 s
Sterling	2,068	-	3,696	1,226
USD	5,524	114	14,780	64,777
Euro	1,613	-	1,896	-
As at 31 December	9,205	114	20,372	66,003

Foreign currency sensitivity analysis

The following table details the Group and Company's sensitivity to a 10% increase and decrease in the functional currency against the relevant foreign currencies. 10% represents management's assessment of the reasonably possible change in foreign exchange rates.

The sensitivity analysis includes only outstanding foreign currency denominated financial instruments and adjusts their translation at the period end for a 10% change in foreign currency rates. The following table sets out the potential exposure, where a positive number below indicates an increase in profit or loss and other equity where the US Dollar strengthens 10% against the relevant currency. For a 10% weakening of the US Dollar against the relevant currency, there would be a comparable impact on the profit or loss and other equity, and the balances below would be positive.

Group	Pound Sterling impact		Euro impact	
	2016 $ 000 s	Restated 2015 $ 000 s	2016 $ 000 s	Restated 2015 $ 000 s
Profit or loss (i)	(1,129)	(770)	(174)	(354)
Other equity (ii)	-	-	-	-
	(1,129)	(770)	(174)	(354)

Company	Pound Sterling impact		Euro impact	
	2016 $ 000 s	Restated 2015 $ 000 s	2016 $ 000 s	Restated 2015 $ 000 s
Profit or loss (i)	(576)	(123)	(351)	-
Other equity	-	-		-
	(576)	(123)	(351)	-

- The main attributable to the exposure outstanding on Pound Sterling and Euro is receivables and payables at the balance sheet date.
- There is no impact on other equity, as the Group does not hold derivative instruments designated as cash flow hedges and net investments hedges.

In management's opinion, the sensitivity analysis is unrepresentative of the inherent foreign exchange risk as the year-end exposure does not reflect the exposure during the year. Whilst the group operates across Europe and North America, operations are managed in US dollar and these financial statements are presented in US Dollars.

Interest rate risk

The Group and Company's exposure to interest rate risk is limited to cash and cash equivalents held in interest-bearing accounts.

Interest rate sensitivity analysis

The impact of interest rate fluctuations is not material to the Group and Company accounts.

Credit risk management

Credit risk refers to the risk that a counterparty will default on its contractual obligations resulting in financial loss to the Group and Company. The Group and the Company's financial assets comprise of receivables, cash, and cash equivalents, and other long-term assets.

The credit risk on trade and other receivables is limited as the amount represents a pre-payment of revenue from a future undertaking. The pre-payment has certain conditions associated with it that require the counterparty to refund the amounts paid if certain criteria are not met.

The credit risk on cash and cash equivalents is limited as the counterparties are banks with high credit-ratings as determined by international credit-rating agencies.

The credit risk on other long-term assets is limited as the total amount represents two components: deposits for the right to secure a revenue-generating asset and restricted cash. The deposits for the right to secure revenue-generating assets are maintained by a government sponsored global organization that is contractually required to return a portion of these deposits if requested. Furthermore, the agency, a not-for-profit organization, is well funded by its member organizations and is not a risk to cease operations. The restricted cash is deposited with banks with a high-credit rating as determined by international credit-rating agencies.

The exposure of the Group and the Company to credit risk arises from default of its counterparty, with maximum exposure equal to the carrying amount of receivables (excluding prepaid income), cash and cash equivalents, and other long term assets in the Group and Company statements of financial position.

The Group and Company do not hold any collateral as security.

Liquidity risk management

Ultimate responsibility for liquidity risk management rests with the Board of Directors, which has established an appropriate liquidity risk management framework for the management of the Group and Company's short, medium, and long-term funding and liquidity management requirements. The Group and Company manages liquidity risk by maintaining adequate reserves, banking facilities and reserve borrowing facilities, by continuously monitoring forecast and actual cash flows, and by matching the maturity profiles of financial assets and liabilities.

Cash forecasts are regularly produced to identify the liquidity requirement for the Group and Company. To date, the Group has relied on the issuance of stock warrants and shares finance its operations. The Group made use of limited borrowing facilities as at 31 December 2016.

The Group's and Company's remaining contractual maturity for its non-derivate financial liabilities with agreed repayment periods are:

			Group		Company
31 December 2016	Weighted average effective interest rate	Within 1 year $ 000 s	1 – 5 years $ 000 s	Within 1 year $ 000 s	1 – 5 years $ 000 s
Non-interest bearing:					
Trade and other payables		6,792	-	406	-
Fixed interest rate instruments:					
Obligations under finance lease	13.76%	-	-	-	-
		6,792	-	406	-

			Group		Company
31 December 2015	Weighted average effective interest rate	Within 1 year $ 000 s	1 – 5 years $ 000 s	Within 1 year $ 000 s	1 – 5 years $ 000 s
Non-interest bearing:					
Trade and other payables		213	-	114	-
Fixed interest rate instruments:					
Obligations under finance lease	13.76%	2	-	-	-
		215	-	114	-

Other Group and Company's non-derivative financial assets mature within one year.

The Group and Company had no derivative financial instruments as at 31 December 2016 and at 31 December 2015.

STRATEGIC REPORT GOVERNANCE FINANCIAL STATEMENTS

29 Commitments

The group as a lessee	2016 $ 000 s	2015 $ 000 s
Lease payments recognised under operating leases recognised as an expense in the year	237	770

At the balance sheet date, the Group had outstanding commitments for future minimum lease payments under non-cancellable operating leases, which fall due as follows:

	2016 $ 000 s	2015 $ 000 s
Within one year	406	423
In the second to fifth years inclusive	2,734	312
After five years	-	-
	3,141	735

Operating lease payments represent amounts payable by the group for its office properties and outsourcing registry operations. Leases in relation to office properties are negotiated for an average period of three years with fixed rentals with only one lease having the option to extend for a further three years at a fixed rental. Leases in relation to outsourcing registry operations are negotiated for a period of five years with fixed commitments.

As at 31 December 2016 and 31 December 2015, the Group has no capital commitments.

As at 31 December 2016 and 31 December 2015, the Company had no lease or capital commitments.

30 Related party transactions - Group

Balances and transactions between the company and its subsidiaries, which are related parties, have been eliminated on consolidation and are not disclosed in this note. Transactions between the Group and its associates are disclosed below. Transactions between the Company and its subsidiaries and associates are disclosed in note 28.

Joint ventures

During the year, the Group entered into transactions with its Joint Ventures that resulted in amounts owed to or due from the Joint Ventures. The balances at the year-end were due to financial and equity requirements across the Joint Ventures. The balances have no fixed repayment and no interest is received or charged on these balances.

	2016 $ 000 s	2015 $ 000 s
Due to Rugby Domains Ltd	-	11
Due to Basketball Domains Ltd	-	(14)
Due from Entertainment Names Inc	44	44
Due to Dot Country LLC	(33)	(58)

Other

At the balance sheet date, an amount of $61k (2015: $61k) was due from Frederick Krueger (a former Director of the company) in relation to shares previously issued.

The Group also sells second level domain names to Tucows, Inc. and receives certain registrar back end services from Tucows, Inc. In 2016, the Group invoiced Nil (2015: $Nil) to Tucows, Inc. and was invoiced $1.5k (2015: $27k) by Tucows. The net payable/receivable from Tucows at year end was $1.5k (2015: $36k). Tucows, Inc. is related by virtue of a common director who ceased to be a director during 2016.

Remuneration of Key Management Personnel

The remuneration of the Executive Directors, who are the key management personnel of the Group, is set out in note 8.

Related party - Company

Transactions between the Company and its subsidiaries and associates are disclosed below.

Subsidiaries

During the year, the Company's subsidiaries have provided certain services to the Company (RSP services) and recharged certain costs to the Company. Details of these transactions are shown below

Recharged costs and services from	2016 $ 000 s	2015 $ 000 s
Minds and Machines LLC	4,350	1,113
Minds + Machines Limited (IE)	1,533	214
Minds and Machines Limited (UK)	-	115

In addition, during the year, the Company has provided financing to its subsidiaries. The net balances due to the Company are detailed below. The balances have no fixed repayment terms and no interest is charged on these balances.

Company	2016 $ 000 s	2015 $ 000 s
Minds and Machines LLC	(4,907)	13,240
Bayern Connect GmbH	1,001	1,032
Minds and Machines GmbH	651	670
Minds + Machines Limited (IE)	(1,613)	11,460
Minds + Machines Registrar Limited (IE)	-	-
Minds and Machines Limited (UK)	(2,068)	10,642
Minds and Machines Registrar UK Limited	2	3
Emerald Names, Inc	97	5
Minds + Machines (FL)	(211)	(40)
Minds + Machines, Inc.	5	5
Minds + Machines Hungary	240	218
Dot Law, Inc.	102	-
Boston TLD Management LLC	1,514	-
Beijing MMX Tech Co. Ltd	219	-

During the year the Company also sold second level domain names to its subsidiaries and had trade receivable balances outstanding at the year end:

Company	Second level sale of domains		Trade receivable outstanding	
	2016 $ 000 s	2015 $ 000 s	2016 $ 000 s	2015 $ 000 s
Minds and Machines LLC	927	1,184	2,101	1,169
Minds + Machines Registrar Limited (IE)	-	151	-	-

Joint ventures

During the year, the Company entered into transactions with its Joint Ventures that resulted in amounts owed to or due from the Joint Ventures. The balances at the year-end were due to financial and equity requirements across the joint ventures. The balances have no fixed repayment and no interest is received or charged on these balances.

	2016 $ 000 s	2015 $ 000 s
Due to Rugby Domains Ltd	-	11
Due to Basketball Domains Ltd	-	(14)
Due from Entertainment Names Inc	49	49
Due to Dot Country LLC	(33)	(58)

Other

At the balance sheet date, an amount of $61k (2015: $61k) was due from Frederick Krueger (a former Director of the company) in relation to shares previously issued.

Remuneration of Key Management Personnel

The remuneration of the Executive Directors, who are the key management personnel of the Group, is set out in note 7 and share options issued set out in note 27.

31 Post Balance Sheet Events

On the 1 February 2017, awards of options over ordinary shares of the Company were made to certain directors and senior managers of the company.

Details of the options granted are as follows:

	Number of Options Granted	Exercise Price
Toby Hall	3,000,000	-
Michael Salazar	3,000,000	-
Senior Management	2,000,000	9.375p

The options granted to the Directors are structured as nil-cost options and, subject to the achievement of vesting conditions, the options will vest on the publication of the accounts of the Company for the year ended 31 December 2018.

The options fully vest at a share price of 18.75p or higher per share. Only a percentage of options vest at a share price of between 9.375p and 18.75p per share, with no options vesting if the share price is below 9.375p per share.

The options granted to senior managers vest on the publication of the accounts of the Company for the year ended 31 December 2018.

corporate information

Registered number
1412814 registered in
British Virgin Islands

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Chief Executive Officer

Michael Salazar
Chief Operating Officer and
Chief Finance Officer

Guy Elliott
Non Executive Chairman

Henry Turcan
Non Executive Director

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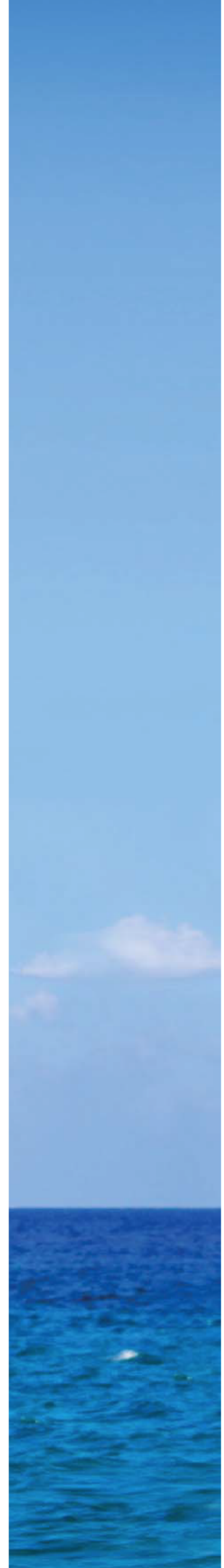

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EXHIBIT KM-35

INTERNET OF THINGS

MAY 1, 2020 / 12:48 AM / A MONTH AGO

ICANN rejects sale of .org registry to for-profit investor group

Joseph Menn

SAN FRANCISCO (Reuters) - A body overseeing web addresses said it has vetoed a $1.1 billion deal to sell control of domain names ending in .org to a private investment firm after an outcry from internet pioneers and officials including California's attorney general.

The surprise plans by the Internet Society to sell the Public Interest Registry to a newly formed for-profit firm, Ethos Capital, announced in November, provoked alarm from many of the more than 10 million entities that use the .org suffix, associated with non-profit organizations.

ICANN, the Internet Corp for Assigned Names and Numbers, which gave the assignment of .org to the Internet Society and retains some rights, said on Thursday it was rejecting the deal.

In particular, it cited concerns that there would be a drive to reward Ethos stockholders while repaying $300 million in debt taken on during the transaction.

"The ICANN Board finds that the public interest is better served in withholding consent as a result of various factors that create unacceptable uncertainty," the Los Angeles-based body said on its website.

Formerly overseen by the U.S. Commerce Department, ICANN has expanded web addresses to new domains and new languages and often works to promote the web name industry.

ICANN said it conducted due diligence into the deal after questions about Ethos' ties to former ICANN officials.

California Attorney General Xavier Becerra, who has regulatory oversight of ICANN as it is a non-profit based in the state, urged it to reject the Ethos deal on multiple grounds.

He cited a lack of transparency around the buyer and questioned why the Internet Society did not pursue other means to diversify its revenue.

"ICANN's analysis of the need for the stability of the .org registry must take into consideration that some of the .org registrants are critical organizations dedicated to assist in times of crisis," Becerra wrote in an April 15 letter.

"The list of such organizations is long, including the World Health Organization, the World Bank, the Red Cross, Doctors Without Borders, and the United Nations."

Others who objected to the planned sale include founding ICANN Chair Esther Dyson, founding ICANN President Michael Roberts and Electronic Frontier Foundation Executive Director Cindy Cohn.

Reporting by Joseph Menn; Editing by Edwina Gibbs

Our Standards: *The Thomson Reuters Trust Principles.*

EXHIBIT KM-36

Want to get technical? Learn more

Global Reach

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Meet our global .CO-ers

Short & Memorable

Your domain name shouldn't need a TL;DR. It should say what it does and do what it says. A .CO domain keeps things short and sweet.

Check on availability here

EXHIBIT KM-37

2015 ANNUAL REPORT

LINKING WHAT MATTERS™

neustar®

COMPANY PROFILE

Every day, the world generates roughly 2.5 quadrillion bits of data. Neustar isolates certain elements and analyzes, simplifies and edits them to make precise and valuable decisions that drive results. As one of the few companies capable of knowing with certainty who is on the other end of every interaction, we're trusted by the world's great brands to make critical decisions some 20 billion times a day. We help marketers send timely and relevant messages to the right people. Because we can authoritatively tell a client exactly who is calling or connecting with them, we make critical real-time responses possible. And the same comprehensive information that enables our clients to direct and manage orders also stops attackers. We know when someone isn't who they claim to be, which helps stop fraud and denial of service before they're a problem. Because we're also an experienced manager of some of the world's most complex databases, we help clients control their online identity, registering and protecting their domain name, and routing traffic to the correct network address. By linking the most essential information with the people who depend on it, we provide more than 12,000 clients worldwide with decisions—not just data.

TRUSTED BY THE BEST BRANDS TO MAKE CRITICAL DECISIONS.

TO OUR SHAREHOLDERS

In 2015, we exceeded our financial objectives and continued to advance our Information Services strategy while investing in our service portfolio. Our team delivered strong results in a year of extraordinary events, including three significant acquisitions and the decision by the Federal Communications Commission to select a competitor as the next Local Number Portability Administrator.

Today, we are a $1 billion company with more than 50% of our revenue coming from Information Services. Our Information Services revenue has tripled over the past five years, with approximately 40% of Fortune 100 companies now relying on services that Neustar provides.

Our strong financial results for 2015 demonstrate our differentiated market position, sharp execution, and growing momentum. Year over year, revenue increased 9% to $1.05 billion, and our adjusted earnings per share increased 10% to $4.75. Information Services revenue increased 11% to $542.8 million, driven by double digit organic growth in Marketing and Security Services.

This past year, we accelerated our growth by enhancing what we call our authoritative identity framework providing our customers with unique Neustar data, updated over two million times each day, offering valuable insights useful in marketing, customer verification, and preventing risk and fraud. Our clients rely on our services to plan, execute, and measure the effectiveness of marketing campaigns across all media, channels, devices, and applications.

In registry services, we enhanced our position as a global leader in launching and managing top level internet domains. Thousands of companies rely on us to manage and protect their digital presence. Our Data Services enable the exchange of essential operating information across multiple carriers.

Everything we have accomplished over the last five years has laid the foundation for continued future success. Both through enhancing the capabilities of our very talented workforce, as well as through such strategic acquisitions as the three we announced in 2015, we have established Neustar as a leader in authoritative identity, a skill set that is tremendously valuable to a diverse customer base and something we do better than anybody else. We use this expertise in identity as the foundation enabling our customers to optimize their interactions in every transaction.

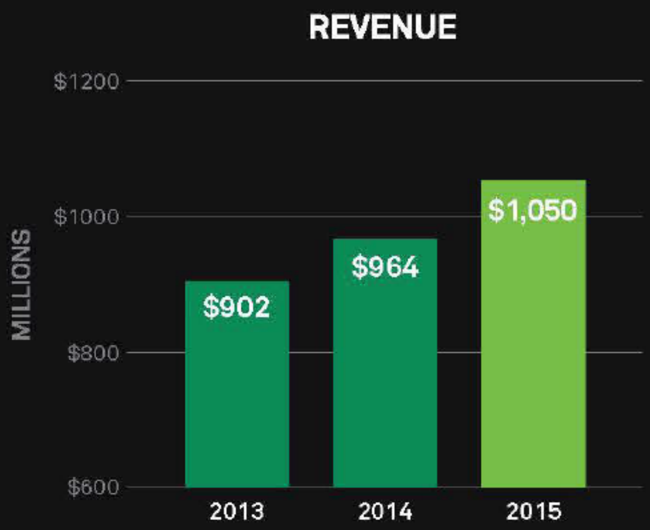
In 2016, we will continue our focus on execution, integrating our recent acquisitions and achieving our financial targets. With powerful assets and capabilities in place, we are positioned to expand our market position and drive shareholders value.

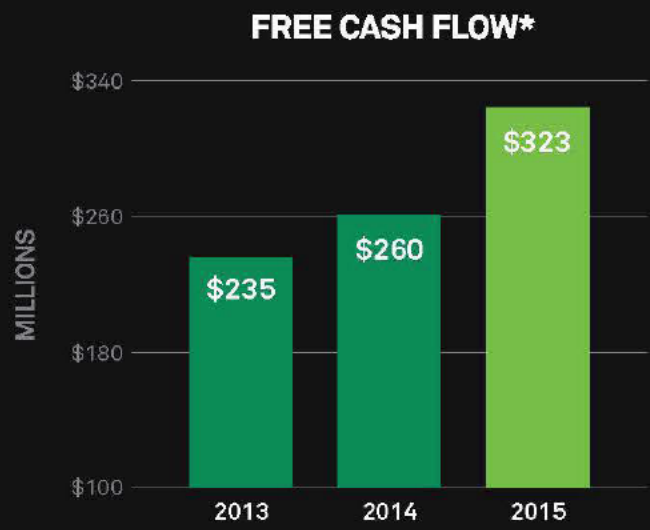
All the best,

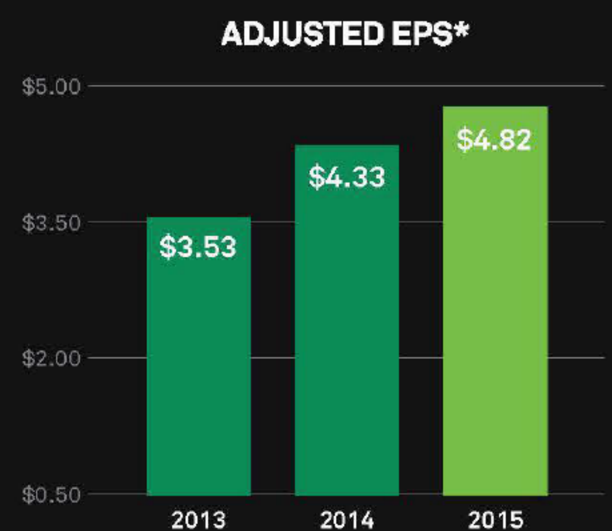
Lisa Hook

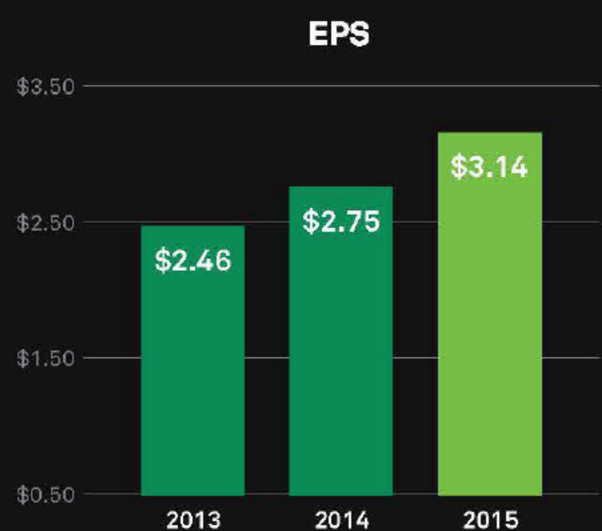
Lisa Hook
President and Chief Executive Officer

FINANCIAL HIGHLIGHTS









* Free Cash Flow and Adjusted Earnings Per Share (EPS) are non-GAAP financial measures intended to supplement our financial statements that are based on U.S generally accepted accounting principles (GAAP). Definitions of our non-GAAP measures as well as reconciliations of comparable GAAP measures are available at our website (www.neustar.biz/about-us/investor-relations/financials).

Lisa A. Hook
President and
Chief Executive Officer

Paul S. Lalljie
Senior Vice President and
Chief Financial Officer

YEAR IN REVIEW

In 2015, we delivered strong financial and operational results, advancing our information services strategy, investing in our service portfolio, and expanding our capabilities through three strategic acquisitions. We solidified our position as an expert in real-time authoritative identity, and we are well-positioned for the future.

FINANCIAL

Exceeded Our Financial Targets

Our strong 2015 financial results demonstrate our differentiated market position and services, crisp execution, and growing momentum. We generated strong revenue growth, healthy margins, and significant free cash flow. We exceeded our financial targets, with revenue increasing 9% between 2014 and 2015, to $1.05 billion. Information Services revenue grew 11% to $542.8 million, driven by double digit organic revenue growth in Marketing and Security Services.

Adjusted net income per share for 2015 increased 11% to $4.82, and we generated more than $320 million in free cash flow. Moreover, we invested in the future by spending over $750 million on strategic acquisitions and returned more than $100 million to shareholders through share repurchases.

OPERATIONAL

Advanced Our Position As a Premier Information Services Provider

Our growth in 2015 underscores the increased demand for services that help our customers make informed decisions to grow their business. Neustar today is a premier provider of Information Services and a leader in what we call authoritative identity   our ability to continually update and then link our data to deliver verification, marketing, security, and data services. We link what matters.

In **Marketing Services**, we acquired marketing analytics leader MarketShare in the fourth quarter, solidifying Neustar's position as a major contender in the large and growing Marketing Services sector. The acquisition also substantially advanced our strategy to deliver complete solutions for the data driven Chief Marketing Officer (CMO). We also announced several strategic Marketing Services partnerships, including Salesforce.com and Marketo.

In addition to boosting our capabilities with the MarketShare acquisition, we launched the next gener ation of PlatformOne, which was redesigned to add new and improved capabilities and features, including a new audience planner tool, revamped onboarding and syndication dashboards, and enhanced global support.

Now we offer a full suite of services that provides market ers with the tools and information they need to formulate and justify their budgets. CMOs are able to plan their media spending, identify and locate desired customers, invest in the right marketing campaigns, deliver relevant offers, and measure the performance of these activities. By combining MarketShare's services with our existing authoritative identity framework, Neustar is positioned to help clients build comprehensive marketing plans and attribute sales to the appropriate marketing expenditure, both online and offline. We are the only company that can provide actionable insights via this comprehensive suite of marketing solutions.

In **Security Services**, demand for our DDoS mitigation and DNS services drove strong revenue growth. We strengthened our registry services by acquiring Bombora, which provides registry services for many top level domains (TLDs), including .au, .melbourne, .sydney, and more than 100 new TLDs, including those for several Fortune 500 brands. We are now positioned as the global leader in launching and operating TLDs. Managing a brand's digital presence by creating a new TLD is becoming an important component of the CMO toolkit and aligns with our other real time authoritative identity services.

In the fourth quarter, we acquired the caller authentica tion assets of TNS, increasing our scale and coverage, and improving accuracy for our clients   particularly within mobile. This move also provided **Data Services** with a platform for maintaining and publishing subscriber data while also generating "data fuel" for our Marketing and Security Services that help companies make informed decisions.

In addition, we added new members to our Board, with the goal of bringing in new skills aimed at supporting the company's growth in Information Services. Paul Ballew has a deep understanding of data analytics through his experience as Chief Data & Analytics Officer at Ford Motor Co. and his prior work at Dun & Bradstreet, Nationwide, GM, and J.D. Power & Associates. Dr. Deborah Rieman serves as the Executive Chairman of Metamarkets and is on the board of Corning Inc. She brings more than 30 years of experience in the tech sector where she was CEO of CheckPoint Software and VP of Marketing at Adobe.

NPAC

Continued Flawless Management For As Long As The Transition Takes

At the end of the first quarter 2015, the Federal Communications Commission (FCC) selected a competitor to serve as the next Local Number Portability Administrator. We were disappointed, but moved quickly to negotiate an evergreen contract with the industry. We will provide NPAC services through the end of any transition currently forecasted for third quarter 2017.

Moving forward, we will continue to operate the NPAC at the highest levels of service. We will be an exemplary partner in fulfilling all of our contractual obligations for as long as a transition takes.

OUTCOME

Why 2015 Was A Success

Our 2015 results reflect our strong market position and are a testament to the value our differentiated services provide to our customers. At Neustar, we go further for our customers, building intelligent, targeted solutions that are predictive, proactive, and prescriptive. We help protect and grow their businesses today, focus on the right decisions for tomorrow, and prepare them for whatever the future may bring.

MOVING THE WORLD AHEAD BY BRINGING THE FUTURE INTO FOCUS.

LOOKING AHEAD

2016 And Beyond

In 2016, we will focus on achieving our financial targets and delivering shareholder value. From an operational perspective, we will focus on integrating our most recent acquisitions, capitalizing on opportunities in high-growth markets, and creating operating leverage.

We are excited about Neustar's future. We have the people, the assets, and the market position to capture share in fast-growing markets. We are committed to our strategy, and as we focus on execution, we are confident that we can build on our momentum to create long-term value for our shareholders.

CORPORATE SOCIAL RESPONSIBILITY

Contributing to the communities in which we live and work is a top priority for Neustar. We have three principal areas of focus—STEM education, the environment, and utilizing our skills to assist in the search for missing children.

STIMULATING INTEREST IN STEM EDUCATION

Moved by reports indicating that the national security and commercial interests of the U.S. are at risk due to the critical shortage of graduates with skills in Science, Technology, Engineering, and Math (STEM), Neustar has focused on encouraging students—particularly women and minorities to enter these important fields. The National Math + Science Initiative reports that by 2018 the U.S. may be short by as many as three million high-skilled workers, with two-thirds of those jobs requiring at least some post-secondary education. Neustar's response to this vital national need has been to mentor students in STEM via key partnerships and grassroots, employee-driven initiatives.

Our most notable STEM initiative is **My Digital Life**, an innovative digital literacy program, available in schools and online, geared toward encouraging 6th-9th grade students to develop important skills necessary in pursuing careers in technology. We sponsor this program for free in interested public schools in Virginia, Kentucky, and California—the states where the bulk of our employees work and live. Since its launch in 2012, 139,000 students have completed the program in these states.

We have a particular interest in addressing the underrepresentation of women in the technology field. In 2015, our **Women In Technology** initiative gained new momentum in ensuring career paths for women, through networking opportunities, and career-development forums. This initiative now encompasses our headquarters in Virginia as well as our offices in San Francisco and San Diego, and we have plans to grow the organization across the entire span of our global workforce. Also, this was our fourth year as a sponsor of the Grace Hopper's Women in Computing Conference, the world's largest gathering of women technologists, produced by the Anita Borg Institute.

Neustar's support of women in technology starts at the top, with the active encouragement of our President and CEO, Lisa Hook, and the Board of Directors. Thirty percent of Neustar's Board is comprised of women, gaining the company a spot on the 2020 Women on Boards Winning "W" companies list. 2020 Women on Boards is a national campaign dedicated to increasing the percentage of women on corporate boards by 20 percent by the year 2020.

We are also passionate supporters of **Year Up**, which envisions a future in which every urban young adult will have access to the education, experiences, and guidance required to realize his or her true potential. Through Year Up, low-income young adults, ages 18-24, participate in an intensive training program that includes a combination of hands-on skill development, college credits, and corporate internships. Since Neustar began its partnership with Year Up in 2011, we have sponsored more than 40 interns who have participated in Year Up's rigorous, STEM-based training, and we were very pleased in 2015 when two interns became Neustar employees.

ENVIRONMENTAL SUSTAINABILITY

Minimizing our impact on the environment is an important priority. Neustar is committed to becoming trash free by 2020. Key initiatives that will help us achieve this goal include removing non-biodegradable plates and utensils in our offices, and removing for sale plastic bottles of water in our cafeterias. Our headquarters building in Sterling, Virginia, and our offices in San Francisco and San Diego are all in LEED certified buildings. In fact, our San Diego office claims Gold Certification for LEED-CI (Commercial Interiors). In addition to being Green Globe certified for our Data Center, we have been Platinum Certified in the Green Business Challenge.

WE MAKE CRITICAL REAL-TIME RESPONSES POSSIBLE.

ASSISTING IN THE SEARCH FOR MISSING CHILDREN

A third area of focus for Neustar is utilizing our skills in the search for children who go missing. We provide essential telephone number information services to the Center for Missing and Exploited Children, a cross-jurisdictional law enforcement support organization that coordinates federal, state, and local agencies on abuse and missing persons cases involving minors. As of April 2015, the Center had assisted in the recovery of more than 208,000 children. We are proud of the assistance we have provided.

In addition to offering our expertise in telephone numbering to assist in the search for missing children, Neustar Local Number Portability Enhanced Analytical Platform (LEAP) is utilized by more than 150 federal, state, and local law enforcement and public safety agencies.

One additional means by which Neustar's technical knowledge and assets provide a public service is our effort improving the process by which deaf and hard of hearing consumers are able to make and receive phone calls. Today, approximately 410,000 subscribers utilize Neustar Telecommunications Relay Service.

BOARD OF DIRECTORS

James G. Cullen
Chairman of the Board;
Retired President and
Chief Operating Officer
of Bell Atlantic Corporation

Paul D. Ballew
Chief Data & Analytics Officer
of Ford Motor Co.

Gareth C. C. Chang
Chairman and
Managing Director
GC3 and Associates
International, LLC

Joel P. Friedman
Former President
of Accenture's Business Process
Outsourcing Organization

Mark N. Greene
Former Chief Executive Officer
and Director
of OpenLink Financial LLC

Lisa A. Hook
President and
Chief Executive Officer

Ross K. Ireland
Retired Senior Executive
Vice President of Services
and Chief Technology Officer
of SBC Communications Inc.

Paul A. Lacouture
Retired Executive Vice President
of Engineering and Technology
of Verizon Telecom

Deborah D. Rieman
Executive Chairman
of Metamarkets

Michael J. Rowny
Chairman of Rowny Capital

Hellene S. Runtagh
Former President and
Chief Executive Officer
of Berwind Group

EXECUTIVE OFFICERS

Lisa A. Hook
President and
Chief Executive Officer

Paul S. Lalljie
Senior Vice President
and Chief Financial Officer

Leonard J. Kennedy
Senior Vice President
and General Counsel

Steve J. Edwards
Senior Vice President,
Data Solutions

Steve L. Chudleigh
Senior Vice President,
Data Strategy

Edward M. Prince, Jr.
Senior Vice President,
Corporate Development

Steven Wolfe Pereira
Senior Vice President,
Chief Marketing and
Communications Officer

Christine Brennan
Senior Vice President,
Human Resources

Brian Foster
Senior Vice President,
Information Services

Hank Skorny
Senior Vice President,
Internet of Things

Peter Burke
Senior Vice President,
Engineering and Operations

Wes Nichols
Senior Vice President,
Strategy

Jon Vein
Senior Vice President,
Strategy

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Corporate Secretary
Leonard J. Kennedy
Senior Vice President and
General Counsel
+1 (571) 434 5400

Stock Information
Neustar stock is publicly traded on the NYSE under the ticker symbol NSR.

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(D) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2015

Or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(D) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission File No. 001-32548

NeuStar, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**52-2141938**
State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
21575 Ridgetop Circle Sterling, Virginia	**20166**
(Address of principal executive offices)	(Zip Code)

(571) 434-5400

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Class A Common Stock	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act:

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer ☒	Accelerated filer ☐
Non-accelerated filer ☐ (Do not check if a smaller reporting company)	Smaller reporting company ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

On February 22, 2016, 53,767,520 shares of NeuStar Class A common stock were outstanding and 2,270 shares of NeuStar Class B common stock were outstanding. The aggregate market value of the NeuStar common equity held by non-affiliates as of June 30, 2015 was approximately $2.4 billion.

DOCUMENTS INCORPORATED BY REFERENCE:

Information required by Part III (Items 10, 11, 12, 13 and 14) is incorporated by reference to portions of NeuStar's definitive proxy statement for its 2016 Annual Meeting of Stockholders, which NeuStar intends to file with the Securities and Exchange Commission within 120 days of December 31, 2015.

TABLE OF CONTENTS

Unless the context requires otherwise, references in this report to "Neustar," "we," "us," the "Company" and "our" refer to NeuStar, Inc. and its consolidated subsidiaries.

PART I

ITEM 1. BUSINESS

Our Business

We offer authoritative, hard-to-replicate data sets and proprietary analytics that provide insights to help clients promote and protect their businesses. Our proprietary, cloud-based platforms and differentiated data sets offer informative, real-time analytics, which enable clients to make actionable, data-driven decisions. We provide chief marketing officers a comprehensive suite of services to plan their media spend, identify and locate desired customers, invest effectively in marketing campaigns, deliver relevant offers and measure the performance of these activities. Security professionals use our solutions to maximize web performance and protect against malicious attacks. We enable the exchange of essential operating information across multiple carriers to provision and manage services, assisting clients with fast and accurate order processing and immediate routing of customer inquiries. We provide communications service providers in the United States critical infrastructure that enables the dynamic routing of calls and text messages.

We incorporated in Delaware in 1998. Our principal executive offices are located at 21575 Ridgetop Circle, Sterling, Virginia, 20166, and our telephone number at that address is (571) 434-5400.

Our Services

Marketing Services

Our Marketing Services empower clients to make informed and high impact decisions in real time to promote their businesses, increase customer retention, achieve greater campaign success and increase their marketing return on investment, as well as mitigate risk and fraud. Using these services, our clients can plan and execute marketing strategies and measure the effectiveness of advertising campaigns across multiple channels with advanced marketing analytics, custom segmentation and media optimization. Marketers also use our omni-channel workflow solutions to tailor their media spend, efficiently reach specific audiences, and measure campaign performance across an array of devices.

Our Marketing Services provide:

- *Customer Intelligence.* We provide authoritative, cloud-based solutions that enable marketers to identify, verify and segment existing and potential customers in real-time for both marketing initiatives and for fraud and risk mitigation. Using a privacy-by-design foundation, these solutions provide clients with a comprehensive view of their customers and prospects most likely to purchase their products and services based on attributes such as demographics, geography, and buying propensities. Our services enable clients to plan data-driven marketing strategies, develop high-impact advertising and lead generation campaigns and execute informed media planning for consistent execution across multiple channels to increase customer conversions.
- *Activation.* Our activation services enable marketers to maximize the impact of online display ad targeting for specific prospect audiences and customers. Our predictive segmentation and geo-targeting capabilities enable clients to reach online customers with relevant messages, by deploying criteria based on buying propensity, geography or a combination of each, in a privacy-compliant manner.
- *Media Intelligence.* We provide a platform that enables marketers to plan and allocate their marketing spend across sales channels and media platforms. We provide measurement and attribution capabilities to optimize marketing effectiveness. Our solutions connect proprietary customer data, such as sales,

pricing, promotions, and distribution, with external factors, such as macro-economic conditions, competition, and weather, to tailor marketing spending plans and measure the resulting business impact. Our platform links actual business performance, such as sales and profitability, to every facet of the marketing plan across offline and online channels.

Security Services

We direct and manage the flow of Internet traffic, resolve Internet queries and provide security protection against cyber attacks. We also manage authoritative domain-name registries.

Our Security Services provide:

- *DNS Services.* Our domain name systems, or DNS, solutions protect our client's Internet ecosystem and defend most standard transmission control protocol based applications, including, among others, websites, email servers, application programming interfaces, and databases. Our managed and recursive DNS services deliver fast, accurate responses to online queries with the scalability that today's enterprises demand. In addition, we provide load-testing analysis to help an enterprise prepare for peak loads on new and existing systems.
- *DDoS Protection.* We provide cloud-based Distributed Denial of Service, or DDoS, protection services that help our clients reduce risk, downtime and revenue loss from cyber attacks. Our extensive diagnostics and multi-domain views give clients a holistic perspective both inside and outside their firewalls. We also provide early detection and alerting against cyber attacks, and provide advanced services that strengthen and protect an enterprise's defenses against such attacks.
- *Domain Name Registries.* We operate the authoritative registries of Internet domain names for the .biz, .us, .co, .au, and .travel top-level domains, and provide international registry gateways. We also provide back-end support for generic top-level domains, or gTLDs, such as .nyc. All Internet communications routed to any of these domains must query a copy of our directory to ensure that the communication is routed to the appropriate destination.

Data Services

We manage large, complex and hard-to-replicate data sets that enable clients to process decisions and transactions in real time. Our workflow solutions enable the exchange of essential operating information with multiple carriers in order to provision and manage services. Our clients use our services to support multiple applications that rely on high speed, reliable and secure transfer of critical information.

Our Data Services provide:

- *Carrier Provisioning.* We provide network services that enable our carrier customers to exchange essential operating information with multiple carriers to provision and manage services for their subscribers. In addition, we offer inventory management services that allow our carrier customers to manage efficiently their assigned telephone numbers and associated resources.
- *Caller Authentication.* We provide authoritative, accurate and current caller-name data and related information to communications service providers. We also store and publish caller-name data on behalf of our carrier customers.
- *Common Short Codes.* We operated the authoritative common short codes registry on behalf of the U.S. wireless industry until December 31, 2015.
- *User Authentication and Rights Management.* We operate the user authentication and rights management system, which supports the UltraViolet™ digital content locker that consumers use to access their entertainment content. We operate a managed service that offers a global routing and addressing solution to help clients optimize their evolving interconnected business.

NPAC Services

Number portability administration center, or NPAC, Services include the dynamic routing of calls and text messages among all competing communications service providers in the United States and related connection services and system enhancements. We operate and maintain authoritative databases that help manage the increasing complexity in the telecommunications industry. Our NPAC Services provide the foundation for subscriber acquisition in a robust and competitive telecommunications market. These services support the industry's needs for real-time network and resource optimization, and also support additional services including public safety, law enforcement, emergency preparedness, disaster recovery, and efficient telephone number utilization. The NPAC is the world's largest and most complex number management system with connections to over 4,800 individual customers in the United States and is a critical component of the national telecommunications network infrastructure.

Operations

Sales Force and Marketing

We operate a unified marketing and sales organization in order to more effectively promote our brand and go to market with our solutions. Our sales and marketing teams are primarily aligned by industry vertical including financial services, media and advertising, technology and communications. Sales employees that service the technology vertical also support the sales teams aligned with the other industry verticals. We believe this operating model allows us to deliver solutions that address the most critical challenges of our clients' business. Our experienced sales and marketing staff have extensive knowledge of the industries we serve and understand how our products and services address our clients' priorities and needs. We employ a wide array of direct and indirect sales approaches and marketing strategies, and we base our strategy for each industry vertical on our analysis of market requirements, client needs, and industry direction. As of December 31, 2015, our sales and marketing organization consisted of 653 people who work together to offer our clients advanced services and solutions.

Operational Capabilities

We provide our services through our state-of-the-art data centers and remotely hosted computer hardware located in third-party facilities throughout the world. Our data centers, including third-party facilities, are custom designed for processing and transmitting high volumes of transaction-related, time-sensitive data in a highly secure environment. We are committed to employing best-of-breed tools and equipment for application development, infrastructure management, operations and information security management. In general, we subscribe to the highest level of service and responsiveness available from each third-party vendor that we use. Further, to protect the integrity and ensure the reliability of our systems, the major components of our networks are generally designed with the intention of eliminating any single point of failure.

We consistently meet and frequently exceed our contractual service level requirements. Our performance results for certain services are monitored internally and are subjected to independent audits on a regular basis.

Research and Development

We maintain a research and development group, the principal function of which is to develop new and innovative services and make improvements to existing services, oversee quality control processes and perform application testing. Our processes surrounding the development of new services and improvements to existing services focus on resolving the challenges our clients face. We employ industry experts in areas of technology that we believe are key to solving these challenges. Our quality control and application testing processes focus predominantly on resolving highly technical issues that are integral to the performance of our services and solutions. These issues are identified through both internal and external feedback mechanisms, and continuous testing of our applications and systems to ensure uptime commensurate with the service level standards we have agreed to provide to our clients. As of December 31, 2015, we had 136 employees dedicated to research and development, including software engineers, quality assurance engineers, technical project managers and documentation specialists. Our research and development expense was $28.0 million, $27.7 million and $25.7 million for the years ended December 31, 2013, 2014 and 2015, respectively.

Clients and Markets

We primarily serve clients in the following industries:

- *Communications.* Our clients include telecommunications services providers, as well as emerging providers of voice over Internet protocol, or VoIP, services, social media, and message aggregation. Within this industry, we provide services in numbering, caller name, carrier provisioning, and marketing analytics.
- *Financial Services.* Our clients span several financial sectors, including retail banking, collections, insurance, credit cards and investments. Within this industry, we provide verification for risk and compliance mitigation, web infrastructure protection, demographic analytics, digital marketing and measurement, and call center experience optimization.
- *Media and Advertising.* Our clients include both the buy-side and sell-side of the advertising and media landscapes, including advertisers, agencies, ad enablers, publishers and performance marketing providers. Within this industry, we provide marketing solutions that enable identification and audience targeting, optimization of media investments and measurement of campaign effectiveness.
- *Retail and eCommerce.* Our clients include department stores, travel and hospitality companies, consumer packaged goods providers, educational institutions and auto parts manufacturers. Within this industry, we primarily provide marketing data analytics, media intelligence platform services, and Internet infrastructure services.
- *Internet.* Our clients include eCommerce, consumer Internet services (e.g. social networks), and online gaming companies. Within this industry, we primarily provide security services such as managed DNS, website personalization, and protection against cyber attacks, as well as marketing analytics and measurement.
- *Technology.* Our clients include hardware, consumer electronics, software, SaaS companies and high-tech manufacturers. Within this industry, we primarily provide security services such as protection against cyber attacks and website personalization, as well as call center optimization.

No single corporate entity accounted for more than 10% of our total revenue in 2015. Our clients include corporate entities, each of which is separately billed for the services we provide, regardless of whether it may be affiliated with one or more of our other clients. The amount of our revenue derived from clients inside the United States was $839.3 million, $901.1 million and $973.6 million for the years ended December 31, 2013, 2014 and 2015, respectively. The amount of our revenue derived from clients outside the United States was $62.7 million, $62.5 million and $76.3 million for the years ended December 31, 2013, 2014 and 2015, respectively. The amount of our revenue derived under our contracts with North American Portability Management LLC, or NAPM, an industry group that represents all telecommunications service providers in the United States, was $446.4 million, $474.8 million and $507.1 million for the years ended December 31, 2013, 2014 and 2015, respectively, and represented 49%, 49% and 48% of our revenue for the years ended December 31, 2013, 2014 and 2015, respectively. Our total revenue from our contracts with NAPM includes revenue from our NPAC Services, connection services related to our NPAC Services and NPAC-related system enhancements.

We currently operate in one operating segment. A single management team reports to the chief operating decision maker who manages the entire business. We do not operate any separate lines of businesses or separate business entities with respect to the sale and support of our services. For further discussion of enterprise-wide results, including goodwill and intangible assets, revenue, total long-lived assets, as well as information concerning our international operations, see Note 4 and Note 15 to our Consolidated Financial Statements in Item 8 of Part II of this report.

Competition

We have a number of competitors for our services:

- *Marketing Services*. Our primary competitors include Acxiom Corporation, Adobe Systems Incorporated and Oracle Corporation, which compete with us in customer intelligence, activation, and media intelligence.
- *Security Services*. Our competitors include Akamai Technologies, Inc. which competes with us in services that protect against cyber attacks. With respect to our registries, our primary competitors include VeriSign, Inc. and Afilias Limited. With respect to our managed DNS services, our competitors include VeriSign, Inc. and Cisco Systems, Inc.
- *Data Services*. Our competitors include Synchronoss Technologies, Inc. and Syniverse Technologies, LLC.
- *NPAC Services*. We are currently the only provider of Local Number Portability Administrator, or LNPA, services in the United States. On March 26, 2015, the Federal Communications Commission, or FCC, approved the selection by the North American Number Council, or NANC, of Telcordia, d/b/a iconectiv, a wholly owned subsidiary of Ericsson, to serve as the LNPA for the next contract term. (For more information regarding the selection process, see "Risk Factors — Risks Related to Our Business — ***When our seven contracts with North American Portability Management LLC are terminated, the timing of which is uncertain, our revenue and profitability may be materially adversely affected.***" in Item 1A of this report).

With respect to our contracts to act as the North American Number Plan Administrator, the National Pooling Administrator, and the operator of the authoritative registry for the .us, .co, .au and .biz Internet domain names, the relevant counterparty could elect not to exercise the extension period under the contract, if applicable, or could allow the contract to terminate in accordance with its terms. If any of these contracts were allowed to terminate, or otherwise were not extended, we could be required to compete with other providers to continue to provide the services we are currently providing under these contracts.

Competitive factors in the market for our services include breadth and quality of services offered, reliability, security, cost-efficiency, privacy compliance and client support. Our ability to compete successfully depends on numerous factors, both within and outside our control, including:

- our responsiveness to clients' needs;
- our ability to support existing and new industry standards and protocols;
- our ability to continue to develop technical innovations and invest in product development; and
- the quality, reliability, security and price-competitiveness of our services.

We may not be able to compete successfully against current or future competitors and competitive pressures that we face may materially and adversely affect our business. See "Risk Factors — Risks Related to Our Business — ***The markets for our services are competitive, and if we do not adapt our organization and services to meet rapid technological and market change, we could lose clients or market share.***" in Item 1A of this report.

Employees

As of December 31, 2015, we had 2,125 employees. None of our employees are currently represented by a labor union. We have not experienced any work stoppages and consider our relationship with our employees to be good.

Contracts

We provide many of our services pursuant to private commercial and government contracts. Specifically, in the United States, we provide centralized wireline and wireless number portability services pursuant to seven regional contracts with the NAPM, and implement the allocation of pooled blocks of telephone numbers and manage the North American Numbering Plan pursuant to contracts with the FCC. Although the FCC has plenary authority over the administration of telephone number portability, it is not a party to our contracts with NAPM. The FCC has delegated limited oversight responsibilities to the NANC, which reviews and oversees NAPM's management of these contracts. See — "Regulatory Environment — Telephone Numbering."

Our seven regional contracts with NAPM provide for an annual fixed-fee pricing model under which the annual fixed fee, or Base Fee, was set at $437.4 million, $465.8 million and $496.1 million in 2013, 2014 and 2015, respectively. If the actual volume of transactions in a given year is above or below the contractually established volume range for that year, the Base Fee may be adjusted up or down, respectively, with any such adjustment being applied in the following year.

Under the fixed-fee model, our fees are billed to telecommunications service providers based on their allocable share of the total annual charges. This allocable share is based on each respective telecommunications service provider's share of the aggregate end-user services revenue of all U.S. telecommunications service providers, as determined by the FCC. Under these contracts, we also bill to our clients a revenue recovery collections fee, or RRC fee, equal to a percentage of monthly billings, which is available to us if any telecommunications service provider fails to pay its allocable share of total transaction charges. If the RRC fee proves insufficient for that purpose, these contracts also provide for the recovery of such differences from the remaining telecommunications service providers. Under these contracts, users of our NPAC Services also pay fees to connect to our data center and additional fees for reports that we generate at the user's request. Our contracts with NAPM will automatically renew on July 3, 2016 for additional one-year terms commencing as of October 1, 2016, unless NAPM provides a notice of non-renewal at least 90 days prior to the end of the then-current term. If the contracts are not renewed, NAPM may elect to extend the regional contracts at the current pricing terms through a period expiring on (a) the date on which a transition of responsibility for NPAC Services is completed or (b) either for up to (i) 180 days after the date on which a notice of non-renewal is issued if NAPM also elects to license from us the source code we use to provide NPAC services or (ii) 18 months after the date on which a notice of non-renewal is issued if NAPM does not elect to license our source code. We may also be required to provide transition services during any contract extension or for up to 180 days if the contracts are not extended. (See "Risk Factors — Risks Related to Our Business — ***When our seven contracts with North American Portability Management LLC are terminated, the timing of which is uncertain, our revenue and profitability may be materially adversely affected.***" in Item 1A of this report).

We also provide wireline and wireless number portability and network management services in Canada pursuant to a contract with the Canadian LNP Consortium Inc., a private corporation composed of telecommunications service providers who participate in number portability in Canada. The Canadian Radio-Television and Telecommunications Commission oversees the Canadian LNP Consortium's management of this contract. We bill each telecommunications service provider for our services under this contract primarily on a per-transaction basis. In March 2015, this contract was amended to continue through December 31, 2017. The services we provide under the contracts with NAPM and the Canadian LNP Consortium are subject to rigorous performance standards, and we are subject to corresponding penalties for failure to meet those standards.

We serve as the North American Numbering Plan Administrator and the National Pooling Administrator pursuant to two separate contracts with the FCC. Under these contracts, we administer the assignment and implementation of new area codes in North America, the allocation of central office codes (which are the prefixes following the area codes) to telecommunications service providers in the United States, and the assignment and allocation of pooled blocks of telephone numbers in the United States in a manner designed to conserve telephone number resources. The North American Numbering Plan Administration contract is a fixed-fee government contract that was originally awarded by the FCC to us in 2003. In July 2012, we were awarded a new contract to serve as the North American Numbering Plan Administrator for a term not to exceed five years. The National Pooling Administration contract was originally awarded to us by the FCC in 2001. Under this contract, we perform the administrative functions associated with the allocation of pooled blocks of telephone numbers in the United States. The terms of this contract provide for a fixed fee associated with the administration of the pooling system. In July 2013, the FCC awarded us a new contract to continue as the National Pooling Administrator. The initial contract term was one year, commencing in July 2013, with three possible one-year extensions exercisable at the election of the FCC. The FCC has exercised the first two options, the most recent in July 2015, extending the current contract through July 14, 2016.

We are the operator of the .biz Internet top-level domain by contract with the Internet Corporation for Assigned Names and Numbers, or ICANN. The .biz contract was originally granted to us in May 2001. In August 2013, the .biz contract was extended through June 30, 2019. Similarly, pursuant to a contract with the U.S. Department of Commerce, originally awarded in October 2001, we operate the .us Internet top-level domain. The Department of Commerce recently conducted a competitive procurement process with respect to this contract, and as a result of this competitive process, we were awarded the contract on February 28, 2014. This new contract is for a term of three years, with two additional one-year extension options exercisable at the election of the Department of Commerce. The .biz and .us contracts allow us to provide domain name registration services to domain name registrars, who pay us on a per-name basis.

Pursuant to a contract with the CTIA — The Wireless Association®, we provided U.S. Common Short Code registration services to wireless content providers, who paid us subscription fees per each U.S. Common Short Code registered through the contract expiration date of December 31 2015.

Regulatory Environment

Telephone Numbering

Overview. Congress enacted the Telecommunications Act of 1996 to remove barriers to entry in the communications market. Among other things, the Telecommunications Act of 1996 mandates portability of telephone numbers and requires traditional telephone companies to provide non-discriminatory access and interconnection to potential competitors. The FCC has plenary jurisdiction over issues relating to telephone numbers, including telephone number portability and the administration of telephone number resources. Under this authority, the FCC promulgated regulations governing the administration of telephone numbers and telephone number portability. In 1995, the FCC established the NANC, a federal advisory committee, to advise and make recommendations to the FCC on telephone numbering issues, including telephone number resources administration and telephone number portability. The members of the NANC include representatives from local exchange carriers, interexchange carriers, wireless providers, VoIP providers, manufacturers, state regulators, consumer groups, and telecommunications associations.

Telephone Number Portability. The Telecommunications Act of 1996 requires telephone number portability, which is the ability of users of telecommunications services to retain existing telephone numbers without impairment of quality, reliability, or convenience when switching from one telecommunications service provider to another. Through a competitive proposal process, a consortium of service providers representing the communications industry selected us to develop, build and operate a solution to enable telephone number portability in the United States. We ultimately entered into seven regional contracts to administer the system that we developed, after which the NANC recommended to the FCC, and the FCC approved, our selection to serve as a neutral administrator of telephone number portability. The FCC also directed the seven original regional entities, each comprising a consortium of service providers operating in the respective regions, to manage and oversee the administration of telephone number portability, subject to NANC oversight. Under the rules and policies adopted by the FCC, NAPM, as successor in interest to the seven regional consortiums, has the power and authority to manage and negotiate changes to the current master agreements.

On November 3, 2005, BellSouth Corporation, or BellSouth, filed a petition with the FCC seeking changes in the way our clients are billed for services provided by us under our contracts with NAPM. In response to the BellSouth petition, the FCC requested comments from interested parties. As of February 29, 2016, the FCC had not initiated a formal rulemaking process and the BellSouth petition remains pending. Similarly, on May 20, 2011, Verizon Communications Inc. and Verizon Wireless Inc. filed a joint petition, the Verizon Petition, with the FCC seeking a ruling that certain carrier initiated modifications of NPAC records be excluded from the costs of the shared NPAC database and be paid for instead by the provider that caused such costs to be incurred. In response to the Verizon Petition, the FCC requested comments from interested parties. On April 18, 2013, the FCC initiated a rulemaking concerning interconnected VoIP providers direct access to telephone numbers in which it asked for comment on the question of whether the FCC should initiate a rulemaking to examine the FCC's cost allocation rules for number administration, portability and pooling more generally. As of February 29, 2016, the FCC had not initiated a formal rulemaking process and the Verizon Petition remains pending.

After the amendment of our contracts with NAPM in September 2006, Telcordia Technologies, Inc., d/b/a iconectiv, a wholly owned subsidiary of the Swedish telecommunications equipment manufacturer, Ericsson, filed a petition with the FCC requesting an order that would require NAPM to conduct a new bidding process to appoint a provider of telephone number portability services in the United States. In response to our amendment of these contracts in January 2009, Telcordia filed another petition asking that the FCC abrogate these contracts and initiate a government-managed procurement in their place. As part of the order selecting iconectiv as the next LNPA, the FCC granted these petitions to the extent consistent with its order and otherwise denied these petitions. (See "Risk Factors — Risks Related to Our Business — ***When our seven contracts with North American Portability Management LLC are terminated, the timing of which is uncertain, our revenue and profitability may be materially adversely affected.***" in Item 1A of this report).

North American Numbering Plan Administrator and National Pooling Administrator. We have contracts with the FCC to act as the North American Numbering Plan Administrator and the National Pooling Administrator, and we must comply with the rules and regulations of the FCC that govern our operations in each capacity. We are charged with administering numbering resources in an efficient and non-discriminatory manner, in accordance with FCC rules and industry guidelines developed primarily by the Industry Numbering Committee. These guidelines provide governing principles and procedures to be followed in the performance of our duties under these contracts. The communications industry regularly reviews and revises these guidelines to adapt to changed circumstances or as a result of the experience of industry participants in applying the guidelines. A committee of the NANC evaluates our performance against these rules and guidelines each year and provides an annual review to the NANC and the FCC. If we violate these rules and guidelines, or if we fail to perform at required levels, the FCC may reevaluate our fitness to serve as the North American Numbering Plan Administrator and the National Pooling Administrator and may terminate our contracts or impose fines. The division of the NANC responsible for reviewing our performance as the North American Numbering Plan Administrator and the National Pooling Administrator has determined that, with respect to our performance in 2013, we "more than met" our performance guidelines under each such respective review. Similar reviews of our performance in 2014 have not yet been completed.

Neutrality. Under FCC rules and orders establishing the qualifications and obligations of the North American Numbering Plan Administrator and National Pooling Administrator, and under our contracts with NAPM to provide telephone number portability services, we are required to comply with neutrality regulations and policies. Under these neutrality requirements, we are required to operate our numbering plan, pooling administration and number portability functions in a neutral and impartial manner, which means that we cannot favor any particular telecommunications service provider, telecommunications industry segment or technology or group of telecommunications consumers over any other telecommunications service provider, industry segment, technology or group of consumers in the conduct of those businesses. We are examined periodically on our compliance with these requirements by independent third parties. The combined effect of our contracts and the FCC's regulations and orders requires that we:

- not be a telecommunications service provider, which is generally defined by the FCC as an entity that offers telecommunications services to the public at large, and is, therefore, providing telecommunications services on a common carrier basis, or an interconnected VoIP provider;
- not be an affiliate of a telecommunications service provider or VoIP provider, which means, among other things, that we:
  - must restrict the beneficial ownership of our capital stock by telecommunications service providers, VoIP providers or affiliates of a telecommunications service provider or VoIP provider; and
  - may not otherwise, directly or indirectly, control, be controlled by, or be under common control with, a telecommunications service provider or VoIP provider;
- not derive a majority of our revenue from any single telecommunications service provider; and
- not be subject to undue influence by parties with a vested interest in the outcome of numbering administration and activities. Notwithstanding our satisfaction of the other neutrality criteria above, the NANC or the FCC could determine that we are subject to such undue influence. The NANC may conduct an evaluation to determine whether we meet this "undue influence" criterion.

We are required to maintain confidentiality of competitive client information obtained during the conduct of our business. In addition, as part of our neutrality framework, we are required to comply with a code of conduct that is designed to ensure our continued neutrality. Among other things, our code of conduct, which was approved by the FCC, requires that:

- we never, directly or indirectly, show any preference or provide any special consideration to any telecommunications service provider;
- we prohibit access by our stockholders to user data and proprietary information of telecommunications service providers served by us (other than access of employee stockholders that is incidental to the performance of our numbering administration duties);
- our stockholders take steps to ensure that they do not disclose to us any user data or proprietary information of any telecommunications service provider in which they hold an interest, other than the sharing of information in connection with the performance of our numbering administration duties;
- we not share confidential information about our business services and operations with employees of any telecommunications service provider;
- we refrain from simultaneously employing, whether on a full-time or part-time basis, any individual who is an employee of a telecommunications service provider and that none of our employees hold any interest, financial or otherwise, in any company that would violate these neutrality standards;
- we prohibit any individual who serves in the management of any of our stockholders from being involved directly in our day-to-day operations;
- we implement certain requirements regarding the composition of our Board of Directors;

- no member of our Board of Directors simultaneously serves on the Board of Directors of a telecommunications service provider; and
- we hire an independent party to conduct a quarterly neutrality audit to ensure that we and our stockholders comply with all the provisions of our code of conduct.

In connection with the neutrality requirements imposed by our code of conduct and under our contracts, we are subject to a number of neutrality audits that are performed on a quarterly and annual basis. In connection with these audits, all of our employees, directors and officers must sign a neutrality certification that states that they are familiar with our neutrality requirements and have not violated them. Failure to comply with applicable neutrality requirements could result in government fines, corrective measures, curtailment of contracts or even the revocation of contracts. See "Risk Factors — Risks Related to Our Business — ***Failure to comply with neutrality requirements could result in loss of significant contracts***." in Item 1A of this report.

In contemplation of the initial public offering of our securities, we sought and obtained FCC approval for a "safe harbor" from previous orders of the FCC that allowed us to consummate the initial public offering for our securities but required us to seek prior approval from the FCC for any change in our overall ownership structure, corporate structure, bylaws, or distribution of equity interests, as well as certain types of transactions, including the issuance of indebtedness by us. Under the safe harbor order, we are required to maintain provisions in our organizational and other corporate documents that require us to comply with all applicable neutrality rules and orders. We are no longer required to seek prior approval from the FCC for many of these changes and transactions, although we are required to provide notice of such changes or transactions. In addition, we are subject to the following requirements under the safe harbor order:

- we may not issue more than 50% of our aggregate outstanding indebtedness to any telecommunications service provider;
- we may not acquire any equity interest in a telecommunications service provider or an affiliate of a telecommunications service provider without prior approval of the FCC;
- we must restrict any telecommunications service provider or affiliate of a telecommunications service provider from acquiring or beneficially owning 5% or more of our outstanding capital stock;
- we must report to the FCC the names of any telecommunications service providers or telecommunications service provider affiliates that own a 5% or greater interest in our Company;
- we must make beneficial ownership records available to our auditors, and must certify upon request that we have no actual knowledge of any ownership of our outstanding capital stock by a telecommunications service provider or telecommunications service provider affiliate other than as previously disclosed; and
- we must make our debt records available to our auditors and certify that no telecommunications service provider holds more than 50% of our aggregate outstanding indebtedness.

Internet Domain Name Registrations

We are also subject to government and industry regulation under our Internet registry contracts with the U.S. government and ICANN, the industry organization responsible for regulation of Internet top-level domains. We are the operator of the .biz Internet domain under a contract with ICANN, as described above under "Contracts." Similarly, pursuant to a contract with the U.S. Department of Commerce, we operate the .us Internet domain registry. This contract is also described above under "Contracts." Under each of these registry service contracts, we are required to:

- provide equal access to all registrars of domain names;
- comply with Internet standards established by the industry; and
- implement additional policies as they are adopted by the U.S. government or ICANN.

Intellectual Property

Our success depends in part upon our proprietary technology. We rely principally upon trade secret and copyright law to protect our technology, including our software, network design, and subject matter expertise. We enter into confidentiality and license agreements with our employees, consultants, outsourcing suppliers, partners, distributors, clients, and potential clients and limit access to and distribution of our software, documentation, and other proprietary information. We believe, however, that because of the rapid pace of technological change, these legal protections for our services are less significant factors in our success than the knowledge, ability, and experience of our employees and the timeliness and quality of our services. In addition, where appropriate, we seek patent protection for our proprietary technology used in our service offerings.

Available Information and Exchange Certifications

We maintain an Internet website at www.neustar.biz. Information contained on, or that may be accessed through, our website is not part of this report. Our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to reports filed or furnished pursuant to Sections 13(a) and 15(d) of the Securities Exchange Act of 1934, as amended, are available, free of charge, on the Investor Relations section of our website under the heading "SEC Filings by NeuStar," as soon as reasonably practicable after we electronically file such reports with, or furnish those reports to, the U.S. Securities and Exchange Commission, or the SEC. Our Principles of Corporate Governance, Board of Directors committee charters (including the charters of the Audit Committee, Compensation Committee, and Nominating and Corporate Governance Committee) and code of ethics entitled "Corporate Code of Business Conduct" also are available on the Investor Relations section of our website. Stockholders may request free copies of these documents, including a copy of our annual report on Form 10-K, by sending a written request to our Corporate Secretary at NeuStar, Inc., 21575 Ridgetop Circle, Sterling, VA 20166. In the event that we make any changes to, or provide any waivers from, the provisions of our Corporate Code of Business Conduct, we intend to disclose these events on our website or in a report on Form 8-K within four business days of such event.

We have filed, as exhibits to this Annual Report on Form 10-K, the certification of our principal executive officer and principal financial officer regarding the quality of our public disclosures, which is required to be filed with the SEC, under Section 302 of the Sarbanes Oxley Act of 2002.

Cautionary Note Regarding Forward-Looking Statements

This report contains forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "expects," "intends," "plans," "anticipates," "believes," "estimates," "predicts," "potential," "continue" or the negative of these terms or other comparable terminology. These statements relate to future events or our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to differ materially from any future results, levels of activity, performance or achievements expressed or implied by these forward-looking statements. Many of these risks are beyond our ability to control or predict. These risks and other factors include those listed under "Risk Factors" in Item 1A of this report and elsewhere in this report and include:

- termination, modification, expiration or non-renewal of (or announcements related to any of the foregoing) our contracts to provide telephone number portability and other directory services;
- failures or interruptions of our systems and services;
- loss of, or damage to, a data center;
- security or privacy breaches;
- adverse changes in statutes or regulations affecting the communications industry;
- our failure to adapt to rapid technological change in the communications industry;

- competition from our clients' in-house systems or from other providers of information services;
- our failure to achieve or sustain market acceptance at desired pricing levels;
- a decline in the volume of transactions we handle;
- inability to manage our growth;
- economic, political, regulatory and other risks in the regions and industries in which we operate;
- inability to obtain sufficient capital to fund our operations, capital expenditures and expansion;
- loss of members of senior management, or inability to recruit and retain skilled employees;
- failure to comply with neutrality requirements,
- risks related to our indebtedness and the impact that it may have on our functional and operating activities;
- inability to protect our intellectual property;
- inability to obtain accurate data required for our information services;
- disruption, increased costs and other risks related to our international expansion; and
- risks relating to the integration of acquired businesses, including the ability of acquired businesses to retain their existing business relationships and key employees.

ITEM 1A. RISK FACTORS

The following sets forth risk factors associated with our business. The risks set forth below could materially affect our business, financial condition and future results and are not the only risks facing us. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially and adversely affect our business, financial condition or operating results.

Risks related to our business

The loss of, or damage to, a data center or any other failure or interruption to our system architecture and/or network infrastructure could materially harm our revenue and impair our ability to conduct our operations.

Because most of the services we provide require our clients to query a copy of our continuously updated databases and directories to obtain necessary routing, operational and marketing data, the integrity of our data centers, including network elements managed by third parties throughout the world, and the systems through which we deliver our services are essential to our business. Notably, certain of our data centers and related systems are essential to the orderly operation of the U.S. telecommunications system because they enable carriers to ensure that telephone calls are routed to the appropriate destinations.

Our system architecture is integral to our ability to process a high volume of transactions in a timely and effective manner. Moreover, both we and our clients rely on hardware, software and other computer technology and equipment developed, supported and maintained by third-party providers. We could experience failures or interruptions of our systems and services, or other problems in connection with our operations, as a result of, for example:

- damage to, or failure of, our computer software or hardware or our connections to, and outsourced service arrangements with, third parties;
- failure of, or defects in, the third-party systems, software or equipment on which we or our clients rely to access our data centers and other systems;
- errors in the processing of data by our systems;

- computer viruses, malware or software defects;
- physical or electronic break-ins, sabotage, distributed denial of service, or DDoS, penetration attacks, intentional acts of vandalism and similar events;
- increased capacity demands or changes in systems requirements of our clients;
- virtual hijacking of traffic destined to our systems; and
- power loss, communications failures, pandemics, wars, acts of terrorism, political unrest or other man-made or natural disasters.

We may not have sufficient redundant systems or back-up facilities to allow us to receive and process data if one or more of the foregoing events occurs. Further, increases in the scope of services that we provide increase the complexity of our network infrastructure. As the scope of services we provide expands or changes in the future, we may be required to make significant expenditures to establish new data centers and acquire additional network capacity from which we may provide services. Moreover, as we add clients, expand our service offerings and increase our visibility in the market we may become a more likely target of attacks similar to those listed in the bullets above. The number of electronic attacks and viruses grows significantly every year, as does the sophistication of these attacks. For example, undetected attackers may be able to monitor unencrypted Internet traffic anywhere in the world and modify it before it reaches our destination, and these attackers may harm our clients by stealing personal or proprietary information, Internet email or IP addresses. If we are not able to react to threats quickly and effectively and stop attackers from exploiting vulnerabilities or circumventing our security measures, the integrity of our systems and networks, and those of our clients and trading partners, may be adversely affected. If we cannot adequately secure and protect the ability of our data centers, offices, networks and related systems to perform consistently at a high level and without interruptions, or if we otherwise fail to meet our clients' expectations:

- our reputation may be damaged, which may adversely affect our ability to market our services and attract or retain clients;
- we may be subject to significant penalties or damages claims, under our contracts or otherwise, including the requirement to pay substantial penalties related to service level requirements in our contracts;
- we may be required to make significant expenditures to repair or replace equipment, third-party systems or an entire data center, to establish new data centers and systems from which we may provide services or to take other required corrective action; or
- one or more of our significant contracts may be terminated early, or may not be renewed.

Any of these consequences would adversely affect our revenue, performance and business prospects.

When our seven contracts with North American Portability Management LLC are terminated, the timing of which is uncertain, our revenue and profitability may be materially adversely affected.

We cannot be certain when our contracts to provide local number portability services will be terminated On January 27, 2016, the NAPM Transition Oversight Manager published a presentation containing a preliminary overall transition timeline for LNPA services. This preliminary timeline showed the transition period extending through the third quarter of 2017. Once the contracts terminate, our annual revenue will decrease by approximately $500 million. As a result of the uncertain contract end date and due to our cost structure, which is organized by function, the impact of the termination of the contracts on our income from operations is not currently quantifiable. At the time of termination, our revenue and profitability will depend on the success of our remaining business. If we are not able to replace this lost revenue and adjust our operating plans to support our remaining business, our total revenue and profitability may be materially adversely affected.

We are exposed to risks related to cybersecurity and protection of confidential information.

Our operations rely on the secure processing, storage and transmission of confidential, sensitive, proprietary and other types of information relating to our products and services and confidential and sensitive information about our clients and others. We expend significant resources on security measures to protect our data and infrastructure against security breaches and cyber attacks and use a complex system of internal processes and software controls along with policies, procedures and training to protect the confidentiality of client data and sensitive information. The cyber risks we face range from cyber attacks common to most industries, to more advanced threats that target us due to our sales of security-related solutions. Breaches of our technology and systems or those of our third party service providers and vendors, whether from circumvention of security systems, denial of service attacks or other cyber-attacks, hacking, computer viruses or malware, technical malfunction, employee error, malfeasance, physical breaches, system disruptions or other actions could cause material interruptions or malfunctions of our products and services or those of third party service providers and may compromise the confidentiality and integrity of confidential or sensitive information regarding our business or clients. Any material incidents or even a perceived breach of our security measures could cause us to experience reputational harm, loss of clients, regulatory actions, sanctions or other statutory penalties, litigation, liability for failure to safeguard our clients' information or financial losses that are either not insured against or not fully covered through any insurance we maintain. As a global company, we could also be impacted by existing and proposed U.S. and foreign laws and regulations, as well as government policies and practices related to cybersecurity, privacy and data protection. Any of the foregoing could materially impact our business, operating results or financial condition.

A significant decline in the volume of transactions we handle could have a material adverse effect on our results of operations.

Under our contracts with NAPM, we earn revenue for NPAC Services on an annual, fixed-fee basis. However, in the event that the volume of transactions in a given year is above or below the contractually established volume range for that year, the fixed-fee may be adjusted up or down, respectively, with any such adjustment being applied to the following year's invoices. In addition, under our contract with the Canadian LNP Consortium Inc., we earn revenue on a per transaction basis. As a result, if industry participants in the United States reduce their usage of our services in a particular year to levels below the established volume range for that year or if industry participants in Canada reduce their usage of our services from their current levels, our revenue and results of operations may suffer. For example, consolidation in the industry could result in a decline in transactions if the remaining carriers decide to handle changes to their networks internally rather than use the services that we provide. Moreover, if customer turnover among carriers in the industry stabilizes or declines, or if carriers do not compete vigorously to lure customers away from their competitors, use of our telephone number portability and other services may decline. If carriers develop internal systems to address their infrastructure needs, or if the cost of such transactions makes it impractical for a given carrier to use our services for these purposes, we may experience a reduction in transaction volumes. Carriers might be able to charge consumers directly for our services, which could also have an adverse impact on transaction volumes. Finally, the trends that we believe will drive the future demand for our services, such as the emergence of IP services, growth of wireless services, consolidation in the industry, and pressure on carriers to reduce costs, may not actually result in increased demand for our existing services or for the ancillary directory services that we expect to offer, which would harm our future revenue and growth prospects.

Certain of our client contracts may be terminated or modified at any time prior to their completion, which could lead to an unexpected loss of revenue, adversely affect our operating performance and damage our reputation.

In addition to our contracts with NAPM, we provide other revenue-generating services to clients in the communications sector and a wide variety of other sectors, trade associations, and government agencies. For example, we serve as the provider of NPAC Services in Canada; as operator of the .biz registry under contract with ICANN; as operator of the .co registry under a contract with the government of Colombia; as the operator of the .au registry; and as the provider of information services to a wide variety of major corporations, major retailers and marketers. Each of these contracts provides for early termination in limited circumstances, most notably if we are in default. In addition, our contracts to serve as the North American Numbering Plan Administrator and as the National Pooling Administrator, each of which is with the U.S. government, may be terminated by the government at will.

If we fail to meet the expectations of the FCC, the U.S. Department of Commerce or any of our other clients that has the right to unilaterally terminate their contracts with us for any reason, including for performance-related or other reasons, the clients may unilaterally terminate the contracts or require us to modify the contracts in ways unfavorable to us, either of which could lead to an unexpected loss of revenue and adversely affect our operating performance. The loss or significant modification of a major contract also could cause us to suffer a loss of reputation that would make it more difficult for us to compete for contracts to provide similar services in the future. Further, a termination arising out of our default under a contract could expose us to liability for breach of contract.

Failure to comply with neutrality requirements could result in loss of significant contracts.

Pursuant to orders and regulations of the U.S. government and provisions contained in our contracts with NAPM, we must comply with certain ongoing neutrality requirements, meaning generally that we cannot favor any particular telecommunications service provider, interconnected VoIP provider, telecommunications industry segment, technology, or group of telecommunications consumers over any other telecommunications or VoIP service provider, industry segment, technology, or group of consumers in the conduct of our business. The FCC oversees our compliance with the neutrality requirements applicable to us in connection with some of the services we provide. We provide to the FCC and the NANC, a federal advisory committee established by the FCC to advise and make recommendations on telephone numbering issues, regular certifications relating to our compliance with these requirements. Our ability to comply with the neutrality requirements to which we are subject may be affected by the activities of our stockholders or lenders. For example, if the ownership of our capital stock subjects us to undue influence by parties with a vested interest in the outcome of numbering administration, the FCC could determine that we are not in compliance with our neutrality obligations. Our failure to continue to comply with the neutrality requirements to which we are subject under applicable orders and regulations of the U.S. government and commercial contracts may result in fines, corrective measures, termination of our contracts, or exclusion from bidding on future contracts, any one of which could have a material adverse effect on our results of operations.

Regulatory and statutory changes that affect us or the communications industry in general may increase our costs or otherwise adversely affect our business.

Certain of our domestic operations and many of our clients' operations are subject to regulation by the FCC and other federal, state and local agencies. As communications technologies and the communications industry continue to evolve, the statutes governing the communications industry or the regulatory policies of the FCC may change. If such statutory or regulatory changes were to occur, the demand for many of our services could change in ways that we cannot predict and our revenue could decline, or our costs could increase due to such changes. These risks include the ability of the federal government, most notably the FCC, the Department of Commerce and the Federal Trade Commission, to:

- increase or change regulatory oversight over services we provide;
- prohibit us from entering into new contracts or extending existing contracts to provide services to the communications industry based on actual or suspected violations of our neutrality requirements, business performance concerns, or other reasons;
- adopt or modify statutes, regulations, policies, procedures or programs in a way that could cause changes to our operations or costs or the operations of our clients (e.g., regulatory changes to support IP Transition);

- appoint, or cause others to appoint, substitute or add additional parties to perform the services that we currently provide; and
- prohibit or restrict the provision or export of new or expanded services under our contracts, or prevent the introduction of other services not under the contracts based upon restrictions within the contracts or in FCC policies.

In addition, we are subject to risks arising out of the delegation of the Department of Commerce's responsibilities for the domain name system to ICANN. Changes in the regulations or statutes to which our clients are subject could cause our clients to alter or decrease the services they purchase from us. We cannot predict when, or upon what terms and conditions, further regulation, deregulation or litigation designed to delay or prevent the introduction of new top-level domains might occur or the effect future regulation or deregulation may have on our business.

Further, the current regulatory environment for Internet communications, products and services generally is uncertain and various laws and governmental regulations, both in the U.S. and abroad, governing Internet related services, related communications services and information technologies remain largely unsettled. It may take several years to determine whether and how existing laws, such as those governing intellectual property, privacy, libel, telecommunications services and taxation, apply to the Internet and to related products and services such as ours, and substantial resources may be required to comply with regulations or bring any non-compliant business practices into compliance with such regulations. Our failure or the failure of our clients and others with whom we transact business to comply with existing or future regulatory or other legal requirements could materially adversely affect our business, financial condition and results of operations.

If we are unable to protect our intellectual property rights adequately, the value of our services and solutions could be diminished.

Our success is dependent in part on obtaining, maintaining and enforcing our proprietary rights and our ability to avoid infringing on the proprietary rights of others. While we take precautionary steps to protect our technological advantages and intellectual property and rely in part on patent, trademark, trade secret and copyright laws, the precautionary steps we have taken may not completely protect our intellectual property rights. Effectively policing our intellectual property is time consuming and costly, and the steps taken by us may not prevent infringement of our intellectual property or proprietary rights in our products, technology and trademarks, particularly in foreign countries where in many instances the local laws or legal systems do not offer the same level of protection as in the United States. Further, because patent applications in the United States are maintained in secrecy until either the patent application is published or a patent is issued, we may not be aware of third-party patents, patent applications and other intellectual property relevant to our services and solutions that may block our use of our intellectual property or may be used by third-parties who compete with our services and solutions. As we expand our business and introduce new services and solutions, there may be an increased risk of infringement and other intellectual property claims by third-parties. From time to time, we and our clients may receive claims alleging infringement of intellectual property rights, or may become aware of certain third-party patents that may relate to our services and solutions. Additionally, we monitor our use of open source software to avoid uses that would require us to disclose our proprietary source code or violate applicable open source licenses, but if we engaged in such uses inadvertently, we could be required to take remedial action or release certain of our proprietary source code. These scenarios could have a material adverse effect on our business, financial condition and operating results.

Additionally, some of our client agreements require that we indemnify our clients for infringement claims resulting from their use of our intellectual property embedded in their products. Any litigation regarding patents or other intellectual property could be costly and time consuming and could divert our management and key personnel from our business operations. The complexity of the technology involved, and the number of parties holding intellectual property within the communications industry, increase the risks associated with intellectual property litigation. Moreover, the commercial success of our services and solutions may increase the risk that an infringement claim may be made against us. Royalty or licensing arrangements, if required, may not be available on terms acceptable to us, if at all. Any infringement claim successfully asserted against us or against a client for which we have an obligation to defend could result in costly litigation, the payment of substantial damages, and an injunction that prohibits us from continuing to offer the service or solution in question, any of which could have a material adverse effect on our business, financial condition and operating results.

The markets for our services are competitive, and if we do not adapt our organization and services to meet rapid technological and market change, we could lose clients or market share.

Our future growth is largely dependent upon our ability to continue to adapt our products, services, and organization to meet the demands of rapidly evolving markets and industry standards. We compete against well-funded providers of data registry, information services, as well as communications software companies and system integrators. In addition, our industry is characterized by rapid technological change, evolving industry standards, and frequent new service offerings. Significant technological changes could make our technology and services obsolete.

Accordingly, our future success depends on our ability to: (i) adapt our products, services, organization, workforce, and sales strategies to fit the rapidly changing needs of current and future clients; (ii) identify emerging technological and other trends in our target markets; and (iii) develop or acquire and bring to market competitive products and services quickly and cost-effectively by continually improving the features, functionality, reliability and responsiveness of our services, and by developing new features, services and applications to meet changing client needs. Our ability to take advantage of opportunities in the market may require us to invest considerable resources adapting our organization and capabilities to support development of products and systems that can support new services or be integrated with new technologies and incur other expenses well in advance of our ability to generate revenue from these services. These development efforts may divert resources from other potential investments in our businesses, management time and attention from other matters, and may not lead to the development of new products or services on a timely basis.

We cannot guarantee that we will be able to adapt to these challenges or respond successfully or in a cost-effective way, particularly in the early stages of launching a new service. Further, we may experience delays in the development of one or more features of our solutions, which could materially reduce the potential benefits to us for providing these services. Potential clients may not adopt our solutions and we may not be able to reach acceptable contract terms with clients to provide these services.

As a result, the failure to effectively adapt our organization, products and services to the needs of our markets or the failure of our offerings to gain market acceptance, could significantly reduce our revenues, increase our operating costs or otherwise materially and adversely affect our business, financial condition, results of operations and cash flows. Our failure to adapt to meet market demand in a cost-effective manner could adversely affect our ability to compete and retain clients or market share.

If we are not able to obtain the data required to provide our information services, or we obtain inaccurate data, our operating results could be adversely affected.

Much of the data that we use in connection with our information services is purchased or licensed from third parties, obtained from public record sources or provided to us as part of a broader business relationship with a client. Our contracts with third party data providers contain service level requirements, but do not guarantee, nor can we ensure, that the data provided under such contracts will be accurate. If we are not able to obtain this data on favorable economic terms or otherwise, or link to this data, or if the data we obtain is inaccurate, our ability to provide information services to our clients could be materially adversely impacted, which could result in decreased revenue, net income and earnings per share.

Regulatory and statutory requirements, changes in requirements regarding privacy and data protection or public perceptions of data usage may increase our costs or otherwise adversely affect our business.

Our business operations are subject to a variety of complex privacy and data protection laws and regulations in the United States at both the state and federal levels, and in other jurisdictions. These statutory and regulatory requirements are evolving, increasing in complexity and number, and may change significantly. How companies collect, process, use, store, share or transmit personal data is subject to increasing scrutiny by governments as well as the public, which could influence the adoption of legislation or regulation. Certain collection and use of personal data may engender distrust of businesses based on such activities, which may lead to additional governmental restrictions on and reduced demand for our information services. New statutory or regulatory developments could restrict how we collect, manage, aggregate and use information. There may be conflicts among the privacy and data protections laws adopted by the various countries in which we operate. Judicial and regulatory application and interpretation of these statutory and regulatory requirements are often uncertain and could be interpreted in ways that could restrict our use of data to provide information services to our clients or otherwise harm our business. We may need to incur significant costs or modify our business practices and/or our services in order to comply with existing or revised laws and regulations, or to adapt to changing public attitudes about data usage. For example, we previously relied on a common European Union — United States "safe harbor" framework for the transfer of certain personal information from the European Union to the United States. In October 2015, the European Court of Justice ruled that the safe harbor framework was invalid. As a result, regulators in individual European Union member states will retain control over data privacy requirements and we may be subject to additional obligations that could require us to change our business practices and/or incur additional costs. Any restrictions on our ability to provide services to clients or costs to modify our business practices and/or services could have a material adverse effect on our results of operations or prospects. If we are not able to comply with applicable laws, we may be subject to significant monetary penalties, orders demanding that we cease alleged noncompliant activities, fines and/or criminal prosecution in one or more jurisdictions. These or other remedies could have a material adverse effect on our results of operation or financial condition. Our failure or alleged failure to comply with privacy and data protection laws, or with public attitudes about data usage, including any perception of our practices as an invasion of privacy, could harm our reputation, result in legal actions against us by governmental authorities or private claimants or cause us to lose clients, any of which could have a material adverse effect on our results of operations or prospects.

Reorganization activities could disrupt our business and affect our results of operations.

We have previously taken steps, including reductions in force, office closures, and internal reorganizations to reduce the size and cost of our operations, improve efficiencies, and align our organization and staffing to better match our market opportunities and our technology development initiatives. We may take similar steps in the future as we seek to realize additional operating synergies and profitability objectives, or better reflect changes in the strategic direction of our business. These changes could be disruptive to our business, including our research and development efforts, and may result in significant expense, including accounting charges for technology-related write-offs, workforce reduction costs and charges relating to consolidation of facilities. Substantial expense or charges resulting from reorganization activities could adversely affect our results of operations and use of cash in those periods in which we undertake such actions.

If we are unable to manage our costs and maintain our quality of service, our profits could be adversely affected.

Historically, sustaining our growth has placed significant demands on our management as well as on our administrative, operational and financial resources. For us to continue to manage our expanded operations, as well as any future growth, we must continue to improve our operational, financial and management information systems and expand, motivate and manage our workforce. If our quality of service is compromised because we are unable to successfully manage our costs, or if new systems that we implement in connection with any future restructuring to assist in managing our operations do not produce the expected benefits, we may experience higher turnover in our client base and our revenue and profits could be adversely affected.

Changes in our tax rates or exposure to additional income tax liabilities could affect our profitability. In addition, audits by tax authorities could result in additional tax payments for prior periods.

We are subject to income taxes in the U.S. and in various non-U.S. jurisdictions. Our effective tax rate can be affected by changes in our mix of earnings in countries with differing statutory tax rates (including as a result of business acquisitions and dispositions), changes in the valuation of deferred tax assets and liabilities, establishment of accruals related to contingent tax liabilities and period-to-period changes in such accruals, the expiration of statutes of limitations, the implementation of tax planning strategies and changes in tax laws. The impact of these factors may be substantially different from period to period. Due to the ambiguity of tax laws and the subjectivity of factual interpretations, our estimates of income tax liabilities may differ from actual payments or assessments. In addition, our income tax returns are subject to ongoing audits by U.S. federal, state and local tax authorities and by non-U.S. tax authorities. If these audits result in payments or assessments different from our reserves, our future results may include unfavorable adjustments to our tax liabilities, which may negatively affect our results of operations. Moreover, indemnification rights that we may have in respect of tax liabilities may be insufficient or unavailable to protect us against such liabilities.

Our operating results and margins could fluctuate due to factors relating to stock-based compensation.

Similar to many other companies, we use stock awards as a form of compensation for certain employees and non-employee directors. We must recognize the fair value of all stock-based awards, including grants of employee stock options, in our financial statements. The valuation model we use to estimate the fair value of our stock-based awards requires us to make several estimates and assumptions, such as the expected holding period of the awards and expected price volatility of our common stock. The amount we recognize for stock-based compensation expense could vary materially depending on changes in these estimates and assumptions. Other factors that could impact the amount of stock-based compensation expense we recognize include changes in the mix and type of stock-based awards we grant, changes in our compensation plans or tax rate, changes in the award forfeiture rate and differences in our company's actual operating results compared to management's estimates for performance-based awards.

Changes in accounting principles and guidance, or their interpretation, could result in unfavorable accounting charges or effects, including changes to previously filed financial statements.

We prepare our consolidated financial statements in accordance with U.S. generally accepted accounting principles, or U.S. GAAP. These principles are subject to interpretation by the SEC and various bodies formed to interpret and create appropriate accounting principles and guidance. A change in these principles or guidance, or in their interpretations, may have a significant effect on our reported results and may retroactively affect previously reported results.

We must recruit and retain skilled employees to succeed in our business, and our failure to recruit and retain qualified employees could harm our ability to maintain and grow our business.

We believe that our success depends upon the continued contributions of our management team and other key employees, including our engineering, product, sales and marketing and operations personnel. Our success is also contingent upon our continuing ability to recruit, hire, develop, motivate and retain highly skilled employees for all areas of our organization. Any of the following factors may affect our ability to motivate and retain our existing employees and recruit new employees:

- competition for employees with the skills we require to operate and grow our business is intense, and, as a result, our competitors may seek to hire our key employees;
- despite our comprehensive compensation packages, we may not be successful in attracting new employees and retaining and motivating our existing employees; and
- any adverse change in reputation, whether as a result of an unfavorable outcome of our petition for review of the FCC Order, decrease in revenue due to the termination of our contracts with NAPM, or a decline in the market price of our common stock.

Our ability to maintain and grow our business and to compete effectively could be impaired if we are unable to retain and motivate our existing employees and recruit new employees. If we are unable to retain existing employees, we may incur additional costs to recruit and train new employees, which may decrease our profits.

Our failure to achieve or sustain market acceptance of our services at desired pricing levels could impact our ability to maintain profitability or positive cash flow.

Our competitors and clients may cause us to reduce the prices we charge for our services and solutions. The primary sources of pricing pressure include:

- competitors offering our clients services at reduced prices, or bundling and pricing services in a manner that makes it difficult for us to compete;
- clients with a significant volume of transactions may have enhanced leverage in pricing negotiations with us; and
- potential clients may find it economically advantageous to handle certain functions internally instead of using our services.

We may not be able to offset the effects of any price reductions by increasing the number of transactions we handle or the number of clients we serve, by generating higher revenue from enhanced services or by reducing our costs.

Our expansion into international markets may be subject to uncertainties that could increase our costs to comply with regulatory requirements in foreign jurisdictions, disrupt our operations, and require increased focus from our management.

We currently provide services to clients located in various international locations and, with our recent acquisitions of Bombora Technologies Pty Ltd. and MarketShare Partners, LLC, we intend to pursue additional international business opportunities. International operations and business expansion plans are subject to numerous additional risks, including:

- economic and political risks in foreign jurisdictions in which we operate or seek to operate;
- difficulties in enforcing contracts and collecting receivables through foreign legal systems;
- differences in foreign laws and regulations, including foreign tax, intellectual property, privacy, labor and contract law, as well as unexpected changes in legal and regulatory requirements;
- differing technology standards and pace of adoption;
- export restrictions on encryption and other technologies;
- fluctuations in currency exchange rates and any imposition of currency exchange controls;
- increased competition by local, regional, or global companies;
- difficulties in maintaining positive relationships with foreign governments and government officials; and
- difficulties associated with managing a large organization spread throughout various countries.

If we continue to expand our business globally, our success will depend, in large part, on our ability to anticipate and effectively manage these and other risks associated with our international operations. However, any of these factors could adversely affect our international operations and, consequently, our operating results.

If we are not successful in growing our information services at the rate that we anticipate, our operating results could be negatively impacted.

Our ability to successfully grow our information services depends on a number of different factors, including market acceptance of our information services, the expansion of our information services capabilities and geographic coverage, and continued public and regulatory acceptance of data usage for the provision of our information services solutions, among others. If we are not successful in growing our information services business at the rate that we anticipate, we may not meet expected growth and gross margin projections or expectations, and our operating results, prospects and the market price of our securities could be adversely affected.

We may be unable to complete acquisitions, or we may undertake acquisitions that increase our costs or liabilities or are disruptive to our business.

We have made a number of acquisitions in the past, and will continue to pursue acquisitions selectively in the future. We may not be able to locate acquisition candidates at prices that we consider appropriate or on terms that are satisfactory to us. If we do identify an appropriate acquisition candidate, we may not be able to successfully negotiate the terms of the acquisition or, if the acquisition occurs, integrate the acquired business into our existing business. Acquisitions of businesses or other material operations may require additional debt or equity financing, resulting in additional leverage or dilution to our stockholders.

We may not be able to successfully integrate the operations of businesses that we acquired or realize the anticipated benefits of the acquisitions, which could have a material adverse effect on our business and results of operations.

Integration of acquired business operations, including our recent acquisitions of Bombora Technologies Pty Ltd, MarketShare Partners, LLC, and the acquisition of caller authentication assets from Transaction Network Services, Inc., is a time consuming process that could disrupt our business by diverting significant management attention and resources away from day-to-day operations. The difficulties of integration may be increased by the necessity of coordinating geographically dispersed organizations, integrating personnel with disparate business backgrounds and combining different corporate cultures. It is also possible that the integration process could result in the loss of key employees, the disruption of each company's ongoing businesses or inconsistencies in standards, controls, procedures and policies that adversely affect our ability to maintain relationships with clients, suppliers, distributors, creditors, or lessors, or to achieve the anticipated benefits of the acquisition. Further, if we cannot successfully integrate an acquired company's internal control over financial reporting, the reliability of our financial statements may be impaired and we may not be able to meet our reporting obligations under applicable law. Any such impairment or failure could cause investor confidence and, in turn, the market price of our common stock, to be materially adversely affected.

Even if we are able to integrate acquired businesses successfully, we may not realize the full benefits of the cost efficiencies or synergies or other benefits that we anticipated when selecting our acquisition candidates or that these benefits will be achieved within a reasonable period of time. In addition, businesses we acquire may not be able to retain their existing business relationships, customers and/or key employees. We may be required to invest significant capital and resources after the acquisition to maintain or grow the businesses that we acquire. In addition, we may need to record write-downs from impairments of goodwill, intangible assets, or long-lived assets, or record adjustments to the purchase price that occur after the closing of the transaction, which could reduce our future reported earnings. If we fail to successfully integrate and support the operations of the businesses we acquire, or if anticipated revenue enhancements and cost savings are not realized from these acquired businesses, our business, results of operations and financial condition would be materially adversely affected. Further, acquired businesses may have liabilities, neutrality-related risks or adverse operating issues that we fail to discover through due diligence prior to the acquisition. These liabilities could include employment, retirement or severance-related obligations under applicable law, other benefits arrangements, legal claims, warranty or similar liabilities to clients, claims by or amounts owed to vendors, tax liabilities or other amounts owed by the acquired companies. The failure to discover such issues prior to such acquisition, should they be significant, could have a material adverse effect on our business and results of operations.

Failure to maintain effective internal controls over financial reporting could have a material adverse effect on our business, operating results and stock price.

Section 404 of the Sarbanes-Oxley Act of 2002 requires that we include in our annual report a report containing management's assessment of the effectiveness of our internal controls over financial reporting as of the end of our fiscal year and a statement as to whether or not such internal controls are effective. Compliance with these requirements has resulted in, and is likely to continue to result in, significant costs and the commitment of time and operational resources. Changes in our business, including certain initiatives to transform business processes, to invest in information systems or to transition certain functions to third party resources or providers, will necessitate modifications to our internal control systems, processes and information systems as we optimize our business and operations. We cannot be certain that our current design for internal control over financial reporting, or any additional changes to be made, will be sufficient to enable management to determine that our internal controls are effective for any period, or on an ongoing basis. If we are unable to assert that our internal controls over financial reporting are effective, market perception of our financial condition and the trading price of our stock may be adversely affected, and client perception of our business may suffer.

Risks related to financial market conditions

We may be unable to raise additional capital, if needed, or to raise capital on favorable terms.

The general economic and capital market conditions in the United States and other parts of the world deteriorated significantly in 2008, adversely affecting access to capital and increasing the cost of capital. Although conditions have improved, a large degree of uncertainty remains both domestically and abroad, which continues to adversely impact access to, and the cost of, capital. If funds generated by our operations or available under our Amended 2013 Credit Facilities are insufficient to fund our future activities, including acquisitions, organic business ventures, or capital expenditures, we may need to raise additional funds through public or private equity or debt financing.

If unfavorable capital market conditions exist when we seek additional financing, we may not be able to raise sufficient capital on favorable terms or at all. In addition, we cannot be certain when our contracts to provide NPAC Services will terminate. On January 27, 2016, the NAPM Transition Oversight Manager published a presentation containing a preliminary overall transition timeline for LNPA services. This preliminary timeline showed the transition period extending through the third quarter of 2017. After these contracts terminate, our annual revenue will decrease by approximately $500 million. Furthermore, we significantly increased our indebtedness for borrowed money in 2015 from $783.3 million as of December 31, 2014 to $1.11 billion as of December 31, 2015. The loss of revenue when our contracts to provide NPAC Services terminate and/or our additional indebtedness for borrowed money may adversely affect our ability to raise sufficient capital on favorable terms or at all. In addition, the increased outstanding debt balance under our credit facilities and the corresponding increase in our leverage ratio may also make it more difficult or more expensive for us to obtain additional debt financing or other sources of capital. Failure to obtain capital on a timely basis could have a material adverse effect on our results of operations and we may not be able to fund further organic and inorganic growth of our business.

Risks related to the notes and our other indebtedness

Our indebtedness could adversely affect our financial condition and prevent us from fulfilling our obligations under the notes.

As of December 31, 2015, borrowings under our 2013 Credit Facilities, Senior Notes and 2015 Incremental Term Facility were approximately $1.11 billion, and we had unused revolving commitments of $8.2 million (after giving effect to borrowings of $175.0 million and $16.8 million of outstanding letters of credit). In addition, our 2013 Term Facility allows us to request one or more increases to the available term commitments under such facility. We are entitled to request such increases in an amount such that, after giving effect to such increases, either (a) the aggregate amount of increases does not exceed $400 million or (b) our consolidated secured leverage ratio on a pro forma basis after giving effect to any such increase is below 2.50 to 1.00. As of December 31, 2015, the total amount of such potential incremental increases we could request was approximately $327.0 million.

Subject to the limits contained in the credit agreement that governs our 2013 Term Facility and 2015 Incremental Term Facility, the indenture that governs the Senior Notes and our other debt instruments, we may be able to incur substantial additional debt from time to time to finance investments or acquisitions, or for other general corporate purposes. If we do so, the risks related to our level of debt could intensify. Our level of debt could have important consequences to the holders of our securities, including the following:

- making it more difficult for us to satisfy our obligations with respect to the Senior Notes and our other debt;
- limiting our ability to obtain additional financing to fund future acquisitions or other general corporate requirements;
- requiring a substantial portion of our cash flows to be dedicated to debt service payments instead of other purposes, thereby reducing the amount of cash flows available for acquisitions and other general corporate purposes;
- increasing our vulnerability to general adverse economic and industry conditions;
- exposing us to the risk of increased interest rates as certain of our borrowings, including borrowings under our 2013 Term Facility and 2015 Incremental Term Facility, are at variable rates of interest;
- limiting our flexibility in planning for and reacting to changes in the industry in which we compete;
- placing us at a disadvantage compared to other, less leveraged competitors; and
- increasing our cost of borrowing.

In addition, the indenture that governs the Senior Notes and the credit agreement that governs our 2013 Term Facility and 2015 Incremental Term Facility contains restrictive covenants that limit our ability to engage in activities that may be in our long-term best interest. Our failure to comply with those covenants could result in an event of default which, if not cured or waived, could result in the acceleration of the repayment of all our debt.

We may not be able to generate sufficient cash to service all of our indebtedness, and may be forced to take other actions to satisfy our obligations under our indebtedness, which may not be successful.

Our ability to make scheduled payments on or refinance our debt obligations depends on our financial condition and operating performance, which are subject to prevailing economic and competitive conditions and to certain financial, business, legislative, regulatory and other factors beyond our control, including the uncertainty regarding future extensions of our contracts with NAPM. We may be unable to maintain a level of cash flows from operating activities sufficient to permit us to pay the principal, premium, if any, and interest on our indebtedness.

If our cash flows and capital resources are insufficient to fund our debt service obligations, we could face substantial liquidity problems and could be forced to reduce or delay investments and capital expenditures or to dispose of material assets or operations, seek additional debt or equity capital or restructure or refinance our indebtedness. We may not be able to effect any such alternative measures, if necessary, on commercially reasonable terms or at all and, even if successful, those alternative actions may not allow us to meet our scheduled debt service obligations. The credit agreements that govern our 2013 Term Facility and 2015 Incremental Term Facility and the indenture that governs the Senior Notes restrict our ability to dispose of assets and use the proceeds from those dispositions and also restrict our ability to raise debt or equity capital to be used to repay other indebtedness when it becomes due. We may not be able to consummate those dispositions or to obtain proceeds in an amount sufficient to meet any debt service obligations then due.

Our inability to generate sufficient cash flows to satisfy our debt obligations would materially and adversely affect our financial position and results of operations and our ability to satisfy our debt obligations.

If we cannot make scheduled payments on our debt, we will be in default and holders of the Senior Notes could declare all outstanding principal and interest to be due and payable, the lenders under our 2013 Term Facility and 2015 Incremental Term Facility could terminate their commitments to loan money, the lenders could foreclose against the assets securing their borrowings and we could be forced into bankruptcy or liquidation.

Our variable rate indebtedness subjects us to interest rate risk, which could cause our debt service obligations to increase significantly.

Borrowings under our credit facilities are at variable rates of interest and expose us to interest rate risk. If interest rates were to increase, our debt service obligations on the variable rate indebtedness would increase even though the amount borrowed remained the same, and our net income and cash flows, including cash available for servicing our indebtedness, will correspondingly decrease. Assuming all loans are fully drawn, each quarter point change in interest rates would result in a $0.5 million change in annual interest expense on our indebtedness under our credit facilities. In the future, we may enter into interest rate swaps that involve the exchange of floating for fixed rate interest payments in order to reduce interest rate volatility. However, we may not maintain interest rate swaps with respect to all of our variable rate indebtedness, and any swaps we enter into may not fully mitigate our interest rate risk.

A lowering or withdrawal of the ratings assigned to our debt securities by rating agencies may increase our future borrowing costs and reduce our access to capital.

Our debt currently has a non-investment grade rating, and any rating assigned could be lowered or withdrawn entirely by a rating agency if, in that rating agency's judgment, future circumstances relating to the basis of the rating, such as adverse changes, so warrant. Any downgrade by either Standard & Poor's or Moody's could increase the interest rate on our credit facilities, result in higher borrowing costs and decrease earnings. Any future adverse changes to our ratings likely would make it more difficult or more expensive for us to obtain additional debt financing.

Risks Related to Our Common Stock

Our common stock price may be volatile.

The market price of our Class A common stock has fluctuated, and may continue to fluctuate, widely. Fluctuations in the market price of our Class A common stock could be caused by many things, including:

- our perceived prospects and the prospects of the Telecom, Internet and data analytics industries in general;
- differences between our actual financial and operating results and those expected by investors and analysts;

- changes in analysts' recommendations or projections;
- uncertainty about the length of the remaining term under our contracts with NAPM;
- an unfavorable outcome, or uncertainty about the outcome, of our legal challenge to the FCC Order approving a new LNPA;
- changes in general valuations for communications and data analytics companies;
- adoption or modification of regulations, policies, procedures or programs applicable to our business;
- sales of our Class A common stock by our officers, directors or principal stockholders;
- sales of significant amounts of our Class A common stock in the public market, or the perception that such sales may occur;
- sales of our Class A common stock due to a required divestiture under the terms of our certificate of incorporation; and
- changes in general economic or market conditions and broad market fluctuations.

Each of these factors, among others, could have a material adverse effect on the market price of our Class A common stock. Recently, the stock market in general has experienced extreme price fluctuations. This volatility has had a substantial effect on the market prices of securities issued by many companies for reasons unrelated to the operating performance of the specific companies. Some companies that have had volatile market prices for their securities have had securities class action suits filed against them. Such a lawsuit was filed against us in July 2014. While this lawsuit was dismissed, if another class action lawsuit were to be filed against us, regardless of the outcome, it could result in substantial costs and a diversion of our management's attention and resources. This could have a material adverse effect on our business, prospects, financial condition and results of operations.

Delaware law and provisions in our certificate of incorporation and bylaws could make a merger, tender offer or proxy contest difficult, and the market price of our Class A common stock may be lower as a result.

We are a Delaware corporation, and the anti-takeover provisions of the Delaware General Corporation Law may discourage, delay or prevent a change in control by prohibiting us from engaging in a business combination with an interested stockholder for a period of three years after the person becomes an interested stockholder, even if a change of control would be beneficial to our existing stockholders. In addition, our certificate of incorporation and bylaws may discourage, delay or prevent a change in our management or control over us that stockholders may consider favorable. Our certificate of incorporation and bylaws:

- authorize the issuance of "blank check" preferred stock that could be issued by our Board of Directors to thwart a takeover attempt;
- prohibit cumulative voting in the election of directors, which would otherwise enable holders of less than a majority of our voting securities to elect some of our directors;
- require that directors only be removed from office for cause;
- provide that vacancies on the Board of Directors, including newly-created directorships, may be filled only by a majority vote of directors then in office;
- disqualify any individual from serving on our board if such individual's service as a director would cause us to violate our neutrality requirements;
- limit who may call special meetings of stockholders;
- prohibit stockholder action by written consent, requiring all actions to be taken at a meeting of the stockholders; and
- establish advance notice requirements for nominating candidates for election to the Board of Directors or for proposing matters that can be acted upon by stockholders at stockholder meetings.

In addition, our certificate of incorporation and bylaws used to provide for a classified Board of Directors, which will be phased out beginning with the annual meeting of stockholders in 2017 and will no longer be in effect at the time of our annual meeting of stockholders in 2019.

In order to comply with our neutrality requirements, our certificate of incorporation contains ownership and transfer restrictions relating to telecommunications service providers, VoIP providers and their respective affiliates, which may inhibit potential acquisition bids that our stockholders may consider favorable, and the market price of our Class A common stock may be lower as a result.

In order to comply with neutrality requirements imposed by the FCC in its orders and rules, no entity that qualifies as a "telecommunications service provider," "VoIP provider" or an affiliate of a telecommunications service provider or VoIP provider, as defined under the Communications Act of 1934 and FCC rules and orders, may beneficially own 5% or more of our capital stock. In general, a telecommunications service provider is an entity that offers telecommunications services to the public at large, and is, therefore, providing telecommunications services on a common carrier basis. In general, a VoIP provider is an entity that provides two-way voice communications over a broadband connection and interconnects with the public switched telephone network.

Moreover, a party will be deemed to be an affiliate of a telecommunications service provider or a VoIP provider if that party controls, is controlled by, or is under common control with, a telecommunications service provider or a VoIP provider, respectively. A party is deemed to control another if that party, directly or indirectly:

- owns 10% or more of the total outstanding equity of the other party;
- has the power to vote 10% or more of the securities having ordinary voting power for the election of the directors or management of the other party; or
- has the power to direct or cause the direction of the management and policies of the other party.

As a result of this regulation, subject to limited exceptions, our certificate of incorporation (a) prohibits any telecommunications service provider, VoIP provider or affiliate of a telecommunications service provider or VoIP provider from beneficially owning, directly or indirectly, 5% or more of our outstanding capital stock and (b) empowers our Board of Directors to determine whether any particular holder of our capital stock is a telecommunications service provider, VoIP provider or an affiliate of a telecommunications service provider or VoIP provider. Among other things, our certificate of incorporation provides that:

- if one of our stockholders experiences a change in status or other event that results in the stockholder violating this restriction, or if any transfer of our stock occurs that, if effective, would violate the 5% restriction, we may elect to purchase the excess shares (i.e., the shares that cause the violation of the restriction) or require that the excess shares be sold to a third-party whose ownership will not violate the restriction;
- pending a required divestiture of these excess shares, the holder whose beneficial ownership violates the 5% restriction may not vote the shares in excess of the 5% threshold; and
- if our Board of Directors, or its permitted designee, determines that a transfer, attempted transfer or other event violating this restriction has taken place, we must take whatever action we deem advisable to prevent or refuse to give effect to the transfer, including refusal to register the transfer, disregard of any vote of the shares by the prohibited owner, or the institution of proceedings to enjoin the transfer.

Any person who acquires, or attempts or intends to acquire, beneficial ownership of our stock that will or may violate this restriction must notify us as provided in our certificate of incorporation. In addition, any person who becomes the beneficial owner of 5% or more of our stock must notify us and certify that such person is not a telecommunications service provider, VoIP provider or an affiliate of a telecommunications service provider or

VoIP provider. If a 5% stockholder fails to supply the required certification, we are authorized to treat that stockholder as a prohibited owner — meaning, among other things, that we may elect to require that the excess shares be sold. We may request additional information from our stockholders to ensure compliance with this restriction. Our board will treat any "group," as that term is defined in Section 13(d)(3) of the Securities Exchange Act of 1934, as a single person for purposes of applying the ownership and transfer restrictions in our certificate of incorporation.

Nothing in our certificate of incorporation restricts our ability to purchase shares of our capital stock. If a purchase by us of shares of our capital stock results in a stockholder's percentage interest in our outstanding capital stock increasing to over the 5% threshold, such stockholder must deliver the required certification regarding such stockholder's status as a telecommunications service provider, VoIP provider or affiliate of a telecommunications service provider or VoIP provider. In addition, to the extent that a repurchase by us of shares of our capital stock causes any stockholder to violate the restrictions on ownership and transfer contained in our certificate of incorporation, that stockholder will be subject to all of the provisions applicable to prohibited owners, including required divestiture and loss of voting rights.

These restrictions and requirements may:

- discourage industry participants that might have otherwise been interested in acquiring us from making a tender offer or proposing some other form of transaction that could involve a premium price for our shares or otherwise be in the best interests of our stockholders; and
- discourage investment in us by other investors who are telecommunications service providers or VoIP providers or who may be deemed to be affiliates of a telecommunications service provider or VoIP provider, which may decrease the demand for our Class A common stock and cause the market price of our Class A common stock to be lower.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our principal executive offices are located at 21575 Ridgetop Circle, Sterling, Virginia, 20166, and our telephone number at that address is (571) 434-5400. As of December 31, 2015, we leased approximately 640,000 square feet of space, primarily in the United States, and to a lesser extent in Europe, Australia and Colombia, in support of general office and sales operations. We own a 54,000 square foot facility in Englewood, Colorado. As of February 29, 2016, we believe that our facilities have sufficient capacity to meet the current and projected needs of our business. We periodically evaluate the adequacy of existing facilities and the availability of additional facilities, and we believe that additional or alternative space, if needed, will be available as needed in the future on commercially reasonable terms. The following table lists our major locations that are primarily used for administrative, sales, marketing, support and research and development operations:

Leased Property Locations	Approximate Square Footage
Sterling, VA, United States	192,000
McLean, VA, United States	44,000
California, United States	241,000
Kentucky, United States	36,000
Illinois, United States	3,500
Utah, United States	8,000
District of Colombia, United States	13,000
New York, United States	29,000
Melbourne, Australia	15,000
Bogotá, Colombia	3,000
Staines, United Kingdom	3,000
Heredia, Costa Rica	13,000
Bangalore, India	14,500
Hyderabad, India	5,000

Owned Property Locations	Approximate Square Footage
Colorado, United States	54,000

Upon expiration of the property leases, we expect to obtain renewals or to lease alternative space. Lease expiration dates range from 2016 through 2023.

ITEM 3. LEGAL PROCEEDINGS

On July 15, 2014, the Oklahoma Firefighters Pension and Retirement System, or OFPRS, individually and on behalf of all other similarly situated stockholders, filed a putative class action complaint in the United States District Court for the Eastern District of Virginia, Alexandria Division, or the Alexandria Division, against us and certain of our senior executive officers. The OFPRS complaint asserted claims for purported violations of Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 and SEC Rule 10b-5 on behalf of those who purchased our securities between April 19, 2013 and June 6, 2014, inclusive, and sought unspecified compensatory damages, costs and expenses, including attorneys' and experts' fees, and injunctive relief.

On October 7, 2014, the Alexandria Division issued an order appointing lead counsel and designating The Indiana Public Retirement System, or IPRS, as lead plaintiff. On November 6, 2014, the IPRS filed an amended complaint and on December 8, 2014, we moved to dismiss IPRS's amended complaint. On December 22, 2014, IPRS filed its opposition to our motion to dismiss. On December 29, 2014, we filed a reply brief to the IPRS opposition. The Alexandria Division heard oral arguments on the motions on January 22, 2015 and on January 27, 2015, and issued an order granting our motion to dismiss IPRS's amended complaint with prejudice. On February 25, 2015, counsel for IPRS filed a notice of appeal.

On July 28, 2015, the IPRS, on behalf of itself and the proposed settlement class, on the one hand, and certain of our senior executive officers on the other hand, entered into a Stipulation and Agreement of Settlement with the Alexandria Division, which sets forth the terms and conditions of the proposed settlement of the claims. The Alexandria Division granted preliminary approval of the settlement on September 22, 2015. The final hearing before the Alexandria Division took place on December 3, 2015 and a Final Order was entered dismissing all claims with prejudice. The settlement amount did not have a material impact to our consolidated financial position and results of operations.

On April 6, 2015, we filed a Petition for Review asking the U.S. Court of Appeals for the District of Columbia Circuit to "hold unlawful, vacate, enjoin, and set aside" the FCC Order issued on March 27, 2015, approving a recommendation by the NANC for a competitor to serve as the next LNPA. Among other things, we believe the FCC Order violates the notice and comment rulemaking requirements of the Administrative Procedure Act, violates the FCC's rules by selecting an entity that is not impartial or neutral to serve as the next LNPA and is arbitrary, capricious, an abuse of discretion or otherwise contrary to law. On June 19, 2015, the Court of Appeals granted the requests made by third-party petitioners to intervene in the case. On July 21, 2015, the Court of Appeals dismissed the FCC's motion to hold the case in abeyance pending further FCC action and ruled that the issues raised in the FCC's motion to dismiss should be addressed in the parties' briefs on the merits. We filed our initial brief on September 21, 2015; the briefing schedule concluded on December 17, 2015. Oral arguments will take place in 2016.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Market for Our Common Stock

Since June 29, 2005, our Class A common stock has traded on the New York Stock Exchange under the symbol "NSR." As of February 22, 2016, our Class A common stock was held by 80 stockholders of record. The following table sets forth the per-share range of the high and low sales prices of our Class A common stock as reported on the New York Stock Exchange for the periods indicated:

	High	Low
Fiscal year ended December 31, 2014		
First quarter	$49.59	$32.51
Second quarter	$34.38	$24.14
Third quarter	$29.80	$24.74
Fourth quarter	$27.80	$24.35
Fiscal year ended December 31, 2015		
First quarter	$28.30	$20.32
Second quarter	$31.40	$24.43
Third quarter	$32.66	$25.35
Fourth quarter	$30.11	$22.35

There is no established public trading market for our Class B common stock. As of February 22, 2016, our Class B common stock was held by 4 stockholders of record.

Dividends

We did not pay any cash dividends on our Class A or Class B common stock in 2014 or 2015 and we do not expect to pay any cash dividends on our common stock for the foreseeable future. Our 2013 Term Facility limits our ability to declare or pay dividends to an amount up to $100 million per year. We currently intend to retain any future earnings to finance our operations and growth. We are limited by Delaware law in the amount of dividends we can pay. Any future determination to pay cash dividends will be at the discretion of our Board of Directors and will depend on earnings, financial condition, operating results, capital requirements, any contractual restrictions and other factors that our Board of Directors deems relevant.

Purchases of Equity Securities

The following table is a summary of our repurchases of common stock during each of the three months in the quarter ended December 31, 2015:

Month	Total Number of Shares Purchased(1)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs(2)(3)	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs
October 1 through October 31, 2015	482,589	$27.37	464,037	$48,454,160
November 1 through November 30, 2015	92,277	29.13	92,120	—
December 1 through December 31, 2015	2,507	25.31	—	—
Total	577,373	$27.64	556,157	$ —

(1) The number of shares purchased represents shares of common stock tendered by employees to us to satisfy the employees' minimum tax withholding obligations arising as a result of vesting of restricted stock grants under our stock incentive plan. We purchased these shares for their fair market value on the vesting date.

(2) The difference between the total number of shares purchased and the total number of shares purchased as part of publicly announced plans or programs is 21,216 shares, all of which relate to shares surrendered to us by employees to satisfy the employees' minimum tax withholding obligations arising as a result of the vesting of restricted stock grants under our incentive stock plans.

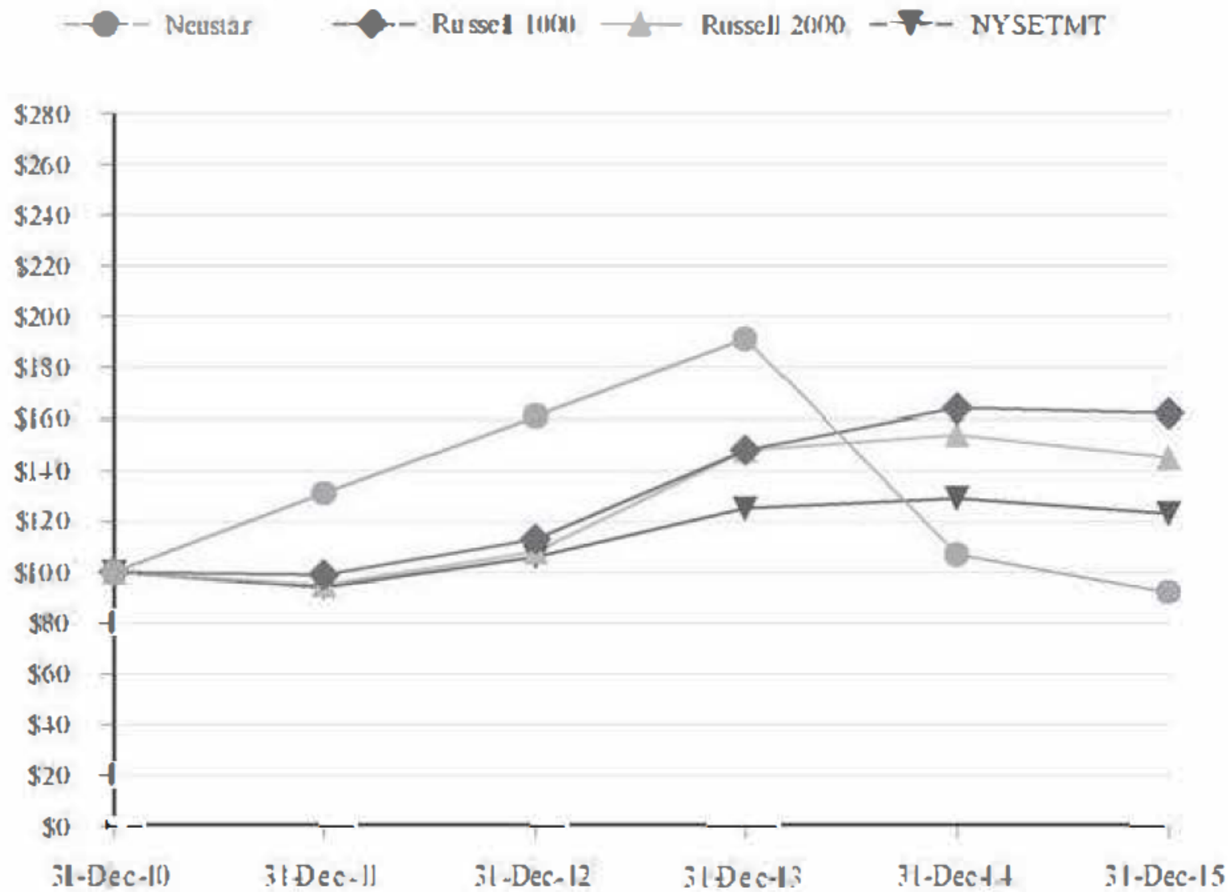
(3) On March 26, 2015, we announced the adoption of a 2015 share repurchase program, which was scheduled to expire on March 25, 2016. The 2015 program authorized the repurchase of up to $150 million of Class A common shares. Under the program, we repurchased 3.8 million shares of our Class A common stock at an average price of $27.65, for a total purchase price of $104.2 million. The program was terminated on November 4, 2015.

Performance Graph

The following chart compares Neustar's cumulative stockholder return on its common stock over the last five fiscal years compared with $100 invested in the Russell 1000 Index, Russell 2000 Index and the NYSE TMT Index, an Index of Technology, Media and Telecommunications companies, each over that same period. We have moved from the Russell 1000 Index, the index used in previous years, to the Russell 2000. For comparative purposes, both the Russell 1000 and Russell 2000 Indices are reflected in the following chart. We will not include the Russell 1000 Index in next year's performance graph.

The comparison assumes reinvestment of dividends. The stock performance in the graph is included to satisfy our SEC disclosure requirements, and is not intended to forecast or to be indicative of future performance.

This performance graph shall not be deemed to be incorporated by reference into our SEC filings and shall not constitute soliciting material or otherwise be considered filed under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended.



ITEM 6. SELECTED FINANCIAL DATA

The tables below present selected consolidated statements of operations data and selected consolidated balance sheet data for each year in the five year period ended December 31, 2015. The selected consolidated statements of operations data for each of the three years ended December 31, 2013, 2014 and 2015, and the selected consolidated balance sheet data as of December 31, 2014 and 2015, have been derived from, and should be read together with, our audited consolidated financial statements and related notes appearing in this report. The selected consolidated statements of operations data for each of the two years ended December 31, 2011 and 2012, and the selected consolidated balance sheet data as of December 31, 2011, 2012 and 2013, have been derived from our audited consolidated financial statements and related notes not included in this report.

The following information should be read together with, and is qualified in its entirety by reference to, the more detailed information contained in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Item 7 of this report and our consolidated financial statements and related notes in Item 8 of this report.

	Year Ended December 31,				
	2011	2012	2013	2014	2015
	(in thousands, except per share data)				
Consolidated Statements of Operations Data:					
Revenue	$620,455	$831,388	$902,041	$963,588	$1,049,958
Operating expense:					
Cost of revenue (excluding depreciation and amortization shown separately below)	137,992	185,965	212,572	247,115	286,236
Sales and marketing	109,855	163,729	178,017	198,142	206,292
Research and development	17,509	29,794	27,993	27,739	25,677
General and administrative	96,317	81,797	93,930	104,970	118,648
Depreciation and amortization	46,209	92,955	100,233	117,785	122,691
Restructuring charges	3,549	489	2	6,521	3,858
	411,431	554,729	612,747	702,272	763,402
Income from operations	209,024	276,659	289,294	261,316	286,556
Other (expense) income:					
Interest and other expense	(6,279)	(34,155)	(34,527)	(26,218)	(33,578)
Interest and other income	1,966	596	357	445	552
Income from continuing operations before income taxes	204,711	243,100	255,124	235,543	253,530
Provision for income taxes, continuing operations	81,137	87,013	92,372	71,849	78,068
Income from continuing operations	123,574	156,087	162,752	163,694	175,462
Income from discontinued operations, net of tax	37,249	—	—	—	—
Net income	$160,823	$156,087	$162,752	$163,694	$ 175,462
Basic net income per common share:					
Continuing operations	$ 1.69	$ 2.34	$ 2.52	$ 2.84	$ 3.21
Discontinued operations	0.51	—	—	—	—
Basic net income per common share	$ 2.20	$ 2.34	$ 2.52	$ 2.84	$ 3.21
Diluted net income per common share:					
Continuing operations	$ 1.66	$ 2.30	$ 2.46	$ 2.75	$ 3.14
Discontinued operations	0.50	—	—	—	—
Diluted net income per common share	$ 2.16	$ 2.30	$ 2.46	$ 2.75	$ 3.14
Weighted average common shares outstanding:					
Basic	72,974	66,737	64,463	57,647	54,643
Diluted	74,496	67,956	66,108	59,535	55,904

	As of December 31,				
	2011	2012	2013	2014	2015
			(in thousands)		
Consolidated Balance Sheet Data:					
Cash, cash equivalents and short-term investments	$ 132,782	$ 343,921	$ 223,309	$ 326,577	$ 89,097
Working capital (deficit)	196,442	368,326	264,245	342,700	(81,428)
Goodwill and intangible assets	910,946	860,665	920,102	994,891	1,716,262
Total assets	1,362,608	1,509,635	1,486,813	1,723,290	2,202,247
Deferred revenue, excluding current portion	10,363	9,922	12,061	27,017	22,998
Long-term note payable and capital lease obligations, excluding current portion	569,587	563,348	591,900	765,359	959,340
Total stockholders' equity	502,634	646,608	589,574	619,483	723,499

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion and analysis in conjunction with the information set forth under "Selected Financial Data" in Item 6 of this report and our consolidated financial statements and related notes in Item 8 of this report. The statements in this discussion related to our expectations regarding our future performance, liquidity and capital resources, and other non-historical statements in this discussion, are forward-looking statements. These forward-looking statements are subject to numerous risks and uncertainties, including, but not limited to, the risks and uncertainties described in "Risk Factors" in Item 1A of this report and "Business — Cautionary Note Regarding Forward-Looking Statements" in Item 1 of this report. Our actual results may differ materially from those contained in or implied by any forward-looking statements.

Overview

In 2015, we strengthened our position as a leader in information services through the build-out of our service offerings and acquisitions. Our information services are predicated on an authoritative identity used to help clients promote and protect their businesses. We continuously strive to improve our authoritative identity. In 2015, we added additional authoritative identity capabilities including mobile advertising identification and attributes such as age, gender and television viewing data. With this foundation, chief marketing officers use our comprehensive suite of services to identify the appropriate audience, activate marketing campaigns, measure campaign performance and conduct full resource allocation planning. Additionally, as a global provider of brand TLDs, companies rely on us to manage their digital presence.

Revenue for the year increased 9.0% to $1.05 billion as compared to $963.6 million in 2014. This increase in revenue was driven by a 19.7% increase in Security Services revenue to $168.0 million as compared to $140.3 million in 2014, a 15.9% increase in Marketing Services revenue to $170.4 million as compared to $147.0 million in 2014, a 6.8% increase in NPAC Services revenue to $507.1 million as compared to $474.8 million in 2014, and a 1.5% increase in Data Services revenue to $204.5 million as compared to $201.4 million in 2014.

On December 9, 2015, we amended our 2013 Credit Facilities and entered into a $350 million incremental term loan facility. The incremental term loan has an annual amortization rate of 40% and matures on January 22, 2018, with our 2013 Credit Facilities. The incremental term loan facility incurs interest at a rate of LIBOR plus 4.00% and the interest on our 2013 Term Facility increased to a rate of LIBOR plus 4.5% in accordance with its terms.

On March 26, 2015, the FCC approved a competitor to serve as the next LNPA and authorized the NAPM to begin contract negotiations with that competitor. On April 6, 2015, we filed a Petition for Review asking the U.S. Court of Appeals for the District of Columbia Circuit to "hold unlawful, vacate, enjoin, and set aside" the FCC's Order approving the North American Numbering Counsel's recommendation. On June 19, 2015, the Court of Appeals granted the requests made by third-party petitioners to intervene in the case. On July 21, 2015, the Court of Appeals dismissed the FCC's motion to hold the case in abeyance pending further FCC action and ruled that the issues raised in the FCC's motion to dismiss should be addressed in the parties' briefs on the merits. We filed our initial brief on September 21, 2015; the briefing schedule concluded on December 17, 2015. Oral arguments will take place in 2016.

On April 7, 2015, we amended our seven regional contracts with the NAPM. Under this amendment, we will provide LNPA services for an annual fixed fee of $496.1 million until the termination of these contracts. The contracts will automatically renew on July 3, 2016 for additional one-year terms commencing as of October 1, 2016, unless NAPM provides a notice of non-renewal at least 90 days prior to the end of the then-current term. Once a notice of non-renewal is provided, NAPM must also provide us with at least 180-days advance notice of its intention to terminate these contracts. We cannot be certain how long we will provide LNPA services. In addition to LNPA services, we will provide certain transition services on a cost-plus basis. On

January 27, 2016, the NAPM Transition Oversight Manager published a presentation containing a preliminary overall transition timeline for LNPA services. This preliminary timeline showed the transition period extending through the third quarter of 2017.

Prior to this amendment, we provided LNPA services under our contracts with NAPM for a fixed fee with a 6.5% annual price escalator. This contract was due to expire on June 30, 2015. The 2015 LNPA service fixed fee under the prior contract terms represents the impact of a 6.5% annual escalator on the 2014 LNPA service fixed fee of $465.8 million, resulting in a 2015 LNPA service fixed fee of $496.1 million. Under the April 7, 2015 amendment, the annual LNPA service fixed fee remains the same at $496.1 million for the duration of the amended term of the contracts. As a result, the amendment did not have an impact on our revenue growth rate for the year ended December 31, 2015.

Loss of the NPAC contracts will have a material adverse impact on our future operating results when compared to our current financial profile. We expect to lose approximately $500 million of annual revenue and this loss will adversely impact our income from operations and operating margin. Additionally, this loss may have a disproportionate material negative impact on our operating margin because of the largely fixed and shared cost structure that is designed to support all of our services. As a result of the uncertain contract end date and due to our cost structure, which is organized by function, we are currently analyzing the impact of the termination of the contracts on our income from operations in an effort to quantify such impacts. Our disclosure will expand as we evaluate the cost structure that will be in place to support our ongoing business or as we learn more about the timing of the NPAC contract termination.

Recent Developments

Management has initiated an organizational review of the business in connection with the integration of our recent acquisitions, the review of our go-to-market strategies and the anticipated loss of our NPAC contracts. While we perform this review, we will maintain the current operating and reporting structure.

Our Company

We were founded to meet the technical and operational challenges of the communications industry when the U.S. government mandated local number portability in 1996. We provide the authoritative solution that the communications industry relies upon to meet this mandate. Since then, we have grown to offer a broad range of real-time information services, including marketing services, security services, and data services.

Our costs and expenses consist of cost of revenue, sales and marketing, research and development, general and administrative, depreciation and amortization, and restructuring charges.

Cost of revenue includes all direct materials costs, direct labor costs, and indirect costs related to the generation of revenue such as indirect labor, outsourced services, materials and supplies, payment processing fees, and general facilities costs. Our primary cost of revenue is personnel costs associated with service implementation, product maintenance, client deployment and client care, including salaries, stock-based compensation and other personnel-related expense. In addition, cost of revenue also includes costs relating to our information technology and systems department, including data costs, network costs, data center maintenance, database management, data processing costs and general facilities costs. Cost of revenue also includes costs relating to developing modifications and enhancements of our existing technology and services, as well as royalties paid to third parties related to our U.S. Common Short Code services and registry gateway services.

Sales and marketing expense consists of personnel costs, such as salaries, sales commissions, travel, stock-based compensation, and other personnel-related expense; costs associated with attending and sponsoring trade shows; facilities costs; professional fees; costs of marketing programs, such as Internet and print marketing programs, as well as costs for product branding, market analysis and forecasting; and client relationship management.

Research and development expense consists primarily of personnel costs, including salaries, stock-based compensation and other personnel-related expense; contractor costs; and the costs of facilities, and computer and support services used in service and technology development.

General and administrative expense consists primarily of personnel costs, including salaries, stock-based compensation, and other personnel-related expense, for our executive, administrative, legal, finance and human resources functions. General and administrative expense also includes facilities, support services and professional services fees.

Depreciation and amortization relates to amortization of identifiable intangibles, and the depreciation of our property and equipment, including our network infrastructure and facilities related to our services.

Restructuring charges relate to the termination of certain employees and reduction in or closure of leased facilities.

Critical Accounting Policies and Estimates

The discussion and analysis of our financial condition and results of operations are based on our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles, or U.S. GAAP. The preparation of these financial statements in accordance with U.S. GAAP requires us to utilize accounting policies and make certain estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingencies as of the date of the financial statements and the reported amounts of revenue and expense during a fiscal period. The U.S. Securities and Exchange Commission, or SEC, considers an accounting policy to be critical if it is important to a company's financial condition and results of operations, and if it requires significant judgment and estimates on the part of management in its application. We have discussed the selection and development of the critical accounting policies with the audit committee of our Board of Directors, and the audit committee has reviewed our related disclosures in this report.

Although we believe that our judgments and estimates are appropriate and reasonable, actual results may differ from those estimates. In addition, while we have used our best estimates based on the facts and circumstances available to us at the time, we reasonably could have used different estimates in the current period. Changes in the accounting estimates we use are reasonably likely to occur from period to period, which may have a material impact on the presentation of our financial condition and results of operations. If actual results or events differ materially from those contemplated by us in making these estimates, our reported financial condition and results of operations could be materially affected. See the information in our filings with the SEC from time to time and Item 1A of this report, "Risk Factors," for certain matters that may bear on our results of operations.

Revenue Recognition

We provide wireline and wireless number portability, implement the allocation of pooled blocks of telephone numbers and provide network management services pursuant to seven contracts with NAPM. The aggregate fees for transactions processed under the contracts are determined by an annual fixed-fee pricing model. If actual volume of transactions in a given year is above or below the contractually established volume range for that year, the annual fixed fee may be adjusted up or down, respectively. At each reporting period, we assess the volume of transactions in comparison to the contractually established volume range for that year and determine the probability of an adjustment, either up or down, to the annual fixed fee. If we determine an adjustment is probable and measurable, we record the adjustment to revenue in the reporting period in which our assessment is made. We have not recorded any adjustments to the annual fixed fee since the inception of these contract terms in January 2009.

For more information regarding our revenue recognition policy, please see Note 2 to our Consolidated Financial Statements in Item 8 of Part II of this report.

Service Level Standards

Some of our private commercial contracts require us to meet minimum service level standards and impose corresponding penalties for failure to meet those standards. We record a provision for these performance-related penalties when we become aware that we have failed to meet required service levels, which results in a corresponding reduction of our revenue.

Business Combinations

We make significant estimates, assumptions, and judgments when valuing acquired assets, assumed liabilities, contractual contingencies and contingent consideration in connection with applying the acquisition method of accounting for business combinations. These assumptions and estimates are based on historical experience, market conditions, and information obtained from the management of the acquired company. Critical estimates in valuing certain intangible assets include, but are not limited to, historical and projected customer retention rates, estimated future cash flows, the appropriate discount rates, and the expected use of the acquired assets and any anticipated cost savings. These estimates are inherently uncertain and unpredictable. In addition, unanticipated events and circumstances may occur which may affect the accuracy or validity of such estimates. These factors are also considered in determining the useful life of the acquired intangible assets.

Goodwill and Intangible Assets

In accordance with the Intangibles-Goodwill and Other Topic of the Financial Accounting Standards Board, or FASB, Accounting Standards Codification, or ASC, we test our goodwill for impairment on an annual basis, or on an interim basis if an event occurs or circumstances change that indicate an impairment may have occurred.

Our 2015 annual goodwill impairment analysis, which we performed for our single reporting unit as of October 1, 2015, did not result in an impairment charge. We compared our enterprise value to our reporting unit carrying value as of October 1, 2015. As a result of this analysis, we determined that the estimated fair value of our reporting unit was substantially in excess of the carrying value. We believe that the assumptions and estimates used to determine the estimated fair value of our reporting unit are reasonable; however, there are a number of factors, including factors outside of our control, such as stock price volatility, that could cause actual results to differ from our estimates.

The fair value of our goodwill and intangible assets could be impacted by future adverse changes including, but not limited to: (a) a significant adverse change in the business climate; (b) a substantial decline in our market capitalization, (c) an adverse action or assessment by a regulator; (d) unanticipated competition and loss of customer contracts; (e) loss of key personnel; or (f) a realignment of our resources or restructuring in response to changes to industry and market conditions. Future adverse changes could cause the fair value of our reporting unit or intangible assets to fall below their respective carrying values, resulting in a potential impairment charge. In addition, changes in our organizational structure or how our management allocates resources and assesses performance could cause us to have more than one operating segment or reporting unit and require a reallocation and impairment analysis of our goodwill and intangible assets under a new organizational structure.

An impairment charge could have a material effect on our consolidated financial statements because of the significance of goodwill and intangible assets to our consolidated balance sheet. As of December 31, 2015, we had \$1.19 billion of goodwill and \$529.3 million of intangible assets.

Accounts Receivable, Revenue Recovery Collections, and Allowance for Doubtful Accounts

Accounts receivable are recorded at the invoiced amount and do not bear interest. In accordance with our contracts with NAPM, we bill a revenue recovery collections fee, or RRC fee, equal to a percentage of monthly billings to our clients. The aggregate RRC fees collected may be used to offset uncollectible receivables from an individual client. On August 1, 2015, the RRC rate was increased from to 0.50% to 0.75% and remained at that level through December 31, 2015. Any accrued RRC fees in excess of uncollectible receivables are paid back to the clients annually on a pro rata basis. All other receivables related to services not covered by the RRC fees are evaluated and, if deemed not collectible, are appropriately reserved.

Income Taxes

We recognize deferred tax assets and liabilities based on temporary differences between the financial reporting bases and the tax bases of assets and liabilities. These deferred tax assets and liabilities are measured using the enacted tax rates and laws that will be in effect when such amounts are expected to reverse or be utilized. The realization of deferred tax assets is contingent upon the generation of future taxable income. When appropriate, we recognize a valuation allowance to reduce such deferred tax assets to amounts that are more likely than not to be ultimately realized. The calculation of deferred tax assets, including valuation allowances, and liabilities requires us to apply significant judgment related to such factors as the application of complex tax laws, changes in tax laws and our future operations. We review our deferred tax assets on a quarterly basis to determine if a valuation allowance is required based upon these factors. Changes in our assessment of the need for a valuation allowance could give rise to a change in such allowance, potentially resulting in additional expense or benefit in the period of change.

Our income tax provision includes U.S. federal, state, local and foreign income taxes and is based on pre-tax income or loss. In determining the annual effective income tax rate, we analyzed various factors, including our annual earnings and taxing jurisdictions in which the earnings were generated, the impact of state and local income taxes and our ability to use tax credits and net operating loss carryforwards.

We assess uncertain tax positions and recognize income tax benefits when, based on the technical merits of a tax position, we believe that if a dispute arose with the taxing authority and was taken to a court of last resort, it is more likely than not (i.e., a probability of greater than 50 percent) that the tax position would be sustained as filed. If a position is determined to be more likely than not of being sustained, the reporting enterprise should recognize the largest amount of tax benefit that is greater than 50 percent likely of being realized upon ultimate settlement with the taxing authority. Our practice is to recognize interest and penalties related to income tax matters in income tax expense.

We file income tax returns in the United States Federal jurisdiction and in many state and foreign jurisdictions. The tax years 2009 through 2014 remain open to examination by the major taxing jurisdictions to which we are subject. During 2015, the IRS completed an examination of the Company's federal income tax return for the years ended 2009 through 2012. The audit resulted in no adjustments. The IRS has initiated an examination of the 2010 federal income tax return of Neustar Information Services, Inc. (formerly TARGUSInformation Corporation), a subsidiary of the Company. We do not currently believe that the outcome will have a material adverse effect on our financial position, results of operations or cash flows.

Stock-Based Compensation

We recognize stock-based compensation expense in accordance with the Compensation — Stock Compensation Topic of the FASB ASC which requires the measurement and recognition of compensation expense for stock-based awards granted to employees based on estimated fair values on the date of grant.

See Note 12 to our Consolidated Financial Statements in Item 8 of Part II of this report for information regarding our assumptions related to stock-based compensation and the amount of stock-based compensation expense we incurred for the years covered in this report.

We estimate the fair value of our restricted stock unit awards based on the fair value of our common stock on the date of grant. Our outstanding restricted stock unit awards are subject to service-based vesting conditions and performance-based vesting conditions. We recognize the estimated fair value of service-based awards, net of estimated forfeitures, as stock-based compensation expense over the vesting period on a straight-line basis. Awards with performance-based vesting conditions require the achievement of specific financial targets at the end of the specified performance period and are subject to the employee's continued employment over the vesting period. We recognize the estimated fair value of performance-based awards, net of estimated forfeitures, as stock-based compensation expense over the vesting period, which considers each performance period or tranche separately, based upon our determination of the level of achievement of the performance targets. At each reporting period, we reassess the level of achievement of the performance targets for the related performance period. Determining the level of achievement of the performance targets involves judgment, and the estimate of stock-based compensation expense may be revised periodically based on changes in performance. If any performance goals specific to the restricted stock unit awards are not met, we do not recognize any compensation cost for such awards, and we reverse any such compensation costs to the extent previously recognized.

During 2015, we revised our estimate of achievement of the performance target for the 2015 performance year, resulting in an increase in stock-based compensation expense of $3.8 million (see Note 12 to our Consolidated Financial Statements in Item 8 of Part II of this report).

Consolidated Results of Operations

Year Ended December 31, 2014 Compared to the Year Ended December 31, 2015

The following table presents an overview of our results of operations for the years ended December 31, 2014 and 2015.

	Years Ended December 31,			
	2014	2015	2014 vs. 2015	
	$	$	$ Change	% Change
	(in thousands, except per share data)			
Revenue	$963,588	$1,049,958	$86,370	9.0%
Operating expense:				
Cost of revenue (excluding depreciation and amortization shown separately below)	247,115	286,236	39,121	15.8%
Sales and marketing	198,142	206,292	8,150	4.1%
Research and development	27,739	25,677	(2,062)	(7.4)%
General and administrative	104,970	118,648	13,678	13.0%
Depreciation and amortization	117,785	122,691	4,906	4.2%
Restructuring charges	6,521	3,858	(2,663)	(40.8)%
	702,272	763,402	61,130	8.7%
Income from operations	261,316	286,556	25,240	9.7%
Other (expense) income:				
Interest and other expense	(26,218)	(33,578)	(7,360)	28.1%
Interest income	445	552	107	24.0%
Income before income taxes	235,543	253,530	17,987	7.6%
Provision for income taxes	71,849	78,068	6,219	8.7%
Net income	$163,694	$ 175,462	$11,768	7.2%
Net income per share:				
Basic	$ 2.84	$ 3.21		
Diluted	$ 2.75	$ 3.14		
Weighted average common shares outstanding:				
Basic	57,647	54,643		
Diluted	59,535	55,904		

Revenue

Revenue. Revenue increased $86.4 million driven by strong demand for our Security and Marketing Services and a $32.3 million increase in revenue from NPAC Services. Security Services revenue increased $27.7 million driven by an increase in revenue of $18.9 million from domain name registries and an increase in revenue of $8.8 million driven by demand for our DNS services. In particular, the increase in revenue from domain name registries was driven by the addition of new top-level domains, of which $7.3 million is due to the acquisition of Bombora in July 2015 and $5.2 million to the incremental revenue from the acquisition of .CO Internet in April 2014. Revenue from our Marketing Services increased $23.4 million driven by increased demand for our services that help clients make informed and high impact decisions to promote their products and services including $2.7 million from the acquisition of MarketShare in December 2015. Data Services revenue increased $3.0 million. In particular, revenue from user authentication and rights management services increased $7.3 million, including $6.3 million of revenue due to the recognition of deferred revenue upon the expiration of our contract to serve as the registry operator for U.S. Common Short Codes. In addition, revenue from caller identification services increased $5.0 million, of which $2.1 million was due to the acquisition of the caller authentication assets from TNS. These increases were partially offset by a decrease of $9.3 million in revenue from carrier provisioning services driven by the completion of client projects and consolidation of the customer base.

Expense

Cost of revenue. Cost of revenue increased $39.1 million due to an increase of $17.3 million in costs related to our information technology and systems, an increase of $15.1 million in personnel and personnel-related expense, an increase of $5.8 million in royalty costs, and an increase of $0.9 million in contractor costs incurred to support business operations. The increase in costs related to our information technology and systems was driven by increased data processing, telecommunications, and maintenance costs. Personnel and personnel-related expense increased due to headcount growth from acquisitions and to support our business growth. Of the total increase in royalty costs, $5.5 million was driven by the recognition of deferred costs upon the expiration of our contract to serve as the registry operator for U.S. Common Short Codes.

Sales and marketing. Sales and marketing expense increased $8.2 million due to an increase of $6.4 million in personnel and personnel-related expense, an increase of $2.9 million in advertising and marketing costs, partially offset by a decrease of $1.1 million in maintenance and general facilities costs. The increase in advertising and marketing costs was driven by an increase of $7.1 million in costs associated with advertising campaigns to drive brand awareness and other professional fees, partially offset by a decrease of $4.2 million in costs associated with NPAC-related campaigns.

Research and development. Research and development expense decreased $2.1 million due to a decrease of $1.6 million in personnel and personnel-related expense and a decrease of $0.5 million in maintenance and general facilities costs.

General and administrative. General and administrative expense increased $13.7 million due to an increase of $14.5 million in professional fees, an increase of $2.0 million in maintenance and other administrative costs, partially offset by a decrease of $2.8 million in personnel and personnel-related expense. The increase in professional fees was driven by an increase in costs of $10.9 million incurred to pursue new business opportunities and an increase in costs of $3.6 million incurred to support corporate initiatives.

Depreciation and amortization. Depreciation and amortization expense increased $4.9 million due to an increase of $4.3 million in amortization expense related to acquired intangible assets. In addition, depreciation expense increased $0.6 million.

Restructuring charges. Restructuring expense decreased $2.7 million. Restructuring charges recorded during 2014 were related to our 2014 restructuring program, which aligned our resources to serve our clients more effectively. The plan was completed as of December 31, 2014. Restructuring charges recorded during 2015 were related to our 2015 restructuring program, which was implemented in the fourth quarter to create greater efficiencies.

Interest and other expense. Interest and other expense increased $7.4 million due to a $3.3 million loss on debt modification and extinguishment, recorded in the fourth quarter of 2015 and incurred in connection with the 2015 Incremental Term Facility, and an increase of $2.2 million foreign currency transaction losses. In addition, interest expense increased $3.4 million driven by additional borrowings under the 2015 Incremental Term Facility and an increase in the interest rate under our 2013 Term Facility. The increase in interest and other expense was partially offset by a net decrease of $1.5 million in losses on asset disposals.

Interest income. Interest income for the year ended December 31, 2015 was comparable to that recorded for the year ended December 31, 2014.

Provision for income taxes. Our effective tax rate for the year ended December 31, 2015 increased to 30.8% from 30.5% for the year ended December 31, 2014, primarily due to a discrete benefit for our domestic production activities deduction recorded during the year ended December 31, 2014, which was not applicable for the year ended December 31, 2015. Excluding discrete tax items, our annual effective tax rate was approximately 35.4% and 35.7% for the years ended December 31, 2015 and 2014, respectively.

Year Ended December 31, 2013 Compared to the Year Ended December 31, 2014

The following table presents an overview of our results of operations for the years ended December 31, 2013 and 2014.

	Years Ended December 31,			
	2013	2014	2013 vs. 2014	
	$	$	$ Change	% Change
	(in thousands, except per share data)			
Revenue	$902,041	$963,588	$ 61,547	6.8%
Operating expense:				
Cost of revenue (excluding depreciation and amortization shown separately below)	212,572	247,115	34,543	16.3%
Sales and marketing	178,017	198,142	20,125	11.3%
Research and development	27,993	27,739	(254)	(0.9)%
General and administrative	93,930	104,970	11,040	11.8%
Depreciation and amortization	100,233	117,785	17,552	17.5%
Restructuring charges	2	6,521	6,519	325,950.0%
	612,747	702,272	89,525	14.6%
Income from operations	289,294	261,316	(27,978)	(9.7)%
Other (expense) income:				
Interest and other expense	(34,527)	(26,218)	8,309	(24.1)%
Interest income	357	445	88	24.6%
Income before income taxes	255,124	235,543	(19,581)	(7.7)%
Provision for income taxes	92,372	71,849	(20,523)	(22.2)%
Net income	$162,752	$163,694	$ 942	0.6%
Net income per share:				
Basic	$ 2.52	$ 2.84		
Diluted	$ 2.46	$ 2.75		
Weighted average common shares outstanding:				
Basic	64,463	57,647		
Diluted	66,108	59,535		

Revenue

Revenue. Revenue increased $61.5 million driven by strong demand for our Security and Marketing Services and a $28.4 million increase in revenue from NPAC Services. Security Services revenue increased $26.8 million driven by an increase in revenue of $16.3 million from domain name registries and an increase in demand for our DNS services. In particular, the increase in revenue from domain name registries was driven by .CO Internet, which contributed $12.6 million since we acquired this entity in 2014. Revenue from our Marketing Services increased $20.8 million driven by increased demand for our services that help clients make informed and high impact decisions to promote their businesses. Data Services revenue decreased $14.5 million driven by a total decrease of $16.2 million in revenue due to contractual changes in caller identification services, partially offset by an increase of $6.9 million in revenue from carrier provisioning services. The remaining decrease in Data Services revenue was driven by lower revenue from common short codes and user authentication and rights management services.

Expense

Cost of revenue. Cost of revenue increased $34.5 million due to an increase of $18.3 million in personnel and personnel-related expense and an increase of $16.1 million in costs related to our information technology and systems. The increase in personnel and personnel-related expense included an increase in stock-based compensation. The increase in costs related to our information technology and systems was driven by increased data processing, telecommunications, and maintenance costs.

Sales and marketing. Sales and marketing expense increased $20.1 million due to an increase of $11.9 million in personnel and personnel-related expense, an increase of $4.0 million in advertising and marketing costs and an increase of $4.2 million in maintenance and general facilities costs. The increase in personnel and personnel-related expense was driven by an increase in stock-based compensation. The increase in advertising and marketing costs was driven by $8.7 million in NPAC-related costs, partially offset by a decrease in costs associated with other professional fees.

Research and development. Research and development expense decreased $0.3 million due to a decrease of $0.6 million in maintenance and general facilities costs, partially offset by an increase of $0.3 million in personnel and personnel-related expense.

General and administrative. General and administrative expense increased $11.0 million due to an increase of $7.6 million in professional fees, an increase of $5.7 million in personnel and personnel-related expense and a decrease of $2.2 million in maintenance and other administrative costs. The increase in professional fees was driven by $9.0 million in costs related to the NPAC selection process, partially offset by a decrease in acquisition-related costs. The increase in personnel and personnel-related expense was driven by an increase of $7.1 million in stock-based compensation expense, partially offset by a decrease in other personnel-related costs.

Depreciation and amortization. Depreciation and amortization expense increased $17.6 million due to an increase of $11.8 million in amortization expense related to acquired intangible assets. In addition, depreciation expense increased $5.7 million related to an increase in capitalized software development costs and build-out of facilities.

Restructuring charges. Restructuring expense increased $6.5 million attributable to our 2014 restructuring activities. We implemented this restructuring program to align our resources to serve our clients more effectively.

Interest and other expense. Interest and other expense decreased $8.3 million due to a $10.9 million loss on debt modification and extinguishment, recorded in the first quarter of 2013 and incurred in connection with the refinancing of our 2011 Credit Facilities. This decrease was partially offset by a $2.5 million increase in losses recorded in connection with asset disposals and an increase in interest expense driven by additional borrowings under the 2013 Credit Facilities.

Interest income. Interest income for the year ended December 31, 2014 was comparable to that recorded for the year ended December 31, 2013.

Provision for income taxes. Our effective tax rate for the year ended December 31, 2014 decreased to 30.5% from 36.2% for the year ended December 31, 2013. During 2014, we recorded $12.2 million of discrete items primarily associated with a change in estimate of our domestic production activities deduction for the years 2009 through 2013 and recognition of unrecorded tax benefits upon the completion of an IRS audit for the year ended December 31, 2009. During 2013, we recorded $4.8 million of discrete tax benefits primarily due to research tax credits and a worthless stock deduction. Excluding discrete tax items, our effective tax rates were approximately 38.1% and 35.7% for the years ended December 31, 2013 and 2014, respectively. This decrease was driven by our domestic production activities deduction.

Liquidity and Capital Resources

Our principal source of liquidity is cash provided by our financing and operating activities. Our principal uses of cash have been to fund acquisitions, share repurchases, capital expenditures and debt service requirements. We anticipate that our principal uses of cash in the future will be for debt service requirements and capital expenditures.

Total cash and cash equivalents were $89.1 million at December 31, 2015, a decrease of $237.5 million from $326.6 million at December 31, 2014. This decrease in cash and cash equivalents was due to cash used for acquisitions and share repurchases, partially offset by cash provided by operations and cash proceeds from borrowings under our 2015 Incremental Term Facility.

We believe that our existing cash and cash equivalents, cash from operations and available borrowings under our credit facilities will be sufficient to fund our operations for the next twelve months.

Credit Facilities

On January 22, 2013, we entered into a credit facility that provided for a $325 million senior secured term loan facility, or 2013 Term Facility, and a $200 million senior secured revolving credit facility, or the 2013 Revolving Facility, and together with the 2013 Term Facility, the 2013 Credit Facilities. In addition, on January 22, 2013, we closed an offering of $300 million aggregate principal amount of senior notes, or Senior Notes. On December 9, 2015, we amended our 2013 Credit Facilities to provide for an $350 million incremental term loan, or the 2015 Incremental Term Facility. For further discussion of this debt, see Note 7 to our Consolidated Financial Statements in Item 8 of Part II of this report.

Discussion of Cash Flows

2015 compared to 2014

Cash flows from operations

Net cash provided by operating activities for the year ended December 31, 2015 was $355.3 million, as compared to $319.7 million for year ended December 31 2014. This $35.7 million increase in net cash provided by operating activities was the result of an increase in net income of $11.8 million, an increase in net changes in operating assets and liabilities of $24.1 million and a decrease in non-cash adjustments of $0.2 million.

Non-cash adjustments decreased $0.2 million primarily due to a decrease of $23.6 million in stock-based compensation and a net decrease of $1.7 million in loss (gain) on asset disposals. These decreases of $25.3 million were partially offset by an increase of $12.4 million in deferred income taxes, an increase of $4.9 million in depreciation and amortization expense, a loss on debt modification and extinguishment of $3.3 million recorded in the fourth quarter related to our 2015 Incremental term Facility, an increase of $2.4 million in the provision for doubtful accounts, a decrease of $1.1 million in tax benefit from equity awards, and an increase of $1.0 million in amortization of deferred financing costs and original issue discount on debt.

Net changes in operating assets and liabilities increased $24.1 million primarily due to an increase of $50.9 million in accounts payable and accrued expenses, an increase of $6.5 million in income taxes, an increase of $4.3 million in other assets and an increase of $2.5 million in deferred costs. These total increases of $64.2 million in net changes in operating assets and liabilities were partially offset by a decrease of $14.2 million in other liabilities, a decrease of $12.8 million in prepaid expenses and other current assets, a decrease of $9.0 million in deferred revenue, a decrease of $3.1 million in accounts and unbilled receivables and a decrease of $1.0 million in notes receivable.

Cash flows from investing

Net cash used in investing activities for the year ended December 31, 2015 was $790.4 million, as compared to $180.9 million for year ended December 31, 2014. This $609.6 million increase in net cash used in investing activities was due to an increase of $637.6 million in cash used for acquisitions, partially offset by a decrease of $28.0 million in cash used for purchases of property and equipment.

Cash flows from financing

Net cash provided by financing activities was $196.8 million for the year ended December 31, 2015, as compared to net cash used of $33.6 million for the year ended December 31, 2014. This $230.4 million increase in net cash provided by financing activities was primarily the result of net proceeds of $149.7 million from the 2015 Incremental Term Facility and a $84.1 million decrease in cash used for share repurchases and for the net down of employee shares. These total net increases in cash provided by financing activities of $233.8 million were partially offset by a decrease of $1.1 million in tax benefit from equity awards, a decrease of $1.1 million in cash proceeds from the issuance of stock, an increase of $0.8 million in cash used in principal repayments on capital lease obligations, and an increase of $0.3 million in restricted cash.

2014 compared to 2013

Cash flows from operations

Net cash provided by operating activities for the year ended December 31, 2014 was $319.7 million, as compared to $287.9 million for the year ended December 31, 2013. This $31.8 million increase in net cash provided by operating activities was the result of an increase in non-cash adjustments of $21.3 million, an increase in net changes in operating assets and liabilities of $9.5 million and an increase in net income of $0.9 million.

Non-cash adjustments increased $21.3 million driven by an increase of $23.8 million in stock-based compensation, an increase of $17.6 million in depreciation and amortization expense, an increase of $6.4 million in excess tax benefits from stock option exercises, an increase of $1.1 million in loss of asset disposals, and an increase of $0.8 million in bad debt expense. These increases in non-cash adjustments were partially offset by a decrease of $17.2 million in deferred income taxes and a $10.9 million loss on debt modification and extinguishment recorded in 2013 that did not reoccur in 2014.

Net changes in operating assets and liabilities increased $9.5 million primarily due to an increase of $20.3 million in accounts and unbilled receivables, an increase of $12.0 million in other liabilities, an increase of $12.0 million in prepaid expenses and other current assets, and an increase of $1.1 million in deferred revenue. These increases in net changes in operating assets and liabilities were partially offset by a decrease of $14.6 million in income taxes, a decrease of $18.2 million in accounts payable and accrued expenses, a decrease of $1.7 million in notes receivable, and a decrease of $0.8 million in deferred costs.

Cash flows from investing

Net cash used in investing activities for the year ended December 31, 2014 was $180.9 million, as compared to $155.1 million for the year ended December 31, 2013. This $25.7 million increase in net cash used in investing activities was due to an increase of $15.3 million in cash used for acquisitions, an increase of $6.9 million in cash used to purchase property and equipment, and a decrease of $3.5 million in cash received from the sale and maturities of investments.

Cash flows from financing

Net cash used in financing activities was $33.6 million for the year ended December 31, 2014, as compared to $249.6 million for the year ended December 31, 2013. This $216.0 million decrease in net cash used in financing activities was due to a net increase in cash of $143.3 million from debt, a decrease of $85.4 million in cash used for the purchase of our Class A common stock, and a decrease of $11.4 million in cash used for debt offering costs. In particular, the net increase in cash from debt of $143.3 million was attributable to borrowings of $175.0 million in 2014 compared to net proceeds of $31.7 million attributable to our debt refinancing completed in 2013. These increases in net cash used in financing activities were partially offset by a decrease of $12.7 million in cash proceeds from the issuance of stock, a decrease of $6.4 million in excess tax benefits from stock option exercises, an increase of $2.7 million in cash used for the net down of employee shares, and an increase of $1.8 million in cash used for principal repayments on capital lease obligations.

Contractual Obligations

Our principal commitments consist of obligations under our Senior Notes, Amended 2013 Credit Facilities, and leases for office space, computer equipment and furniture and fixtures. The following table summarizes our long-term contractual obligations as December 31, 2015:

	Payments Due by Period				
	Total	Less Than 1 Year	2-3 Years	4-5 Years	More Than 5 Years
	(in thousands)				
Capital lease obligations	$ 6,948	$ 5,079	$ 1,869	$ —	$ —
Operating lease obligations	142,751	21,276	41,339	38,809	41,327
2013 Term Facility(1)	330,812	23,033	307,779	—	—
Senior Notes(1)	395,325	13,500	27,000	27,000	327,825
2013 Revolving Facility(1)	182,310	3,647	178,663	—	—
2015 Incremental Term Facility(1)	370,987	153,556	217,431	—	—
Total	$1,429,133	$220,091	$774,081	$65,809	$369,152

(1) Interest expense related to the 2013 Term Facility has been calculated using a rate of 4.9%. Interest expense related to the Senior Notes has been calculated using a fixed 4.5% interest rate. Interest expense related to the 2013 Revolving Facility has been calculated using a rate of 4.0%. Interest expense related to the 2015 Incremental Term Facility has been calculated using a rate of 4.4%.

Some of our commercial commitments are secured by standby letters of credit. The following is a summary of our commercial commitments secured by standby letters of credit by commitment date as of December 31, 2015:

	Total	Less Than 1 Year	1-3 Years	4-5 Years	More Than 5 Years
	(in thousands)				
Standby letters of credit	$ 18,370	$ 17,699	$ 35	$ 636	$ —

The amounts presented in the tables above may not necessarily reflect our actual future cash funding requirements because the actual timing of the future payments made may vary from the stated contractual obligation. As of December 31, 2015, we had $7.5 million of unrecognized tax benefits recorded in other long-term liabilities along with interest and penalties accrued thereon and $38.7 million of long-term deferred tax liabilities. Due to the uncertainty with respect to the timing of payments in individual years in connection with these tax liabilities, we are unable to make reasonably reliable estimates of the period of cash settlement with the respective taxing authority. Therefore, we have not included these amounts in the contractual obligations table above. See Note 11 to the consolidated financial statements in Item 8 of Part II of this report for a discussion on income taxes.

Effect of Inflation

Inflation generally affects us by increasing our cost of labor and equipment. We do not believe that inflation had any material effect on our results of operations during the years ended December 31, 2013, 2014 and 2015.

Off-Balance Sheet Arrangements

We had no off-balance sheet arrangements as of December 31, 2014 and 2015.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to a variety of market risks, including changes in interest rates affecting the return on our Amended 2013 Credit Facilities and foreign currency fluctuations.

As of December 31, 2015, borrowings under our Amended 2013 Credit Facilities were approximately $825.6 million. A hypothetical change in interest rates by 100 basis points would not have a material impact on our financial position.

We have accounts on our foreign subsidiaries' ledgers which are maintained in the respective subsidiary's local foreign currency and remeasured into the United States dollar. As a result, we are exposed to movements in the exchange rates of various currencies against the United States dollar and against the currencies of other countries in which we sell services. As of December 31, 2015, our assets and liabilities related to non-dollar denominated currencies were primarily related to intercompany payables and receivables. An increase or decrease of 10% in foreign exchange rate would not have a material impact on our financial position.

Because our sales and expense are primarily denominated in local currency, the impact of foreign currency fluctuations on sales and expenses has not been material, and we do not employ measures intended to manage foreign exchange rate risk.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders
NeuStar, Inc.

We have audited the accompanying consolidated balance sheets of NeuStar, Inc. as of December 31, 2014 and 2015, and the related consolidated statements of operations, comprehensive income, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2015. Our audits also included the financial statement schedule listed in the Index at Item 15(a)(2). These financial statements and schedule are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements and schedule based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of NeuStar, Inc. at December 31, 2014 and 2015, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2015, in conformity with U.S. generally accepted accounting principles. Also, in our opinion, the related financial statement schedule, when considered in relation to the basic financial statements taken as a whole, presents fairly in all material respects the information set forth therein.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), NeuStar, Inc.'s internal control over financial reporting as of December 31, 2015, based on criteria established in Internal Control — Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 29, 2016 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

McLean, Virginia
February 29, 2016

NEUSTAR, INC.

CONSOLIDATED BALANCE SHEETS
(in thousands, except share and per share data)

	December 31, 2014	December 31, 2015
ASSETS		
Current assets:		
Cash and cash equivalents	$ 326,577	$ 89,097
Restricted cash	2,191	2,363
Accounts receivable, net of allowance for doubtful accounts of $3,154 and $4,512, respectively	155,086	167,593
Unbilled receivables	13,084	17,712
Prepaid expenses and other current assets	21,112	30,216
Deferred costs	6,951	6,676
Income taxes receivable	15,956	5,883
Deferred income tax assets	10,380	—
Total current assets	551,337	319,540
Property and equipment, net	161,604	147,764
Goodwill	692,269	1,186,983
Intangible assets, net	302,622	529,279
Other assets, long-term	15,458	18,681
Total assets	$1,723,290	$2,202,247

See accompanying notes.

NEUSTAR, INC.

CONSOLIDATED BALANCE SHEETS
(in thousands, except share and per share data)

	December 31, 2014	December 31, 2015
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 8,439	$ 28,392
Accrued expenses	94,771	134,632
Deferred revenue	73,908	91,006
Notes payable	4,692	131,272
Capital lease obligations	3,702	4,791
Other liabilities	23,125	10,875
Total current liabilities	208,637	400,968
Deferred revenue, long-term	27,017	22,998
Notes payable, long-term	759,780	957,509
Capital lease obligations, long-term	5,579	1,831
Deferred income tax liabilities, long-term	49,111	38,701
Other liabilities, long-term	53,683	56,741
Total liabilities	1,103,807	1,478,748
Commitments and contingencies	—	—
Stockholders' equity:		
Preferred stock, $0.001 par value; 100,000,000 shares authorized; no shares issued and outstanding as of December 31, 2014 and 2015	—	—
Class A common stock, par value $0.001; 200,000,000 shares authorized; 80,917,293 and 80,233,896 shares issued; and 55,080,441 and 53,516,287 outstanding at December 31, 2014 and 2015, respectively	81	80
Class B common stock, par value $0.001; 100,000,000 shares authorized; 3,082 and 2,270 shares issued and outstanding at December 31, 2014 and 2015, respectively	—	—
Additional paid-in capital	674,385	729,273
Treasury stock, 25,836,852 and 26,717,609 shares at December 31, 2014 and 2015, respectively, at cost	(898,520)	(920,439)
Accumulated other comprehensive loss	(1,645)	(1,904)
Retained earnings	845,182	916,489
Total stockholders' equity	619,483	723,499
Total liabilities and stockholders' equity	$1,723,290	$2,202,247

See accompanying notes.

NEUSTAR, INC.

CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share data)

	Year Ended December 31, 2013	2014	2015
Revenue	$902,041	$963,588	$1,049,958
Operating expense:			
Cost of revenue (excluding depreciation and amortization shown separately below)	212,572	247,115	286,236
Sales and marketing	178,017	198,142	206,292
Research and development	27,993	27,739	25,677
General and administrative	93,930	104,970	118,648
Depreciation and amortization	100,233	117,785	122,691
Restructuring charges	2	6,521	3,858
	612,747	702,272	763,402
Income from operations	289,294	261,316	286,556
Other (expense) income:			
Interest and other expense	(34,527)	(26,218)	(33,578)
Interest income	357	445	552
Income before income taxes	255,124	235,543	253,530
Provision for income taxes	92,372	71,849	78,068
Net income	$162,752	$163,694	$ 175,462
Net income per common share:			
Basic	$ 2.52	$ 2.84	$ 3.21
Diluted	$ 2.46	$ 2.75	$ 3.14
Weighted average common shares outstanding:			
Basic	64,463	57,647	54,643
Diluted	66,108	59,535	55,904

See accompanying notes.

NEUSTAR, INC.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in thousands)

	Year Ended December 31,		
	2013	2014	2015
Net income	$162,752	$163,694	$175,462
Other comprehensive (loss) income, net of tax:			
Available for sale investments, net of tax:			
Change in net unrealized (losses) gains, net of tax of $(73), $72 and $(37) respectively	(112)	112	(58)
Reclassification for gains included in net income, net of tax of $(28), $(17) and $(39) respectively	(44)	(26)	(62)
Net change in unrealized (losses) gains on investments, net of tax	(156)	86	(120)
Foreign currency translation adjustment, net of tax:			
Change in foreign currency translation adjustment, net of tax of $(70) and $(765) and $(1,118) respectively	126	(1,219)	(1,696)
Reclassification adjustment included in net income, net of tax of $0, $183 and $991 respectively	—	285	1,557
Foreign currency translation adjustment, net of tax	126	(934)	(139)
Other comprehensive loss, net of tax	(30)	(848)	(259)
Comprehensive income	$162,722	$162,846	$175,203

See accompanying notes.

NEUSTAR, INC.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands)

	Class A Common Stock		Class B Common Stock		Additional Paid-in Capital	Treasury Stock	Accumulated Other Comprehensive Loss	Retained Earnings	Total Stockholders' Equity
	Shares	Amount	Shares	Amount					
Balance at December 31, 2012	85,959	$ 86	3	$—	$532,743	$(604,042)	$ (767)	$ 718,588	$ 646,608
Issuance of shares from employee equity plans	1,189	1	—	—	21,145	2,540	—	—	23,686
Stock based compensation expense	—	—	—	—	40,606	—	—	—	40,606
Replacement equity awards in business acquisition	—	—	—	—	924	—	—	—	924
Common stock repurchase	—	—	—	—	—	(285,277)	—	—	(285,277)
Common stock received for tax withholding	—	—	—	—	—	(7,073)	—	—	(7,073)
Net excess tax benefit from stock option exercises	—	—	—	—	7,378	—	—	—	7,378
Net income	—	—	—	—	—	—	—	162,752	162,752
Other comprehensive loss	—	—	—	—	—	—	(30)	—	(30)
Balance at December 31, 2013	87,148	87	3	—	602,796	(893,852)	(797)	881,340	589,574
Issuance of shares from employee equity plans	832	1	—	—	5,893	5,100	—	—	10,994
Stock-based compensation expense	—	—	—	—	64,379	—	—	—	64,379
Common stock repurchase	(7,063)	(7)	—	—	—	—	—	(199,852)	(199,859)
Common stock received for tax withholding	—	—	—	—	—	(9,768)	—	—	(9,768)
Net excess tax benefit from stock option exercises	—	—	—	—	1,317	—	—	—	1,317
Net income	—	—	—	—	—	—	—	163,694	163,694
Other comprehensive loss	—	—	—	—	—	—	(848)	—	(848)
Balance at December 31, 2014	80,917	81	3	—	674,385	(898,520)	(1,645)	845,182	619,483
Issuance of shares from employee equity plans	2,511	2	—	—	10,425	5,055	—	—	15,482
Issuance of shares for business acquisitions	572	1	—	—	13,331	—	—	—	13,332
Stock-based compensation expense	—	—	—	—	40,810	—	—	—	40,810
Conversion of Class B common stock to Class A common stock	1	—	(1)	—	—	—	—	—	—
Common stock repurchase	(3,767)	(4)	—	—	—	—	—	(104,155)	(104,159)
Common stock received for tax withholding	—	—	—	—	—	(26,974)	—	—	(26,974)
Net excess tax benefit (shortfall) from stock option exercises	—	—	—	—	(9,678)	—	—	—	(9,678)
Net income	—	—	—	—	—	—	—	175,462	175,462
Other comprehensive loss	—	—	—	—	—	—	(259)	—	(259)
Balance at December 31, 2015	80,234	$ 80	2	$—	$729,273	$(920,439)	$(1,904)	$ 916,489	$ 723,499

See accompanying notes.

NEUSTAR, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	Year Ended December 31,		
	2013	2014	2015
Operating activities:			
Net income	$ 162,752	$ 163,694	$ 175,462
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	100,233	117,785	122,691
Stock based compensation	40,606	64,379	40,810
Loss on debt modification and extinguishment	10,886	—	3,326
Amortization of deferred financing costs and original issue discount on debt	3,397	3,385	4,380
Tax benefit from equity awards	(7,876)	(1,495)	(361)
Deferred income taxes	(17,423)	(34,668)	(22,265)
Provision for doubtful accounts	6,174	7,015	9,399
Amortization of bond premium	123	—	—
Loss (gain) on disposal of assets	—	1,057	(678)
Changes in operating assets and liabilities, net of acquisitions:			
Accounts receivable	(27,418)	(8,973)	(11,197)
Unbilled receivables	(3,759)	(1,865)	(2,757)
Notes receivable	2,740	1,008	—
Prepaid expenses and other current assets	(3,853)	8,100	(4,716)
Deferred costs	1,200	377	2,875
Income taxes	7,131	(7,485)	(989)
Other assets	(3,456)	(3,907)	402
Other liabilities	1,567	13,533	(666)
Accounts payable and accrued expenses	12,117	(6,051)	44,860
Deferred revenue	2,716	3,773	(5,237)
Net cash provided by operating activities	287,857	319,662	355,339
Investing activities:			
Purchases of property and equipment	(53,239)	(60,161)	(32,137)
Sales and maturities of investments	3,543	—	—
Businesses acquired, net of cash acquired	(105,419)	(120,698)	(758,295)
Net cash used in investing activities	(155,115)	(180,859)	(790,432)
Financing activities:			
Decrease (increase) in restricted cash	685	130	(172)
Proceeds from note payable	624,244	175,000	350,000
Extinguishment of note payable	(592,500)	—	—
Payments under notes payable obligations	(8,126)	(8,125)	(8,125)
Principal repayments on capital lease obligations	(1,686)	(3,466)	(4,306)
Debt issuance costs	(11,410)	—	(25,274)
Proceeds from issuance of stock	23,686	10,994	9,915
Tax benefit from equity awards	7,876	1,495	361
Repurchase of restricted stock awards and common stock	(292,350)	(209,627)	(125,563)
Net cash (used in) provided by financing activities	(249,581)	(33,599)	196,836
Effect of foreign exchange rates on cash and cash equivalents	(107)	(1,936)	777
Net (decrease) increase in cash and cash equivalents	(116,946)	103,268	(237,480)
Cash and cash equivalents at beginning of year	340,255	223,309	326,577
Cash and cash equivalents at end of year	$ 223,309	$ 326,577	$ 89,097
Supplemental cash flow information:			
Cash paid for interest	$ 14,700	$ 15,846	$ 16,878
Cash paid for income taxes	$ 100,125	$ 107,231	$ 108,290
Non cash investing activities:			
Property and equipment acquired under capital leases	$ 3,496	$ 8,460	$ 683
Accounts payable incurred to purchase property and equipment	$ 1,884	$ 1,842	$ 4,468
Non-cash equity awards in business acquisition	$ 924	$ —	$ —

See accompanying notes.

1. DESCRIPTION OF BUSINESS AND ORGANIZATION

NeuStar, Inc. (the Company or Neustar) offers authoritative, hard-to-replicate data sets and proprietary analytics that provide insights to help clients promote and protect their businesses. The Company's proprietary, cloud-based platforms and differentiated data sets offer informative, real-time analytics, which enable clients to make actionable, data-driven decisions. The Company provides chief marketing officers a comprehensive suite of services to plan their media spend, identify and locate desired customers, invest effectively in marketing campaigns, deliver relevant offers and measure the performance of these activities. Security professionals use the Company's solutions to maximize web performance and protect against malicious attacks. The Company enables the exchange of essential operating information across multiple carriers to provision and manage services, assisting clients with fast and accurate order processing and immediate routing of customer inquiries. The Company provides communications service providers in the United States critical infrastructure that enables the dynamic routing of calls and text messages.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation and Consolidation

The consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries. All material intercompany transactions and accounts have been eliminated in consolidation. The Company consolidates investments where it has a controlling financial interest. The usual condition for controlling financial interest is ownership of a majority of the voting interest and, therefore, as a general rule, ownership, directly or indirectly, of more than 50% of the outstanding voting shares is a condition indicating consolidation. The Company does not have any variable interest entities.

Use of Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles (U.S. GAAP) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expense during the reporting periods. Significant estimates and assumptions are inherent in the analysis and the measurement of deferred tax assets; the identification and quantification of income tax liabilities due to uncertain tax positions; identification and valuation of acquired intangibles; and recoverability of goodwill. The Company bases its estimates on historical experience and assumptions that it believes are reasonable. Actual results could differ from those estimates.

Fair Value of Financial Instruments

Fair value is the price that would be received in the sale of an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The Fair Value Measurements and Disclosure Topic of Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) establishes a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value and requires that assets and liabilities carried at fair value be classified and disclosed in one of the following three categories:

- Level 1. Observable inputs, such as quoted prices in active markets;
- Level 2. Inputs, other than quoted prices in active markets, that are observable either directly or indirectly; and
- Level 3. Unobservable inputs for which there is little or no market data, which require the reporting entity to develop its own assumptions.

The Company evaluates assets and liabilities subject to fair value measurements on a recurring and non-recurring basis to determine the appropriate level at which to classify them for each reporting period. Due to their short-term nature, the carrying amounts reported in the accompanying consolidated financial statements approximate the fair value for cash and cash equivalents, accounts receivable, accounts payable and accrued expenses. The Company determines the fair value of its $325 million senior secured term loan facility (2013 Term Facility) and $350 million incremental term loan facility (2015 Incremental Term Facility) using pricing service quotations as quoted by Bloomberg (Level 2) (see Note 7). The Company believes the carrying value of its revolving credit facility (2013 Revolving Facility) approximates the fair value of the debt as the term and interest rate approximates the market rate (Level 2) (see Note 7). The Company determines the fair value of its $300 million aggregate principal amount of 4.50% senior notes due 2013 (Senior Notes) using a secondary market price on the last trading day in each period as quoted by Bloomberg (Level 2) (see Note 7).

The estimated fair values of the Company's financial instruments are as follows (in thousands):

	December 31,			
	2014		2015	
	Carrying Amount	Fair Value	Carrying Amount	Fair Value
Cash and cash equivalents	$326,577	$326,577	$ 89,097	$ 89,097
2013 Term Facility (including current portion, net of discount)	308,290	289,794	300,328	296,013
2013 Revolving Facility	175,000	175,000	175,000	175,000
2015 Incremental Term Facility (including current portion, net of discount)	—	—	337,947	341,326
Senior Notes (including current portion)	300,000	255,750	300,000	249,000

Cash and Cash Equivalents

The Company considers all highly liquid investments, which are investments that are readily convertible into cash and have original maturities of three months or less at the time of purchase, to be cash equivalents.

Restricted Cash

As of December 31, 2014 and 2015, cash of $2.2 million and $2.4 million, respectively, was restricted as collateral for certain of the Company's outstanding letters of credit and for deposits on leased facilities.

Concentrations of Credit Risk

Financial instruments that are potentially subject to a concentration of credit risk consist principally of cash, cash equivalents, and accounts receivable. The Company's cash management and investment policies are in place to restrict placement of these instruments with only financial institutions evaluated as highly creditworthy.

With respect to accounts receivable, the Company performs ongoing evaluations of its clients, generally granting uncollateralized credit terms to its clients, and maintains an allowance for doubtful accounts based on historical experience and management's expectations of future losses. Clients under the Company's contracts with North American Portability Management LLC (NAPM) are charged a Revenue Recovery Collection (RRC) fee (see "Accounts Receivable, Revenue Recovery Collections and Allowance for Doubtful Accounts" below).

Accounts Receivable, Revenue Recovery Collections and Allowance for Doubtful Accounts

Accounts receivable are recorded at the invoiced amount and do not bear interest. In accordance with the Company's contracts with NAPM, the Company bills a RRC fee to offset uncollectible receivables from any individual client. The RRC fee is based on a percentage of monthly billings. On July 1, 2013 the RRC fee was reduced from 0.65% to 0.50% and remained at that level through July 31, 2015. On August 1, 2015, the RRC fee was increased to 0.75%. The RRC fees are recorded as an accrued expense when collected. If the RRC fee is insufficient, the uncollectible amounts can be recovered from the clients. Any accrued RRC fees in excess of uncollectible receivables are paid back to the clients annually on a pro rata basis. RRC fees of $2.5 million and $3.2 million are included in accrued expenses as of December 31, 2014 and 2015, respectively. All other receivables related to services not covered by the RRC fees are evaluated and, if deemed not collectible, are reserved. The Company recorded an allowance for doubtful accounts of $3.2 million and $4.5 million as of December 31, 2014 and 2015, respectively. Bad debt expense amounted to $6.2 million, $7.0 million and $9.4 million for the years ended December 31, 2013, 2014 and 2015, respectively.

Deferred Financing Costs

Direct and incremental costs related to the issuance of debt are capitalized as deferred financing costs and are reported as a reduction to notes payable on the Company's consolidated balance sheets. The Company amortizes deferred financing costs using the effective-interest method and records such amortization as interest expense. Amortization of debt discount and annual commitment fees for unused portions of available borrowings are also recorded as interest expense.

Property and Equipment

Property and equipment, including leasehold improvements and assets acquired through capital leases, are recorded at cost, net of accumulated depreciation and amortization. Depreciation and amortization of property and equipment are determined using the straight-line method over the estimated useful lives of the assets, as follows:

Computer hardware	3 – 5 years
Equipment	5 years
Furniture and fixtures	5 – 7 years
Leasehold improvements	Lesser of related lease term or useful life
Building	30 years

Amortization expense of assets acquired through capital leases is included in depreciation and amortization expense in the consolidated statements of operations. Replacements and major improvements are capitalized; maintenance and repairs are charged to expense as incurred. Impairments of long-lived assets are determined in accordance with the Property, Plant and Equipment Topic of the FASB ASC.

The Company capitalizes software development and acquisition costs in accordance with the Intangibles — Goodwill and Other, Internal-Use Software Topic of the FASB ASC, which requires the capitalization of costs incurred in connection with developing or obtaining software for internal use. Costs incurred to develop the internal-use software are capitalized, while costs incurred for planning the project and for post-implementation training and maintenance are expensed as incurred. The capitalized costs of purchased technology and software development are amortized using the straight-line method over an estimated useful life of three to five years. During the years ended December 31, 2014 and 2015, the Company capitalized costs related to internal use software of $23.1 million and $21.3 million, respectively. Amortization expense related to internal use software for the years ended December 31, 2013, 2014 and 2015 was $29.7 million, $29.4 million and $25.3 million, respectively, and is included in depreciation and amortization expense in the consolidated statements of operations.

Segment Reporting

Operating segments are components of an enterprise about which discrete financial information is available that is evaluated regularly by the chief operating decision maker (CODM) in deciding how to allocate resources and in assessing performance. As of December 31, 2015, the Company's organizational structure and internal financial reporting was aligned by functional area to reflect the manner in which the CODM allocates resources and assesses performance. This alignment by functional area resulted in a single operating segment and single reporting unit.

Goodwill

Goodwill represents the excess of the purchase price over the fair value of assets acquired, as well as other identifiable intangible assets. In accordance with the Intangibles — Goodwill and Other Topic of the FASB ASC, goodwill and indefinite-lived intangible assets are not amortized, but are reviewed for impairment at least annually and upon the occurrence of events or changes in circumstances that would reduce the fair value of such assets below their carrying amount. For the purposes of the Company's annual impairment tests completed on October 1, 2014 and October 1, 2015, the Company identified and assigned goodwill to one reporting unit (see Note 4).

Goodwill is tested for impairment at the reporting unit level using a two-step approach. The first step is to compare the fair value of a reporting unit's net assets, including assigned goodwill, to the book value of its net assets, including assigned goodwill. For the Company's impairment analysis completed as of October 1, 2014 and October 1, 2015, the fair value of the single reporting unit was based upon the Company's enterprise value, which was substantially in excess of the carrying value. If the fair value of the reporting unit is greater than its net book value, the assigned goodwill is not considered impaired. If the fair value is less than the reporting unit's net book value, the Company performs a second step to measure the amount of the impairment, if any. The second step is to compare the book value of the reporting unit's assigned goodwill to the implied fair value of the reporting unit's goodwill, using a theoretical purchase price allocation. If the carrying value of goodwill exceeds the implied fair value, an impairment has occurred and the Company is required to record a write-down of the carrying value and charge the impairment as an operating expense in the period the determination is made. There were no goodwill impairment charges recognized during the years ended December 31, 2013, 2014 and 2015.

Identifiable Intangible Assets

Identifiable intangible assets are amortized over their respective estimated useful lives using a method of amortization that reflects the pattern in which the economic benefits of the intangible assets are consumed or otherwise used and are periodically reviewed for impairment. There were no intangible asset impairment charges recognized during the years ended December 31, 2013, 2014 and 2015.

The Company's identifiable intangible assets are amortized as follows:

	Years	Method
Acquired technologies	3 – 8	Straight-line
Client lists and relationships	3 – 13	Straight-line
Trade names and trademarks	3	Straight-line
Non-compete agreement	3	Straight-line

Amortization expense related to identifiable intangible assets is included in depreciation and amortization expense in the consolidated statements of operations.

Impairment of Long-Lived Assets

In accordance with Property, Plant and Equipment Topic of the FASB ASC, the Company reviews long-lived assets and certain identifiable intangible assets for impairment whenever events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. The Company measures recoverability of assets to be held and used by comparing the carrying amount of the assets to future undiscounted net cash flows expected to be generated by the assets. Recoverability measurement and estimating undiscounted cash flows is performed at the lowest possible level for which there are identifiable cash flows. If the carrying amount of the assets exceeds the future undiscounted cash flows expected to be generated by those assets, such assets fail the recoverability test and an impairment charge would be recognized, measured as the amount by which the carrying amount of the assets exceeds the fair value. Assets to be disposed of are recorded at the lower of the carrying amount or fair value less costs to sell.

Revenue Recognition

The Company recognizes revenue when the price is fixed or determinable, persuasive evidence of an arrangement exists, services have been performed, and collectability is reasonably assured. The Company assesses whether the price is fixed or determinable based on the contractual payment terms and whether the sales is price is subject to refund or adjustment.

For revenue arrangements that consist of monthly recurring fees for an established amount of transactions, the Company recognizes the monthly fee as services are provided. For transactions in excess of the established amount of transactions, the Company recognizes revenue on a per-transaction basis.

Revenue derived from the real-time and batch delivery of data for marketing analytics is recorded upon delivery of such data to the client. Revenue associated with engagements requiring periodic updates of data over the course of the service period, where cash is received or collectible in advance, are recorded as deferred revenue, and recognized on a straight-line basis over the service period, which is usually twelve months.

For revenue arrangements with separate deliverables, the consideration is allocated based on the relative selling price for each deliverable. The selling price for each contract deliverable can be established based on vendor specific objective evidence (VSOE) or if VSOE is not available, third-party evidence (TPE) is used. An estimate of selling price (ESP) is used if neither VSOE nor TPE is available. VSOE, when determinable, is established based on the Company's pricing for the specific service sold separately. In determining whether VSOE exists, the Company utilizes a bell-shape curve approach. This approach drives the requirement for a substantial majority of actual selling prices for a service to fall within a narrow range of the median pricing.

Client set-up and implementation fees are not considered separate deliverables. These fees are deferred and recognized on a straight-line basis over the term of the contract, ranging from one to three years. The Company also receives annual technology fees from certain clients in exchange for access to intellectual property, standard technical support, emergency 24-hour support, and system upgrades on a when-and-if-available basis. These technology fees are not considered separate deliverables. As a result, technology fees are deferred and recognized on a straight-line basis over the service period, which is usually twelve months.

Under its seven contracts with NAPM, the Company provides number portability administration center services. As discussed below under the heading "Revenue Recognition — Significant Contracts," the Company determined the fixed and determinable fee on an annual basis and recognized such fee on a straight-line basis over twelve months.

The Company also generates revenue from its telephone number administration services under two government contracts: North American Numbering Plan Administrator (NANPA) and National Pooling Administrator (NPA). Under its NANPA contract, the Company earns a fixed annual fee and recognizes this fee as revenue on a straight-line basis as services are provided. Under its NPA contract, the Company earns a fixed fee associated with administration of the pooling system. The Company recognizes revenue for this contract on a straight-line basis over the term of the contract.

Professional Services

The Company's professional services revenue is comprised of fees for consulting services that support a client's pre- and post- implementation activities, including plan and design, optimization, support and training services. Consulting services may be provided on a stand-alone basis or bundled within a multiple element arrangement. For consulting services provided on a stand-alone basis, revenue is recognized as services are performed. For consulting services bundled within a multiple element arrangement, the services are evaluated for separability by determining if they have stand-alone value to the client. The selling price for the consulting services is established using the VSOE, TPE, ESP hierarchy. For consulting services with no stand-alone value, the contract fee allocated to the consulting services is combined with the consideration from the undelivered elements in the arrangement and recognized as revenue when all other revenue recognition criteria have been met.

Significant Contracts

The Company provides number portability administration center (NPAC) services (NPAC Services), which include wireline and wireless number portability, implementation of the allocation of pooled blocks of telephone numbers and network management services in the United States pursuant to seven contracts with NAPM, an industry group that represents all telecommunications service providers in the United States. The aggregate fees for transactions processed under these contracts are determined by an annual fixed-fee pricing model under which the annual fixed fee (Base Fee) was set at $437.4 million, $465.8 million and $496.1 million in 2013, 2014 and 2015, respectively. In the event that the volume of transactions in a given year is above or below the contractually established volume range for that year, the Base Fee may be adjusted up or down, respectively, with any such adjustment being applied against invoices in the following year. The Company determines the fixed and determinable fee under these contracts on an annual basis at the beginning of each year and recognizes this fee on a straight-line basis over twelve months.

The total amount of revenue derived under the Company's contracts with NAPM, which is comprised of fees for NPAC Services, connection service fees related to the Company's NPAC Services and fees for system enhancements, was approximately $446.4 million, $474.8 million and $507.1 million for the years ended December 31, 2013, 2014 and 2015, respectively.

Fees under the Company's contracts with NAPM are billed to telecommunications service providers based on their allocable share of the total transaction charges. This allocable share is based on each respective telecommunications service provider's share of the aggregate end-user services revenue of all U.S. telecommunications service providers, as determined by the Federal Communications Commission. The Company also bills an RRC fee equal to a percentage of monthly billings to its clients, which is available to the Company if any client under the contracts to provide NPAC Services fails to pay its allocable share of total transactions charges.

On April 7, 2015, the Company amended its seven regional contracts with NAPM. Under the amendment contracts, the Company will provide Local Number Portability Administrator (LNPA) services for an annual fixed fee of $496.1 million until the termination of these contracts. The contracts will automatically renew on July 3, 2016 for additional one-year terms commencing as of October 1, 2016 unless NAPM provides a notice of non-renewal at least 90 days prior to the end of the then-current term. Once a notice of non-renewal is provided, NAPM must also provide the Company with at least 180 days advance notice of its intention to terminate the contracts.

Loss of the NPAC contracts will have a material adverse impact on the Company's future operating results when compared to its current financial profile. The Company expects to lose approximately $500 million of annual revenue and this loss will adversely impact its income from operations and operating margin. Additionally, this loss may have a disproportionate material negative impact on the Company's operating margin because of the largely fixed and shared cost structure that is designed to support all of the Company's services.

Service Level Standards

Some of the Company's private commercial contracts require the Company to meet service level standards and impose corresponding penalties on the Company if the Company fails to meet those standards. The Company records a provision for these performance-related penalties in the period in which it becomes aware that it has failed to meet required service levels, triggering the requirement to pay a penalty, which results in a corresponding reduction to revenue.

Cost of Revenue and Deferred Costs

Cost of revenue includes all direct materials costs, direct labor costs, and indirect costs related to the generation of revenue such as indirect labor, outsourced services, materials and supplies, payment processing fees, and general facilities cost. The Company's primary cost of revenue is personnel costs associated with service implementation, product maintenance, client deployment and client care, including salaries, stock-based compensation and other personnel-related expense. In addition, cost of revenue includes costs relating to developing modifications and enhancements of the Company's existing technology and services, as well as royalties paid related to U.S. common short code services and registry gateway services. Cost of revenue also includes costs relating to the Company's information technology and systems department, including network costs, data center maintenance, database management, data processing costs and general facilities costs.

Deferred costs represent direct labor related to professional services incurred for the setup and implementation of contracts. These costs are recognized in cost of revenue on a straight-line basis over the contract term. Deferred costs also include royalties paid related to the Company's U.S. common short code services and registry gateway services, which are recognized in cost of revenue on a straight-line basis over the contract term. Deferred costs are classified as such on the consolidated balance sheets.

Research and Development

The Company expenses its research and development costs as they are incurred. Research and development expense consists primarily of personnel costs, including salaries, stock-based compensation and other personnel-related expense, consulting fees, and the costs of facilities and computer and support services used in service and technology development.

Advertising

The Company expenses advertising costs as they are incurred. Advertising expense was approximately $15.4 million, $17.8 million and $15.9 million for the years ended December 31, 2013, 2014 and 2015, respectively.

Stock-Based Compensation

The Company accounts for its stock-based compensation plans under the recognition and measurement provisions of the Compensation — Stock Compensation Topic of the FASB ASC. The Company estimates the value of stock option awards and awards under the Company's employee stock purchase plan using the Black-Scholes option-pricing model. The fair value of restricted stock units is measured by reference to the closing market price of the Company's common stock price on the date of grant. For stock-based awards subject to graded vesting, the Company has utilized the "straight-line" method for allocating compensation cost by period. The Company presents benefits of tax deductions in excess of the compensation cost recognized (excess tax benefits) as a financing cash inflow with a corresponding operating cash outflow.

Basic and Diluted Net Income per Common Share

In accordance with the Earnings Per Share Topic of the FASB ASC, unvested share-based payment awards that contain non-forfeitable rights to dividends or dividend equivalents (whether paid or unpaid) are participating securities that should be included in the computation of earnings per share under the two-class method. The Company's restricted stock awards are considered to be participating securities because they contain non-forfeitable rights to cash dividends, if declared and paid. In lieu of presenting earnings per share pursuant to the two-class method, the Company has included shares of unvested restricted stock awards in the computation of basic net income per common share as the resulting earnings per share would be the same under both methods.

Basic net income per common share is computed by dividing net income by the weighted-average number of common shares and participating securities outstanding during the period. Unvested restricted stock units and performance vested restricted stock units (PVRSUs) are excluded from the computation of basic net income per common share because the underlying shares have not yet been earned by the stockholder and are not participating securities. Shares underlying stock options are also excluded because they are not considered outstanding shares. Diluted net income per common share assumes dilution and is computed based on the weighted-average number of common shares outstanding after consideration of the dilutive effect of stock options, unvested restricted stock units and PVRSUs. The effect of dilutive securities is computed using the treasury stock method and average market prices during the period. Dilutive securities with performance conditions are excluded from the computation until the performance conditions are met.

Income Taxes

The Company accounts for income taxes in accordance with the Income Taxes Topic of the FASB ASC. Deferred income tax assets and liabilities are determined based on temporary differences between the financial reporting bases and the tax bases of assets and liabilities. Deferred income tax assets are also recognized for tax net operating loss carryforwards. These deferred income tax assets and liabilities are measured using the enacted tax rates and laws that will be in effect when such amounts are expected to be reversed or utilized. Valuation allowances are provided to reduce such deferred income tax assets to amounts more likely than not to be ultimately realized.

The income tax provision includes U.S. federal, state, local and foreign income taxes and is based on pre-tax income or loss. In determining the annual effective income tax rate, the Company analyzes various factors, including the Company's annual earnings and taxing jurisdictions in which the earnings will be generated, the impact of state and local income taxes and the ability of the Company to use tax credits and net operating loss carryforwards.

The Company assesses uncertain tax positions in accordance with income tax accounting standards. Under these standards, income tax benefits should be recognized when, based on the technical merits of a tax position, the Company believes that if a dispute arose with the taxing authority and were taken to a court of last resort, it is more likely than not (i.e., a probability of greater than 50 percent) that the tax position would be sustained as filed. If a position is determined to be more likely than not of being sustained, the reporting enterprise should recognize the largest amount of tax benefit that is greater than 50 percent likely of being realized upon ultimate settlement with the taxing authority. The Company's practice is to recognize interest and penalties related to income tax matters in income tax expense.

Foreign Currency

Assets and liabilities of consolidated foreign subsidiaries, whose functional currency is the local currency, are translated to U.S. dollars at fiscal year-end exchange rates. Revenue and expense items are translated to U.S. dollars at the average rates of exchange prevailing during the fiscal year. The adjustment resulting from translating the financial statements of such foreign subsidiaries to U.S. dollars is reflected as a foreign currency translation adjustment and reported as a component of accumulated other comprehensive loss.

Transactions denominated in currencies other than the functional currency are recorded based on exchange rates at the time such transactions arise. Subsequent changes in exchange rates result in transaction gains or losses, which are reflected within interest and other expense in the consolidated statements of operations.

Comprehensive Income

Comprehensive income is comprised of net earnings and other comprehensive income (loss), which includes certain changes in equity that are excluded from income. The Company includes unrealized holding gains and losses on available-for-sale securities, if any, and foreign currency translation adjustments in other comprehensive income (loss) in the consolidated statements of comprehensive income. Comprehensive income was approximately $162.7 million, $162.8 million and $175.2 million for the years ended December 31, 2013, 2014 and 2015, respectively.

Recent Accounting Pronouncements — Effective

In April 2015, the FASB issued ASU 2015-03, *Simplifying the Presentation of Debt Issuance Costs*. ASU 2015-03 requires debt issuance costs related to a recognized debt liability to be presented in the balance sheet as a direct deduction from the carrying value of that debt liability, consistent with debt discounts. The guidance is effective retrospectively for fiscal years, and interim periods within those years, beginning after December 15, 2015. Adoption prior to that date is permitted for financial statements that have not been previously issued. The Company adopted ASU 2015-03 in the fourth quarter of 2015. The Company's adoption of ASU 2015-03 resulted in a balance sheet reclassification to present deferred financing costs of $18.8 million as a deduction from the carrying value of the debt as of December 31, 2014 (see Note 7).

In November 2015, the FASB issued ASU No. 2015-17, *Balance Sheet Classification of Deferred Taxes*. ASU 2015-17 requires deferred tax liabilities and assets to be classified as noncurrent in the consolidated balance sheet. The standard is effective for financial statements issued for annual periods beginning after December 15, 2016, and interim periods within those annual periods. Early adoption is permitted for financial statements that have not been previously issued. The ASU may be applied either prospectively to all deferred tax liabilities and assets or retrospectively to all periods presented. The Company adopted ASU 2015-17 on a prospective basis in the fourth quarter of 2015. Prior periods were not retrospectively adjusted.

Recent Accounting Pronouncements — Not Yet Effective

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606).* Under this standard, revenue is recognized when promised goods or services are transferred to customers in an amount that reflects the consideration to which a company expects to be entitled in exchange for those goods or services. On July 9, 2015, the FASB deferred the effective dates of the standard by one year. As a result, the standard will be effective for annual and interim periods beginning after December 15, 2017. Companies may adopt the standard as early as the original effective date (i.e. annual reporting periods beginning after December 15, 2016). Early adoption prior to that date is not permitted. The standard allows for either full retrospective adoption, meaning the standard is applied to all of the periods presented, or a modified retrospective adoption, meaning the standard is applied only to the most current period presented. The Company is currently evaluating the impact of adoption on its consolidated financial statements.

In September 2015, the FASB issued ASU 2015-16, *Simplifying the Accounting for Measurement-Period Adjustments (Topic 805): Business Combinations,* which requires that an acquirer recognize adjustments to provisional amounts that are identified during the measurement period in the reporting period in which the adjustment amounts are determined. The standard is effective for fiscal years beginning after December 15, 2015, including interim periods within those fiscal years. The guidance is to be applied prospectively to adjustments to provisional amounts that occur after the effective date of the standard, with earlier application permitted for financial statements that have not been issued. The Company does not expect that the adoption of this ASU will have a significant impact its consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases*. ASU 2016-02 requires that long-term lease arrangements be recognized on the balance sheet. The standard is effective for interim and annual periods beginning after December 15, 2018, and early adoption is permitted. The Company is currently evaluating the impact of adoption on its consolidated financial statements.

3. ACQUISITIONS

The application of the acquisition method of accounting for business combinations requires management to make significant estimates and assumptions in the determination of the fair value of the assets acquired and liabilities assumed in order to properly allocate purchase price consideration. These assumptions and estimates include a market participant's expected use of the asset and the appropriate discount rates from a market participant's perspective. The Company's estimates are based on historical experience and information obtained from the management of the acquired company and are determined with assistance from an independent third-party. The Company's significant assumptions and estimates made in connection with the application of the acquisition method of accounting for business combinations include the cash flows that an acquired asset is expected to generate in the future, the weighted-average cost of capital, long-term projected revenue and growth rates and estimated replacement costs.

.CO Internet Acquisition

On April 14, 2014, the Company acquired .CO Internet S.A.S (.CO Internet) and certain associated assets. .CO Internet is the exclusive operator of the worldwide registry for Internet addresses with the ".co" top-level domain. This acquisition expanded the Company's registry services, which includes the .biz and .us top-level domains. Total consideration for this purchase, which was subject to certain customary working capital adjustments, included cash consideration of $113.7 million, of which $86.7 million was paid at closing and $27.0 million was deposited into escrow for the satisfaction of potential indemnification claims and certain performance obligations. In addition, the Company may be required to make a contingent payment of up to

$6.0 million prior to or during the first quarter of 2020 in the event that the sellers satisfy certain post-closing performance obligations. The transaction was accounted for under the acquisition method of accounting in accordance with Business Combination Topic of the FASB ASC.

Of the total preliminary purchase price of $114.8 million, which reflected initial estimates of .CO Internet's closing date working capital, the Company recorded $85.1 million of definite-lived intangible assets and $36.3 million of goodwill. During 2014, the Company adjusted the amounts recorded as preliminary purchase price and goodwill based upon the finalization of the acquired company's working capital as of the closing. As of December 31, 2014, the adjusted preliminary purchase price was $115.1 million and the adjusted goodwill balance recorded in connection with the transaction was $36.6 million. As of December 31, 2014, the preliminary purchase price was pending the finalization of the valuation of acquired deferred income tax assets and assumed income and non-income based tax liabilities. As of December 31, 2015, the adjusted purchase price was $118.1 million and the adjusted goodwill balance was $39.6 million. The consolidated balance sheet as of December 31, 2014 has been retrospectively adjusted to include the effect of the measurement period adjustments. The goodwill is expected to be deductible for tax purposes. During 2014, the Company recorded $2.1 million of acquisition costs in general and administrative expense related to this transaction.

Goodwill represents the excess of the .CO Internet purchase price over the estimated fair value of the net assets acquired. The opportunity to gain .CO Internet's innovative domain marketing capabilities and to expand the Company's registry services, among other factors, were the reasons for the establishment of the purchase price, resulting in the recognition of goodwill.

Bombora Acquisition

On July 30, 2015, the Company acquired Bombora Technologies Pty Ltd (Bombora). Bombora is the registry services provider for the ".au" top-level domain and many other top-level domains. This acquisition expanded the Company's registry services, which includes the .biz, .us and .co top-level domains. Total consideration for this purchase, which was subject to certain customary working capital adjustments, included cash consideration of $87.4 million, of which $55.5 million was paid to the sellers at closing and $31.9 million was deposited into escrow pending the satisfaction of certain performance obligations. The transaction was accounted for under the acquisition method of accounting in accordance with the Business Combination Topic of the FASB ASC.

The total preliminary purchase price was $91.8 million, consisting of cash consideration of $87.4 million and contingent consideration of $4.4 million, which is the estimated fair value of such consideration as of the acquisition date. During 2015, the Company adjusted the amounts recorded as preliminary purchase price and goodwill based upon the finalization of the acquired company's working capital and the valuation of certain acquired deferred income tax assets as of closing. As of December 31, 2015, the adjusted preliminary purchase price was $87.7 million.

As of December 31, 2015, of the total preliminary purchase price of $87.7 million, the Company recorded $44.9 million of definite-lived intangible assets, $65.7 million of goodwill, and $22.9 million of net liabilities. The definite-lived intangible assets consist of $37.8 million of client relationships and $7.1 million of acquired technology. The Company is amortizing client relationships on a straight-line basis over an estimated useful life of 5 to 13 years. Acquired technology is being amortized on a straight-line basis over an estimated useful life of 3 to 5 years. The allocation of the purchase price is preliminary pending the finalization of the fair value of acquired deferred income tax assets and assumed income and non-income based tax liabilities. The goodwill is not expected to be deductible for tax purposes. During the year ended December 31, 2015, the Company recorded $2.0 million of acquisition costs in general and administrative expense related to this transaction.

Goodwill represents the excess of the Bombora preliminary purchase price over the estimated fair value of the net assets acquired. This acquisition further positions the Company as a leader in launching and operating top-level-domains. The opportunity to expand the Company's registry services, among other factors, were the reasons for the establishment of the purchase price, resulting in the recognition of goodwill.

MarketShare Acquisition

On December 9, 2015, the Company completed its acquisition of MarketShare Partners, LLC (MarketShare), a marketing analytics technology provider to major brands. The acquisition of MarketShare expands the Company's marketing services by creating a complete data-driven solution to Chief Marking Officers (CMOs) as they plan, optimize and allocate their entire marketing budget and resources across all channels. The combination of the Company's leadership in authoritative identity, audience targeting and segmentation as well as real-time media measurement, together with MarketShare's expertise in predictive analytics, enables the Company to provide a single solution that solves CMOs' critical resource allocation challenges. CMOs are able to look across their entire business, from campaign planning to execution, online to offline, to get a complete, accurate reading of what is driving their sales and effectively allocate their resources across all sales channels as well as media platforms.

The transaction was accounted for under the acquisition method of accounting in accordance with the Business Combination Topic of the FASB ASC and revenue of $2.7 million and operating expense of $5.2 million has been included in the Company's consolidated statement of operations since the date of acquisition.

The total preliminary purchase price was $442.4 million, consisting of cash consideration of $429.1 million and non-cash consideration of $13.3 million paid in shares of NeuStar Class A Common Stock, which shares are subject to certain transfer restrictions. Of the total cash consideration, $53.7 million was deposited in escrow, of which $45.0 million will be available to satisfy indemnification claims (Indemnity Escrow) and $5.8 million will be available to holders of unvested MarketShare equity awards in the event such holders' employment is terminated without cause within the first six months following December 9, 2015 (Equity Escrow). An additional $2.5 million and $0.4 million of the purchase consideration was deposited into separate escrow accounts and will be available to fund purchase price adjustments required under the purchase agreement and to reimburse certain costs and expenses of the stockholder representative, respectively. During the year ended December 31, 2015, the Company recorded $8.7 million of acquisition costs in general and administrative expense related to this acquisition.

Under the acquisition method of accounting, the total preliminary purchase price was allocated to MarketShare's net tangible and intangible assets acquired and liabilities assumed based on their estimated fair values as of December 9, 2015. The allocation of the preliminary purchase price is pending the finalization of the acquired company's working capital as of the closing date and the finalization of the fair value of acquired deferred income tax assets and assumed income and non-income based tax liabilities. The following table summarizes the preliminary purchase price allocation based on the estimated fair value of the acquired assets and assuming liabilities (in thousands):

Cash and cash equivalents	$ 7,504
Accounts receivable	9,280
Prepaids and other assets	6,343
Accounts payable and accrued expenses	(8,292)
Deferred revenue	(2,062)
Deferred tax liability	(10,862)
Net tangible assets acquired	1,911
Customer relationships	30,000
Acquired identified technology	100,000
Goodwill	310,529
Total preliminary purchase price allocation	$442,440

The Company allocated $130.0 million of the total preliminary purchase price to definite-lived intangible assets acquired, consisting of customers relationships and acquired technology. Customer relationships represent agreements with existing customers. The Company utilized a replacement cost and lost profits methodology to estimate the fair value the customer relationships. Under this method, the Company's significant assumptions and estimates included costs associated with recreating the customer relationship, and the revenue projected to be lost while the customer relationships are recreated. The value of customer relationships will be amortized on a straight-line basis over the estimated useful life of 10 years.

Acquired technology represents technology that had reached technological feasibility and for which development has been completed as of the date of the acquisition. The Company utilized the excess earnings methodology, a variation of the income approach, to estimate the fair value of the acquired technology. Under this method, the Company's significant assumptions and estimates included projected revenue, an obsolescence factor, contributory asset charge, discount rate and tax amortization benefit. The value of the acquired technology will be amortized on a straight-line basis over the estimated useful life of 8 years.

Goodwill represents the excess of the MarketShare preliminary purchase price over the estimated fair value of the net assets acquired. With this acquisition, the Company has the ability to provide CMOs a comprehensive suite of services to plan their media spend, identify and locate desired customers, invest in the right marketing campaigns, deliver relevant offers and measure the performance of these activities. The opportunity to offer this comprehensive suite of services, among other factors, were the reasons for the establishment of the purchase price, resulting in the recognition of a significant amount of goodwill. As of December 31, 2015, of the total goodwill balance of $310.5 million, approximately $201.2 million is expected to be deductible for tax purposes.

The total preliminary purchase price included non-cash consideration of $13.3 million in shares of NeuStar Class A Common Stock. The fair value of the Neustar Class A Common Stock was determined using Neustar's closing stock price of $23.31 as reported on the New York Stock Exchange on December 9, 2015, the date of the acquisition.

Pro Forma Financial Information for the MarketShare Acquisition

The following unaudited pro forma financial information summarizes the Company's results of operations for the period indicated as if the Company's acquisition of MarketShare had been completed as of the beginning of the earliest period presented. These pro forma amounts (unaudited and in thousands) are not indicative of the results that would have actually been obtained if the acquisition occurred as of the beginning of the periods presented and should not be construed as representative of the future consolidated results of operations or financial condition of the combined entity. The pro forma financial information for all periods presented also includes the effect of related financing, amortization expense from the acquired intangible assets, adjustments to interest expense and related tax effects.

	Year Ended December 31,	
	2014	2015
Pro forma revenue	$1,010,647	$1,101,391
Pro forma income from operations	$ 227,435	$ 262,512
Pro forma net income	$ 115,287	$ 124,145

Caller Authentication Assets Acquisition

On December 18, 2015, the Company acquired caller authentication assets from Transaction Network Services, Inc. for approximately $220.0 million in cash. The acquisition of these assets accelerates the Company's ability to launch next generation mobile identity solutions for service providers, businesses and consumers. These mobile identity solutions include subscriber data storage and management, caller identification and verification services. Total consideration for this purchase, which is subject to certain customary working capital adjustments, included cash consideration of $220.0 million, of which $22.0 million was deposited into escrow to satisfy post-closing indemnification claims. The transaction was accounted for under the acquisition method of accounting in accordance with the Business Combination Topic of the FASB ASC.

As of December 31, 2015, of the total preliminary purchase price of $220.0 million, the Company recorded $111.9 million of definite-lived intangible assets, $108.0 million of goodwill and $0.1 million of net assets. The definite-lived intangible assets consist of $98.0 million of client relationships and $13.9 million of acquired technology. The Company is amortizing client relationships on a straight-line basis over an estimated useful life of 10 years. Acquired technology is being amortized on a straight-line basis over an estimated useful life of 5 years. The allocation of the purchase price is preliminary pending the finalization of the fair value of acquired deferred income tax assets and assumed income and non-income based tax liabilities. The goodwill is expected to be deductible for tax purposes. During the year ended December 31, 2015, the Company recorded $1.8 million of acquisition costs in general and administrative expense related to this transaction.

Goodwill represents the excess of the preliminary purchase price of the caller authentication assets over the estimated fair value of the net assets acquired. With this acquisition, the Company has enhanced its position in the caller authentication market that includes subscriber data storage, database management, caller identification and verification services. The opportunity to expand the Company's caller authentication services, among other factors, were the reasons for the establishment of the purchase price, resulting in the recognition of goodwill.

4. GOODWILL AND INTANGIBLE ASSETS

Goodwill

The Company's goodwill as of December 31, 2014 is as follows (in thousands):

	December 31, 2013(1)	Acquisitions(2)	Adjustments	December 31, 2014(1)
Gross goodwill	$736,414	$43,981	$2,476	$782,871
Accumulated impairments	(93,602)	—	—	(93,602)
Net goodwill	$642,812	$43,981	$2,476	$689,269

(1) Balance as originally reported prior to the reflection of measurement period adjustments.

(2) See Note 3 for a discussion of acquisitions.

The Company's goodwill as of December 31, 2015 is as follows (in thousands):

	December 31, 2014(1)	Acquisitions(2)	Adjustments	Disposals(3)	Foreign Currency Translation	December 31, 2015
Gross goodwill	$782,871	$500,534	$(1,149)	$(1,236)	$(435)	$1,280,585
Accumulated impairments	(93,602)	—	—	—	—	(93,602)
Net goodwill	$689,269	$500,534	$(1,149)	$(1,236)	$(435)	$1,186,983

(1) Balance as originally reported prior to the reflection of measurement period adjustments.

(2) See Note 3 for a discussion of acquisitions.

(3) Reflects the goodwill associated with the Company's sale of certain Data Services assets and liabilities used to deliver lawful intercept services.

The Company's 2014 and 2015 annual goodwill impairment analysis was performed as of October 1 in each respective year and did not result in an impairment charge.

As of the date of the Company's 2015 annual impairment test, the estimated fair value for the Company's reporting unit was substantially in excess of the carrying value. The Company believes that the assumptions and estimates used to determine the estimated fair value of its reporting unit are reasonable; however, there are a number of factors, including factors outside of the Company's control, such as stock price volatility, that could cause actual results to differ from the Company's estimates. Such differences may be material. Changes in estimates and assumptions could have a significant impact on whether or not an impairment charge is recognized and also the magnitude of any such charge.

Any changes to the Company's key assumptions about its business and its prospects, or changes in market conditions, could cause the fair value of its reporting unit to fall below its carrying value, resulting in a potential impairment charge. In addition, changes in the Company's organizational structure or how the Company's management allocates resources and assesses performance could result in a change of its operating segments or reporting units, requiring a reallocation and an interim impairment analysis of goodwill. A goodwill impairment charge could have a material effect on the Company's consolidated financial statements because of the significance of goodwill to its consolidated balance sheet.

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Intangible Assets

Intangible assets consist of the following (in thousands):

	December 31, 2014	December 31, 2015	Weighted-Average Amortization Period (in years)
Intangible assets:			
Client lists and relationships	$ 409,638	$ 578,085	8.9
Accumulated amortization	(151,017)	(196,806)	
Client lists and relationships, net	258,621	381,279	
Acquired technology	91,959	214,212	6.3
Accumulated amortization	(48,248)	(66,335)	
Acquired technology, net	43,711	147,877	
Trade name	8,030	8,030	3.0
Accumulated amortization	(7,785)	(7,919)	
Trade name, net	245	111	
Non-compete agreement	100	100	3.0
Accumulated amortization	(55)	(88)	
Non-compete agreement, net	45	12	
Intangible assets, net	$ 302,622	$ 529,279	

During the years ended December 31, 2014 and 2015, the Company acquired the following intangible assets (in thousands) (see Note 3).

	For the Year Ended December 31, 2014	For the Year Ended December 31, 2015
Intangible assets acquired:		
Client lists and relationships	$86,100	$171,267
Acquired technology	4,900	122,300
Total intangible assets acquired	$91,000	$293,567

Amortization expense related to intangible assets, which is included in depreciation and amortization expense, was approximately $50.5 million, $62.3 million and $66.6 million for the years ended December 31, 2013, 2014 and 2015, respectively. Amortization expense related to intangible assets for the years ended December 31, 2016, 2017, 2018, 2019, 2020 and thereafter is expected to be approximately $95.4 million, $86.8 million, $84.1 million, $72.7 million, $43.7 million and $146.6 million, respectively. Intangible assets as of December 31, 2015 will be fully amortized during the year ended December 31, 2028.

5. PROPERTY AND EQUIPMENT

Property and equipment consists of the following (in thousands):

	December 31,	
	2014	2015
Computer hardware	$ 148,974	$ 163,087
Equipment	3,472	3,811
Furniture and fixtures	13,973	14,213
Leasehold improvements	66,306	68,117
Construction in-progress	7,060	4,455
Capitalized software	188,927	195,022
Building	4,072	4,072
Land	271	271
	433,055	453,048
Accumulated depreciation and amortization	(271,451)	(305,284)
Property and equipment, net	$ 161,604	$ 147,764

The Company entered into capital lease obligations of $8.5 million and $0.7 million during the years ended December 31, 2014 and 2015, respectively, primarily for computer hardware. As of December 31, 2014 and 2015, unamortized capitalized software costs were $39.3 million and $37.6 million, respectively. Amortization expense of assets recorded under capital leases is included in depreciation and amortization expense.

Depreciation and amortization expense related to property and equipment for the years ended December 31, 2013, 2014 and 2015 was $49.7 million, $52.7 million and $56.1 million, respectively. Amortization of capitalized software costs for the years ended December 31, 2013, 2014 and 2015 was $29.7 million, $29.4 million and $25.3 million, respectively.

6. ACCRUED EXPENSES

Accrued expenses consist of the following (in thousands):

	December 31,	
	2014	2015
Accrued compensation	$58,814	$ 84,757
RRC reserve	2,496	3,159
Accrued interest	6,212	7,190
Other	27,249	39,526
Total	$94,771	$134,632

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7. NOTES PAYABLE

Notes payable consist of the following (in thousands):

	December 31, 2014	December 31, 2015
2013 Term Facility (net of discount)	$308,290	$ 300,328
2013 Term Facility deferred financing fees	(2,599)	(1,683)
2013 Revolving Facility	175,000	175,000
2013 Revolving deferred financing fees	(3,226)	(2,162)
Senior Notes	300,000	300,000
Senior Notes deferred financing fees	(12,993)	(11,637)
2015 Incremental Term Facility (net of discount)	—	337,947
2015 Incremental Term Facility deferred financing fees	—	(9,012)
Total	764,472	1,088,781
Less: current portion, net of discount	(4,692)	(131,272)
Long-term portion	$759,780	$ 957,509

Credit Facilities and Senior Notes

On January 22, 2013, the Company entered into a credit facility that provided for a $325 million senior secured term loan facility (2013 Term Facility) and a $200 million senior secured revolving credit facility (2013 Revolving Facility, and together with the 2013 Term Facility, the 2013 Credit Facilities). In addition, the Company closed an offering of $300 million aggregate principal amount of senior notes (Senior Notes).

On December 9, 2015, the Company amended its 2013 Credit Facilities to provide for (i) the permissibility of an incremental term facility under the Company's existing 2013 Credit Agreement (the 2013 Credit Agreement), (ii) the addition of a senior secured leverage financial maintenance covenant; (iii) streamlined conditions for the incurrence of an incremental term facility to be used for a permitted acquisition; (iv) a required escrow and prepayment (such prepayment to be for the benefit of the incremental facility lenders) by the Company under certain specified circumstances; and (v) certain tax related changes favorable to the Company to the terms of the 2013 Credit Agreement and related security agreement.

On December 9, 2015, the Company borrowed $350 million (the 2015 Incremental Term Facility, and together with the 2013 Term Facility and the 2013 Revolving Facility, the Amended 2013 Credit Facilities). The proceeds of the 2015 Incremental Term Facility were used to consummate the acquisition of MarketShare and to pay related fees and expenses.

The Amended 2013 Credit Facilities include: (1) the 2013 Term Facility; (2) the 2013 Revolving Facility, and (3) the 2015 Incremental Term Facility. In addition, under the Amended 2013 Credit Facilities, the Company has available the potential for additional incremental loan facilities in an amount such that after giving effect to the incurrence of any such incremental loans, either (a) the aggregate amount of incremental loans (including the 2015 Incremental Term Facility) loans does not exceed $400 million or (b) the Consolidated Secured Leverage Ratio (as defined in the Amended 2013 Credit Facilities) on a pro forma basis after giving effect to any such increase would not exceed 2.50 to 1.00. The 2013 Term Facility, 2013 Revolving Facility and 2015 Incremental Term Facility mature on January 22, 2018. As of December 31, 2015, outstanding borrowings under the 2013 Revolving Facility were $175.0 million and available borrowings under the same facility were $8.2 million, exclusive of outstanding letters of credit totaling $16.8 million.

Principal payments under the 2013 Term Facility of $2.0 million are due on the last day of each fiscal quarter beginning on March 31, 2013 and ending on December 31, 2017. The remaining 2013 Term Facility principal balance of $284.4 million is due in full on January 22, 2018, subject to early mandatory prepayments. The outstanding borrowings under the 2013 Revolving Facility of $175.0 million are due in full on January 22, 2018. Principal payments under the 2015 Incremental Term Facility of approximately $25.0 million are due on the last day of the last month of each of the two first fiscal quarters within each year beginning on March 31, 2016 and principal payments of approximately $45.0 million are due on the last day of the last month of each of the last two fiscal quarters within each year. The remaining 2015 Incremental Term Facility principal balance of $70.0 million is due in full on January 22, 2018.

The 2015 Incremental Term Facility (i) was issued with a Eurodollar rate margin of 4.00% and a corresponding base rate margin of 3.00%, (ii) was issued with 400 basis points of original issue discount and additional customary fees, and (iii) has an annual amortization percentage of 40% of the aggregate principal amount with quarterly amortization percentages of 7.1%, 7.1%, 12.9%, and 12.9% for the first, second, third, and fourth quarters respectively. Pursuant to the provisions of the 2013 Credit Agreement, the Eurodollar rate margin on the existing term loans under the 2013 Credit Agreement was increased as a result of the pricing on the 2015 Incremental Term Facility to 4.50%, with a corresponding base rate margin of 3.25%. The amortization schedule for the existing term loans under the 2013 Credit Agreement remained unchanged at 2.5% per annum.

The Company may voluntarily prepay the borrowings under the Amended 2013 Credit Facilities at any time in minimum amounts of $1 million or an integral multiple of $500,000 in excess thereof. The Amended 2013 Credit Facilities provide for mandatory prepayments with the net cash proceeds of certain debt issuances, insurance receipts, and dispositions. The Amended 2013 Credit Facilities also contain certain events of default, upon the occurrence of which, and so long as such event of default is continuing, the amounts outstanding may, at the option of the required lenders, accrue interest at an increased rate and payments of such outstanding amounts could be accelerated, or other remedies undertaken.

As of December 31, 2014 and 2015, deferred financing costs and loan origination fees related to the 2013 Credit Facilities and Amended 2013 Credit Facilities were $6.3 million and $25.2 million, respectively. Total amortization expense of the deferred financing costs and loan origination fees was $2.0 million, $2.1 million and $3.0 million for the years ended December 31, 2013, 2014 and 2015, respectively, and is reported as interest expense in the consolidated statements of operations.

Senior Notes

On January 22, 2013, the Company closed an offering of $300 million aggregate principal amount of 4.50% senior notes due 2023 to qualified institutional buyers pursuant to Rule 144A, and outside of the United States pursuant to Regulation S, under the Securities Act of 1933, as amended. The Senior Notes were issued pursuant to an indenture, dated as of January 22, 2013, among the Company, certain of its domestic subsidiaries, or the Subsidiary Guarantors, and The Bank of New York Mellon Trust Company, N.A., as trustee, or the Indenture. The Senior Notes are the general unsecured senior obligations of the Company and are guaranteed on a senior unsecured basis by the Subsidiary Guarantors. In the third quarter of 2013, the Company conducted an exchange offer pursuant to which it exchanged the Senior Notes for new notes guaranteed by the Subsidiary Guarantors, with terms substantially identical in all material respects to those of the original Senior Notes, except that the new notes are not subject to restrictions on transfer or to any increase in annual interest rate.

Interest is payable on the Senior Notes semi-annually in arrears at an annual rate of 4.50%, on January 15 and July 15 of each year, beginning on July 15, 2013. The Senior Notes will mature on January 15, 2023. Interest accrues from January 22, 2013. As of December 31, 2014 and 2015, accrued interest under the Senior Notes was

$6.2 million and $6.2 million, respectively. At December 31, 2015, the estimated fair value of the Senior Notes was $249.0 million and was determined using a secondary market price on the last trading day in each period as quoted by Bloomberg (Level 2 inputs).

At any time and from time to time prior to July 15, 2016, the Company may redeem up to a maximum of 35% of the original aggregate principal amount of the Senior Notes with the proceeds of certain equity offerings, at a redemption price equal to 104.50% of the principal amount thereof, plus accrued and unpaid interest thereon, if any, to the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date); provided that: (1) at least 65% of the original aggregate principal amount of the Senior Notes remains outstanding; and (2) the redemption occurs within 90 days of the completion of such equity offering upon not less than 30 nor more than 60 days prior notice.

Prior to January 15, 2018, the Company may redeem some or all of the Senior Notes by paying a "make-whole" premium based on U.S. Treasury rates. During the 12-month period commencing on January 15 of the relevant year listed below, the Company may redeem some or all of the Senior Notes at the prices listed below, plus accrued and unpaid interest, if any, to, but not including, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date): 2018 at a redemption price of 102.25%; 2019 at a redemption price of 101.50%; 2020 at a redemption price of 100.75%; and 2021 and thereafter at a redemption price of 100.00%. If the Company experiences certain changes of control together with a ratings downgrade, it will be required to offer to purchase all of the Senior Notes then outstanding at a purchase price equal to 101.00% of the principal amount thereof, plus accrued and unpaid interest, if any, to the date of purchase. If the Company sells certain assets and does not repay certain debt or reinvest the proceeds of such sales within certain time periods, it will be required to offer to repurchase the Senior Notes with such proceeds at 100.00% of their principal amount, plus accrued and unpaid interest, if any, to the date of purchase.

The Senior Notes contain customary events of default, including among other things, payment default, failure to provide certain notices and defaults related to bankruptcy events. The Senior Notes also contain customary negative covenants.

As of December 31, 2014 and 2015, deferred financing costs related to the Senior Notes were $13.0 million and $11.6 million, respectively. Total amortization expense of the deferred financing costs was $1.2 million, $1.3 million and $1.4 million for the years ended December 31, 2013, 2014 and 2015, respectively, and is reported as interest expense in the consolidated statements of operations.

Future Principal Payments

Future principal payments under the Amended 2013 Credit Facilities and the Senior Notes as of December 31, 2015, are as follows (in thousands):

2016	$ 148,125
2017	148,125
2018	529,375
2019	—
2020	—
Thereafter	300,000
Total future principal payments	$1,125,625

Debt Refinancing costs

On January 22, 2013, the Company used the proceeds received from the 2013 Term Facility and Senior Notes to repay outstanding principal borrowings of $592.5 million (the "refinanced debt"). Certain investors in the refinanced debt reinvested in either or both of the 2013 Credit Facilities and Senior Notes and the change in the present value of future cash flows between the investments was less than 10%. Accordingly, the Company accounted for this refinancing event for these investors as a debt modification. Certain investors in the refinanced debt either did not invest in the 2013 Credit Facilities or Senior Notes or the change in the present value of future cash flows between the investments was greater than 10%. Accordingly, the Company accounted for this refinancing event for these investors as a debt extinguishment. In applying debt modification accounting, during the first quarter of 2013, the Company recorded $10.9 million in interest and other expense, comprised of $9.4 million in loss on debt extinguishment and $1.5 million in debt modification expense, in connection with this refinancing event.

On December 9, 2015, the Company amended its 2013 Credit Facilities to include the 2015 Incremental Term Facility. Certain investors in the 2013 Credit Facilities reinvested in the 2015 Incremental Term Facility and the change in the present value of future cash flows between the investments was less than 10%. Accordingly, the Company accounted for this refinancing event for these investors as a debt modification. Certain investors in the 2013 Credit Facilities either did not invest in the 2015 Incremental Term Facility or the change in the present value of future cash flows between the investments was greater than 10%. Accordingly, the Company accounted for this refinancing event for these investors as a debt extinguishment. In applying debt modification accounting, the Company recorded $3.3 million in interest and other expense, comprised of $2.5 million in loss on debt extinguishment and $0.8 million in debt modification expense, in connection with this refinancing event.

8. COMMITMENTS AND CONTINGENCIES

Capital Leases

The following is a schedule of future minimum lease payments due under capital lease obligations as of December 31, 2015 (in thousands):

2016	$ 5,079
2017	1,869
Total minimum lease payments	6,948
Less: amounts representing interest	(326)
Present value of minimum lease payments	6,622
Less: current portion	(4,791)
Capital lease obligation, long-term	$ 1,831

The following assets are capitalized under capital leases at the end of each period presented (in thousands):

	December 31,	
	2014	2015
Equipment and hardware	$ 44,350	$ 44,984
Furniture and fixtures	1,005	1,053
Subtotal	45,355	46,037
Less: accumulated amortization	(35,192)	(38,713)
Net assets under capital leases	$ 10,163	$ 7,324

Operating Leases

The Company leases office space under noncancelable operating lease agreements. The leases terminate at various dates through 2023 and generally provide for scheduled rent increases.

The Company leases 91,574 square feet of office space for its corporate headquarters in Sterling, Virginia from a third party. The initial term of the lease commenced on October 1, 2010 and terminates January 31, 2021. The Company has two five-year options to renew the lease, and the rent for the applicable renewal term will be determined if and when the Company exercises its applicable option to renew the lease. The Company recognizes rent incentives and leasehold improvements funded by landlord incentives on a straight-line basis, as a reduction of rent expense, over the initial term of the lease.

Future minimum lease payments under noncancelable operating leases as of December 31, 2015, are as follows (in thousands):

2016	$ 21,276
2017	21,130
2018	20,209
2019	19,989
2020	18,820
Thereafter	41,327
	$142,751

Future minimum sublease receipts under noncancelable operating leases for the years ended December 31, 2016, 2017, and 2018, are expected to be approximately $6.3 million, $0.5 million, and $0.4 million, respectively.

Rent expense was $12.6 million, $14.1 million, and $11.5 million for the years ended December 31, 2013, 2014 and 2015, respectively.

Contingencies

On July 15, 2014, the Oklahoma Firefighters Pension and Retirement System (OFPRS), individually and on behalf of all other similarly situated stockholders, filed a putative class action complaint in the United States District Court for the Eastern District of Virginia, Alexandria Division, or the Alexandria Division, against the Company and certain of its senior executive officers. The OFPRS complaint asserted claims for purported violations of Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 and SEC Rule 10b-5 on behalf of those who purchased the Company's securities between April 19, 2013 and June 6, 2014, inclusive, and sought unspecified compensatory damages, costs and expenses, including attorneys' and experts' fees, and injunctive relief.

On October 7, 2014, the Alexandria Division issued an order appointing lead counsel and designating The Indiana Public Retirement System, or IPRS, as lead plaintiff. On November 6, 2014, the IPRS filed an amended complaint and on December 8, 2014, the Company moved to dismiss IPRS's amended complaint. On December 22, 2014, IPRS filed its opposition to the Company's motion to dismiss. On December 29, 2014, the Company filed a reply brief to the IPRS opposition. The Alexandria Division heard oral arguments on the motions on January 22, 2015 and on January 27, 2015, and issued an order granting the Company's motion to dismiss IPRS's amended complaint with prejudice. On February 25, 2015, counsel for IPRS filed a notice of appeal.

On July 28, 2015, the IPRS, on behalf of itself and the proposed settlement class, on the one hand, and certain of the Company's senior executive officers on the other hand, entered into a Stipulation and Agreement of Settlement with the Alexandria Division, which sets forth the terms and conditions of the proposed settlement of the claims. The Alexandria Division granted preliminary approval of the settlement on September 22, 2015. The final hearing before the Alexandria Division took place on December 3, 2015 and a Final Order was entered dismissing all claims with prejudice. The settlement amount did not have a material impact to the Company's consolidated financial position and results of operations.

9. RESTRUCTURING CHARGES

2014 Restructuring Plan

In the fourth quarter of 2013, the Company aligned its teams into a functional organization. This initiative continued into 2014 with the alignment of the sales and marketing teams into key industry verticals to serve the Company's clients more effectively. Under this plan, the Company recorded restructuring charges of $6.5 million for the year ended December 31, 2014. As of December 31, 2014 the plan was complete and no further charges are expected.

2015 Restructuring Plan

In the fourth quarter of 2015, the Company initiated a restructuring program to create greater efficiencies. The Company recorded restructuring charges of $3.9 million for the year ended December 31, 2015 in connection with this plan. As of December 31, 2015, the plan was complete and no further charges are expected.

Summary of Accrued Restructuring Plans

Accrued restructuring costs are recorded in other current liabilities presented in the Company's consolidated balance sheets. The additions and adjustments to the accrued restructuring liability related to the Company's restructuring plans as described above for the year ended December 31, 2015 are as follows (in thousands):

	December 31, 2014	Additional Costs	Cash Payments	December 31, 2015
2014 Restructuring Plan:				
Severance and severance-related costs	$ 374	$ —	$ (374)	$ —
Lease and facility exit costs	136	—	(136)	—
2015 Restructuring Plan:				
Severance and severance-related costs	—	3,858	(499)	3,359
Total restructuring	$ 510	$ 3,858	$ (1,009)	$ 3,359

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10. INTEREST AND OTHER EXPENSE

Interest and other expense consists of the following (in thousands):

	Year Ended December 31,		
	2013	2014	2015
Interest and other expense:			
Interest expense	$23,907	$24,864	$28,209
Loss on debt modification and extinguishment	10,886	—	3,326
(Gain) loss on asset disposals	(236)	1,302	(193)
Foreign currency transaction (gain) loss	(179)	104	2,236
Other	149	(52)	—
Total interest and other expense	$34,527	$26,218	$33,578

Interest expense includes the amortization of loan origination fees and deferred financing costs related to the Company's 2013 Credit Facilities and the Company's 2015 Incremental Term Loan (see Note 7).

11. INCOME TAXES

The components of income before provision for income taxes are as follows (in thousands):

	Year Ended December 31,		
	2013	2014	2015
Domestic	$252,001	$233,274	$249,851
Foreign	3,123	2,269	3,679
Income before provision for income taxes	$255,124	$235,543	$253,530

The provision for income taxes consists of the following components (in thousands):

	Year Ended December 31,		
	2013	2014	2015
Current:			
Federal	$ 90,636	$ 84,553	$ 77,941
State	17,249	16,559	14,153
Foreign	1,910	5,405	8,655
Total current	109,795	106,517	100,749
Deferred:			
Federal	(13,775)	(29,039)	(17,163)
State	(3,611)	(5,653)	(2,646)
Foreign	(37)	24	(2,872)
Total deferred	(17,423)	(34,668)	(22,681)
Total provision for income taxes	$ 92,372	$ 71,849	$ 78,068

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A reconciliation of the statutory United States income tax rate to the effective income tax rate follows:

	Year Ended December 31,		
	2013	2014	2015
Statutory federal tax rate	35.0%	35.0%	35.0%
State taxes (net of federal benefit)	4.0	3.8	3.5
Domestic production activities deduction	(1.2)	(6.5)	(3.8)
Settlements and statute expirations	—	—	(3.6)
Other	(1.6)	(1.4)	(0.3)
Change in valuation allowance	—	(0.4)	—
Effective tax rate	36.2%	30.5%	30.8%

During 2014, the Company recorded $12.2 million of discrete tax benefits primarily associated with a change in estimate of its domestic production activities deduction for the years 2009 through 2013. During 2015, the Company recorded $11.6 million of discrete tax benefits primarily associated with the recognition of unrecorded tax benefits upon the completion of an Internal Revenue Service audit of the Company's federal income tax returns for the years ended December 31, 2009 through December 31, 2012.

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The Company realized certain tax benefits attributable to stock-based compensation, of which the excess tax benefit over the amount recorded for financial reporting purposes was $7.9 million and $1.5 million for the years ended December 31, 2013 and 2014, respectively, and has been recorded as an increase to additional paid-in capital. For the year ended December 31, 2015, the Company had a tax shortfall of $9.2 million which was recorded as a decrease to additional paid-in capital. Deferred income taxes reflect the net tax effects of temporary differences between the carrying amount of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the Company's net deferred income taxes are as follows (in thousands):

	December 31, 2014	December 31, 2015
Deferred tax assets:		
Domestic NOL carryforwards	$ 24,230	$ 27,041
Foreign NOL carryforwards	4,052	6,557
Deferred revenue	4,993	15,519
Accrued compensation	6,063	5,832
Stock-based compensation expense	40,418	23,964
Foreign currency translation adjustments	—	1,122
Deferred rent	11,423	9,489
Basis differences in notes payable	—	6,213
Other	5,247	7,803
Total deferred tax assets	96,426	103,540
Valuation allowance	(4,584)	(8,552)
Total deferred tax assets, net	91,842	94,988
Deferred tax liabilities:		
Unbilled receivables	(5,108)	(6,842)
Depreciation and amortization	(46,988)	(41,931)
Identifiable intangible assets	(70,471)	(81,851)
Deferred costs	(3,335)	(3,065)
Other	(4,671)	—
Total deferred tax liabilities	(130,573)	(133,689)
Net deferred tax liabilities	$ (38,731)	$ (38,701)

As of December 31, 2015, the Company had U.S. net operating loss carryforwards for federal tax purposes of approximately $69.6 million which expire, if unused, in various years from 2020 to 2035. As of December 31, 2015, the Company had $29.1 million of net operating losses that are ultimately available for carryforward indefinitely under U.K. tax law and the Company has a full valuation allowance against its deferred tax asset associated with its U.K. net operating loss carryforwards. As of December 31, 2015, the Company had other foreign net operating loss carryforwards of approximately $3.7 million, of which $2.6 million can be carried forward indefinitely under current local tax laws and $1.1 million which expire, if unused, in years beginning 2016.

As of December 31, 2015, the amount of earnings from foreign subsidiaries that the Company considers indefinitely reinvested and for which deferred taxes have not been provided was approximately $2.9 million. It is not practicable to determine the income tax liability that would be payable if such earnings were not indefinitely reinvested.

As of December 31, 2014 and 2015, the Company had unrecognized tax benefits of $13.6 million and $7.5 million, respectively, of which $12.8 million and $6.9 million, respectively, would affect the Company's effective tax rate if recognized. The net change in the liability for unrecognized income tax benefits is as follows (in thousands):

Balance at January 1, 2013	$ 4,403
Increase related to current year tax positions	1,748
Increase related to prior year tax positions	766
Reductions due to lapse in statutes of limitations	(100)
Settlements	—
Balance at December 31, 2013	6,817
Increase related to current year tax positions	3,116
Increase related to prior year tax positions	4,939
Reductions due to lapse in statutes of limitations	(1,190)
Settlements	(78)
Balance at December 31, 2014	13,604
Increase related to current year tax positions	1,742
Increase related to prior year tax positions	282
Positions assumed in acquisitions	1,368
Reductions due to lapse in statutes of limitations	(115)
Settlements	(9,374)
Balance at December 31, 2015	$ 7,507

The Company recognizes interest and penalties related to uncertain tax positions in income tax expense. During the years ended December 31, 2013 and 2014, potential interest and penalties were insignificant. During the year ended December 31, 2015, the Company recognized potential interest and penalties of $2.3 million, including interest and penalties related to uncertain tax positions of acquired companies.

The Company files income tax returns in the United States federal jurisdiction and in many state and foreign jurisdictions. The tax years 2009 through 2014 remain open to examination by the major taxing jurisdictions to which the Company is subject. During 2015, the IRS completed an examination of the Company's federal income tax return for the years ended December 31, 2009 through December 31, 2012. The audit resulted in no adjustments. The IRS has initiated an examination of the 2010 federal income tax return of Neustar Information Services, Inc. (formerly TARGUSInformation Corporation), a subsidiary of the Company. Management does not currently believe that the outcome will have a material adverse effect on the Company's financial position, results of operations or cash flows.

The Company anticipates that total unrecognized tax benefits will decrease by approximately $1.7 million over the next 12 months due to the expiration of certain statutes of limitations and settlement of tax audits.

12. STOCKHOLDERS' EQUITY

Preferred Stock

The Company is authorized to issue up to 100,000,000 shares of preferred stock, $0.001 par value per share, in one or more series, to establish from time to time the number of shares to be included in each series, and to fix the rights, preferences, privileges, qualifications, limitations and restrictions of the shares of each wholly unissued series. As of December 31, 2014 and 2015, there are no shares of preferred stock issued or outstanding.

Common Stock

The Company is authorized to issue up to 200,000,000 shares of Class A common stock, $0.001 par value per share and 100,000,000 shares of Class B common stock, $0.001 par value per share. Each holder of Class A and Class B common stock is entitled to one vote for each share of common stock held on all matters submitted to a vote of stockholders. Subject to preferences that may apply to shares of preferred stock outstanding at the time, the holders of Class A and Class B common stock are entitled to receive dividends out of assets legally available at the time and in the amounts as the Company's Board of Directors may from time to time determine.

Stock-Based Compensation

The Company maintains six compensation plans: the NeuStar, Inc. 1999 Equity Incentive Plan (1999 Plan); the NeuStar, Inc. 2005 Stock Incentive Plan (2005 Plan); the Amended and Restated NeuStar, Inc. 2009 Stock Incentive Plan (2009 Plan); the Targus Information Corporation Amended and Restated 2004 Stock Incentive Plan (TARGUSinfo Plan); the AMACAI Information Corporation 2004 Stock Incentive Plan (AMACAI Plan) (collectively, the Plans), and the Neustar, Inc. Employee Stock Purchase Plan (ESPP). The Company may grant to its directors, employees and consultants awards under the 2009 Plan in the form of incentive stock options, nonqualified stock options, stock appreciation rights, shares of restricted stock, restricted stock units, performance vested restricted stock units (PVRSUs) and other stock-based awards. As of December 31, 2015, a total of 3,885,907 shares were available for grant or award under the 2009 Plan.

The Company's ESPP permits employees to purchase shares of common stock at a 15% discount from the market price of the stock at the beginning or at the end of a six-month purchase period, whichever is less. The six-month purchase periods begin on May 1 and November 1 each year. During the year ended December 31, 2015, the Company issued 127,618 shares under the ESPP. As of December 31, 2015, a total of 277,564 shares were available to be issued under the ESPP.

The term of any stock option granted under the Plans may not exceed ten years. The exercise price per share for options granted under the Plans may not be less than 100% of the fair market value of the common stock on the option grant date. The Board of Directors or Compensation Committee of the Board of Directors determines the vesting schedule of the options, with a maximum vesting period of ten years. Options granted generally vest with respect to 25% of the shares underlying the option award on the first anniversary of the grant date and 2.083% of the shares on the last day of each succeeding calendar month thereafter. The options expire seven to ten years from the date of grant and are forfeitable upon termination of an option holder's service.

The Company has granted and may in the future grant restricted stock to directors, employees and consultants. The Board of Directors or Compensation Committee of the Board of Directors determines the vesting schedule of the restricted stock, with a maximum vesting period of ten years. Restricted stock granted generally vests in equal annual installments over a three to four-year term.

Stock-based compensation expense recognized for the years ended December 31, 2013, 2014 and 2015 was $44.2 million, $64.4 million, and $41.0 million, respectively. As of December 31, 2015, total unrecognized compensation expense was estimated at $47.7 million, which the Company expects to recognize over a weighted average period of approximately 1.6 years. Total unrecognized compensation expense as of December 31, 2015 is estimated based on outstanding non-vested stock options, non-vested restricted stock units and non-vested PVRSUs. Stock-based compensation expense may increase or decrease in future periods for subsequent grants or forfeitures.

Stock Options

The Company utilizes the Black-Scholes option pricing model to estimate the fair value of stock options granted. The weighted-average grant date fair value of options granted during the year ended December 31, 2014 was $5.70. No options were granted during the years ended December 31, 2013 and 2015. The following are the weighted-average assumptions used in valuing the stock options granted during the year ended December 31, 2014, and a discussion of the Company's assumptions.

	Year Ended December 31, 2014
Dividend yield	— %
Expected volatility	27.83%
Risk-free interest rate	1.06%
Expected life of options (in years)	3.35

Dividend yield — The Company has never declared or paid dividends on its common stock and does not anticipate paying dividends in the foreseeable future.

Expected volatility — Volatility is a measure of the amount by which a financial variable such as a share price has fluctuated (historical volatility) or is expected to fluctuate (expected volatility) during a period. The Company considered the historical volatility of its stock price over a term similar to the expected life of the grant in determining its expected volatility.

Risk-free interest rate — The risk-free interest rate is based on U.S. Treasury bonds issued with similar life terms to the expected life of the grant.

Expected life of the options — The expected life is the period of time that options granted are expected to remain outstanding. The Company determined the expected life of stock options based on the weighted average of (a) the time-to-settlement from grant of historically settled options and (b) a hypothetical holding period for the outstanding vested options as of the date of fair value estimation. The hypothetical holding period is the amount of time the Company assumes a vested option will be held before the option is exercised. To determine the hypothetical holding period, the Company assumes that an unexercised option will be exercised at the midpoint of the time between the date of fair value estimation and the remaining contractual life of the unexercised option.

The following table summarizes the Company's stock option activity:

	Shares	Weighted-Average Exercise Price	Aggregate Intrinsic Value (in millions)	Weighted Average Remaining Contractual Life (in years)
Outstanding at December 31, 2012	3,296,040	$24.81		
Options granted	—	—		
Options exercised	(896,168)	24.35		
Options forfeited	(362,754)	26.57		
Outstanding at December 31, 2013	2,037,118	24.70		
Options granted	580,000	26.44		
Options exercised	(332,142)	22.87		
Options forfeited	(241,071)	26.90		
Outstanding at December 31, 2014	2,043,905	25.23		
Options granted	—	—		
Options exercised	(503,053)	25.01		
Options forfeited	(183,948)	29.74		
Outstanding at December 31, 2015	1,356,904	$24.70	$ 1.7	2.9
Exercisable at December 31, 2015	1,066,900	$24.23	$ 1.7	2.2
Exercisable at December 31, 2014	1,424,154	$24.67	$ 4.5	2.2
Exercisable at December 31, 2013	1,362,624	$24.13	$35.1	2.9

The aggregate intrinsic value of options exercised for the years ended December 31, 2013, 2014 and 2015 was $21.3 million, $2.6 million, and $1.7 million, respectively.

The following table summarizes information regarding options outstanding at December 31, 2015:

	Options Outstanding		Weighted-Average Remaining Contractual Life (in years)	Options Exercisable	
Range of Exercise Price	Number of Options Outstanding	Weighted-Average Exercise Price		Number of Options Exercisable	Weighted-Average Exercise Price
$ 9.10 – $12.10	3,739	$10.40	0.63	3,739	$10.40
$12.11 – $15.50	107,503	15.39	0.15	107,503	15.39
$15.51 – $18.10	22,050	17.28	0.91	22,050	17.28
$18.11 – $21.10	60,164	19.14	1.83	60,164	19.14
$21.11 – $24.10	222,410	22.79	1.11	222,410	22.79
$24.11 – $26.97	873,961	26.45	3.83	583,957	26.45
$30.14 – $32.02	67,077	31.51	2.84	67,077	31.51
	1,356,904	$24.70	2.90	1,066,900	$24.23

Restricted Stock Awards

The following table summarizes the Company's non-vested restricted stock activity:

	Shares	Weighted-Average Grant Date Fair Value	Aggregate Intrinsic Value (in millions)
Outstanding at December 31, 2012	305,390	$25.93	
Restricted stock granted	—	—	
Restricted stock vested	(112,177)	25.39	
Restricted stock forfeited	(38,441)	26.27	
Outstanding at December 31, 2013	154,772	26.24	
Restricted stock granted	—	—	
Restricted stock vested	(102,775)	25.92	
Restricted stock forfeited	(12,803)	25.76	
Outstanding at December 31, 2014	39,194	27.21	
Restricted stock granted	—	—	
Restricted stock vested	(34,269)	26.57	
Restricted stock forfeited	(4,925)	31.64	
Outstanding at December 31, 2015	—	$ —	$—

The total aggregate intrinsic value of restricted stock vested during the years ended December 31, 2013, 2014 and 2015 was approximately $5.1 million, $3.4 million and $1.0 million, respectively. During the years ended December 31, 2013, 2014 and 2015, the Company repurchased 41,042, 38,852 and 13,207 shares of common stock, respectively, for an aggregate purchase price of $1.9 million, $1.3 million and $0.4 million, respectively, pursuant to the participants' rights under the Company's stock incentive plans to elect to use common stock to satisfy their minimum tax withholding obligations.

Performance Vested Restricted Stock Units

During 2012, the Company issued awards of PVRSUs to eligible employees under a 2012 long-term incentive plan. These awards were multi-year grants, structurally different than previous awards, and specifically designed to motivate employees to execute the Company's transformation strategy to become a global leader in information services. The structure of these awards is described in more detail below under *2012 Long-Term Incentive Program.* In addition to the issuance of awards under the 2012 long-term incentive plan, the Company issued awards to eligible new and existing employees in each of 2013, 2014 and 2015. The structure of these awards is further described below under *Long-Term Incentive Program.*

2012 Long-Term Incentive Program

For executive management, the awarded PVRSUs are subject to five one-year performance periods, the first of which began on January 1, 2012 and ended December 31, 2012 and the last of which begins on January 1, 2016 and ends on December 31, 2016. Each executive is eligible to earn up to 150% of one-fifth of the award with respect to each annual performance period subject to the achievement of the respective performance goals for each one-year performance period. For non-executive management, the PVRSUs awarded are subject to three one-year performance periods, the first of which began on January 1, 2012 and ended December 31, 2012 and the last of which began on January 1, 2014 and ended on December 31, 2014. Each non-executive was eligible to earn up to 150% of one-third of the award with respect to each annual performance period subject to the achievement of the respective performance goals for each one-year performance period. For both executive and non-executive management, the performance goals for each of the 2012, 2013 and 2014 performance periods were: (i) Non-NPAC Revenue, (ii) Total Revenue, and (iii) Adjusted Net Income. For executive management, the performance goals for the 2015 performance period were: (i) Non-NPAC Revenue, (ii) Total Revenue, and (iii) Adjusted Net Income. The performance goals for the future one-year performance period will consist of financial measures, weights and payouts to be established no later than 90 days after the beginning of such period.

Subject to each participant's continued service and to certain other terms and conditions, the portion of the award earned (a) by executive management with respect to the first three performance periods vested on January 1, 2015, and the portion of the award earned with respect to the fourth performance period vested on January 1, 2016, and the portion of the award, if any, earned with respect to the final performance period will vest on January 1, 2017; and (b) by non-executive management with respect to all three performance periods, 75% of the earned amount vested on the first business day of 2015, and the remaining 25% of the earned amount vested on the first business day of 2016. Compensation expense related to these awards is recognized over the requisite service period based on the Company's estimate of the achievement of the performance target and the length of the vesting period.

Long-Term Incentive Program

The awarded PVRSUs are subject to three one-year performance periods. Each participant is eligible to earn up to 150% of one-third of the award with respect to each annual performance period, subject to the achievement of the respective performance goals for each one-year performance period. The performance goals for each of the 2013, 2014 and 2015 performance periods were: (i) Non-NPAC Revenue, (ii) Total Revenue, and (iii) Adjusted Net Income. The performance goals for the future one-year performance periods will consist of financial measures, weights and payouts to be established no later than 90 days after the beginning of each such period.

Subject to each participant's continued service and to certain other terms and conditions, the portion of the award, if any, earned will vest on March 1 in the year following the respective annual performance period. Compensation expense related to these awards is recognized over the requisite service period based on the Company's estimate of the achievement of the performance target and the length of the vesting period.

Non-Vested PVRSU Activity

The fair value of a PVRSU is measured by reference to the closing market price of the Company's common stock on the date of the grant. The Company recognizes the estimated fair value of PVRSUs, net of estimated forfeitures, as stock-based compensation expense over the vesting period, which considers each performance period or tranche separately, based upon the Company's determination of the level of achievement of the performance target. As of December 31, 2015, the level of achievement of the performance target awards for PVRSUs' 2013, 2014 and 2015 performance years was 111.2%, 123.5% and 130.9%, respectively.

During 2015, the Company revised its estimate of the level of achievement of the performance target awards for the PVRSUs performance year of 2014 from 100% of target to reflect the final achievement of 130.9% of target. The Company's consolidated net income for the year ended December 31, 2015 was $175.5 million and diluted earnings per share was $3.14 per share. If the Company had continued to use the previous estimate of the level of achievement of 100% of the performance target for the PVRSUs performance year of 2015, the as adjusted net income for the year ended December 31, 2015 would have been approximately $178.1 million and the as adjusted diluted earnings per share would have been approximately $3.19 per share. As of December 31, 2014, the performance periods for PVRSUs performance years 2012 and 2013 were complete and the levels of achievement of the performance targets were fixed.

NEUSTAR, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following table summarizes the Company's non-vested PVRSU activity:

	Shares	Weighted-Average Grant Date Fair Value	Aggregate Intrinsic Value (in millions)
Non-vested December 31, 2012	971,023	$31.72	
Granted	909,220	42.93	
Vested	(159,346)	22.85	
Forfeited	(280,430)	35.51	
Non-vested December 31, 2013	1,440,467	39.04	
Granted	963,479	34.11	
Vested	(312,676)	32.26	
Forfeited	(280,318)	37.91	
Non-vested December 31, 2014	1,810,952	37.76	
Granted	1,435,835	26.16	
Vested	(1,718,280)	37.37	
Forfeited	(161,935)	31.67	
Non-vested December 31, 2015	1,366,572	$26.78	$32.8

During the years ended December 31, 2014 and 2015, the Company granted 963,479 and 1,435,835 PVRSUs, respectively, with an aggregate fair value of $32.9 million and $37.6 million, respectively. The total aggregate intrinsic value of PVRSUs vested during the years ended December 31, 2013, 2014 and 2015 was approximately $6.7 million, $13.4 million and $45.8 million, respectively. During the years ended December 31, 2013, 2014 and 2015, the Company repurchased 60,075, 122,312 and 683,127 shares of common stock, respectively, for an aggregate purchase price of $2.5 million, $5.1 million and $18.2 million, respectively, pursuant to the participants' rights under the Plans to elect to use common stock to satisfy their minimum tax withholding obligations.

On January 1, 2016 and January 4, 2016, 38,796 and 259,711 PVRSUs, respectively, vested with an aggregate intrinsic value of $0.9 million and $6.0 million, respectively. The Company repurchased 13,151 and 104,499 shares with respect to the PVRSUs that vested on January 2, 2016 and January 4, 2016, respectively, for an aggregate purchase price of $0.3 million and $2.4 million, respectively, pursuant to the participants' rights under the Plans to elect to use common stock to satisfy their minimum tax withholding obligations.

Restricted Stock Units

The following table summarizes the Company's restricted stock units activity:

	Shares	Weighted-Average Grant Date Fair Value	Aggregate Intrinsic Value (in millions)
Outstanding at December 31, 2012	922,550	$33.20	
Granted	736,111	48.55	
Vested	(178,337)	38.50	
Forfeited	(102,162)	39.66	
Outstanding at December 31, 2013	1,378,162	40.23	
Granted	43,201	28.80	
Vested	(200,283)	37.75	
Forfeited	(149,266)	44.80	
Outstanding at December 31, 2014	1,071,814	39.60	
Granted	1,486,374	26.54	
Vested	(294,992)	42.10	
Forfeited	(189,076)	33.68	
Outstanding at December 31, 2015	2,074,120	$30.42	$49.7

During the years ended December 31, 2013, 2014 and 2015, the Company granted 736,111, 43,201 and 1,486,374 restricted stock units, respectively, to certain employees with an aggregate fair value of $35.7 million, $1.2 million and $39.4 million, respectively.

The restricted stock units issued to non-management directors of the Company's Board of Directors will fully vest on the earlier of the first anniversary of the date of grant or the day preceding the date in the following calendar year on which the Company's annual meeting of stockholders is held. Upon vesting of restricted stock units, each director's restricted stock units will automatically be converted into deferred stock units and will be delivered to the director in shares of the Company's stock six months following the director's termination of board service unless a director elected near-term delivery, in which case the vested restricted stock units will be delivered on August 15 in the year following the initial grant.

Employee Stock Purchase Plan

The Company estimated the fair value of stock-based compensation expense associated with its ESPP using the Black-Scholes option pricing model, with the following weighted-average assumptions:

	Year Ended December 31, 2015
Dividend yield	— %
Expected volatility	34.82%
Risk-free interest rate	0.11%
Expected life of employee stock purchase plan options (in months)	6

Dividend yield — The Company has never declared or paid dividends on its common stock and does not anticipate paying dividends in the foreseeable future.

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Expected volatility — Volatility is a measure of the amount by which a financial variable such as a share price has fluctuated (historical volatility) or is expected to fluctuate (expected volatility) during a period. The Company considered the historical volatility of its stock price over a term similar to the expected life of the option to purchase shares under the ESPP during a 6 month purchase period.

Risk-free interest rate — The risk-free interest rate is based on U.S. Treasury bonds issued with similar life terms to the expected life of the ESPP options.

Expected life of ESPP options — The expected life of ESPP options was based on the six-month purchase period.

Share Repurchase Programs

2010 Share Repurchase Program

On July 28, 2010, the Company announced that its Board of Directors had authorized a $300 million share repurchase program. Share repurchases under the program were made through a Rule 10b5-1 plan, open market purchases, privately negotiated transactions or otherwise as market conditions warranted, at prices the Company deemed appropriate, and subject to applicable legal requirements and other factors. During the year ended December 31, 2013, the Company repurchased 0.8 million shares at an average price per share of $44.09 for an aggregate purchase price of approximately $35.4 million. All repurchased shares were accounted for as treasury shares.

2013 Share Repurchase Plan

On May 2, 2013, the Company announced that its Board of Directors authorized a $250 million share repurchase program. The program commenced in the second quarter of 2013 and expired on December 31, 2013. Under this program, during the year ended December 31, 2013, the Company repurchased 5.1 million shares of its Class A common stock at an average price per share of $49.44 per share for a total purchase price of $249.9 million. All repurchased shares were accounted for as treasury shares.

2014 Share Repurchase Plan

On January 29, 2014, the Company announced that its Board of Directors authorized a $200 million share repurchase program. The program commenced on January 30, 2014 and expired on December 31, 2014. Share repurchases under the program were completed in accordance with Rule 10b5-1 and Rule 10b-18 of the Securities and Exchange Act of 1934. All repurchased shares were retired. The Company repurchased 7.1 million shares of its Class A common stock at an average price of $28.30 per share for a total purchase price of $199.9 million. As of September 30, 2014, the share repurchase program was complete.

2015 Share Repurchase Plan

On March 26, 2015, the Company announced that its Board of Directors authorized a $150 million share repurchase program. The program commenced on March 27, 2015 and was terminated on November 4, 2015. Share repurchases under the program were completed in accordance with Rule 10b5-1 and Rule 10b-18 of the Securities and Exchange Act of 1934. All repurchased shares were retired. During the year ended December 31, 2015, the Company repurchased 3.8 million shares of its Class A common stock at an average price of $27.65 per share for a total purchase price of $104.2 million.

13. BASIC AND DILUTED NET INCOME PER COMMON SHARE

The following table provides a reconciliation of the numerators and denominators used in computing basic and diluted net income per common share (in thousands, except per share data):

	Year Ended December 31,		
	2013	2014	2015
Computation of basic net income per common share:			
Net income	$162,752	$163,694	$175,462
Weighted average common shares and participating securities outstanding — basic	64,463	57,647	54,643
Basic net income per common share	$ 2.52	$ 2.84	$ 3.21
Computation of diluted net income per common share:			
Weighted average common shares and participating securities outstanding — basic	64,463	57,647	54,643
Effect of dilutive securities:			
Stock-based awards	1,645	1,888	1,261
Weighted average common shares outstanding — diluted	66,108	59,535	55,904
Diluted net income per common share	$ 2.46	$ 2.75	$ 3.14

Diluted net income per common share reflects the potential dilution of common stock equivalents such as options and warrants, to the extent the impact is dilutive. The Company used income from continuing operations as the control number in determining whether potential common shares were dilutive or anti-dilutive. The same number of potential common shares used in computing the diluted per-share amount from continuing operations was also used in computing the diluted per-share amounts from discontinued operations even if those amounts were anti-dilutive.

Common stock options to purchase an aggregate of 104,167, 1,176,879 and 1,187,611 shares were excluded from the calculation of the denominator for diluted net income per common share due to their anti-dilutive effect for the years ended December 31, 2013, 2014, and 2015, respectively.

14. ACCUMULATED OTHER COMPREHENSIVE LOSS

The following table provides a reconciliation of the changes in accumulated other comprehensive loss, net of tax, by component (in thousands):

	Gains and Losses on Investments	Currency Translation Adjustment	Total
Balance at December 31, 2012	$ 142	$ (909)	$ (767)
Other comprehensive (loss) income	(156)	126	(30)
Balance at December 31, 2013	(14)	(783)	(797)
Other comprehensive income (loss)	86	(934)	(848)
Balance at December 31, 2014	72	(1,717)	(1,645)
Other comprehensive loss	(120)	(139)	(259)
Balance at December 31, 2015	$ (48)	$(1,856)	$(1,904)

15. SEGMENT INFORMATION

The Company engages in business activities as a single entity and the chief operating decision maker reviews consolidated operating results and allocates resources based on consolidated reports. The Company has a single operating segment.

Management has initiated an organizational review of the business in connection with the integration of its recent acquisitions, the review of its go-to-market strategies and the anticipated loss of its NPAC contracts. While the Company performs this review, the Company will maintain the current operating and reporting structure.

Enterprise-Wide Disclosures

Revenue by geographical areas is based on the billing addresses of our clients. Geographic area revenue and service revenue from external clients for the years ended December 31, 2013, 2014 and 2015, and geographic area long-lived assets as of December 31, 2014 and 2015 are as follows (in thousands):

	Year Ended December 31,		
	2013	2014	2015
Revenue by geographical areas:			
United States	$839,367	$901,136	$ 973,628
International	62,674	62,452	76,330
Total revenue	$902,041	$963,588	$1,049,958
Revenue by service:			
Marketing Services	$126,165	$146,991	$ 170,368
Security Services	113,507	140,315	167,995
Data Services	215,954	201,438	204,461
NPAC Services	446,415	474,844	507,134
Total revenue	$902,041	$963,588	$1,049,958

	December 31,	
	2014	2015
Property and equipment, net		
United States	$161,542	$145,077
Australia	—	2,171
Other	62	516
Total property and equipment, net	$161,604	$147,764

16. EMPLOYEE BENEFIT PLANS

The Company has a 401(k) Profit-Sharing Plan for the benefit of all employees who meet certain eligibility requirements. This plan covers substantially all of the Company's full-time employees. The Company makes matching and other discretionary contributions under this plan, as determined by the Board of Directors. The Company recognized contribution expense totaling $6.9 million, $7.5 million and $8.1 million for the years ended December 31, 2013, 2014 and 2015, respectively.

17. SUPPLEMENTAL GUARANTOR INFORMATION

The following schedules present condensed consolidating financial information of the Company as of December 31, 2014 and 2015 and for the years ended December 31, 2013, 2014 and 2015 for (a) Neustar, Inc., the parent company; (b) certain of the Company's 100% owned domestic subsidiaries (collectively, the Subsidiary Guarantors); and (c) certain wholly-owned domestic and foreign subsidiaries of the Company (collectively, the Non-Guarantor Subsidiaries). Investments in subsidiaries are accounted for using the equity method; accordingly, entries necessary to consolidate the parent company and all of the guarantor and non-guarantor subsidiaries are reflected in the eliminations column. Intercompany amounts that will not be settled between entities are treated as contributions or distributions for purposes of these consolidated financial statements. The guarantees, as outlined in Note 7, are full and unconditional and joint and several. A Subsidiary Guarantor will be released from its obligations under the Senior Notes when: (a) the Subsidiary Guarantor is sold or sells substantially all of its assets; (b) the Subsidiary Guarantor is designated as an unrestricted subsidiary as defined by the Senior Notes; (c) the Subsidiary Guarantor's guarantee of indebtedness under the Senior Notes is released (other than discharge through repayment); or (d) the requirements for legal or covenant defeasance or discharge of the indenture have been satisfied.

CONDENSED CONSOLIDATED BALANCE SHEET
DECEMBER 31, 2014
(in thousands)

	NeuStar, Inc.	Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Eliminations	Consolidated
ASSETS					
Current assets:					
Cash and cash equivalents	$ 297,565	$ 19,606	$ 9,406	$ —	$ 326,577
Restricted cash	1,260	931	—	—	2,191
Accounts receivable, net	93,519	59,868	1,699	—	155,086
Unbilled receivables	3,115	9,652	317	—	13,084
Prepaid expenses and other current assets	17,042	3,526	544	—	21,112
Deferred costs	4,798	2,153	—	—	6,951
Income taxes receivable	18,935	—	7	(2,986)	15,956
Deferred income tax assets	3,600	6,853	—	(73)	10,380
Intercompany receivable	24,674	—	—	(24,674)	—
Total current assets	464,508	102,589	11,973	(27,733)	551,337
Property and equipment, net	149,024	12,566	14	—	161,604
Goodwill	95,388	565,425	31,456	—	692,269
Intangible assets, net	16,836	280,962	4,824	—	302,622
Net investments in subsidiaries	841,436	—	—	(841,436)	—
Deferred income tax assets, long-term	—	—	284	(284)	—
Other assets, long-term	13,521	1,917	20	—	15,458
Total assets	$1,580,713	$963,459	$48,571	$(869,453)	$1,723,290
LIABILITIES AND STOCKHOLDERS' EQUITY					
Current liabilities:					
Accounts payable	$ 7,025	$ 1,332	$ 82	$ —	$ 8,439
Accrued expenses	72,423	20,243	2,105	—	94,771
Income taxes payable	—	2,986	—	(2,986)	—
Deferred revenue	29,952	42,177	1,779	—	73,908
Notes payable	4,692	—	—	—	4,692
Capital lease obligations	3,702	—	—	—	3,702
Other liabilities	21,882	1,202	114	(73)	23,125
Intercompany payable	—	12,267	12,407	(24,674)	—
Total current liabilities	139,676	80,207	16,487	(27,733)	208,637
Deferred revenue, long-term	8,592	18,425	—	—	27,017
Notes payable, long-term	759,780	—	—	—	759,780
Capital lease obligations, long-term	5,579	—	—	—	5,579
Deferred income tax liabilities, long-term	3,813	45,582	—	(284)	49,111
Other liabilities, long-term	44,246	9,437	—	—	53,683
Total liabilities	961,686	153,651	16,487	(28,017)	1,103,807
Total stockholders' equity	619,027	809,808	32,084	(841,436)	619,483
Total liabilities and stockholders' equity	$1,580,713	$963,459	$48,571	$(869,453)	$1,723,290

CONDENSED CONSOLIDATED BALANCE SHEET
DECEMBER 31, 2015
(in thousands)

	NeuStar, Inc.	Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Eliminations	Consolidated
ASSETS					
Current assets:					
Cash and cash equivalents	$ 48,061	$ 27,092	$ 13,944	$ —	$ 89,097
Restricted cash	1,260	1,103	—	—	2,363
Accounts receivable, net	91,899	71,062	4,632	—	167,593
Unbilled receivables	2,357	14,694	661	—	17,712
Prepaid expenses and other current assets	23,080	8,551	1,868	(3,283)	30,216
Deferred costs	1,119	2,876	2,681	—	6,676
Income taxes receivable	10,661	—	—	(4,778)	5,883
Intercompany receivable	26,030	—	—	(26,030)	—
Total current assets	204,467	125,378	23,786	(34,091)	319,540
Property and equipment, net	135,445	9,302	3,017	—	147,764
Goodwill	94,153	984,017	108,813	—	1,186,983
Intangible assets, net	13,751	462,848	52,680	—	529,279
Net investments in subsidiaries	1,545,227	—	—	(1,545,227)	—
Other assets, long-term	16,071	1,283	2,635	(1,308)	18,681
Total assets	$2,009,114	$1,582,828	$190,931	$(1,580,626)	$2,202,247
LIABILITIES AND STOCKHOLDERS' EQUITY					
Current liabilities:					
Accounts payable	$ 18,945	$ 7,522	$ 1,925	$ —	$ 28,392
Accrued expenses	98,761	29,262	6,609	—	134,632
Income taxes payable	—	3,068	1,496	(4,564)	—
Deferred revenue	24,929	46,153	19,924	—	91,006
Notes payable	131,272	—	3,283	(3,283)	131,272
Capital lease obligations	3,927	—	864	—	4,791
Other liabilities	9,937	279	659	—	10,875
Intercompany payable	—	18,199	7,831	(26,030)	—
Total current liabilities	287,771	104,483	42,591	(33,877)	400,968
Deferred revenue, long-term	8,239	9,734	5,025	—	22,998
Notes payable, long-term	957,509	—	—	—	957,509
Capital lease obligations, long-term	1,825	—	6	—	1,831
Deferred income tax liabilities, long-term	—	42,865	7,658	(11,822)	38,701
Other liabilities, long-term	41,978	8,652	6,111	—	56,741
Total liabilities	1,297,322	165,734	61,391	(45,699)	1,478,748
Total stockholders' equity	711,792	1,417,094	129,540	(1,534,927)	723,499
Total liabilities and stockholders' equity	$2,009,114	$1,582,828	$190,931	$(1,580,626)	$2,202,247

CONDENSED CONSOLIDATED STATEMENT OF OPERATIONS
YEAR ENDED DECEMBER 31, 2013
(in thousands)

	NeuStar, Inc.	Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Eliminations	Consolidated
Revenue	$620,987	$269,979	$14,899	$ (3,824)	$902,041
Operating expense:					
Cost of revenue (excluding depreciation and amortization shown separately below)	163,288	49,646	3,204	(3,566)	212,572
Sales and marketing	84,540	89,757	3,744	(24)	178,017
Research and development	17,840	10,140	13	—	27,993
General and administrative	84,963	8,258	943	(234)	93,930
Depreciation and amortization	41,164	59,050	19	—	100,233
Restructuring charges	2	—	—	—	2
	391,797	216,851	7,923	(3,824)	612,747
Income from operations	229,190	53,128	6,976	—	289,294
Other (expense) income:					
Interest and other expense	(34,474)	15	(68)	—	(34,527)
Interest income	336	1	20	—	357
Income before income taxes and equity income in consolidated subsidiaries	195,052	53,144	6,928	—	255,124
Provision for income taxes	66,795	23,994	1,583	—	92,372
Income before equity income in consolidated subsidiaries	128,257	29,150	5,345	—	162,752
Equity income in consolidated subsidiaries	34,495	2,516	—	(37,011)	—
Net income	$162,752	$ 31,666	$ 5,345	$(37,011)	$162,752
Comprehensive income	$162,791	$ 31,697	$ 5,245	$(37,011)	$162,722

NEUSTAR, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

CONDENSED CONSOLIDATED STATEMENT OF OPERATIONS
YEAR ENDED DECEMBER 31, 2014
(in thousands)

	NeuStar, Inc.	Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Eliminations	Consolidated
Revenue	$675,857	$301,167	$14,484	$(27,920)	$963,588
Operating expense:					
Cost of revenue (excluding depreciation and amortization shown separately below)	162,696	98,001	10,567	(24,149)	247,115
Sales and marketing	142,215	57,879	1,629	(3,581)	198,142
Research and development	25,516	2,190	33	—	27,739
General and administrative	95,343	8,956	861	(190)	104,970
Depreciation and amortization	48,954	67,464	1,367	—	117,785
Restructuring charges	3,842	2,442	237	—	6,521
	478,566	236,932	14,694	(27,920)	702,272
Income (loss) from operations	197,291	64,235	(210)	—	261,316
Other (expense) income:					
Interest and other expense	(26,377)	52	107	—	(26,218)
Interest income	418	9	18	—	445
Income (loss) before income taxes and equity income in consolidated subsidiaries	171,332	64,296	(85)	—	235,543
Provision for income taxes	35,893	35,179	777	—	71,849
Income (loss) before equity income in consolidated subsidiaries	135,439	29,117	(862)	—	163,694
Equity income in consolidated subsidiaries	28,255	1,345	—	(29,600)	—
Net income (loss)	$163,694	$ 30,462	$ (862)	$(29,600)	$163,694
Comprehensive income	$163,138	$ 30,725	$ (1,417)	$(29,600)	$162,846

**CONDENSED CONSOLIDATED STATEMENT OF OPERATIONS
YEAR ENDED DECEMBER 31, 2015
(in thousands)**

	NeuStar, Inc.	Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Eliminations	Consolidated
Revenue	$713,860	$347,043	$27,248	$(38,193)	$1,049,958
Operating expense:					
Cost of revenue (excluding depreciation and amortization shown separately below)	185,058	115,025	18,407	(32,254)	286,236
Sales and marketing	148,710	62,004	1,253	(5,675)	206,292
Research and development	21,712	3,945	20	—	25,677
General and administrative	105,887	12,416	609	(264)	118,648
Depreciation and amortization	52,624	65,742	4,325	—	122,691
Restructuring charges	3,858	—	—	—	3,858
	517,849	259,132	24,614	(38,193)	763,402
Income (loss) from operations	196,011	87,911	2,634	—	286,556
Other (expense) income:					
Interest and other expense	(32,604)	334	(1,308)	—	(33,578)
Interest income	482	153	(83)	—	552
Income before income taxes and equity income in consolidated subsidiaries	163,889	88,398	1,243	—	253,530
Provision for income taxes	50,238	27,048	782	—	78,068
Income before equity income in consolidated subsidiaries	113,651	61,350	461	—	175,462
Equity income in consolidated subsidiaries	61,811	1,007	—	(62,818)	—
Net income	$175,462	$ 62,357	$ 461	$(62,818)	$ 175,462
Comprehensive income (loss)	$175,434	$ 62,179	$ 408	$(62,818)	$ 175,203

**CONDENSED CONSOLIDATED STATEMENT OF CASH FLOWS
YEAR ENDED DECEMBER 31, 2013
(in thousands)**

	NeuStar, Inc.	Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Eliminations	Consolidated
Net cash provided by operating activities	$ 284,854	$ 126,933	$11,318	$(135,248)	$ 287,857
Investing activities:					
Purchases of property and equipment	(48,794)	(4,435)	(10)	—	(53,239)
Sales and maturities of investments	3,543	—	—	—	3,543
Businesses acquired, net of cash acquired	(105,419)	—	—	—	(105,419)
Net cash used in investing activities	(150,670)	(4,435)	(10)	—	(155,115)
Financing activities:					
Decrease in restricted cash	221	250	214	—	685
Proceeds from note payable	624,244	—	—	—	624,244
Extinguishment of note payable	(592,500)	—	—	—	(592,500)
Payments under notes payable obligations	(8,126)	—	—	—	(8,126)
Principal repayments on capital lease obligations	(1,686)	—	—	—	(1,686)
Debt issuance costs	(11,410)	—	—	—	(11,410)
Proceeds from issuance of stock	23,686	—	—	—	23,686
Tax benefit from equity awards	7,854	—	22	—	7,876
Repurchase of restricted stock awards and common stock	(292,350)	—	—	—	(292,350)
Distribution to parent	—	(127,045)	(8,203)	135,248	—
Net cash used in financing activities	(250,067)	(126,795)	(7,967)	135,248	(249,581)
Effect of foreign exchange rates on cash and cash equivalents	(7)	—	(100)	—	(107)
Net (decrease) increase in cash and cash equivalents	(115,890)	(4,297)	3,241	—	(116,946)
Cash and cash equivalents at beginning of period	330,849	5,372	4,034	—	340,255
Cash and cash equivalents at end of period	$ 214,959	$ 1,075	$ 7,275	$ —	$ 223,309

CONDENSED CONSOLIDATED STATEMENT OF CASH FLOWS
YEAR ENDED DECEMBER 31, 2014
(in thousands)

	NeuStar, Inc.	Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Eliminations	Consolidated
Net cash provided by (used in) operating activities	$ 296,280	$ 191,873	$(1,255)	$(167,236)	$ 319,662
Investing activities:					
Purchases of property and equipment	(58,174)	(1,833)	(154)	—	(60,161)
Businesses acquired, net of cash acquired	(120,698)	—	—	—	(120,698)
Net cash used in investing activities	(178,872)	(1,833)	(154)	—	(180,859)
Financing activities:					
Decrease in restricted cash	—	127	3	—	130
Proceeds from note payable	175,000	—	—	—	175,000
Payments under notes payable obligations	(8,125)	—	—	—	(8,125)
Principal repayments on capital lease obligations	(3,466)	—	—	—	(3,466)
Proceeds from issuance of stock	10,994	—	—	—	10,994
Tax benefit from equity awards	1,490	—	5	—	1,495
Repurchase of restricted stock awards and common stock	(209,627)	—	—	—	(209,627)
(Distribution to) investment by parent	—	(171,322)	4,086	167,236	—
Net cash (used in) provided by financing activities	(33,734)	(171,195)	4,094	167,236	(33,599)
Effect of foreign exchange rates on cash and cash equivalents	(1,068)	(314)	(554)	—	(1,936)
Net increase in cash and cash equivalents	82,606	18,531	2,131	—	103,268
Cash and cash equivalents at beginning of period	214,959	1,075	7,275	—	223,309
Cash and cash equivalents at end of period	$ 297,565	$ 19,606	$ 9,406	$ —	$ 326,577

CONDENSED CONSOLIDATED STATEMENT OF CASH FLOWS
YEAR ENDED DECEMBER 31, 2015
(in thousands)

	NeuStar, Inc.	Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Eliminations	Consolidated
Net cash (used in) provided by operating activities	$(394,901)	$ 600,268	$ 98,832	$ 51,140	$ 355,339
Investing activities:					
Purchases of property and equipment	(30,304)	(1,833)	—	—	(32,137)
Businesses acquired, net of cash acquired	(16,949)	(641,228)	(100,118)	—	(758,295)
Net cash used in investing activities	(47,253)	(643,061)	(100,118)	—	(790,432)
Financing activities:					
Increase in restricted cash	—	(172)	—	—	(172)
Proceeds from note payable	350,000	—	—	—	350,000
Payments under notes payable obligations	(8,125)	—	—	—	(8,125)
Principal repayments on capital lease obligations	(4,306)	—	—	—	(4,306)
Debt issuance costs	(25,274)	—	—	—	(25,274)
Proceeds from issuance of stock	9,915	—	—	—	9,915
Tax benefit from equity awards	361	—	—	—	361
Repurchase of restricted stock awards and common stock	(125,563)	—	—	—	(125,563)
Investment by parent	—	50,166	974	(51,140)	—
Net cash provided by financing activities	197,008	49,994	974	(51,140)	196,836
Effect of foreign exchange rates on cash and cash equivalents	(4,358)	285	4,850	—	777
Net (decrease) increase in cash and cash equivalents	(249,504)	7,486	4,538	—	(237,480)
Cash and cash equivalents at beginning of period	297,565	19,606	9,406	—	326,577
Cash and cash equivalents at end of period	$ 48,061	$ 27,092	$ 13,944	$ —	$ 89,097

18. QUARTERLY FINANCIAL INFORMATION (UNAUDITED)

The following is unaudited quarterly financial information for the two year period ended December 31, 2015. In management's opinion, the unaudited financial information has been prepared on the same basis as the audited information and includes all adjustments (consisting only of normal recurring adjustments) necessary for fair presentation of the quarterly financial information presented.

	Quarter Ended			
	Mar. 31, 2014	Jun. 30, 2014	Sep. 30, 2014	Dec. 31, 2014
	(in thousands, except per share data)			
Summary consolidated statement of operations:				
Revenue	$229,897	$237,457	$243,859	$252,375
Income from operations	55,339	64,750	66,799	74,428
Net income	31,683	36,847	48,173	46,991
Net income per common share — basic	$ 0.52	$ 0.62	$ 0.87	$ 0.85
Net income per common share — diluted	$ 0.50	$ 0.61	$ 0.84	$ 0.82

	Quarter Ended			
	Mar. 31, 2015	Jun. 30, 2015	Sep. 30, 2015	Dec. 31, 2015
	(in thousands, except per share data)			
Summary consolidated statement of operations:				
Revenue	$251,388	$256,767	$261,653	$280,150
Income from operations	79,461	78,110	80,736	48,249
Net income	46,214	45,058	50,282	33,908
Net income per common share — basic	$ 0.83	$ 0.81	$ 0.93	$ 0.64
Net income per common share — diluted	$ 0.81	$ 0.80	$ 0.91	$ 0.62

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Attached as exhibits to this Form 10-K are certifications of our Chief Executive Officer and Chief Financial Officer, which are required in accordance with Rule 13a-14 of the Securities Exchange Act of 1934, as amended. This "Controls and Procedures" section includes information concerning the controls and controls evaluation referred to in the certifications. The report of Ernst & Young LLP, our independent registered public accounting firm, regarding its audit of our internal control over financial reporting is set forth below in this section. This section should be read in conjunction with the certifications and the Ernst & Young report for a more complete understanding of the topics presented.

Evaluation of Disclosure Controls and Procedures

We conducted an evaluation of the effectiveness of the design and operation of our "disclosure controls and procedures" as of the end of the period covered by this Form 10-K. The controls evaluation was conducted under the supervision and with the participation of management, including our Chief Executive Officer and Chief Financial Officer. Disclosure controls are controls and procedures designed to reasonably assure that information required to be disclosed in our reports filed under the Securities Exchange Act of 1934, such as this Form 10-K, is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls are also designed to reasonably assure that such information is accumulated and communicated to our management, including the Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure. Our quarterly evaluation of disclosure controls includes an evaluation of some components of our internal control over financial reporting, and internal control over financial reporting is also separately evaluated on an annual basis for purposes of providing the management report which is set forth below.

The evaluation of our disclosure controls included a review of the controls' objectives and design, our implementation of the controls and their effect on the information generated for use in this Form 10-K. In the course of the controls evaluation, we reviewed identified data errors, control problems or indications of potential fraud and, where appropriate, sought to confirm that appropriate corrective actions, including process improvements, were being undertaken. This type of evaluation is performed on a quarterly basis so that the conclusions of management, including the Chief Executive Officer and Chief Financial Officer, concerning the effectiveness of the disclosure controls can be reported in our periodic reports on Form 10-Q and Form 10-K. Many of the components of our disclosure controls are also evaluated on an ongoing basis by our finance organization. The overall goals of these various evaluation activities are to monitor our disclosure controls, and to modify them as necessary. Our intent is to maintain the disclosure controls as dynamic systems that change as conditions warrant.

Based upon the controls evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that, as of the end of the period covered by this Form 10-K, our disclosure controls were effective to provide reasonable assurance that information required to be disclosed in our report filed under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the time periods specified by the SEC, and that material information related to NeuStar and its consolidated subsidiaries is made known to management, including the Chief Executive Officer and Chief Financial Officer, particularly during the period when our periodic reports are being prepared. We reviewed the results of management's evaluation with the Audit Committee of our Board of Directors.

Management Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining effective internal control over financial reporting to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with U.S. GAAP. Internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. GAAP; and (iii) provide reasonable assurance regarding authorization to effect the acquisition, use or disposition of Company assets, as well as the prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the consolidated financial statements.

Management assessed our internal control over financial reporting as of December 31, 2015, the end of our fiscal year. Management based its assessment on criteria established in Internal Control — Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework). Management's assessment included evaluation of such elements as the design and operating effectiveness of key financial reporting controls, process documentation, accounting policies and our overall control environment. This assessment is supported by testing and monitoring performed by our finance organization.

Based on this assessment, management has concluded that our internal control over financial reporting was effective as of the end of the fiscal year to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external reporting purposes in accordance with U.S. GAAP.

Our independent registered public accounting firm, Ernst & Young LLP, independently assessed the effectiveness of the Company's internal control over financial reporting. Ernst & Young has issued an attestation report, which is included at the end of this section.

Inherent Limitations on Effectiveness of Controls

A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. The design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Other inherent limitations include the realities that judgments in decision-making can be faulty and that breakdowns can occur because of simple error or mistake. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. Projections of any evaluation of controls effectiveness to future periods are subject to risks. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures.

Changes in Internal Control over Financial Reporting

On a quarterly basis we evaluate any changes to our internal control over financial reporting to determine if material changes occurred. There were no changes in our internal controls over financial reporting during the quarterly period ended December 31, 2015 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders
NeuStar, Inc.

We have audited NeuStar, Inc.'s internal control over financial reporting as of December 31, 2015, based on criteria established in Internal Control — Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). NeuStar, Inc.'s management is responsible for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, NeuStar, Inc. maintained, in all material respects, effective internal control over financial reporting as of December 31, 2015, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of NeuStar, Inc. as of December 31, 2014 and 2015, and the related consolidated statements of operations, comprehensive income, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2015 and our report dated February 29, 2016 expressed an unqualified opinion thereon.

/s/ ERNST & YOUNG LLP

McLean, Virginia
February 29, 2016

ITEM 9B. OTHER INFORMATION

On February 24, 2016, or the Effective Date, our Board of Directors, or the Board, upon the recommendation of our Compensation Committee, or Committee, amended and restated the NeuStar 2010 Key Employee Severance Pay Plan, or the Plan. Each of our named executive officers is a "key employee" participant in the Plan.

The principal effects of the amendment and restatement of the Plan were to:

(1) Rename the Plan the NeuStar, Inc. 2016 Key Employee Severance Pay Plan;

(2) Revise the definitions of "good reason" and "cause" under the Plan;

(3) Modify the cash severance benefit payable under the Plan in connection with a qualifying termination of employment to be (a) in the case of the Chief Executive Officer, or CEO, 150% of the CEO's annual salary and target annual bonus, payable over the 18-month period following the date of termination, and (b) in the case of key employees other than the CEO, 100% of the employee's annual salary and target annual bonus, payable over twelve months following the date of termination;

(4) Modify the cash severance benefit payable in connection with a qualifying termination occurring within the two-year period following a corporate transaction to be (a) in the case of the CEO, 200% of the CEO's annual salary and average annual bonus (based on the bonus received for the three full calendar years prior to the corporate transaction), payable over eighteen months following termination, and (b) in the case of key employees other than the CEO, 150% of the employee's annual salary and average annual bonus, payable over twelve months following termination;

(5) Conform the restricted period during which a key employee's non-compete and non-solicitation obligations apply following termination of the key employee's employment to match the applicable post-termination severance period, subject to the Compensation Committee's ability to extend the post-termination non-compete and non-interference restrictions by up to an additional one-year period, provided that the Company pay additional cash severance during such extended restricted period;

(6) Add a net "better-of" cutback provision which would reduce the aggregate payments payable to the key employee, under the Plan or otherwise, in connection with change in control under Section 280G of the Internal Revenue Code of 1986, as amended, or Code, to the maximum amount that would result in no such payments being subject to excise tax under Code Section 4999, if such reduction would result in greater amount of such payments, on a net after-tax basis, than without such reduction.

In addition, upon the approval of the Board following the recommendation of the Committee, the Company entered into individual letter agreements with each of Lisa A. Hook, President and CEO, Paul S. Lalljie, Senior Vice President and Chief Financial Officer, and Leonard Kennedy, Senior Vice President, General Counsel, or the Letter Agreements, which further modify the definition of "good reason" applicable to Ms. Hook and Messrs. Lalljie and Kennedy for purposes of the Plan.

The foregoing description of the key changes to the Plan does not purport to be complete and is qualified in its entirety by reference to the Plan, a copy of which is attached as Exhibit 10.11 to this Annual Report on Form 10-K, and is incorporated herein by reference, and to the form of Letter Agreement, a copy of which is attached as Exhibit 10.12 to this Annual Report on Form 10-K and is incorporated herein by reference.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information about our directors and executive officers and our corporate governance is incorporated by reference to our definitive proxy statement for our 2016 Annual Meeting of Stockholders, or our 2016 Proxy Statement, which is anticipated to be filed with the Securities and Exchange Commission within 120 days of December 31, 2015, under the headings "Board of Directors," "Executive Officers and Management" and "Governance of the Company." Information about compliance with Section 16(a) of the Exchange Act is incorporated by reference to our 2016 Proxy Statement under the heading "Section 16(a) Beneficial Ownership Reporting Compliance." Information about our Audit Committee, including the members of the Audit Committee, and Audit Committee financial experts, is incorporated by reference to our 2016 Proxy Statement under the heading "Governance of the Company." Information about the NeuStar policies on business conduct governing our employees, including our Chief Executive Officer, Chief Financial Officer and our controller, is incorporated by reference to our 2016 Proxy Statement under the heading "Governance of the Company."

ITEM 11. EXECUTIVE COMPENSATION

Information required by Item 11 of this report is incorporated by reference to our 2016 Proxy Statement, under the heading "Compensation."

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information required by Item 12 of this report is incorporated by reference to our 2016 Proxy Statement, under the headings "Beneficial Ownership of Shares of Common Stock" and "Equity Compensation Plan Information."

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

The information required by Item 13 of this report is incorporated by reference to our 2016 Proxy Statement, under the heading "Governance of the Company."

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Information about the fees for professional services rendered by our independent registered public accounting firm in 2014 and 2015 is incorporated by reference to our 2016 Proxy Statement, under heading "Audit and Non-Audit Fees". Our audit committee's policy on pre-approval of audit and permissible non-audit services of our independent registered public accounting firm is incorporated by reference from the discussion under the heading "Governance of the Company."

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) Documents filed as part of this report:

(1)

(2)

Schedule for the three years ended December 31, 2013, 2014 and 2015:

(a) (3) and (b) Exhibits required by Item 601 of Regulation S-K:

NEUSTAR, INC.
SCHEDULE II — VALUATION AND QUALIFYING ACCOUNTS

	As of December 31,		
	2013	2014	2015
		(in thousands)	
Allowance for Doubtful Accounts			
Beginning balance	$ 2,161	$ 2,507	$ 3,154
Additions	6,174	7,015	9,399
Reductions(1)	(5,828)	(6,368)	(8,041)
Ending balance	$ 2,507	$ 3,154	$ 4,512
Deferred Tax Asset Valuation Allowance			
Beginning balance	$ 3,965	$ 2,821	$ 4,584
Additions	37	2,841	4,001
Reductions	(1,181)	(1,078)	(33)
Ending balance	$ 2,821	$ 4,584	$ 8,552

(1) Includes the reinstatement and subsequent collections of account receivable that were previously written-off.

Exhibit Index

See exhibits listed under the Exhibit Index below.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized on February 29, 2016.

NEUSTAR, INC.

By: /s/ Lisa A. Hook

Lisa A. Hook
President and Chief Executive Officer

We, the undersigned directors and officers of NeuStar, Inc., hereby severally constitute Lisa A. Hook and Paul S. Lalljie, and each of them singly, our true and lawful attorneys with full power to them and each of them to sign for us, in our names in the capacities indicated below, any and all amendments to this Annual Report on Form 10-K filed with the Securities and Exchange Commission.

Pursuant to the requirements of the Securities Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities indicated on February 29, 2016.

Signature	Title
/s/ Lisa A. Hook Lisa A. Hook	President, Chief Executive Officer (Principal Executive Officer) and Director
/s/ Paul S. Lalljie Paul S. Lalljie	Senior Vice President and Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)
/s/ James G. Cullen James G. Cullen	Chairman, Board of Directors
/s/ Paul D. Ballew Paul D. Ballew	Director
/s/ Gareth Chang Gareth Chang	Director
/s/ Joel P. Friedman Joel P. Friedman	Director
/s/ Mark N. Greene Mark N. Greene	Director
/s/ Ross K. Ireland Ross K. Ireland	Director
/s/ Paul A. Lacouture Paul A. Lacouture	Director
/s/ Deborah D. Rieman Deborah D. Rieman	Director
/s/ Michael J. Rowny Michael J. Rowny	Director
/s/ Hellene S. Runtagh Hellene S. Runtagh	Director

Exhibit Index

Exhibits identified in parentheses below are on file with the SEC and are incorporated herein by reference. All other exhibits are provided as part of this electronic submission.

Exhibit Number	Description of Exhibit
(2.1)	Agreement and Plan of Merger, dated as of October 10, 2011, by and among NeuStar, Inc., Tumi Merger Sub, Inc., Targus Information Corporation and Michael M. Sullivan, as Stockholder Representative, incorporated herein by reference to Exhibit 2.1 to our Current Report on Form 8-K, filed October 11, 2011.
(2.2)	Asset Purchase Agreement, dated as of September 9, 2015, by and among NeuStar, Inc. and Transaction Network Services, Inc., incorporated by reference to Exhibit 2.1 to our Current Report on Form 8-K filed September 9, 2015.
(2.3)	Securities Purchase Agreement, dated as of November 5, 2015, by and among NeuStar, MarketShare, the Sellers (as defined therein), the Warrant Holders (as defined therein), and Shareholder Representative Services LLC, as the Sellers Representative, incorporated by reference to Exhibit 2.1 to our Current Report on Form 8-K Filed November 6, 2015.
(3.1)	Third Restated Certificate of Incorporation, incorporated herein by reference to Exhibit 3.1.2 to our Quarterly Report on Form 10-Q, filed October 29, 2015.
(3.2)	Amended and Restated Bylaws, incorporated herein by reference to Exhibit 3.2 to our Quarterly Report on Form 10-Q, filed October 29, 2015.
(4.1)	Indenture, dated as of January 22, 2013, among NeuStar, Inc., each of the subsidiary guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee, incorporated herein by reference to Exhibit 99.1 to our Current Report on Form 8-K, filed January 22, 2013.
(10.1)	Contractor services agreement entered into the 7th day of November 1997 by and between NeuStar, Inc. and North American Portability Management LLC, as amended, incorporated herein by reference to (a) Exhibit 10.1 to our Quarterly Report on Form 10-Q, filed August 15, 2005; (b) Exhibit 10.1.1. to our Annual Report on Form 10-K, filed March 29, 2006; (c) Exhibit 10.1.2 to our Quarterly Report on Form 10-Q, filed August 14, 2006; (d) Exhibit 10.1.3 to our Quarterly Report on Form 10-Q, filed August 14, 2006**; (e) Exhibit 99.1 to our Current Report on Form 8-K, filed September 22, 2006; (f) Exhibit 10.1.1 to our Annual Report on Form 10-K, filed March 1, 2007; (g) Exhibit 10.1.2 to our Quarterly Report on Form 10-Q, filed November 5, 2007**, (h) Exhibit 10.1.1 to our Annual Report on Form 10-K, filed February 28, 2008, (i) Exhibit 10.1.2 to our Quarterly Report on Form 10-Q, filed November 10, 2008; (j) Exhibit 99.1 to our Current Report on Form 8-K, filed on January 28, 2009; (k) Exhibit 10.1.3 to our Quarterly Report on Form 10-Q, filed on August 4, 2009; and (l) Exhibit 10.1.4 to our Quarterly Report on Form 10-Q, filed on October 30, 2009, (m) Exhibit 10.1.1 to our Annual Report on form 10-K, filed February 26, 2010; (n) Exhibit 10.1.2 to our Quarterly Report on Form 10-Q, filed on July 28, 2010; (o) Exhibit 10.1.1 to our Quarterly Report on Form 10-Q, filed April 27, 2011; and (p) Exhibit 10.1.1 to our Quarterly Report on Form 10-Q, filed November 5, 2012; (q) Exhibit 10.1.1 ** to our Annual Report on Form 10-K, filed February 28, 2013; (r) Exhibit 10.1.2 to our Quarterly Report on Form 10-Q, filed May 2, 2013; (s) Exhibits 10.1.3**, 10.1.4** and 10.1.5, respectively, to our Quarterly Report on Form 10-Q, filed July 30, 2013; (t) Exhibit 10.1.6** to our Quarterly Report on Form 10-Q, filed October 30, 2013; (w) Exhibit 10.1.2 to our Annual Report on Form 10-K, filed February 28, 2014; (x) Exhibit 99.1 to our Current Report on Form 8-K filed on April 8, 2015; and (y) Exhibit 10.1.1 to our Quarterly Report on Form 10-Q filed on July 30, 2015.
10.1.1	Amendment No. 99 dated December 3, 2015 to the contractor services agreement by and between NeuStar, Inc. and North American Portability Management LLC.

Exhibit Number	Description of Exhibit
(10.2)	NeuStar, Inc. 1999 Equity Incentive Plan (the "1999 Plan"), incorporated herein by reference to Exhibit 10.8 to Amendment No. 3 to our Registration Statement on Form S-1, filed May 27, 2005 (File No. 333-123635).†
(10.3)	NeuStar, Inc. 2005 Stock Incentive Plan (the "2005 Plan"), incorporated herein by reference to Exhibit 10.51 to our Quarterly Report on Form 10-Q, filed August 8, 2007.†
(10.4)	TARGUS Information Corporation Amended and Restated 2004 Stock Incentive Plan, incorporated herein by reference to Exhibit 99.1 to our Registration Statement on Form S-8, filed November 18, 2011 (File No. 333-177979).†
(10.5)	AMACAI Information Corporation 2004 Stock Incentive Plan, incorporated by reference to Exhibit 99.1 to our Registration Statement on Form S-8, filed November 14, 2011 (File No. 333-177976).†
(10.6)	Loudoun Tech Center Office Lease by and between Merritt-LT1, LLC, Landlord, and NeuStar, Inc., Tenant, incorporated herein by reference to Exhibit 99.1 to our Current Report on Form 8-K, filed on June 2, 2009.
(10.7)	Loudoun Tech Center Office Lease by and between Merritt-LT1, LLC, Landlord, and NeuStar, Inc., Tenant, incorporated herein by reference to (a) Exhibit 10.37 to Amendment No. 2 to our Registration Statement on Form S-1, filed May 11, 2005 (File No. 333-123635) and (b) Exhibit 99.2 to our Current Report on Form 8-K, filed June 2, 2009.
(10.8)	Lease, dated January 20, 2010, by and between Ridgetop Three, L.L.C. and NeuStar, Inc., incorporated herein by reference to (a) Exhibit 99.1 to our Current Report on Form 8-K, filed January 20, 2010, and (b) Exhibit 10.61.1 to our Quarterly Report on Form 10-Q, filed October 28, 2010.
(10.9)	Credit Agreement dated as of January 22, 2013 among NeuStar, Inc., Morgan Stanley Senior Funding Inc., as Administrative Agent, Initial Swing Line Bank and Collateral Agent, and the guarantors, other agents and lenders party thereto, incorporated herein by reference to Exhibit 10.3 to our Current Report on Form 8-K, filed January 22, 2013.
(10.10)	Security Agreement dated January 22, 2013 among NeuStar, Inc., Morgan Stanley Senior Funding Inc., as Collateral Agent for the secured parties thereto, and the subsidiaries of NeuStar, Inc. party thereto, incorporated herein by reference to Exhibit 10.3 to our Current Report on Form 8-K, filed January 22, 2013.
10.11	NeuStar, Inc. 2016 Key Employee Severance Pay Plan.†
10.12	Side Letter to NeuStar, Inc. 2016 Key Employee Severance Pay Plan.†
(10.13)	Executive Relocation Policy, incorporated herein by reference to Exhibit 10.29 to our Quarterly Report on Form 10-Q, filed August 4, 2009.†
(10.14)	Form of Nonqualified Stock Option Agreement under the 2005 Plan, incorporated herein by reference to Exhibit 99.4 to our Current Report on Form 8-K, filed March 5, 2007.†
(10.15)	Form of Incentive Stock Option Agreement under the 2005 Plan, incorporated herein by reference to Exhibit 10.47 to Amendment No. 3 to our Registration Statement on Form S-1, filed May 27, 2005 (File No. 333-123635).†
(10.16)	Form of Indemnification Agreement, incorporated by reference to Exhibit 10.15 to NeuStar, Inc.'s Annual Report on Form 10-K, filed February 29, 2012.†
(10.17)	Summary Description of Non-Management Director Compensation incorporated herein by reference to Exhibit 10.22 to our Quarterly Report on Form 10-Q, filed July 26, 2012.†

Exhibit Number	Description of Exhibit
(10.18)	Forms of Directors' Restricted Stock Unit Agreement, incorporated herein by reference to (a) Exhibit 99.2 to our Current Report on Form 8-K, filed April 14, 2006;(b) Exhibit 10.36 to our Quarterly Report on Form 10-Q, filed August 4, 2009; (c) Exhibit 10.46 to our Quarterly Report on Form 10-Q, filed July 28, 2011; (d) Exhibit 10.47 to our Quarterly Report on Form 10-Q, filed July 28, 2011; (e) Exhibit 10.38 to our Quarterly Report on Form 10-Q, filed July 26, 2012; and (f) Exhibit 10.39 to our Quarterly Report on Form 10-Q, filed July 26, 2012.†
(10.19)	Form of Performance Award Agreement under the NeuStar, Inc. 2005 Stock Incentive Plan, as amended, incorporated herein by reference to Exhibit 99.1 to our Current Report on Form 8-K/A, filed February 28, 2008.†
(10.2)	Form of Restricted Stock Agreement under the NeuStar, Inc. 2005 Stock Incentive Plan, as amended, incorporated herein by reference to Exhibit 99.2 to our Current Report on Form 8-K/A, filed February 28, 2008.†
(10.21)	Second Form of Restricted Stock Agreement under the NeuStar, Inc. 2005 Stock Incentive Plan, as amended, incorporated herein by reference to Exhibit 99.3 to our Current Report on Form 8-K/A, filed February 28, 2008.†
(10.22)	Form of Nonqualified Stock Option Agreement under the NeuStar, Inc. 2009 Stock Incentive Plan, incorporated by reference from Exhibit 99.2 to our Current Report on Form 8-K, filed December 15, 2009. †
(10.23)	Form of Performance Award Agreement under the NeuStar, Inc. 2009 Stock Incentive Plan, incorporated herein by reference to Exhibit 99.1 to our Current Report on Form 8-K, filed March, 1, 2010. †
(10.24)	Form of Restricted Stock Agreement under the NeuStar, Inc. 2009 Stock Incentive Plan, incorporated herein by reference to Exhibit 99.2 to our Current Report on Form 8-K, filed March 1, 2010. †
(10.25)	Form of Performance Award Agreement under the NeuStar, Inc. 2009 Stock Incentive Plan, as amended, incorporated herein by reference to Exhibit 10.46 to our Quarterly Report on Form 10-Q, filed April 27, 2011. †
(10.26)	Form of Restricted Stock Agreement under the NeuStar, Inc. 2009 Stock Incentive Plan, as amended incorporated herein by reference to Exhibit 10.47 to our Quarterly Report on Form 10-Q, filed April 27, 2011. †
(10.27)	Form of Nonqualified Stock Option Agreement under the NeuStar, Inc. 2009 Stock Incentive Plan, incorporated herein by reference from Exhibit 10.48 to our Quarterly Report on Form 10-Q, filed April 27, 2011. †
(10.28)	NeuStar, Inc. Deferred Compensation Plan incorporated herein by reference from Exhibit 10.27 to our Annual Report on Form 10-K, filed February 13, 2015.†
(10.29)	Form of Agreement Respecting Noncompetition, Nonsolicitation and Confidentiality, incorporated herein by reference to Exhibit 10.41 to our Quarterly Report on Form 10-Q, filed May 12, 2008.
(10.3)	Employment Agreement, made as of January 15, 2009, by and between NeuStar, Inc. and Paul Lalljie, incorporated herein by reference to Exhibit 99.2 to our Current Report on Form 8-K, filed January 15, 2009, as superseded by Compensation Agreement, made as of December 9, 2009, by and between Neustar, Inc. and Paul Lalljie, incorporated herein by reference to Exhibit 99.1 to our Current Report on From 8-K, filed on December 15, 2009.†
(10.31)	NeuStar, Inc. 2009 Performance Achievement Reward Plan, incorporated herein by reference to Exhibit 99.1 to our Current Report on Form 8-K, filed February 27, 2009.†

Exhibit Number	Description of Exhibit
(10.32)	Amended and Restated NeuStar, Inc. Corporate Bonus Plan (formerly known as the 2009 Performance Achievement Award Plan), incorporated herein by reference to Annex B to NeuStar's Definitive Proxy Statement on Schedule 14A, filed April 17, 2014.†
(10.33)	Form of Performance Award Agreement under the NeuStar, Inc. 2005 Stock Incentive Plan, incorporated herein by reference to Exhibit 99.2 to our Current Report on Form 8-K, filed February 27, 2009.†
(10.34)	Form of Performance Award Agreement under the NeuStar, Inc. 2009 Stock Incentive Plan, incorporated herein by reference to Exhibit 99.3 to our Current Report on Form 8-K, filed December 15, 2009.†
(10.35)	NeuStar, Inc. 2009 Stock Incentive Plan, incorporated herein by reference to Exhibit 99.1 to our Current Report on Form 8-K, filed on April 13, 2009.†
(10.36)	Amended and Restated NeuStar. Inc. 2009 Stock Incentive Plan, incorporated herein by reference to Annex B to our Definitive Proxy Statement on Schedule 14A, filed on April 17, 2015.†
(10.37)	Form of Agreement Respecting Noncompetition, Nonsolicitation and Nondisparagement, incorporated herein by reference to Exhibit 10.42 to our Annual Report on Form 10-K, filed February 25, 2011.†
(10.38)	Board Stock Ownership Guidelines, incorporated herein by reference to Exhibit 10.43 to our Annual Report on Form 10-K, filed February 25, 2011.
(10.39)	Form of Performance Award Agreement under the NeuStar, Inc. 2005 Stock Incentive Plan, as amended, incorporated herein by reference to Exhibit 99.3 to our Current Report on Form 8-K, filed July 13, 2007.†
(10.4)	Form of Restricted Stock Agreement under the NeuStar, Inc. 2005 Stock Incentive Plan, incorporated by reference to Exhibit 10.45 to Amendment No. 3 to our Registration Statement on Form S-1, filed May 27, 2005 (File No. 333-123635).†
(10.41)	Amended and Restated NeuStar, Inc. 2009 Stock Incentive Plan. †
(10.42)	NeuStar, Inc. Employee Stock Purchase Plan. †
(10.43)	Registration Rights Agreement, dated January 22, 2013, among NeuStar, Inc., the guarantors signatory hereto and J.P. Morgan Securities LLC, Morgan Stanley & Co. LLC and RBC Capital Markets, LLC, incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K, filed January 22, 2013.
(10.44)	Form of Restricted Stock Unit Award Agreement, incorporated by reference to Exhibit 99.1 to our Current Report on Form 8-K,filed March 2, 2012. †
(10.45)	Form of Performance-Vested Restricted Stock Unit Award Agreement, incorporated by reference to Exhibit 99.2 to our Current Report on Form 8-K,filed March 2, 2012. †
(10.46)	Amendment No. 1 to the Credit Agreement and Security Agreement, dated as of December 9, 2015, by and among NeuStar, Inc., certain subsidiaries of NeuStar, Inc. party thereto as Guarantors, Morgan Stanley Senior Funding, Inc., as Administrative Agent and Collateral Agent, and the Lenders party thereto, incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K, filed on December 9, 2015.
(10.47)	Amendment No. 2 to Credit Agreement dated as of December 9, 2015, by and among NeuStar, Inc., certain subsidiaries of NeuStar, Inc. party thereto as Guarantors, Morgan Stanley Senior Funding, Inc., as Administrative Agent, Collateral Agent and Lead Arranger, the other Lead Arrangers party thereto, the Increasing Lenders party thereto, and the Assuming Lenders party thereto, incorporated by reference to Exhibit 10.2 to our Current Report on Form 8-K, filed on December 9, 2015.

Exhibit Number	Description of Exhibit
21.1	Subsidiaries of NeuStar, Inc.
23.1	Consent of Ernst & Young LLP, independent registered public accounting firm.
24.1	Power of Attorney (included on the signature page herewith).
31.1	Chief Executive Officer Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Chief Financial Officer Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
(99.1)	Update to the Functional Requirements Specification, which is attached as Exhibit B to the contractor services agreement by and between NeuStar, Inc. and North American Portability Management, LLC.
(99.2)	Update to the Interoperable Interface Specification, which is attached as Exhibit C to the contractor services agreement by and between NeuStar, Inc. and North American Portability Management, LLC.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema
101.CAL	XBRL Taxonomy Extension Calculation
101.DEF	XBRL Taxonomy Extension Definition
101.LAB	XBRL Taxonomy Extension Label
101.PRE	XBRL Taxonomy Extension Presentation

† Compensation arrangement.

** Confidential treatment has been requested or granted for portions of this document. The omitted portions of this document have been filed with the Securities and Exchange Commission.

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GLOBAL LOCATIONS

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EXHIBIT KM-38

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Newsroom

Mar 20, 2014

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Neustar to Acquire .CO Internet S.A.S.

STERLING, VA, - Neustar, Inc. (NYSE: NSR), a trusted, neutral provider of real-time information and analytics, today announced it has entered into a definitive agreement to acquire .CO Internet S.A.S. and certain assets associated with the business. .CO Internet is the exclusive operator of the worldwide registry for Internet addresses with the ".co" top-level domain.

Since its global launch in 2010, .co has grown to more than 1.6 million web addresses registered by individuals and businesses in over 200 countries and territories worldwide. Neustar has an existing partnership with .CO Internet to provide registry services and infrastructure support for .co extensions, the top-level domain assigned to Colombia.

"The acquisition of .CO Internet is a natural fit for us given our successful partnership over the past four years and our domain name expertise," said Lisa Hook, president and CEO of Neustar. "By combining .CO Internet's innovative domain marketing capabilities with Neustar's distribution network and technical resources, we will be able to broaden our registry services and the .co brand worldwide, while delivering attractive returns on this investment for our shareholders."

The acquisition of .CO Internet expands Neustar's registry services business, which maintains the .biz and .us top-level domains and has been selected to provide services for up to 350 new domain extensions as a result of Internet Corporation for Assigned Names and Numbers' (ICANN) ongoing global domain name expansion.

Neustar will include the impact of this transaction when it updates guidance during its first quarter 2014 earnings call. To provide perspective, .CO Internet exited 2013 with an annual revenue run-rate of $21 million. However, business combination accounting principles require the company to adjust the acquired deferred revenue to fair value. This adjustment to fair value often results in a write-down that will reduce future revenue recognized as the services are performed, typically over a one year period. During 2013, Neustar recorded $4 million in revenue for its role as the back-end provider for .CO Internet, which will be eliminated upon consolidation. In addition, results for the first quarter of 2014 will include pursuit costs associated with this transaction.

The acquisition is subject to standard closing conditions and is expected to close within one month. Following the acquisition, .CO Internet, as a wholly-owned subsidiary of Neustar, will continue to manage the .co domain extensions from its headquarters in Bogota, Colombia.

About Neustar, Inc.

Neustar, Inc. (NYSE: NSR) is a trusted, neutral provider of real-time information and analytics to the communications services, financial services, retail, and media and advertising sectors. Neustar applies its advanced, secure technologies to help its clients promote and protect their businesses. More information is available at www.neustar.biz.

Safe Harbor Statement under the Private Securities Litigation Reform Act of 1995

Statements in this press release regarding Neustar, Inc.'s proposed acquisition of .CO Internet S.A.S. including, without limitation, benefits and synergies of the proposed transaction and any other statements regarding future expectations, beliefs, goals or business prospects constitute forward-looking statements made pursuant to the safe harbor provision of the Private Securities Litigation Reform Act of 1995. The company cannot assure you that its expectations will be achieved or that any deviations will not be material. Forward-looking statements are subject to many assumptions, risks and uncertainties that may cause future results to differ materially from those anticipated. Among the important factors that could cause future events or results to vary from those addressed in the forward-looking statements include without limitation, risks and uncertainties arising from difficulties with the integration process or the realization of the benefits of the transaction; risks and uncertainties related to doing business in Colombia and in connection with the company's relationship with the Colombian government; and the reaction of the customers and distributors of the acquired business. More information about potential factors that could affect the company's business and financial results is included in its filings with the Securities and Exchange Commission, including, without limitation, its Annual Report on Form 10-K for the year ended December 31, 2013 and subsequent periodic reports. All forward-looking statements are based on information available to the company on the date of this press release, and the company undertakes no obligation to update any of the forward-looking statements after the date of this press release.

Contact Info:

Investor Relations Contact

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Press Contact

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Media Links

- Executive Bios

Upcoming Events

April 28, 2020

Webinar: What You Need to Know About Cookie-

EXHIBIT KM-39

neustar

Newsroom

Jul 30, 2015
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Neustar Acquires Leading Domain Name Registry Provider Bombora Technologies

Neustar, Inc. (NYSE: NSR), a trusted, neutral provider of real-time information services, today announced it has acquired Bombora Technologies Pty Ltd (Bombora), based in Australia, for AUD $118.5 million, or approximately USD $86.9 million. Bombora and its subsidiaries, which include ARI Registry Services, provide registry services for a number of top-level domains (TLDs) including .au, .melbourne, .sydney, and over 100 new TLDs, including several in the Fortune 500.

This acquisition expands Neustar's registry services, which operates the .biz, .us, and .co TLDs, in addition to over 300 new TLDs.

"With this acquisition, Neustar continues to gather momentum as a global leader in launching and operating TLDs." said Lisa Hook, President and CEO of Neustar. "Managing a brand's digital presence through the creation of new TLDs has become a key component of the

CMO's tool kit, which aligns with the services we offer in real-time authoritative identity. By combining Bombora's strong team and market presence in Australia with Neustar's industry leading organization and technical resources, we are positioned to expand our footprint to the Asia-Pacific region."

This acquisition is expected to contribute AUD $10 million, or approximately USD $8 million, of revenue and AUD $1.5 million, or approximately USD $1.1 million, of operating income in 2015, which reflects the adjustment for deferred revenue on a fair value basis in accordance with business combination accounting principles. Over the last two years, Bombora has grown revenue at a compounded annual growth rate of 12% to AUD $28.2 million, or approximately USD $20.6 million, in 2014 with operating margins between 25% and 30%.

About Neustar, Inc.
Neustar, Inc. (NYSE: NSR) is the first real-time provider of cloud-based information services, enabling marketing and IT security professionals to promote and protect their businesses. With a commitment to privacy and neutrality, Neustar operates complex data registries and uses its expertise to deliver actionable, data-driven insights that help clients make high-value business decisions in real time, one customer interaction at a time. More information is available at www.neustar.biz.

Safe Harbor Statement under the Private Securities Litigation Reform Act of 1995
Statements in this press release regarding Neustar, Inc.'s acquisition of Bombora Technologies Pty Ltd including, without limitation, benefits of the transaction and any other statements regarding future expectations, beliefs, goals or business prospects constitute forward-looking statements made pursuant to the safe harbor provision of the Private Securities Litigation Reform Act of 1995. The company cannot assure you that its expectations will be achieved or that any deviations will not be material. Forward-looking statements are subject to many assumptions, risks and uncertainties that may cause future results to differ materially from those anticipated. Among the important factors that could cause future events or results to vary from those addressed in the forward-looking statements include without limitation, the ability to realize the benefits of the transaction at the expected times or at all; risks and uncertainties related to doing business in Australia; and the ability of the acquired business to retain existing business relationships and key employees. More information about potential factors that could affect the company's business and financial results is included in its filings with the Securities and Exchange Commission, including, without limitation, its Annual Report on Form 10-K for the

year ended December 31, 2014 and subsequent periodic reports. All forward-looking statements are based on information available to the company on the date of this press release, and the company undertakes no obligation to update any of the forward-looking statements after the date of this press release.

Contact Info:

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PR@team.neustar

Media Links

- Executive Bios

Upcoming Events

May 6, 2020

Webinar: CPG Marketers—Three Steps to Reveal Your Customers' Purchase Path

Webinar

May 7, 2020

Webinar: The Future of Retail 2020

Webinar

May 8, 2020

Webinar: The 2020 Genius Awards –

What You Need to Know to Win

Webinar

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AdAdvisor

Customer Analytics

Risk Solutions

Authentication

Compliance

Communications Solutions

Branded Contact Management

Security Solutions

Application & Network Security

DNS Services

Customer Experience

Customer Intelligence

Customer Intelligence

Caller Intelligence

Global Numbering Insights

Number Management

Order Management Solutions

Security Intelligence

Web Performance Management

Registry Solutions

.Brands

Compliance & Abuse Monitoring

Registry & DNS Services

Registry Strategy Planning

Professional Services

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1-855-898-0036

Customer Support:
1-844-NSR-CUST

Privacy Support:
1-844-638-2878

Privacy *(Updated 1/1/20)* Your Ad Choices

Privacy Choices Do Not Sell My Personal Info Legal Sitemap Payments

EXHIBIT KM-40

(/)

- Home (/)
- Registrar Login (http://registrars.afilias.info)
- Afilias WHOIS (http://whois.afilias.net)

Search

(#)

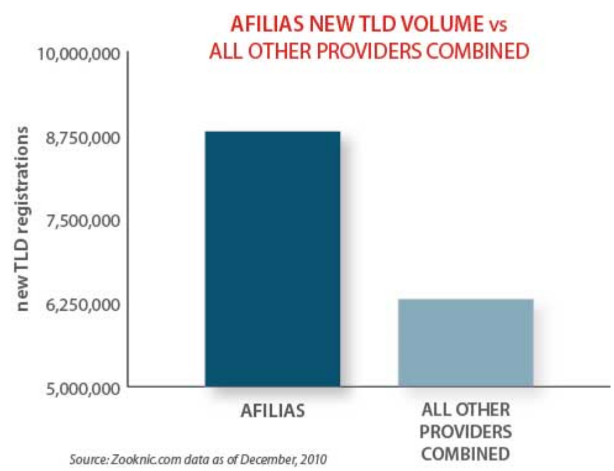
English (/) 中文 (/china)

New TLDs

Afilias supports all types of new TLDs, including dotBrands, dotCities, dotCommunities and dotGenerics with turnkey technical and value-added services.

The Experts in New TLDs

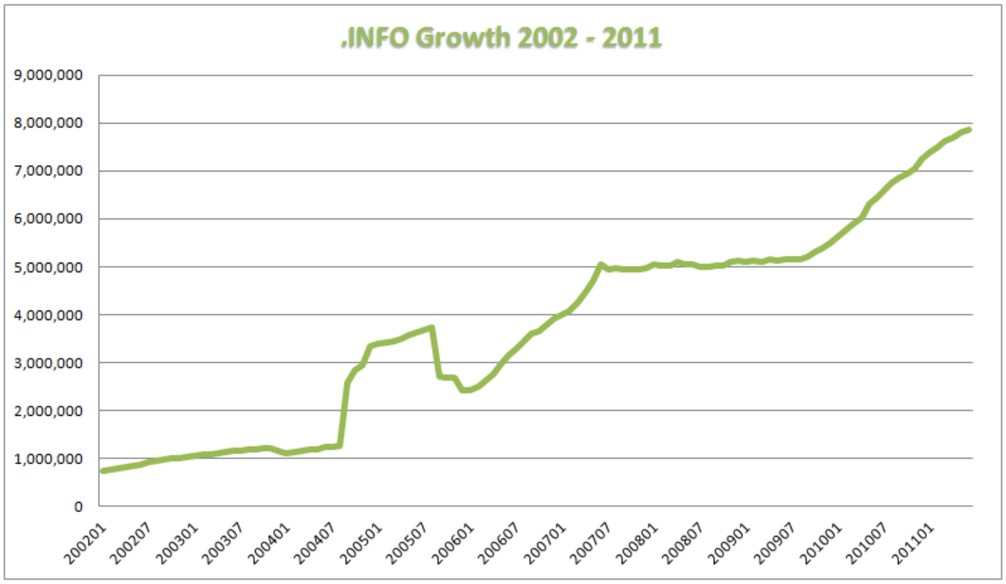
Afilias is the world's largest provider of domain registry services, supporting more than 20 million registrations across 16 different TLDs, six of which are new TLDs under contract with ICANN! In fact, Afilias has more new TLD registrations than all other registry services providers combined.



Afilias uses a world-class, ICANN-compliant registry services technology platform to operate a diverse collection of domain registries, including .org, .info and .mobi. No other firm in the world has the breadth and depth of experience preparing, launching and operating such a large collection of TLDs.

Working in close collaboration with ICANN, our registrar channel partners, and our TLD registry customers, we have been planning and investing in anticipation of the current explosion of new TLDs. The new TLD business is a long-term strategic focus for Afilias. As an industry leader, we have been a pioneering every major domain registry technology development including EPP, DNSSEC, IDNs and IPv6. We continue to invest in domain registry technologies, security, managed DNS services, the mobile Internet and database technologies so that our registry services technology and innovations continue to meet -- and exceed -- ICANN's tough technical requirements now and in the future. Our proven ICANN-compliant registry services platform is designed to manage and operate top level domains in a secure, reliable and efficient manner. No new TLD customer is too small - or large - for us. And as your new TLD begins to grow, Afilias' services are already scaled to meet your changing needs.

Most new TLDs aim to succeed; however, the success record of new gTLDs is mixed. Afilias launched the most successful new gTLD ever (http://www.afilias.info/blogs/roland-laplante/10-years-internet-was-changed-forever).   Launched in 2001, the .INFO gTLD is a great study of a successful new TLD lifecycle. Learn more about .INFO (http://www.info.info/).



As the experts in new TLDs, Afilias will share the secrets to our success in launching and operating .INFO. Afilias has also developed materials to help you understand the benefits, challenges and opportunities of applying for, managing and outsourcing the operations of your new TLD. No matter if your organization plans to apply for a new TLD for your company, city or regional government, or niche community of interest, you will enjoy the many benefits that your new TLD can provide if you arm yourself with knowledge, build the right team, and partner wisely.

New TLD Application Tip: Learning from the Market Stats to Estimate new TLD Volume – BLOG (http://www.afilias.info/blogs/roland-laplante/new-tld-application-tip-learning-history-estimate-new-tld-volume)

New TLD Application Tip: Premium Domains Can Support a Sustained Revenue Stream – BLOG (http://www.afilias.info/blogs/roland-laplante/new-tld-application-tip-premium-domains-can-support-sustained-revenue-stream)

What ARE the lessons from past launches? The Chief Marketing Officer of Afilias gave **this compelling new TLD presentation (http://afilias.info/webfm_send/221)**at the September 26, 2011 New Domains conference in Munich, Germany. The presentation shows detailed statistics about new TLDs, trends and key lessons learned. When it comes to new TLDs, is history a prelude to the future? Judge for yourself.

Afilias has developed some great education materials and we welcome you to spend some time reviewing our e-books, videos, blogs and webinars. Please visit the **dot Brand (http://afilias.info/dotbrand)** section to learn about how your firm can succeed with a new gTLD (or several gTLDs), or visit the **dot City (http://afilias.info/dotcity)** section to learn about how your city or region can succeed with a new TLD, or visit the **dot Niche (http://afilias.info/dotniche)** section to learn how your association or community of interest can succeed with a new gTLD.

Let's start a conversation about your New TLD. Contact the **Afilias New TLD Team (http://www.afilias.info/newTLD-partner-form)** today.

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EXHIBIT KM-41

future tense

The Internet Has Run Out of Four-Letter Dot-Com Names

By WILL OREMUS
DEC 04, 2013 • 12:08 PM

If you want a snappy dot-com URL, you'll have to buy it from someone else.

Lebedeva Tatiana / Shutterstock.com

None. Zero. Nada.

That's how many four-letter dot-com domain names are left unregistered on the Internet, according to new research by WhoAPI.com, a Croatian startup that analyzes domain data.

We're not just talking about four-letter names that spell actual words, like cars.com or pets.com (R.I.P). We're not even just talking about pronounceable four-letter combinations, like eBay, Yelp, Etsy, and Hulu. We're talking every possible four-letter combination, from aaaa.com to zzzz.com. That's a total of 456,976 combinations. WhoAPI checked all 456,976 of them, and confirmed that not one remains unregistered.

Gone. Done. Over. Past.

They're not all being actively maintained, of course. Many are for sale across the Internet by various domain-name resellers, but none are just sitting around waiting to be claimed.

Short domain names have long been prized because they're easy to remember, even if they don't spell anything in particular—think xkcd.com. All the two- and three-letter combinations were snapped up years ago, but the WhoAPI report is the first I've seen to definitively declare that the four-letter combinations, known in the industry as LLLLs, are all occupied as well.

Drat. Heck. Rats. Grrr.

For those still bent on obtaining a four-character URL, Lifehacker a few years back suggested replacing one letter with a number. WhoAPI did not check all of the additional combinations that formula makes possible. There are also short domain names available on top-level domains other than .com, including .biz, .net, and many more.

For the rest of us, the good news is that domain names have become less important over the years as people navigate the Web via Google search rather than by typing URLs into their browser bars. And for what it's worth, it should be a while before all the five-character combinations are claimed: 26 to the fifth power is 11,881,376.

*Previously in **Slate**:*

- Are Wacky Startup Names Really Necessary?
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EXHIBIT KM-42

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Ideas

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DOT.COMPLEX

The world is running out of domain names—what will we do when they're all gone?

June 2, 2017

By **Alan Dunn**

AP PHOTO/TOBY TALBOT

Time to get more creative.

The world is nearly out of good ".com" domain names—and even the fourth circuit of the United States Court of Appeals agrees.

As global internet usage rises, .com naming is going to get more and more complicated. Our languages only contain a finite number of meaningful words, so brand naming is becoming much more than coming up with a unique, snazzy moniker—it also involves knowledge of intellectual property rights, law, and a large of dash of luck.

Many well-known brands have encountered challenges securing their preferred domain names. For example, Google renamed their parent company "Alphabet," but it doesn't own alphabet.com—BMW does. In 2014, Microsoft spent $2.5 billion to acquire Mojang, the Swedish company behind the popular Minecraft video game, but it didn't get the domain name minecraft.com with it—that belongs to an Australia mining-engineering company, MineCraft Consulting PTY Ltd. (Oh yeah—*that* Minecraft.) Meanwhile, Nissan has spent over 20 years trying to acquire nissan.com from a man named Uzi Nissan, and it took Apple 16 years to acquire apple.co.uk from a British company called Apple Illustrations.

Acronyms get even messier. Governmental organizations such as CIA.com, NSA.com, FBI.com, Mossad.com, and Mi6.com are all owned by private individuals and companies. A Google search for BOA (an acronym often used by Bank of America) may show a page covered in Bank of America listings, but a visit to BOA.com will rattle anybody with a fear of snakes. ABBA.com is not the Swedish group, but an acronym for the American Bed and Breakfast Association; DND.com isn't owned by Dungeons and Dragons; and

MOFO.com is actually safe to view at work. (It's owned by the law firm, Morrison & Foerster).

First come, first served

So why don't the big guys pull rank when it comes to owning their digital properties as well as their marketplace? That's because most domain-name registries operate on a simple first-come, first-served rule for reservations and registrations. While this model is likely the only fair way to service a broad community, it has its drawbacks.

Take Tesla, for example. Most people know of Elon Musk's company, but fewer people know it was named after Nikola Tesla, the renowned Serbian inventor. As Tesla isn't a word created for a brand—such as Jeep, Chapstick, or Jacuzzi—it's more likely to be adopted by others who share the same appreciation for the original inventor. For example, Tesla Tecnologia e Comunicação owns tesla.com.br (Brazil), TESLA MR Scanning operates owns tesla.dk (Denmark), Tesla CRM Software GmbH owns tesla.de (Germany), and The Tesla Company owns tesla.gr (Greece). In theory, all of these owners have just as much right to a primary Tesla domain name as the others.

Some brands have been able to acquire their preferred domain names through cash or creative equity deals, such as Uber, which agreed to trade 2% of the company's shares to Universal Music for the domain name uber.com, or Slack, which paid $60,000 for the domain name slack.com. Others will opt for less-friendly methods such as litigation or filing a Uniform Dispute Resolution Process (UDRP). The latter involves a great risk in the case of a loss, including almost always a higher cost.

Domain names are a critical part of a company's infrastructure, so it's important for them to fight for them: Not only are they the storefront for a brand's image online, but they also play a crucial role in everything from email to e-commerce. Many of today's greatest companies even employ "global domain-name managers" who often have years of trademark and IP experience.

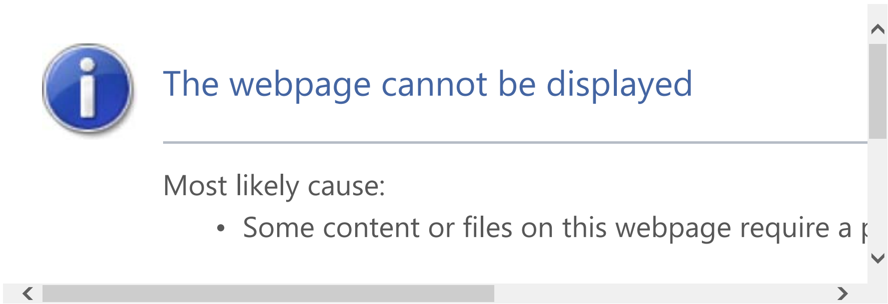
Let's say you spend tens of thousands of dollars (and portion of your sanity) on securing your desired domain name—then what about wrestling back the attached social-media handles?

The real @SlimShady

It's hard to say who the real Slim Shady is, since @slimshady hasn't tweeted since opening his account in 2007.

Like domain names, social handles also operate on a first-come, first-served basis, causing very similar confusion throughout social platforms.

For example, when Donald Trump won the 2016 US presidential election, Mike Pence also won his slot as vice president. Another winner was a Florida man whose name did not appear on a ballot—he describes himself as a “software developer, grandpa and nature lover. Not a Christo-fascist politician.” He is also named Mike Pence, and he happens to operate the @mikepence Twitter handle.



I tried to see if Twitter co-founder @jackdorsey had anything to say about this, but I quickly realized that attempt might be futile. In fact, a whole bunch of tech leaders’ Twitter handles look a whole lot different than their real world counterparts. If the CEO of Twitter doesn’t have control over his own name’s Twitter handle, what hope do the rest of us have?

TWITTER SCREENSHOT

And it's just not personal names, either. Brands are subject to others using their preferred handles with almost no recourse.

TWITTER SCREENSHOT

Social handles are often more challenging to acquire than domain names as there are fewer resolution methods available for an acquisition. Buying a social handle can be tricky, and selling a Twitter handle is actually against Twitter's rules. For the most part, any decision to release or transfer a handle is left in the hands of the social handle's owner. Some people, like Haje Jan Kamps, have used trademark law to find creative ways to acquire their handle for the cost of an application fee. However, successful attempts are few and far between.

The future of .com

To counteract these challenges, brands have started investing in branded digital-naming solutions for the future.

In 2014, ICANN—the Internet Corporation for Assigned Names and Numbers, which oversees primary DNS and IP regulation, maintenance, and co-ordination for the internet—introduced a series of new, generic, top-level domain names (gTLDs). This added more options to an ever-shrinking pool of quality .com domain names. New domain name extensions like .club and .link have shown good success with respect to new registrations—while others like .bible and .rodeo are still trying to find a wider following. But this last round of new gTLD applications also saw over 600 brands spend more than a collective $100 million on application fees alone for brand-related domain name extensions. Nike now owns .nike, BMW owns .bmw, and McDonald's even owns .mcdonalds, which is a full 180-degree turn from 1994, when Joshua Quittner tried to get the ubiquitous restaurant chain to acquire McDonalds.com.

"The thing about domain names is that they have become a precious commodity in their own right," says David Taylor, a partner at Hogan Lovells and domain-name panellist for the World Intellectual Property Organization. "The opportunity provided by the ICANN new gTLD program has enabled many brands to move to the right of the dot, with a .brand. Given the application fee was $185,000, these are relatively costly domain names, but it's often a cheaper option to paying large sums out to acquire a pre-registered and lovingly owned .com domain name that is being used for a genuine business or activity."

Over the next few years, we may see the face of the internet change as more brands shift to using branded extensions. Barclay's, Canon, and BNP Paribas are already early adopters who have made the move, taking control over everything to the left of the dot. When a brand owns an entire extension and can actually control who can register, it puts a lot more power in their hands. Applications for new gTLDs have now closed, but it shouldn't be too long until ICANN opens up the opportunity for more branded domain names once more.

In the meantime, people will continue to call Minecraft Australia for game support, tag @mikepence in their political discussions, and question whether or not Paul Ryan is selling guitars on the side.

I'd say that you could email us at quartz.com with any questions, but then the joke would be on you.

QUARTZ

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↑ Beam me up, Scotty

EXHIBIT KM-43

Brief Internet Updated: August 26, 2017

.Com Domains Reach a Saturation Point with 127.5 Mln Registered Domains; New TLDs Are On a Rise

By Aarzu Khan September 22, 2016 830 0

The number of Domain registrations worldwide is growing at a staggering pace. According to the latest data sheet released by Verisign, the global leader in domain registration and internet security, the **total number of domains registered reached 334.6 million TLDs (Top Level Domains) by the end of June 2016**. In Q2 2016 alone, 7.9 million new domains were registered, resulting in 2.4% increase over the first quarter of 2016.

Low-budget yet feature-enriched smartphones have led to steady internet adoption worldwide. With the majority of the audience shifting to the web, it is mandatory for every business to have an online presence. And to do that, registering a domain name is the first step. The domain name is l ke a unique identity of the business or individual on the web. Hence, it isn't a surprise that businesses and individuals are in a rush to get their unique domain names registered.

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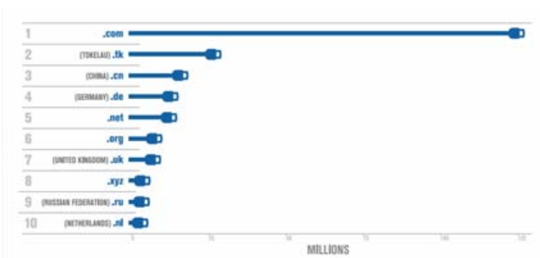
In-Depth: Dprime

Although .Com TLD is the most popular one; it is also the most saturated one. Every common name with a.Com TLD is already registered. Despite the saturation, businesses and individuals seem to prefer a domain name with .Com, albeit with some work around.

By the end of June 2016, around 143.2 million domains with .Com or .Net TLDs were registered. However, it is the .Com TLD that enjoys the lion's share of the total registered domain names. Around 127.5 million domain names are .Com TLDs, followed by .Net TLD with 15.8 million domain names.



Other TLDs Are Gaining Grounds

Data from the second quarter also highlights some interesting shifts in the world of Internet.

Due to the non-availability of domain names with .com and .net TLD, individuals, and businesses are now preferring other TLDs. They are not changing their names but just the TLDs, l ke .co, .ws, .name, or, country specific TLDs, like .us, .uk, .in, etc. As a result, the quarterly growth of .Com and .Net TLDs have declined considerably in the second quarter of 2016. **In Q2 2016, new domain names registered with .com and .net TLDs reached 8.6 million, slightly down from 8.7 million in the year-ago quarter**.

This slight decline is a clear indication of the beginning of a new internet revolution.

The Verisign report highlights that ccTLDs (Country Specific Top level Domains) accounted 45% share of total domains that were registered during the second quarter of 2016. The total registration of ccTLD domains clocked 149.9 million during the second quarter, a neglig ble 1% growth compared to the previous quarter.

.tk, .cn and .de emerged as the top three ccTLDs, beating .uk, .au and .us.

In August 2011, ICANN founding member introduced gTLD – generic Top Level Domains, like .xys, .cloud, .rich etc. At that time, many people did argue that gTLDs are unnecessary. Today, nearly after five years, the growth of the internet has a different story to tell. In the current time, looking at the rush for domain names, his introduction of gTLDs is a boon! In Q2 2016, the registration of gTLDs totalled 22 million. With 6.6% share of total domains registered in the second quarter, gTLDs are gaining grounds. The three most popular gTLDs are .xyz, .top and .wang.

As of 20 September 2016, there are 1641 TLDs available for people to register their domain with. As the demand for Geographical and category based gTLDs is on the rise, most of the top popular brands have applied for Brand TLD to secure their names. For example, the Internet giant Yahoo! has applied for .yahoo while Google is waiting for .google to be approved by ICANN.

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EXHIBIT KM-44

Is the dot-com era coming to an end?

Published: June 9, 2015 at 9:30 a.m. ET

By Caitlin Huston

Will dot.pizza or dot.bike replace the dot.com?

Generic top-level domains owned by Donuts **Donuts**

GOOG +1.10% **AMZN +1.32%**

In the future, the familiar dot-com domains on the Internet may be as outdated as today's Myspace page.

At least, that's what Donuts, a domain registry company, is banking on.

"We believe over time that we will effectively replace dot-com," said Richard Tindal, co-founder and chief operating officer of Donuts.

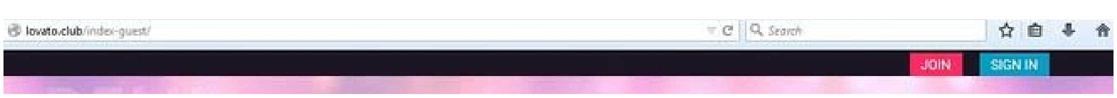
Donuts spent $58 million to apply for 307 top-level domains, and thus far has about 190 under contract. With that tally, Donuts says it is and expects to be the owner of the most new, generic top-level domains, beating out other top applicants such as Google **GOOG, +1.10%** and Amazon **AMZN, +1.32%**.

A generic top-level domain is the ending of a Web address to the right of the dot, as in ".pizza" or ".photography". The Internet Corporation for Assigned Names and Numbers (Icann), the nonprofit that coordinates domain names and Internet Protocol addresses, started the application program in 2012 to introduce new top-level domains to the marketplace. So far, Icann has delegated more than 640 domains, and expects to delegate about 1300 by the end of the process.

Donuts acts as a registry, meaning it sells the top-level domains to registrars such as GoDaddy. The registrar then licenses the chosen domain name to the customer, an individual or business, while Donuts runs the technical side of the domain.

"In essence, the registry operator becomes the custodian of a piece of the Internet's core infrastructure," Tindal said.

Some of Donuts' more popular domain holdings include ".technology" and ".photography." While other domains, such as ".plumbing," are gaining momentum but aren't moving quite as fast, largely due to the old-school nature of the plumbing industry, Tindal said.



One reason businesses pay for these domains rather than a dot-com or a dot-org is the“cool” factor of the suffixes, according to Tindal.

“These are just more attractive and more hip,” Tindal said.

It may help that businesses looking for a dot-com have fewer options, because the more popular names have been around longer and have already been taken, said Kurt Pritz, executive director of the Domain Name Association.

“It’s certainly true that shorter, more memorable names are more available with the new [top-level domains],” Pritz said.

Still, Pritz said the release of the new domains doesn’t necessarily mean that brands or businesses will get rid of their legacy domain. Instead, Pritz is expecting businesses to acquire new domains related to their brand in addition to the dot-coms.

“Google and Amazon have helped us immeasurably [in terms of raising awareness].”

— - Richard Tindal, chief operating officer of Donuts.

Tindal said Donuts has seen growth from both existing and new businesses, but in the future he expects most growth to come from new top-level domains, which will have the bigger market share.

As of the last week in May, there were 117.3 million total registered dot-com domains compared with more than 5.7 million top-level domains, according to Andrew Brier of namestat.org, a top-level domain tracking website. But on a net daily basis, new top-level domain registrations were growing approximately twice as fast as dot-com registrations.

The new generic top-level domains are also gaining traction internationally. Icann has introduced non-Latin characters for the first time, so suffixes can appear in characters such as Chinese or Cyrillic, said Akram Atallah, president of Icann’s global domains division.

“The demand has been there,” Atallah said.

The top three suffixes by volume at the end of May were “.xyz” and “.网址” which translates from Chinese to English as web address, and then “.science”, according to namestat.org. Donuts doesn't own those suffixes and Tindal said the current top-selling domains are more generic and lower priced, and thus more people are buying them.

TOP 10 BIGGEST SELLING GTLDS

1. .xyz
2. .网址
3. .science
4. .club
5. .party
6. .wang
7. .berlin
8. .top
9. .link
10. .realtor

Source: namestat.org

Overall, the release of the new top-level domains was meant to introduce more innovation and increase competition in the domain space, with the hope of lowering the cost of having a web presence, said Atallah. That lowered cost is especially important for opening the Internet to users in developing countries, he said.

For the registries, just applying for a single top-level domain costs $185,000, but it can cost the applicant more to get the tech support and hosting services in place.

When there are no other applicants and the application is approved by Icann, the cost for the domain is just the $185,000, along with a $25,000 annual fee. That is relatively cheap, given how valuable some names can be.

If there are other legitimate applicants, Icann directs them to decide through private arbitration, which can involve bidding or a partnership. An exception is sometimes made for community priority, when an independent panel views an applicant as being most representative of the domain.

If it can't be decided privately, Icann hosts an auction. In a high profile case, Google Inc. paid $25 million for ".app," beating Amazon Inc. and other applicants.

To apply for all its names--Donuts narrowed its initial applications down to 307 from 3,000 — the company raised more than $150 million in a 2012 round led by Austin Ventures.

Donuts still has 21 active applications and is waiting on domains such as ".music" which has several other applicants including Amazon.

"The more people applied for one, the most popular it's going to be," Tindal said.

Amazon still has 54 active applications including ".song," ".bot" and ".buy" listed on Icann's site. Google still has 16 active applications, including ".map," ".kid" and ".car."

But Donuts said it doesn't consider Amazon or Google to be competition, and instead credits their presence and high profile auctions for raising awareness of the new top-level domains--a key issue for their growth.

"Google and Amazon have helped us immeasurably," Tindal said.

EXHIBIT KM-45

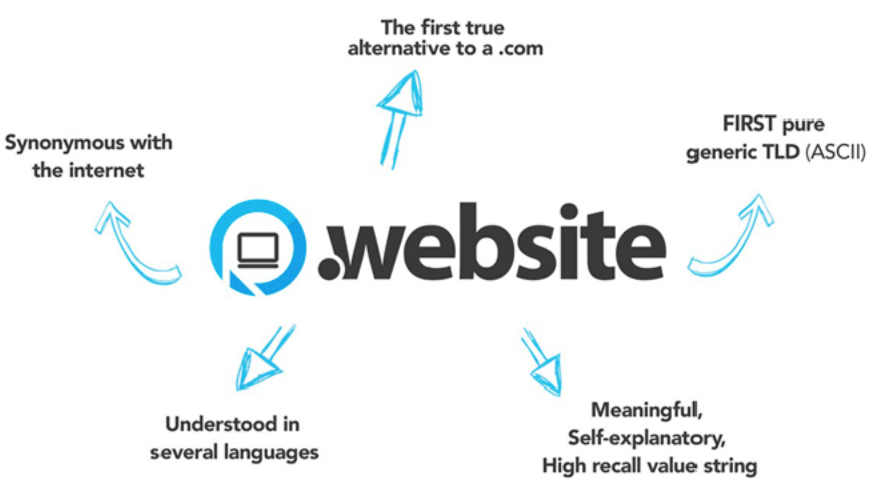
Radix Announces .Website Launch Timeline

RADIX

By Radix (Sponsored Post)
Enabling Identities. Creating Futures.

June 16, 2014 | Views: 9,796

.Website will become the first all-purpose domain extension available for registration when it launches into Sunrise on June 24, 2014. Radix, .website's registry and the largest new gTLD registry based in Asia, released a complete launch timeline for .website today, outlining a Landrush start date of Aug. 26, 2014 and a General Availability start date of Sept. 17, 2014.



.website is one of many new gTLDs (generic top-level domains, or "right-of-the-dots," like .org, .com or .biz) recently approved for registration. New gTLDs create an alternative to .com, which has cornered the domain name market for the last 10 years. While most new gTLDs launched so far are niche extensions, presenting "new dot" options for geographic regions, cultural groups or vertical markets, .website offers open registration to every user, for any application, making it the first extension that competes in the same market as .com.

"We're very enthusiastic to launch .website, because it's a strong mass market new gTLD that has immense potential," said Radix Founder, Bhavin Turakhia. "We're already working closely with channel partners across the globe who've shown keen interest in pioneering the development of the .website extension."

There are more than 113 million .com domain names registered, according to current market research, making it extremely difficult to secure a first-choice .com domain name. In fact, 65 percent of all checks for .com domain name availability fail and half of all customers buying a new domain name have to try two or more times to register a name of their choosing. The frustratingly limited .com space makes new domain options like .website a top priority in the digital marketplace, and for Radix.

During Sunrise, trademark owners may register their trademark and brand .website domain names. Landrush is a priority registration period for registering keyword-rich and quality .website domains before they become available on a first-come, first-serve basis in General Availability.

About .website:

.website is Radix's flagship extension, offering a truly generic new gTLD offering open use to all users, for any application, spanning industries, communities, cultures and languages. .website is one of the top three generic new gTLDs favored by small business owners, existing domain owners and white collar executives, according to market research, and it perfectly embodies and symbolizes a customer's online identity.

By Radix, **Enabling Identities. Creating Futures.** – *Radix is one of the world's largest nTLD portfolio registries with 9 new extensions that include .ONLINE, .STORE, .TECH, .WEBSITE, .SPACE, .PRESS, .SITE, .HOST, and .FUN; as well as 1 re-purposed ccTLD, .PW. Through these extensions, Radix is empowering business owners to get short, memorable and descriptive domain names which can be used for a website, email address, or a variety of other internet addressing purposes. To learn more, please visit: http://www.radix.website or connect on @radixregistry.* Visit Page ›

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Service Partners: DNS Management *by* Constellix | Managed Hosting *by* Hostway

EXHIBIT KM-46

Welcome to the Not Com Revolution

Donuts offers hundreds of fresh and relevant new domain names, providing variety and choice to anyone establishing a new or refreshing an existing online identity. Now you can choose from specific, relevant, domain name endings that identify your business, your industry, or your passion.

Since the Internet was opened to commercial use almost 20 years ago, the namespace has been artificially constrained to only 22 generic names following the dot (like .COM, .NET or .INFO). As a result, finding a suitable, meaningful, and memorable domain name can be a struggle. Good, short domains are exceptionally hard to find. Now, however, for the first time, new domain names include descriptive, useful words and names that are instantly recognizable and understood.

Domain Name Launch Schedule

New domain names are becoming available steadily. The following table lists the names already open for registration as well as the schedule for names soon to be available*.

Domain Name	Sunrise Opens	Sunrise Closes	Early Access GA
.游戏 **xn--unup4y (games)**	September 13, 2016	December 31, 2016	March 15, 2017
.企业 **xn--vhquv (enterprises)**	September 13, 2016	December 31, 2016	March 15, 2017
.娱乐 **xn--fjq720a (entertainment)**	September 13, 2016	December 31, 2016	March 15, 2017
.商店 **xn--czrs0t (shop/store)**	September 13, 2016	December 31, 2016	March 15, 2017
.hospital	January 10, 2017	March 11, 2017	March 15, 2017

*All dates are anticipated and may change due to, among other things, rules and delays from ICANN, the industry's overseer and contracting authority. Dates for **bolded TLDs** have received ICANN approval and are anticipated to become available on dates as listed.

Registering a domain name is exceptionally easy. Simply visit one of our many accredited registrar partners, where you can register your domain name. In many cases, you can find hosting, e-mail, and other helpful services along with your registration.

Available Domain Names

Domain Name	Release Date	Registration Volume
.ACADEMY	Mar 12, 2014	25155

Domain Name	Release Date	Registration Volume
.ACCOUNTANTS	Sep 03, 2014	1468
.AGENCY	Apr 23, 2014	35989
.APARTMENTS	May 20, 2015	3654
.ASSOCIATES	Jul 16, 2014	2878
.BARGAINS	Apr 23, 2014	2789
.BIKE	Jan 29, 2014	15209
.BINGO	May 13, 2015	1161
.BOUTIQUE	Apr 23, 2014	8814
.BUILDERS	Mar 19, 2014	3882
.BUSINESS	Dec 03, 2014	17631
.CAB	Mar 05, 2014	3272
.CAFE	Jul 08, 2015	10395
.CAMERA	Feb 05, 2014	4864
.CAMP	Mar 26, 2014	6196
.CAPITAL	Jul 09, 2014	7371
.CARDS	Jun 11, 2014	5998
.CARE	Aug 06, 2014	15611
.CAREERS	Feb 26, 2014	6942
.CASH	Aug 13, 2014	8896
.CASINO	May 27, 2015	3827
.CATERING	Jun 11, 2014	3556
.CENTER	Mar 12, 2014	36073
.CHAT	May 13, 2015	10289
.CHEAP	Apr 23, 2014	3341
.CHURCH	Sep 10, 2014	18358
.CITY	Oct 01, 2014	45410

Domain Name	Release Date	Registration Volume
.CLAIMS	Aug 27, 2014	1845
.CLEANING	Jun 11, 2014	2584
.CLINIC	Aug 06, 2014	6524
.CLOTHING	Jan 29, 2014	13158
.COACH	Mar 04, 2015	9295
.CODES	Apr 16, 2014	5679
.COFFEE	Apr 02, 2014	14160
.COMMUNITY	Jun 11, 2014	11824
.COMPANY	Mar 12, 2014	54555
.COMPUTER	Mar 12, 2014	4890
.CONDOS	May 28, 2014	2316
.CONSTRUCTION	Feb 12, 2014	6549
.CONTRACTORS	Feb 12, 2014	4089
.COOL	Apr 30, 2014	15911
.COUPONS	Aug 19, 2015	2570
.CREDIT	Aug 27, 2014	3383
.CREDITCARD	Aug 27, 2014	804
.CRUISES	May 21, 2014	2284
.DATING	Jun 04, 2014	2901
.DEALS	Sep 24, 2014	8103
.DELIVERY	Feb 04, 2015	3771
.DENTAL	Aug 06, 2014	7171
.DIAMONDS	Feb 19, 2014	2709
.DIGITAL	Sep 03, 2014	24105
.DIRECT	Sep 17, 2014	10749
.DIRECTORY	Feb 12, 2014	19647

Domain Name	Release Date	Registration Volume
.DISCOUNT	Aug 20, 2014	4200
.DOCTOR	Oct 26, 2016	2984
.DOG	Aug 12, 2015	8433
.DOMAINS	Mar 05, 2014	6651
.EDUCATION	Mar 26, 2014	21052
.EMAIL	Mar 19, 2014	70612
.ENERGY	Feb 04, 2015	6814
.ENGINEERING	Jul 09, 2014	4715
.ENTERPRISES	Feb 19, 2014	5549
.EQUIPMENT	Feb 05, 2014	5849
.ESTATE	Feb 05, 2014	9031
.EVENTS	Jun 04, 2014	20575
.EXCHANGE	Jul 09, 2014	5633
.EXPERT	May 07, 2014	31268
.EXPOSED	May 14, 2014	2880
.EXPRESS	Jul 08, 2015	6033
.FAIL	Jul 30, 2014	3058
.FARM	Apr 16, 2014	11461
.FINANCE	Sep 03, 2014	5879
.FINANCIAL	Jul 30, 2014	3775
.FISH	Jun 25, 2014	4065
.FITNESS	Aug 20, 2014	9117
.FLIGHTS	May 21, 2014	2141
.FLORIST	Apr 02, 2014	2256
.FOOTBALL	May 27, 2015	4720
.FOUNDATION	May 14, 2014	8765

Domain Name	Release Date	Registration Volume
.FUND	Aug 13, 2014	10749
.FURNITURE	Aug 20, 2014	2252
.FYI	Aug 26, 2015	8915
.GALLERY	Feb 05, 2014	18794
.GIFTS	Nov 05, 2014	3600
.GLASS	Mar 26, 2014	3396
.GMBH	Jun 15, 2016	16740
.GOLD	Jul 01, 2015	7837
.GOLF	Jul 01, 2015	6550
.GRAPHICS	Feb 05, 2014	7324
.GRATIS (free)	Aug 27, 2014	4311
.GRIPE	Jul 09, 2014	1104
.GROUP	Jun 01, 2016	33901
.GUIDE	Sep 10, 2014	14800
.GURU	Jan 29, 2014	62946
.HEALTHCARE	Oct 15, 2014	8034
.HOCKEY	Aug 12, 2015	1174
.HOLDINGS	Jan 29, 2014	5111
.HOLIDAY	Apr 09, 2014	5033
.HOSPITAL	Mar 15, 2017	1166
.HOUSE	Apr 02, 2014	16007
.IMMO (real estate)	Dec 03, 2014	13615
.INDUSTRIES	Jun 18, 2014	3430
.INSTITUTE	Mar 26, 2014	9036
.INSURE	Sep 03, 2014	4378
.INTERNATIONAL	Apr 02, 2014	21212

Domain Name	Release Date	Registration Volume
.INVESTMENTS	Aug 13, 2014	3222
.IRISH	Dec 14, 2016	2768
.JETZT (now)	Mar 31, 2016	10209
.JEWELRY	Jul 22, 2015	3205
.KITCHEN	Feb 12, 2014	6189
.LAND	Feb 12, 2014	14204
.LEASE	Jul 16, 2014	1932
.LEGAL	Mar 04, 2015	10481
.LIFE	Sep 10, 2014	116566
.LIGHTING	Feb 05, 2014	6039
.LIMITED	Jul 30, 2014	5427
.LIMO	Mar 05, 2014	2564
.LOANS	Sep 10, 2014	3202
.LTD	Jun 15, 2016	79160
.MAISON (house)	May 28, 2014	1181
.MANAGEMENT	Mar 12, 2014	10002
.MARKETING	Apr 09, 2014	17845
.MBA	Aug 26, 2015	2748
.MEDIA	Jul 16, 2014	35311
.MEMORIAL	Mar 04, 2015	467
.MONEY	Mar 04, 2015	7066
.MOVIE	Aug 19, 2015	1989
.NETWORK	Dec 03, 2014	22067
.PARTNERS	Jun 04, 2014	5738
.PARTS	Jun 18, 2014	5467
.PHOTOGRAPHY	Feb 05, 2014	49892

Domain Name	Release Date	Registration Volume
.PHOTOS	Feb 26, 2014	19046
.PICTURES	Jul 16, 2014	7493
.PIZZA	Dec 03, 2014	5032
.PLACE	Sep 17, 2014	5677
.PLUMBING	Jan 29, 2014	3176
.PLUS	Jul 01, 2015	8277
.PRODUCTIONS	Jun 04, 2014	5650
.PROPERTIES	May 28, 2014	11925
.RECIPES	Feb 26, 2014	2898
.REISE (travel)	May 27, 2015	2679
.REISEN (traveling)	Jul 23, 2014	6682
.RENTALS	May 21, 2014	11709
.REPAIR	Mar 26, 2014	6069
.REPORT	Jun 25, 2014	5696
.RESTAURANT	Nov 05, 2014	6805
.RUN	Aug 12, 2015	17018
.SALON	Jun 01, 2016	1394
.SARL	Nov 05, 2014	1004
.SCHOOL	May 27, 2015	10491
.SCHULE (school)	Aug 20, 2014	2627
.SERVICES	Jul 02, 2014	32259
.SHOES	Feb 26, 2014	5427
.SHOPPING	Sep 21, 2016	6267
.SHOW	Jul 22, 2015	5848
.SINGLES	Jan 29, 2014	4149
.SOCCER	Aug 19, 2015	2726

Domain Name	Release Date	Registration Volume
.SOLAR	Apr 02, 2014	6794
.SOLUTIONS	Mar 19, 2014	69992
.STYLE	May 13, 2015	8075
.SUPPLIES	Jun 18, 2014	3166
.SUPPLY	Jun 18, 2014	4283
.SUPPORT	Mar 19, 2014	19322
.SURGERY	Aug 06, 2014	1918
.SYSTEMS	Mar 12, 2014	23519
.TAX	Aug 13, 2014	5198
.TAXI	Aug 12, 2015	5313
.TEAM	Jul 22, 2015	12265
.TECHNOLOGY	Feb 12, 2014	31247
.TENNIS	May 13, 2015	1534
.THEATER	Aug 12, 2015	989
.TIENDA (shop/store)	May 28, 2014	3079
.TIPS	Feb 19, 2014	32826
.TIRES	Mar 25, 2015	788
.TODAY	Feb 12, 2014	78575
.TOOLS	Jun 18, 2014	9312
.TOURS	Jul 01, 2015	7027
.TOWN	Jul 23, 2014	3096
.TOYS	Jul 23, 2014	4336
.TRAINING	Mar 19, 2014	18001
.UNIVERSITY	Jul 23, 2014	5534
.VACATIONS	May 21, 2014	4223
.VENTURES	Jan 29, 2014	8506

Domain Name	Release Date	Registration Volume
.VIAJES (travel)	Apr 16, 2014	2375
.VILLAS	May 21, 2014	2004
.VIN	Jan 20, 2016	6627
.VISION	Jun 25, 2014	5925
.VOYAGE	Feb 19, 2014	2778
.WATCH	Apr 30, 2014	5702
.WINE	Jan 20, 2016	12495
.WORKS	May 07, 2014	13040
.WORLD	Jan 07, 2015	65478
.WTF	Jul 30, 2014	8813
.ZONE	Apr 23, 2014	22922
.企业 xn--vhquv (Enterprise)	Mar 15, 2017	199
.商店 xn--czrs0t (Shop/store)	Mar 15, 2017	331
.娱乐 xn--fjq720a (Entertainment)	Mar 15, 2017	137
.游戏 xn--unup4y (Games)	Mar 15, 2017	176

EXHIBIT KM-47

3 Mistakes to Avoid When Registering a Domain Name

Categories: .US, Domain Hack, Domain Strategy, Domains

Over the years, registering the perfect domain name for your business has become more and more difficult – as premium domain names, sought-after keywords and many popular terms and phrases become harder to find.

Getting the exact domain name you want can be tricky. This often forces businesses and startups to get ‘creative’ in registering a name – and causes common errors along the way. Some businesses have even been known to change their company name to help them get an available web address.

With many desirable names still available, .US can help you secure a web address that fully captures the spirit and personality of you or your business.

Here are three common mistakes to avoid when selecting your domain name.

1. Using hyphens

When trying to get around limited domain name availability, some people choose to include hyphens between words to create a more unique combination. While this strategy is understandable, the main difficulty with hyphenated web addresses is customer recall.

Printing your domain name on billboards and flyers, or announcing it verbally in advertising, can both be made more difficult when extra characters such as hyphens are introduced. They're trickier to say aloud and add an extra piece of information for customers to remember – and you may end up sending a lot of web traffic to someone else whose web address is the same as yours, minus the hyphens.

2. Not checking how your domain reads as one word

The nature of domains is that often brands are forced to write their business name or call to action as one word. Because of this, it can become difficult to read or in some cases, can even lead to unintended phrases being created. Consider how the name "Books Exchange" reads when run together, booksexhange.us!

The same can be said for phrases that have confusing double letters, such as www.samsstore.us.

Think about how your brand name reads all as one word. The last thing you want to do is lose customers to your site because they can't easily decipher your web address. Consider reordering the words or choosing a shortened version of the name.

3. Waiting too long on the perfect domain

The domain name market is very quick-moving. Domain name investors and resellers quickly buy up great online real estate so they can resell the domain name for a profit in the future.

If you find your perfect domain and choose to wait on registering it, you could miss your opportunity. With great names still available in .US, you have the chance to get your hands on a fantastic web address – but the opportunity can disappear quickly.

Get the complete domain name checklist here

Search

Search for:

Search

Latest .US Posts

- Connect, Learn and Stay Secure Online - Resources for the Entire Community

EXHIBIT KM-48

Contact Us

HomeRegister a .BZ DomainRegistrarsWhy .BZMarketing MaterialPolicyFAQAbout Nic.bzNewsWhois?

Why Use

Home » Why .BZ?

Why .BZ?

Domain Name Availability

With so many people registering their domain name with a ".com" extension, chances are the name you want won't be available. You're more likely to find the very name you want if you choose to register a .bz domain name instead. Register your .bz domain name today!

Short and Sweet

A ".bz" domain name quickly says "business" to people. And, it can rapidly mean a "buzz" for your online business. **Even Sweeter**, .bz is reliable and secure like .com but you don't have to scramble or go to great lengths for a name. **The sweetest part,** your business name is available now! Get it working for you today!

".BZ" Sounds Better

A ".bz" domain name creates a unique and memorable web presence for your online business.

".BZ" is Exotic

The TLD (Top Level Domain) **.bz** represents the beautiful country of Belize. To learn more about Belize click here.

Sell More!

Registrars! Add .bz and offer your registrants a wider TLD selection and sell more domain names.

The Better Alternative

Provide your registrants with a better alternative to “.biz” domain names. Why not offer a “.bz” domain name? After all, “.bz” means business.

Impressive Network

.bz holds an impressive network of over 50 registrars worldwide; including the top 10 registrars such as GoDaddy and Network Solutions. Become an accredited **.bz** registrar today!

World Class Registry Technology

Served by world-class domain registry technology, .bz ensures fast DNS resolution, internet stability and global redundancy.

Easy Integration

Easy integration with EPP (Extensible Provisioning Protocol) compliant registration gateway.

News & Events

No News at this time

more news and events»

FAQ

What is a domain name?
A domain name is the address of your website, for example www.belizenic.bz. It is unique and once a... read more

What is a Top Level Domain?
The Top Level Domains (TLDs) are the highest hierarchical level in the international Domain Name System (DNS)... read more

more Frequently Asked Questions»

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toll free: +(1) 866 dot.INFO

fax: +(1) 215 706 5701

email: support@afilias.info

Accredited Registrars

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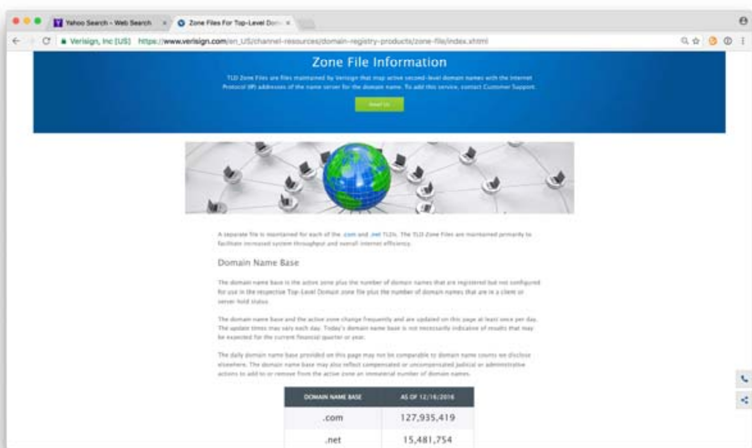
EXHIBIT KM-49

TheDomains

.Com Domain Registrations Back Under 128 Million

DECEMBER 16, 2016 BY MICHAEL BERKENS 5 COMMENTS



Verisign is reporting that the number of .Com domain names in the Domain Name Base have fallen below 128 Million.

Back in September of this year we reported the number of .com domain name had broken through the 128 million mark for the first time.

For the record, Verisign defines the Domain Name Base “is the active zone plus the number of domain names that are registered but not configured for use in the respective Top-Level Domain zone file plus the number of domain names that are in a client or server hold status.”

As Verisign has warned in earnings calls, there was a huge increase in .Com registrations in the 4th Quarter of last year especially numeric domain names and those domain name with random letters, that were registered mostly by those in China. Other domain name investors in the rest of the world also jumped into those type of domain registrations to sell to domain investors in China. The renewal rate on those domain name were expected to be lower than the normal .com registrations rate.

It one of the rare period of times that the number of .com domain registrations have actually dropped.

We will have better numbers when Verisign publishes their Domain Name Report for the 4Q of 2016 in 2017.

FILED UNDER: .COM, DOMAIN INDUSTRY, VERISIGN

About Michael Berkens

Michael Berkens, Esq. is the founder and Editor-in-Chief of TheDomains com. Michael is also the co-founder of Worldwide Media Inc. which sold around 70K domain to Godaddy.com in December 2015 and now owns around 8K domain names . Michael was also one of the 5 Judges selected for the the Verisign 30th Anniversary .Com contest.

« WHAT DO YOU WANT IN 2017 ?

GODADDY/NAMEFIND SELLS 50 THREE CHARACTER .COM DOMAINS »

Comments

Paul Stahura says

DECEMBER 16, 2016 AT 3:03 PM

peak com

REPLY

Michael Castello says

DECEMBER 18, 2016 AT 4:19 PM

Then, "Peak" all domain names Paul. You can't separate .com from the others. They are all part of a defined hierarchy. Expect a collapse in the domain space soon. There are too few reaons to own domain names now unless they are exceptional. There is no longer the foundation for direct navigation unless they are .premium com global or ccTLD/nTLD local. We are sitting on a bubble that really has less purpose in a search engine dominated web. Unless something fundamentally changes in the balance of how people navigate the web, the influx of new extensions will only suffice to help search engines more. The mechanisms to reach traffic were accessible for everyone for free with direct navigation and memorable addresses, where now, it is becoming too expensive to place for relevance in search for small and mid-sized businesses. Is short; search loves over-saturation.

REPLY

Michael Castello says

DECEMBER 18, 2016 AT 4:21 PM

Then, "Peak" all domain names Paul. You can't separate .com from the others. They are all part of a defined hierarchy. Expect a collapse in the domain space soon. There are too few reaons to own domain names now unless they are exceptional. There is no longer the foundation for direct navigation unless they are .premium com global or ccTLD/nTLD local. We are sitting on a bubble that really has less purpose in a search engine dominated web. Unless something fundamentally changes in the balance of how people navigate the web, the influx of new extensions will only suffice to help search engines

RECENT COMMENTS

SAKTHIMICRO on Post the best .com you have for sale for $1,000 or less

Dan The Man on What they do right – what do they do wrong – Afternic

Free JV Platform on What they do right – what do they do wrong – Afternic

Free Web Builder on Sedo weekly sales led by Bier.de

Purple Marijuana on Post the best .com you have for sale for $1,000 or less

POLLS

How Many .Web Domains Will Be Registered 1 Year After Launch

- Under 500,000
- 500K - 750K
- 750K- 1 Million
- 1 Million - 1.5 Million
- 1.5 Million - 2 Million
- 2 million - 2.5 Million
- 2.5 Million -5 Million
- 5 Million - 7.5 Million
- 7.5 Million - 10 million
- More than 10 Million

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Polls Archive

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> more. The mechanisms to reach traffic were accessible for everyone for free with direct navigation and memorable addresses, where now, it is becoming too expensive to place for relevance in search for small and mid-sized businesses. Is short; search loves over-saturation.
>
> REPLY

Join Domains says

DECEMBER 16, 2016 AT 6:59 PM

It's called a "chips" hangover

REPLY

Paul Stahura says

DECEMBER 19, 2016 AT 2:25 PM

.com growth has been declining for years. even before new TLDs. And over the resent few years, Verisign has lowered the price of new .com names to very low prices (including on that burst of names sold to Chinese registrants in Q4 2015) . Why has their growth declined? its because there are fewer and fewer great new names to be found in .com. The volume of names in new TLDs have been growing faster than .com. much faster. True, some of those new registrations are very low-cost (such as in .xyz), but its also true that names in Donut's ~200 TLDs are at least 3x the cost of .com names (to the registry). Those are facts. True, the huge growth in new TLDs could be a bubble. I don't think so, at least not in Donuts TLDs. Our renewal rate is increasing, as well as our usage rate. I think our both our renewal and usage rates will continue to increase.

regarding type-in traffic. i don't think its correlated to the growth of the entire name space. I think the name space grows even if type-in does not. Why? because it has been.

I think domain names have a bright future. They are not going away anytime soon (in our lifetimes). They are not becoming less relevant, but more. People said, apps would take over websites. Didn't happen. The average number of apps on a phone is about 30. People said domain names will fade to the background. Didn't happen. The top mobile apps – Google search, facebook, twitter – are nothing but a curated list of domains/URLs! Without domain names all those business models don't work. Why do you think Google applied for 100 TLDs? "people will put their ecommerce/company page on Facebook". Didn't happen. Facebook is not a sink *from* the namespace, its a source *to* domains

For these reasons, domain names are *more* relevant, not less, despite .com growth slowing (or declining). There is more choice/availability in new TLDs than in .com. There is no denying that. Why do you think Verisign is trying to by .web for $135M? Its not because they think the domain industry total growth is the same as .com (near-zero to negative). The overall growth of the domain name market is faster than .com, and that growth is being captured by new TLDs. That's not com-bashing or industry-bashing, that is a fact. My message is pro-industry, pro-growth, pro-domains. We are nowhere close to the peak of all domains.

I enjoyed this exchange.... I'll be doing much more speaking/writing on these topics in 2017 than I've done in the past.

REPLY

Comment Policy:

TheDomains.com welcomes reader comments. Please follow these simple rules:

- Stay on topic
- Refrain from personal attacks

Can't reach

- Make sure the web a
- Search for this site or
- Refresh the page

CATEGORIES

Select Category

ARCHIVES

Select Month

- Avoid profanity
- Links should be related to the topic of the post
- No spamming. Listing domains, products, or services will get the comment deleted

We reserve the right to remove comments if we deem it necessary.

Join the Discussion

Comment

Name *

Email *

Website

☐

Save my name, email, and website in this browser for the next time I comment.

☐ Notify me of follow-up comments by email.

☐ Notify me of new posts by email.

Replies to my comments Notify me of followup comments via e-mail. You can also subscribe without commenting.

SUBMIT COMMENT

This site uses Akismet to reduce spam. Learn how your comment data is processed.

EXHIBIT KM-50

DOMAIN NAMES

Verisign as a Domain Registry

Powers the domain names that define the Internet

Verisign is the authoritative registry of all .com, .net, .name, .cc, .tv, .edu, .gov and .jobs domain names, and offers domain registry services for a range of additional domain names, including Local Language Domain Names and new gTLDs.

The Industry's Most Scalable, Reliable Resolution and Registration Systems

Every day, billions of consumers and businesses worldwide rely on Verisign for access to commerce and communications.

Trusted provider of Internet infrastructure services for the networked world

We've maintained operational accuracy and stability of .com and .net top-level domain resolution services 100 percent of the time for more than 22 years, earning us the reputation of being one of the most reliable and trusted networks in the world.

Delivering unmatched performance in domain name system (DNS) services

We provide the routing support for approximately 158.8 million domain names ending with .com and .net, as well as other TLDs ending in .tv, .name, .cc, .edu, .gov and .jobs—processing more than 210 billion DNS queries a day.

More than half (56 percent) of the world's DNS hosts rely on the Verisign .net and .com infrastructure.

We manage relationships with approximately 2,500 ICANN-accredited registrars who submit more than 150 million domain name transactions daily.

We are committed to increasing capacity of the DNS to meet exponential growth due to the global spread of Internet access and increasing threats from malicious users.

We continuously monitor DNS queries to identify growing and emerging markets that require expanded infrastructure services to enhance reliability and responsiveness.

Striving to enable the full potential of the Internet

Our commitment to research and development of critical Internet infrastructure will enable the Internet to keep pace with the world's increasing reliance on Web-based applications and Internet-connected devices.

We have developed complementary services and tools to help registrars find and register more domain names that their customers value. Our global support team is available 24/7 to assist in 150 different languages.

We share our expertise in evolving trends by making data about the .com and .net zones publicly available, and contribute to policy development as an active member of the Internet standards development community.

We are committed to helping companies and consumers expand their online presence and engage in communications and commerce on the Internet.

LEGAL NOTICES PRIVACY (UPDATED) CCPA NOTICE AT COLLECTION REPOSITORY SITE MAP

Contact Share Find a Domain

EXHIBIT KM-51

News:

Verisign Statement Regarding .Web Auction Results

August 1, 2016

RESTON, Va.--(BUSINESS WIRE)-- VeriSign, Inc. (NASDAQ:VRSN), a global leader in domain names and internet security, today announced the following information pertaining to the .web top-level domain (TLD):

The Company entered into an agreement with Nu Dot Co LLC wherein the Company provided funds for Nu Dot Co's bid for the .web TLD. We are pleased that the Nu Dot Co bid was successful.

We anticipate that Nu Dot Co will execute the .web Registry Agreement with the Internet Corporation for Assigned Names and Numbers (ICANN) and will then seek to assign the Registry Agreement to Verisign upon consent from ICANN.

As the most experienced and reliable registry operator, Verisign is well-positioned to widely distribute .web. Our expertise, infrastructure, and partner relationships will enable us to quickly grow .web and establish it as an additional option for registrants worldwide in the growing TLD marketplace. Our track record of over 19 years of uninterrupted availability means that businesses and individuals using .web as their online identity can be confident of being reliably found online. And these users, along with our global distribution partners, will benefit from the many new domain name choices that .web will offer.

About Verisign

Verisign, a global leader in domain names and internet security, enables internet navigation for many of the world's most recognized domain names and provides protection for websites and enterprises around the world. Verisign ensures the security, stability and resiliency of key internet infrastructure and services, including the .com and .net domains and two of the internet's root servers, as well as performs the root zone maintainer functions for the core of the internet's Domain Name System (DNS). Verisign's Security Services include intelligence-driven Distributed Denial of Service Protection, iDefense Security Intelligence and Managed DNS. To learn more about what it means to be Powered by Verisign, please visit .

EXHIBIT KM-52

S&P Global
Market Intelligence

VeriSign, Inc. NasdaqGS:VRSN

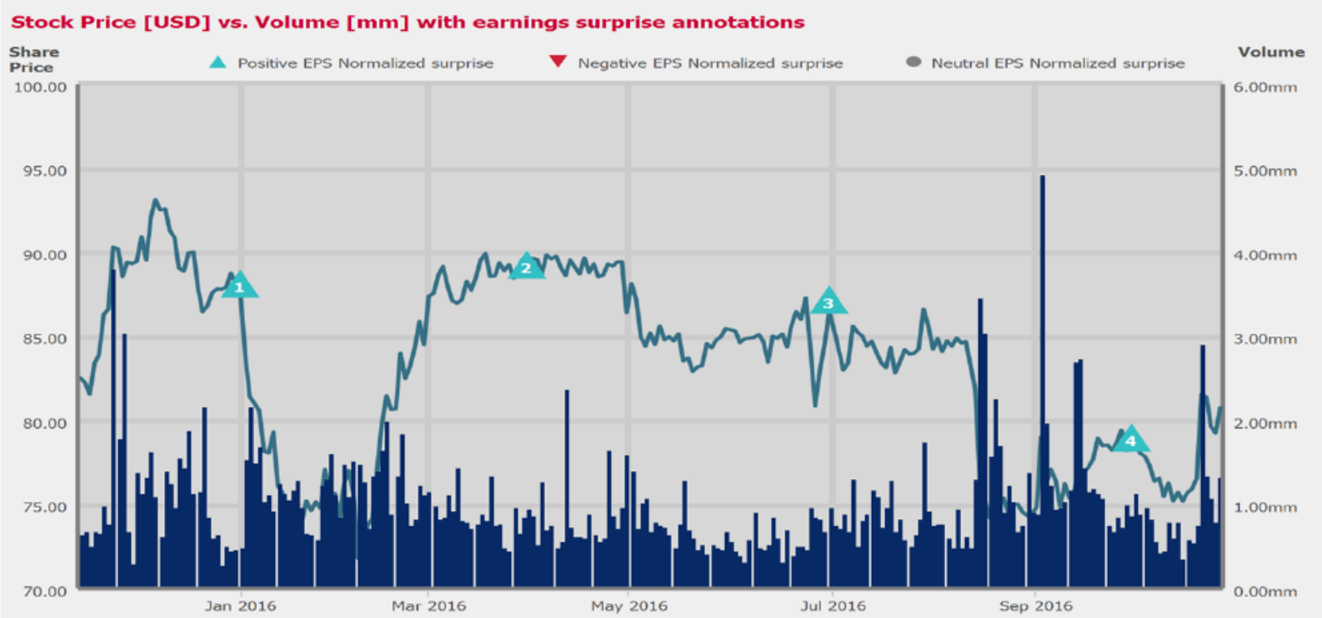
FQ3 2016 Earnings Call Transcripts

Thursday, October 27, 2016 8:30 PM GMT

S&P Global Market Intelligence Estimates

	-FQ3 2016-			-FQ4 2016-	-FY 2016-	-FY 2017-
	CONSENSUS	ACTUAL	SURPRISE	CONSENSUS	CONSENSUS	CONSENSUS
EPS Normalized	0.87	0.93	▲6.90	0.87	3.49	3.78
Revenue (mm)	287.14	287.55	▲0.14	284.35	1139.66	1176.26

Currency: USD
Consensus as of Oct-21-2016 12:26 PM GMT



- EPS NORMALIZED -	CONSENSUS	ACTUAL	SURPRISE
FQ4 2015	0.78	0.79	▲1 1.28 %
FQ1 2016	0.83	0.85	▲2 2.41 %
FQ2 2016	0.86	0.91	▲3 5.81 %
FQ3 2016	0.87	0.93	▲4 6.90 %

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David Atchley
VP & Corporate Treasurer

George E. Kilguss
Executive VP & CFO

ANALYSTS

Sterling Auty
JP Morgan Chase & Co, Research Division

Steven Michael Ashley
Robert W. Baird & Co. Incorporated, Research Division

Walter H Pritchard
Citigroup Inc, Research Division

Presentation

Operator

Good day, everyone. Welcome to VeriSign's Third Quarter 2016 Earnings Call. Today's conference is being recorded, and unauthorized recordings of this call are not permitted.

At this time, I would like to turn the conference over to Mr. David Atchley, Vice President of Investor Relations and Corporate Treasurer. Please go ahead, sir.

David Atchley
VP & Corporate Treasurer

Thank you, operator, and good afternoon, everyone. Welcome to VeriSign's Third Quarter 2016 Earnings Call. With me are Jim Bidzos, Executive Chairman, President and CEO; Todd Strubbe, Executive Vice President and COO; and George Kilguss, Executive Vice President and CFO.

This call and our presentation are being webcast from the Investor Relations section of our verisign.com website. There, you will also find our third quarter 2016 earnings release. At the end of this call, the presentation will be available on that site, and within a few hours, the replay of the call will be posted.

Financial results in our earnings release are unaudited, and our remarks include forward-looking statements that are subject to the risks and uncertainties that we discussed in detail in our documents filed with the SEC, specifically the most recent reports on Forms 10-K and 10-Q, which identify risk factors that could cause actual results to differ materially from those contained in the forward-looking statements. VeriSign retains its long-standing policy not to comment on financial performance or guidance during the quarter unless it is done through a public disclosure.

The financial results in today's call and the matters we will be discussing today include GAAP and non-GAAP measures used by VeriSign. GAAP to non-GAAP reconciliation information is appended to our earnings release and slide presentation, as applicable, each of which can be found on the Investor Relations section of our website.

In a moment, Jim and George will provide some prepared remarks. And afterward, we will open up the call for your questions.

With that, I would like to turn the call over to Jim.

D. James Bidzos
Founder, Executive Chairman, President & CEO

Thanks, David, and good afternoon, everyone. I'm pleased to report another solid third quarter for VeriSign. Third quarter results were in line with our objectives of offering security and stability to our customers while generating profitable growth and providing long-term value to our shareholders.

Before I get into the third quarter results, I want to comment on 2 areas of focus for the company. First, last week, VeriSign issued an 8-K detailing the completion of the Root Zone Maintainer Service Agreement or RZMA and the .com Registry Agreement extension amendment. The RZMA between VeriSign and ICANN is now effective, and VeriSign has been discharged from those responsibilities under the cooperative agreement. Additionally, NTIA approved the .com extension which extends the .com Registry Agreement between VeriSign and ICANN until November 30, 2024, to coincide with the term of the RZMA. VeriSign agreed to cooperate with NTIA as it determines whether to exercise their right to extend the term of the Cooperative Agreement before it expires on November 30, 2018.

Second, as we stated earlier this year, a significant part of our corporate strategy for 2016 was to evaluate for acquisition top level domains that are currently in operation and those that have not yet been awarded. Consistent with this strategy, as announced in August, VeriSign entered into an agreement for the future assignment of the .web TLD. While there's still steps that need to occur before we become the registry operator for .web, we are excited about the .web opportunity as we believe that we are well positioned to make it successful.

I'll comment now on third quarter operating highlights. We reported revenue of $288 million, up 8.2% year-over-year, and we delivered strong financial performance, including $165 million in free cash flow. We ended the third quarter with 144.1 million .com and .net domain name registrations in the domain name base.

Our financial position is strong with $1.8 billion in cash, cash equivalents and marketable securities at the end of the quarter. As a part of managing our business, during the third quarter, we continued our share repurchase program by repurchasing 2.2 million shares for $177 million. We continually evaluate the overall cash and investing needs of the business and consider the best uses for our cash, including potential share repurchases.

At the end of September, the domain name base in .com and .net was 144.1 million, consisting of 128.4 million .com registrations and 15.8 million .net registrations. This represents an increase of 6.6% year-over-year and a net increase of 0.9 million domain name registrations from the end of the second quarter. During the quarter, we processed 8.3 million new registrations.

In the second quarter of 2016, the renewal rate was 73.8% compared with 72.7% for the same quarter of 2015. While renewal rates are not fully measurable until 45 days after the end of the quarter, we believe that the renewal rate for the third quarter of 2016 will be approximately 72.3%. This preliminary rate compares favorably to 71.9% achieved in the third quarter of 2015.

There are many factors that drive domain growth. These include, but are not limited to, Internet adoption, economic activity, e-commerce activity and registrar go-to-market strategies. During the second half of 2015 and the first quarter of 2016, we experienced an increased volume of new domain name registrations, primarily from our registrars in China. The volume of these new registrations has been inconsistent and periodic compared to prior periods and, by the end of the first quarter of 2016, reverted back to a more normalized registration pace.

Also, as discussed for the last 3 quarters, we still expect the fourth quarter of 2016 to be somewhat unique, as the value of domain name registrations up for renewal, the volume of domain name registrations up for renewal in the quarter will have a larger-than-normal percentage of first-time renewing registrations as a result of the strong performance during Q3 and Q4 of 2015. While it's difficult to assess what the renewal characteristics of these registrations will be due to the large upcoming Q4 2016 expiring base, we still expect fourth quarter deletions to be elevated, with many of these deletions occurring towards the end of the fourth quarter. Based on these and other factors, we expect the full year 2016 domain name base growth range of between 1% and 2%, despite a net increase to the -- a net decrease to the domain name base of between 1.5 million and 2.8 million registrations in the fourth quarter.

Now I'd like to turn the call over to George.

George E. Kilguss
Executive VP & CFO

Thanks, Jim, and good afternoon, everyone. Revenue for the third quarter totaled $288 million, up 8.2% year-over-year. During the quarter, 58% of our revenue was from customers in the U.S. and 42% was from international customers. GAAP operating income in the third quarter totaled $175 million, up 13.2% from $154 million in the third quarter of 2015. The GAAP operating margin in the quarter came to 60.8% compared to 58.1% in the same quarter a year ago. GAAP net income totaled $114 million compared to $92 million a year earlier, which produced diluted GAAP earnings per share of $0.90 in the third quarter this year compared to $0.70 for the third quarter last year.

As of September 30, 2016, the company maintained total assets of $2.3 billion and total liabilities of $3.5 billion. Assets included $1.8 billion of cash, cash equivalents and marketable securities, of which $421 million were held domestically, with the remainder held abroad.

I'll now review some additional third quarter metrics, which include non-GAAP operating margin, non-GAAP earnings per share, diluted share count, operating cash flow and free cash flow. I will then discuss our 2016 full year guidance.

Third quarter non-GAAP operating expense, which excludes $13 million of stock-based compensation, totaled $100 million as compared to $99 million in the second quarter of 2016 and $99 million in the same quarter a year ago. Non-GAAP operating margin for the third quarter was 65.3% compared to 62.7% in the same quarter of 2015.

Non-GAAP net income for the third quarter was $119 million, resulting in non-GAAP diluted earnings per share of $0.93 based on a weighted average diluted share count of 127.7 million shares. This compares to $0.78 in the third quarter of 2015 and $0.91 last quarter based on 131.7 million and 130.6 million weighted average diluted shares, respectively.

Dilution related to the convertible debenture was 20.8 million shares based on the average share price during the third quarter compared with 18 million for the same quarter in 2015 and 21.9 million shares last quarter. The share count was reduced by the full effect of the second quarter 2016 repurchase activity and the weighted effect of the 2.2 million shares repurchased during the third quarter.

Operating cash flow was $168 million and free cash flow was $165 million for the third quarter compared with $155 million and $157 million, respectively, for the third quarter last year.

With respect to full year 2016 guidance, revenue for 2016 is now expected to be in the range of $1,135,000,000 to $1,140,000,000, representing an annual growth rate of approximately 7% to 7.5%. This revenue guidance is narrowed from the $1,130,000,000 to $1,140,000,000 range given on our last earnings call. Full year 2016 non-GAAP operating margin is now expected to be between 63.5% and 64.5%, increased from the 62.5% to 64% range provided during the last call.

Our non-GAAP interest expense and non-GAAP nonoperating income net is still expected to be an expense of between $110 million and $116 million.

Capital expenditures for the year are now expected to be between $30 million and $35 million, decreased from the $35 million and $45 million range given on our last call. Cash taxes for the year are still expected to be between $10 million and $20 million. Substantially all of the expected cash taxes in 2016 are international, primarily as a result of domestic tax attributes, including cash tax benefits from our convertible debentures. In summary, the company continued to demonstrate sound financial performance during the third quarter of 2016.

Now I'll turn the call back to Jim for his closing remarks.

D. James Bidzos
Founder, Executive Chairman, President & CEO

Thank you, George. In closing, during the third quarter, we continued to protect, grow and manage the business while delivering value to our shareholders. We think that our focus on profitable growth and disciplined execution will extend the long trend lines of growth in our top and bottom line and allow us to continue our consistent track record of generating and returning value to our shareholders in the most efficient manner. We believe the 2 developments I spoke of, the com extension and our move to becoming the registry operator for the .web extension, will result in securing stability for our customers and our business as well as long-term growth opportunities for the company.
We will now take your questions. So operator, we're ready for the first question.

Question and Answer

Operator

[Operator Instructions] And we do have our first question from Sterling Auty with JPMorgan.

Sterling Auty
JP Morgan Chase & Co, Research Division

I want to start with -- can you help us really understand the net impacts from both the .com extension and the signing of the Root Zone Maintainer? Feels like there was a number of moving parts, but maybe summarize the net impacts of both of those on the business.

D. James Bidzos
Founder, Executive Chairman, President & CEO

Sure, Sterling. Let me try to just, I guess, factually state what's actually changed. First of all, the IANA transition was completed, and the IANA contract between NTIA and ICANN was allowed to sunset. So ICANN is now accountable to the community under enhanced accountability mechanisms. Second, the term of VeriSign's .com registry agreement with ICANN is now extended to November 30, 2024. So the next renewal cycle for .com will be in 2024, not in 2018. Third, the Root Zone Maintainer portion of the transition is now complete as VeriSign will continue the Root Zone Maintenance function it has historically performed, but now under a new contract called the RZMA between VeriSign and ICANN. Fourth, there are 2 amendments to the Cooperative Agreement between VeriSign and NTIA. Amendment 33 discharges VeriSign from its Root Zone Maintenance responsibilities, and Amendment 34 approved the extension of the .com agreement to 2024 and gives NTIA the right to extend the Cooperative Agreement past its current expiration of 2018. It also allows NTIA to conduct a public interest review for purposes of making the extension decision. And also, VeriSign still has the right, I would point out, under Amendment 32, to seek removal of the pricing restrictions in the com registry agreement if we demonstrate to the department that market conditions no longer warrant such restrictions. Those are the basic factual changes in all of these various events of the last 30 days or so.

Sterling Auty
JP Morgan Chase & Co, Research Division

So one follow-up to it, on that last point. So if the Cooperative Agreement is allowed to expire, what does that mean for pricing? Do you automatically get the ability to raise prices? Will you seek a request from the DOJ? So what happens on the pricing front if Cooperative Agreement does go away?

D. James Bidzos
Founder, Executive Chairman, President & CEO

So if NTIA decides -- and it's their process and their decision, but if they do decide to allow the Cooperative Agreement to sunset as opposed to exercising their right to extend it -- so I don't want speculate on that process because that's NTIA's decision, whether to sunset it or extend it beyond 2018. I can tell you that we agreed to work with NTIA as they go through their process and make the decision. However, I would point out one thing, which is that if there's a change to or a termination of or expiration of the Cooperative Agreement, the com registry agreement itself contains something called the cooperation clause that states that VeriSign and ICANN will negotiate in good faith to amend the terms of the registry agreement, the com registry agreement, as necessary, for consistency with changes to or expiration of the Cooperative Agreement. If that helps.

Sterling Auty
JP Morgan Chase & Co, Research Division

Well, it does, but it kind of still leaves a little ambiguity. So if it goes away and you renegotiate with ICANN, I would imagine one of things that, if I'm in your shoes, you'd be interested in is negotiating back the ability to raise prices. Or would you still be under a consent decree of the Department of Justice through 2024 to keep .com prices capped?

D. James Bidzos
Founder, Executive Chairman, President & CEO

So I think I can answer part of that, I'm just trying to avoid speculating. But if -- in your scenario, if you're assuming that the Cooperative Agreement is allowed to sunset and there is no other contractual relationship or provision or restrictions relationship between DOJ, DOC and VeriSign, then VeriSign will negotiate in good faith, as we're both required to under the agreement, with ICANN to effect whatever changes need to be effected as a result of the sunset of the Cooperative Agreement. So that certainly would include pricing, but I don't want to speculate what that would look like today.

Sterling Auty
JP Morgan Chase & Co, Research Division

Okay. And last -- so just to clarify then. Really, the cap on pricing that the DOJ effectively helped put into place is not like what -- when the DOJ steps in and declares a company a monopoly and puts in a consent decree, where they have direct oversight and capping. You're saying that the price agreement that the DOJ market power study helped is really just entirely encapsulated within the Cooperative Agreement?

D. James Bidzos
Founder, Executive Chairman, President & CEO

I believe that's correct. It's a fact that the relationship that we have with NTIA is the mechanism by which the price caps are imposed on .com and that NTIA, where appropriate for its oversight through the Cooperative Agreement, consults with DOJ on issues of -- competitive issues, et cetera. So if that went away, there would be -- at that point, if that's all that happened and the Cooperative Agreement sunset-ed, there would -- there is no other relationship -- contractual relationship that we have at this point. So we don't have that type of relationship that you described upfront your question.

Operator

Our next question comes from Steve Ashley with Robert W. Baird.

Steven Michael Ashley
Robert W. Baird & Co. Incorporated, Research Division

Well, I'm going to just pick up right where Sterling left off and just keep drilling down so -- because it is something we're all very interested in. If the Cooperative Agreement sunsets, who will control pricing? And you talked to him about you would negotiate with ICANN. Would ICANN have the authority to set pricing, veto pricing? We're just trying to understand where authority for setting and enforcing pricing would reside if the Cooperative Agreement sunsets on November 18, 2018.

D. James Bidzos
Founder, Executive Chairman, President & CEO

Well, I don't want to speculate on what that process in detail would look like, and therefore, it's hard to say where it would come out. But it would -- according to the language that's in the documents today, it would be the result of a good-faith negotiation between VeriSign and ICANN. Essentially, the DOC is not in the picture if the Cooperative Agreement is allowed to sunset. So having said that, I would say that trying to determine what that will yield, I think, would be speculating. But I would observe that ICANN's policies at least are fairly consistent in how they've applied pricing across TLD, certainly since the new gTLD program. There are a number of legacy TLDs, of course, like .com and .net and .org and others. But it's just difficult to speculate on a process that only gets invoked under a set of circumstances that are 2 years away. And I think the main point is, is that the pricing imposed on .com since -- at least since 2006 has come directly from DOC. So that mechanism goes away. But in terms of what happens and who has the authority, it's a good-faith negotiation between VeriSign and ICANN. That much is factual.

Steven Michael Ashley

Robert W. Baird & Co. Incorporated, Research Division

Great. And then I'd just like to ask a question on deferred revenue. It declined sequentially for not a lot, a little bit for the second time consecutively. That hasn't been kind of the norm over the past years. Is there any comment around the small sequential decline in deferred revenue we're seeing?

George E. Kilguss
Executive VP & CFO

Nothing other than it typically does slow down as the year progresses. Typically, at least historically, we used to have very large registrations in the first quarter, so we get a bump in deferred revenue, and it would decline sequentially over the years. More recently, that bump in Q1 has gotten less, and so some of the changes year-over-year have rolled through. But nothing material that I'm aware of, Steve.

Operator

[Operator Instructions] And our next question comes from Walter Pritchard with Citi.

Walter H Pritchard
Citigroup Inc, Research Division

Two questions. One, on -- you've been pretty clear on the Q4 trajectory given what happened last year. Can you talk about how you look at that into Q1?

George E. Kilguss
Executive VP & CFO

So Walter, this is George. We'll give you Q1 guidance on our fourth quarter call. But again, the reason for the large range that we put in place this particular quarter is the fact that it was a fairly large amount of names that came up for renewal -- or will come up for renewal in this quarter. And the cohort or the type of names that they are, they're related to Chinese investment community, we really don't have a tremendous amount of data around that. And so we're really waiting to take a look at those names as they come up for renewal. In the middle of November and early December, we'll get a better look at that. And once we have a better look at that, it'll give us a little more clarity into Q1. But as we've always said, the Q4 is a relatively unique event. There's over 4 million names that are really coming up for renewal as a result of the demand that happened last year. And so we're really waiting to take a look at that before providing guidance to Q1.

Walter H Pritchard
Citigroup Inc, Research Division

And then, George, just on the expenses, you had a very good -- or I guess the expenses very low, declining year-over-year by about 3% in the quarter. Can you talk about the sustainability -- I guess, first, the source of the expense declines year-over-year and then the sustainability of that trajectory as you look into Q4 and beyond?

George E. Kilguss
Executive VP & CFO

Yes. I would say -- I mean, as you commented on, I think we've done a pretty good job of trying to keep expenses level. I mean when you talk about year-over-year, you're looking at the third quarter, and I think it's probably more appropriate to look at the 9 months because things can move from quarter-to-quarter. When I look at the 9 months, on a non-GAAP basis, expenses in total are down a little bit. You're correct there. But we're seeing some movement in between the groups. So we've seen an increase in our cost of goods sold. We've got more labor going on there. Sales and marketing, we've talked about that. It's been lower, but we do have an intention to put more money to work there, and I always think that's really more of a timing function. R&D is down. We have reduced labor there. We -- as we talked about last quarter, I believe, we did close our Indian development corporation over there last year, and so we're getting some benefits from a labor perspective through the P&L at the present time. And then G&A is up a little bit. We do have some subtly higher labor, and we've incurred some higher legal costs this quarter. As far as your questions to the sustainability, we really try to manage the total expense of the company, the entire $400 million number on an annual basis, and we try to allocate those dollars to where they are. Clearly, we try to gain efficiencies, but, at the same time, we're not starving the business. And as you know, our business is relatively dynamic. As the cyber environment continues to evolve, we absolutely want to make sure we put enough resources into maintaining the security and stability of the business. So we'll continue to be vigilant on that, but to date, they've -- we've done a good job at keeping them in the range where they've been historically.

Operator

We are taking a follow-up question from Sterling Auty with JPMorgan. It's also our final question.

Sterling Auty
JP Morgan Chase & Co, Research Division

Just a housekeeping follow-up question. Can you remind us what the total number of names that are up for renewal in the fourth quarter? And if you're willing to give it for the first quarter, so March, actually are.

D. James Bidzos
Founder, Executive Chairman, President & CEO

Yes. So a couple of data points. The names that were up for renewal this quarter was 28.7 million, and the names that are up for Q4 are going to be 32 million names that are up for renewal.

Sterling Auty
JP Morgan Chase & Co, Research Division

All right, great. And how about March of '17? Or is it too early to give that?

D. James Bidzos
Founder, Executive Chairman, President & CEO

I would say it's too early for that at this point.

Sterling Auty
JP Morgan Chase & Co, Research Division

And actually -- and maybe one other we didn't touch upon. So early here in the quarter, so you've got the guidance for the decline in the base, but there was a pop actually in the zone file, like 350,000 names the 1 week and including a pretty healthy pop in .net. Anything that you can ascribe the jump to?

D. James Bidzos
Founder, Executive Chairman, President & CEO

Yes. We ran some marketing activities in the quarter around .net, and they were actually relatively successful. And so we're -- the team's evaluating the programs to see if we want to run some more of those. But we had a marketing program basically, and those numbers are -- roughly right about 300 names came in from those marketing programs.

Sterling Auty
JP Morgan Chase & Co, Research Division

And when you talk about those marketing programs, are these different than -- I think about, in the past, that you ran marketing programs with registrars at the end market to spur demand. But are these those types of things? Or are these kind of incentives where maybe you're giving discount on registry fees on .net above certain thresholds? Or anything like that?

D. James Bidzos
Founder, Executive Chairman, President & CEO

The programs vary from program to program. This was more of a program we were looking to see if we ran a short-term program, what would be the effect of. Sometimes we run programs throughout the year, much longer-term programs, and we're questioning the effectiveness of those compared to some shorter-rate programs -- shorter-term programs. And this one was a relatively short program. We just wanted to understand the duration of programs and get some feedback as we think about 2017.

Operator

And that does conclude our question-and-answer session. I'd like to turn the call over to David Atchley for closing remarks.

David Atchley
VP & Corporate Treasurer

Thank you, operator. Please call the Investor Relations department with any follow-up questions from this call. Thank you for your participation. This concludes our call. Have a good evening.

Operator
Once again, that does conclude today's call. We appreciate your participation.

EXHIBIT KM-53

S&P Global
Market Intelligence

VeriSign, Inc. NasdaqGS:VRSN

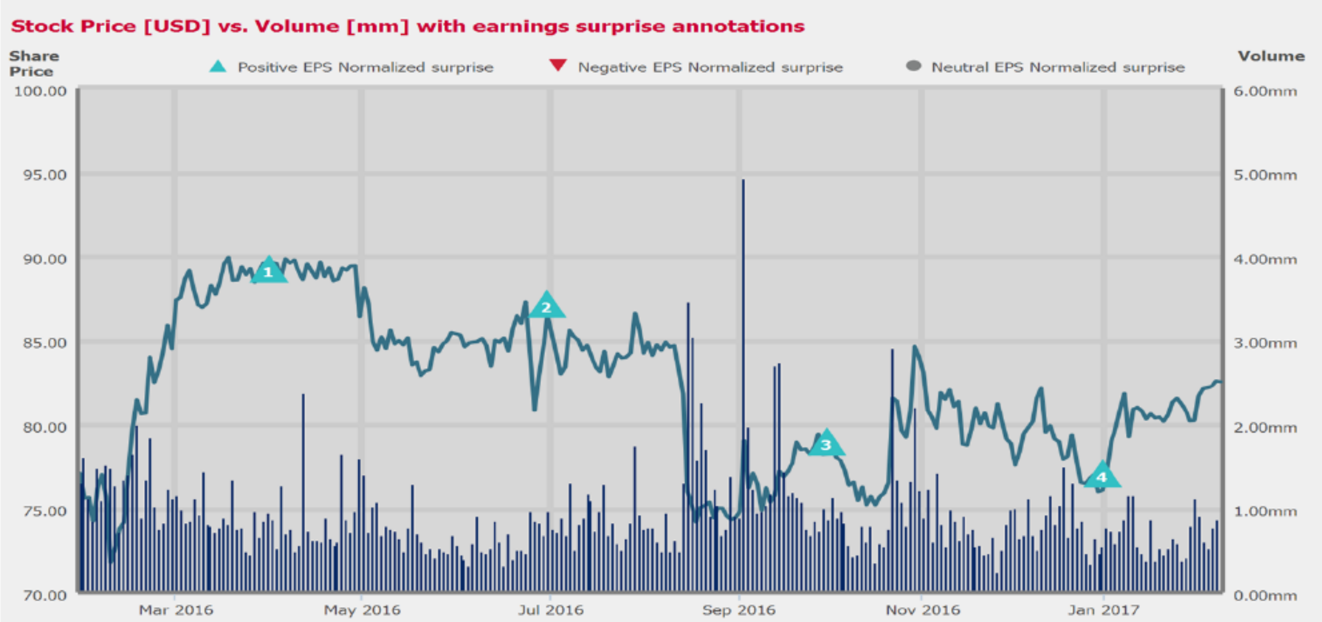
FQ4 2016 Earnings Call Transcripts

Thursday, February 09, 2017 9:30 PM GMT

S&P Global Market Intelligence Estimates

	-FQ4 2016-			-FQ1 2017-	-FY 2016-			-FY 2017-
	CONSENSUS	ACTUAL	SURPRISE	CONSENSUS	CONSENSUS	ACTUAL	SURPRISE	CONSENSUS
EPS Normalized	0.88	0.92	▲4.55	0.91	3.56	3.61	▲1.40	3.82
Revenue (mm)	283.09	286.27	▲1.12	286.73	1138.99	1142.17	▲0.28	1169.94

Currency: USD
Consensus as of Jan-30-2017 7:16 PM GMT



- EPS NORMALIZED -

	CONSENSUS	ACTUAL	SURPRISE
FQ1 2016	0.83	0.85	▲1 2.41 %
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Todd B. Strubbe
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JP Morgan Chase & Co, Research Division

Jason Edward Velkavrh
Robert W. Baird & Co. Incorporated, Research Division

Presentation

Operator

Good day, everyone. Welcome to the VeriSign's Fourth Quarter and Full Year 2016 Earnings Call. Today's conference is being recorded, and unauthorized recording of this call is not permitted.

At this time, I would like to turn the conference over to Mr. David Atchley, Vice President of Investor Relations and Corporate Treasurer. Please go ahead, sir.

David Atchley
VP & Corporate Treasurer

Thank you, operator, and good afternoon, everyone. Welcome to VeriSign's Fourth Quarter and Full Year 2016 Earnings Call. With me are Jim Bidzos, Executive Chairman, President and CEO; Todd Strubbe, Executive Vice President and COO; and George Kilguss, Executive Vice President and CFO.

This call and our presentation are being webcast from the Investor Relations section of our verisign.com website. There you will also find our fourth quarter and full year 2016 earnings release. At the end of this call, the presentation will be available on that site. And within a few hours, the replay of the call will be posted.

Financial results in our earnings release are unaudited, and our remarks include forward-looking statements that are subject to the risks and uncertainties that we discuss in detail in our documents filed with the SEC, specifically the most recent reports on Forms 10-K and 10-Q, which identify risk factors that could cause actual results to differ materially from those contained in the forward-looking statements.

VeriSign retains its longstanding policy not to comment on financial performance or guidance during the quarter unless it is done through a public disclosure.

The financial results in today's call and the matters we will be discussing today include GAAP and non-GAAP measures used by VeriSign. GAAP to non-GAAP reconciliation information is appended to our earnings release and slide presentation, as applicable, each of which can be found on the Investor Relations section of our website.

In a moment, Jim and George will provide some prepared remarks. And afterward, we will open the call for your questions.

With that, I would like to turn the call over to Jim.

D. James Bidzos
Founder, Executive Chairman, President & CEO

Thanks, David, and good afternoon, everyone. I'm pleased to report another solid quarter, which capped another solid year for VeriSign. The year marks some significant milestones for the Internet community and for VeriSign with the completion of the IANA transition, our signing of the Root Zone Maintainer service agreement with ICANN and the .com registry agreement extension amendment, which extends the .com registry agreement until the end of November 2024.

Our fourth quarter and full year 2016 results were in line with our objectives of offering security and stability to our customers while generating profitable growth and providing long-term value to our shareholders.

During 2016, VeriSign delivered strong financial performance, including reporting $1,142,000,000 in revenues, expanding free cash flow to $666 million and producing full year 2016 non-GAAP operating margins of 64.5%. Operationally, 2016 was a solid year for the company. VeriSign processed 35.8 million new .com and .net domain name registrations and finished the year with 142.2 million .com and .net names in the domain name base.

During the year, we marked more than 19 years of uninterrupted availability of the VeriSign DNS for .com and .net.

As part of managing our business, during the fourth quarter, we continued our share repurchase program by repurchasing 2 million shares for $160 million. During the full year 2016, we repurchased 7.8 million shares for $637 million. Effective today, the Board of Directors increased the amount of VeriSign common stock authorized for share repurchase by approximately $641 million to a total of $1 billion authorized and available under the share repurchase program, which has no expiration.

Our financial position is strong with $1.8 billion in cash, cash equivalents and marketable securities at the end of the year. We continually evaluate the overall cash and investing needs of the business and consider the best uses for our cash, including potential share repurchases.

At the end of December, the domain name base in .com and .net was 142.2 million, consisting of 126.9 million names for .com and 15.3 million names for .net. This represents an increase of 1.7% year-over-year. As noted in prior conference calls, the fourth quarter of 2016 was somewhat unique as the volume of domain name registrations up for renewal in the quarter had a larger-than-normal percentage of first-time renewing registrations due to the strong performance during Q3 and Q4 2015 coming from China investors.

As first-time renewing names have a lower renewal rate than previously renewed names, fourth quarter 2016 deletes were elevated and resulted in the domain name base decrease of 1.9 million net names after processing 8.8 million new gross registrations during the quarter. This larger percentage of first-time renewing names also leading to an overall -- is also leading to an overall preliminary fourth quarter 2016 renewal rate of 67.5%. This preliminary rate compares to 73.3% achieved in the fourth quarter of 2015.

In the third quarter of 2016, the renewal rate was 73% compared with 71.9% for the same quarter of 2015. While activity from China has normalized over the last few quarters, the China names surge of late 2015 declined but did carry over into the first quarter of 2016. As a result, we expect the small group of names to contribute to a slight increase in deletes towards the end of the current Q1 and the beginning of Q2.

Based on these and other factors, we expect full year 2017 domain name base growth of between 0.5% and 2.5%, with an increase to the domain name base of between 0.7 million and 1.2 million registrations in the first quarter.

Now I'd like to provide 2 updates before handing the call over to George. First, as it relates to our becoming a registry operator for .web, on January 18, 2017, the company received a civil investigative demand from the Antitrust division of the U.S. Department of Justice requesting certain information related to VeriSign's potential operation of the .web TLD. The CID is not directed at VeriSign's existing registry agreements. As we said at the time of the auction last July, we strongly believe VeriSign is well positioned to grow and widely distribute .web to provide an additional option to the marketplace given our proven track record of reliability and stability, and we look forward to explaining our views as we respond to the CID and continue to cooperate with the DOJ.

Second, we continually evaluate the strategic opportunities for our business. And as you may have seen earlier today, we have decided it is in the best interest to sell our iDefense business to Accenture. As part of this sale, VeriSign will continue as an iDefense customer to benefit from the threat intelligence information provided by iDefense. The announcement of the iDefense sale only relates to iDefense and is not a sale of our other VeriSign security services offerings, including DDoS Protection and Managed DNS. The terms of this transaction are not being disclosed, and the financials associated with this business are not material to our overall business. We anticipate closing in the next few months, subject to customary closing conditions.

And now I'd like to turn the call over to George.

George E. Kilguss
Executive VP & CFO

Thanks, Jim, and good afternoon, everyone. For the year ended December 31, 2016, the company generated revenue of $1,142,000,000, up 7.8% from fiscal 2015 and delivered GAAP operating income of $687 million, up 13% from $606 million for the full year 2015.

Revenue for the fourth quarter totaled $286 million, up 5% year-over-year and down 0.4% sequentially. The small sequential decline was a result of the 1.9 million reduction in the domain name base during the quarter that Jim discussed earlier. During the quarter, 59% of our revenue was from customers in the U.S. and 41% was from international customers.

GAAP operating income in the fourth quarter totaled $169 million, up 6.6% from $158 million in the fourth quarter of 2015. The GAAP operating margin in the quarter came to 59% compared to 58.1% in the same quarter a year ago.

GAAP net income totaled $106 million compared to $102 million a year, which produced diluted GAAP earnings per share of $0.84 in the fourth quarter this year compared to $0.76 for the fourth quarter last year.

As of December 31, 2016, the company maintained total assets of $2.3 billion and total liabilities of $3.5 billion. Assets included $1.8 billion of cash, cash equivalents and marketable securities, of which $368 million were held domestically, with the remainder held abroad.

I'll now review some additional fourth quarter financial metrics, which include non-GAAP operating margin, non-GAAP earnings per share, diluted share count, operating cash flow and free cash flow. I will then discuss our 2017 full year guidance.

Fourth quarter non-GAAP operating expense, which excludes $14 million of stock-based compensation, totaled $103 million as compared to $100 million in the third quarter of 2016 and $103 million in the same quarter a year ago. The sequential increase was primarily a result of increased marketing expenses deployed in the quarter.

Non-GAAP operating margin for the fourth quarter was 63.9% compared to 62.4% in the same quarter of 2015. Non-GAAP net income for the fourth quarter was $115 million, resulting in non-GAAP diluted earnings per share of $0.92 based on a weighted average diluted share count of 125.5 million shares. This compares to $0.79 in the fourth quarter of 2015 and $0.93 last quarter based on 133.4 million and 127.8 million weighted average diluted shares, respectively.

Dilution related to the convertible debentures was 20.6 million shares based on the average share price during the fourth quarter compared with 21.4 million for the same quarter in 2015 and 20.8 million shares last quarter. The share count was reduced by the full effect of third quarter 2016 repurchase activity and the weighted effect of the 2 million shares repurchased during the fourth quarter.

Operating cash flow was $195 million and free cash flow was $198 million for the fourth quarter compared with $189 million and $176 million, respectively, for the fourth quarter last year.

With respect to full year 2017 guidance, the financial guidance that I will provide reflects the expected completion of the iDefense asset sale within the next few months. Revenue for 2017 is expected to be in the range of $1,138,000,000 to $1,158,000,000. Full year 2017 non-GAAP operating margin is expected to be between 64% and 65%. Our non-GAAP interest expense and non-GAAP nonoperating income net is expected to be an expense of between $93 million and $100 million. Capital expenditures for the year are expected to be between $35 million and $45 million. And finally, cash taxes for the year are expected to be between $15 million and $25 million.

Substantially all of the expected cash taxes in 2017 are international, primarily because of domestic tax attributes including cash tax benefits from our convertible debentures. These convertible debentures continue to generate cash tax benefits while they remain outstanding, and they are an important part of our capital structure. Although we will have the right to redeem these debentures under the terms of the indentures starting in August of 2017, our intention, based on current conditions, is not to redeem these debentures, which will allow the cash tax benefits to continue to accrue.

In summary, the company continued to demonstrate sound financial performance during the fourth quarter and full year 2016.

Now I'll turn the call back to Jim for his closing remarks.

D. James Bidzos
Founder, Executive Chairman, President & CEO

Thank you, George. In closing, during last year, we expanded our work to protect, grow and manage the business while continuing our focus to provide long-term value to our shareholders. We think that our focus on profitable growth and disciplined execution will extend the long trend lines of growth in our top and bottom line and allow us to continue our consistent track record of generating and returning value to our shareholders in the most efficient manner.
We will now take your questions. Operator, we are ready for the first question.

Question and Answer

Operator

[Operator Instructions] We will take our first question from Gregg Moskowitz of Cowen and Company.

Gregg Steven Moskowitz
Cowen and Company, LLC, Research Division

First question. You mentioned that Q4 renewal rates are expected to be 67.5%. Was there any change in renewal rates outside of China in the quarter?

George E. Kilguss
Executive VP & CFO

Gregg, thanks for the question. In general, our renewal rates, both domestically and internationally, had been relatively consistent with one another. But the vast majority of the decline that we saw in our international renewal rates really related to the China names. That was the biggest factor. Everything else stayed relatively consistent for us.

Gregg Steven Moskowitz
Cowen and Company, LLC, Research Division

Okay, perfect. And then within the Q1 net-add guidance, are you assuming essentially the same renewal rates from China that you saw in Q4?

George E. Kilguss
Executive VP & CFO

Yes. For the group of names that are similar -- the group of names, it was about 750,000 to 1 million names that came in, in the first quarter of 2016 that was also from what we believe to be the China investor phenomena. We expect those to have similar renewal rates as the names that renewed in the fourth quarter of 2016.

Gregg Steven Moskowitz
Cowen and Company, LLC, Research Division

Perfect. And just a couple other quick ones, if I may. I understand and certainly can appreciate that you don't want to get overly granular with respect to the iDefense contribution. Having said that, the 2017 revenue guidance is below where The Street was. And just I think any sort of additional color you might be able to provide, even if not getting, again, overly granular, might just be helpful in sort of reconciling where The Street was previously versus your guidance.

George E. Kilguss
Executive VP & CFO

Sure. I mean, I think there's a variety of factors that go into our revenue guidance, which is $1.138 billion to $1.158 billion for next year. Clearly, we had a very strong 2017. We were up 7.8% -- I'm sorry, '16, we were up 7.8% in 2016 versus 4.9% in 2015. And as we've talked about, a lot of that revenue growth was from a unique event, which was attributed to the strong China investor community. And as we've mentioned, about 1/3 of those names renewed in the fourth quarter. So we do have some names, as I just mentioned, coming up in the first quarter that should -- if they had the same renewal rate, will delete out of the zone sometime in the late first quarter, early second quarter. And so that's part of what's influencing it. Also, to a lesser extent, you're correct; the iDefense business, we expect that revenue to get out of the business as we close this transaction. And so without disclosing any details on the iDefense business, which we're not, I would say it's really those 2 factors that are giving our view of revenue today. And as always, we'll update our guidance each quarter as we get more visibility into the year.

Gregg Steven Moskowitz

Cowen and Company, LLC, Research Division

Okay, great. And then just one last one for Jim. Just following up on the civil investigative demands from the DOJ with respect to .web. What would be the sort of the procedure and time line from here just as you understand it?

D. James Bidzos
Founder, Executive Chairman, President & CEO

Sure. Well, I think in my comments, I not only said all I should; I think I said all there really is to say at this point. There's no information beyond what I told you. I can give you a little bit more color, I guess. I mean, we certainly said in the past that inorganic growth is part of our growth strategy, and sometimes regulatory review becomes part of that process. So we received the CID, which is kind of like a subpoena. We've been discussing it with the DOJ since shortly after we received it. And we've provided some information already, and we're continuing to cooperate. So like I said in my remarks, we believe we're well positioned to grow .web. We think that the industry is extremely competitive. Beyond that, it's just too early in the process to say anything beyond that. It's just speculation, and I really can't do that.

Operator

We will take our next question from Gray Powell of Wells Fargo Securities.

Gray Wilson Powell
Wells Fargo Securities, LLC, Research Division

Just a couple of questions, if I may. So looks like .com has shown a decent recovery and growth over the last month, but .net does remain under some pressure. Is there any residual churn issue on .net? Or should we just expect more muted growth there, on that domain going forward?

George E. Kilguss
Executive VP & CFO

Well .net was also impacted by the China activity in 2015. And so we did see some of .net names also churn out of the zone in the fourth quarter of 2016. They're -- .net is still a great brand for us globally. It's well recognized. We continue -- it continues to do well in markets internationally as well as domestically. But there is a lot of choice in the domain name industry. And there's clearly competition, whether it be from ccTLDs or other technologies. But we still are looking to drive demand in .net, and it's still a great brand for us globally.

D. James Bidzos
Founder, Executive Chairman, President & CEO

Certainly, .net is not the brand that .com is. Com is a stronger brand, but there are 15.3 million .net registrations. It's a globally recognized and trusted brand. It had, in the past couple of years, actually dipped briefly below 15 million names, and it's recovered. So I think its growth trajectory is just a little bit different than .com, but it's still a very, very strong and recognized brand. It's the second-largest generic TLD behind com.

Gray Wilson Powell
Wells Fargo Securities, LLC, Research Division

Understood. Okay, that's helpful. And then could you give an update on foreign language versions of .com and .net that you're introducing? Just how many are up and running today? What kind of traction are they seeing? And then just what's the schedule for the remaining domains going forward?

D. James Bidzos
Founder, Executive Chairman, President & CEO

Todd, do you want to start it?

Todd B. Strubbe

Executive VP & COO

Yes. Well, we currently have 3 of the transliterations of com and net generally available. That's 2 of the Korean or Hangul transliterations, 1 for com and 1 for net. And then the Japanese were katakana script of .com. At this point, we're not providing any additional details on other launches. As we mentioned last quarter, we do continue to work on our licensing process to operate the Chinese IDNs, and we will update as we develop our plans further.

Operator

[Operator Instructions] We will take our next question from Sterling Auty of JPMorgan.

Hazal Mine Kansu
JP Morgan Chase & Co, Research Division

This is Mine Kansu in for Sterling. I wanted to ask a follow-up on the iDefense sales. Can you talk a little bit more about the timing and the rationale of the sale and if there are any plans for divestments in security business? And then also my second question is just on the other revenue in the quarter. It seems a little bit higher than what we expected. So if there's anything that's driving that, any color there would be really helpful.

D. James Bidzos
Founder, Executive Chairman, President & CEO

I don't know if you're on a cell phone. The very end of that was a little difficult to understand. You said that other revenue was a little bit higher in the quarter and then you said something else that I think -- at least I wasn't able to get.

Hazal Mine Kansu
JP Morgan Chase & Co, Research Division

Can you -- is it better now?

George E. Kilguss
Executive VP & CFO

A little.

D. James Bidzos
Founder, Executive Chairman, President & CEO

Yes, a little. Try again, please. We got your -- I got your first -- yes, I got your first question.

Hazal Mine Kansu
JP Morgan Chase & Co, Research Division

I was just asking about the other revenue, if anything was different in the quarter. Yes.

D. James Bidzos
Founder, Executive Chairman, President & CEO

So let me address your first question about iDefense. I think you were asking about strategic rationale. We've certainly said consistently that we're certainly better suited to be a consumer rather than a producer of threat intelligence. Our primary business is obviously the secure and stable operation of infrastructure supporting .com and .net. That's our primary mission. That's the most important thing that we do. We obviously need good cyber defenses in order to do that, but we will continue to be an iDefense customer and receive it. But it's a little different than the other security services. And as I mentioned in my remarks, this is specifically iDefense. It's not our Managed DNS business and it's not our DDoS Protection businesses. So I think it's just sort of a logical sort of business procession [ph] for us. Your other question was about other revenue, and I'll ask George maybe to address that.

George E. Kilguss

Executive VP & CFO

Yes. So there was nothing unusual in the quarter. I'm not sure how your models track our revenue performance, but nothing unusual from an other revenue perspective.

D. James Bidzos
Founder, Executive Chairman, President & CEO

Yes, and if I can just throw out some additional color for you. I mean, we've had, as you know, a number of different growth initiatives and we did monetize some patents in 2016, and we expect to do so in 2017 as well but the amount is not material. We've adjusted our growth efforts to align with a rapidly changing domain name market. Some of those changes include shifts in traditional channels for domain names, possible secondary market activity and corresponding changes to how we invest in marketing. So while we're planning to realize 2017 revenue from these other efforts, we don't expect it to be material, and none of it's in our guidance.

Operator

We will take our final question from Jason Velkavrh of Robert W. Baird.

Jason Edward Velkavrh
Robert W. Baird & Co. Incorporated, Research Division

First question is on the expense side. I believe last quarter, you mentioned an intent to put a little more money to work in sales and marketing. I was just hoping you could provide some more color around this. And if that took place this quarter, sort of what initiative that is going towards?

George E. Kilguss
Executive VP & CFO

Yes. Sure, Jason, be happy to. So if you looked at the quarter from a non-GAAP basis, we had about $103 million of expenses in the quarter. That was up about $3 million from the third quarter, where we had about $100 million. And the majority, if not all of that increase was spent in the marketing area. We continue to partner with our registrars to put more marketing dollars in various markets to drive domain name growth. And so we were able to put that money to work, and we continue to look to opportunities to partner with registrars to do that in markets that we think can drive profitable growth for us.

Jason Edward Velkavrh
Robert W. Baird & Co. Incorporated, Research Division

Got it. That's helpful. And then a question on the new gTLDs, the .com, .net transliterations. Realize it's a small base and early. But just curious, what are you seeing there in terms of renewal rates for those that have lapped versus what you see for .com and .net?

Todd B. Strubbe
Executive VP & COO

We haven't really -- the general availability for the earliest ones was not until second quarter of 2016. So we're not up to our first year.

D. James Bidzos
Founder, Executive Chairman, President & CEO

Yes, we haven't lapped yet.

Todd B. Strubbe
Executive VP & COO

Yes, don't have lapped.

Jason Edward Velkavrh
Robert W. Baird & Co. Incorporated, Research Division

Got it. I guess, maybe, do you have an expectation for that to be any different? Or do you expect that to be around the same as...

Todd B. Strubbe
Executive VP & COO

I think it's too early to tell. They are such a different product.

D. James Bidzos
Founder, Executive Chairman, President & CEO

Yes. We don't guide to the renewal rates, but there's only a few more months and that information will be available.

Operator

That concludes today's question-and-answer session. I will now turn the call back to Mr. David Atchley for final comments.

David Atchley
VP & Corporate Treasurer
Thank you, operator. Please call the Investor Relations Department with any follow-up questions from this call. Thank you for your participation. This concludes our call. Have a good evening.