

**An Economic Framework for the Analysis of the
Expansion of Generic Top-Level Domain Names**

prepared for ICANN

Michael L. Katz

Gregory L. Rosston

Theresa Sullivan

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I. INTRODUCTION AND OVERVIEW

1. Following a policy recommendation of the Generic Names Supporting Organization (GNSO), ICANN proposes to introduce new generic top-level domains (gTLDs) and has asked us to conduct an initial economic analysis of the costs and benefits of this proposed expansion.¹

Specifically, ICANN commissioned us to:

- Survey published studies and resources that describe the potential impacts of new gTLD introduction;
- Examine theoretical arguments about the benefits and costs of an increased number of gTLDs; and
- Consider and propose new empirical studies that could help assess costs and benefits of new gTLDs. The studies should be planned and structured to address open questions and to provide information about how best to structure rules for new gTLDs.

This report presents our findings and recommendations with respect to each of these tasks.

2. We begin by providing relevant background on the domain name system (DNS) and the proposed process for approving new gTLDs. With this foundation established, we develop a conceptual framework in which to conduct an economic analysis of the welfare and efficiency effects of introducing additional gTLDs. This economic framework recognizes that the costs and benefits of new gTLDs may not accrue solely to the new gTLD operators, but also to third parties (those outside of the registry application and approval process). The potential for “externalities” (*i.e.*, costs and benefits imposed on third parties) implies that an open-entry delegation process may not lead to the socially-optimal number of new gTLDs. For example,

¹ The GNSO is one of the bodies within ICANN that develops policy recommendations. It comprises representatives of several different constituencies such as gTLD registries, gTLD registrars, Internet service providers, and the business community.

Internet users may suffer costs or gain benefits from the establishment of new gTLDs if the new gTLDs affect the ease of using the Internet. Domain name registrants may also suffer costs or gain benefits if the addition of new gTLDs affects their costs of maintaining an Internet presence or protecting their trademarks. These costs and benefits to third parties create a gap between the net private benefits of new gTLDs to their operators and total net benefits to society. Because new gTLD applicants generally can be expected to make decisions to maximize their own (private) benefits rather than overall social benefits, an open-entry delegation process can lead to private decision-making that is not optimal for society as a whole; a gap between private and social net benefits results in private incentives that could lead to too many or too few new gTLDs.² An estimate of the potential gap between private and social costs and benefits is, therefore, necessary for determining whether an open-entry process for delegating new gTLDs is likely to increase aggregate social benefits. The greater is the gap between private net benefits and social net benefits, the more likely it is that an open-entry process will lead to either too few new gTLDs (if net social benefits exceed net private benefits) or too many new gTLDs (if net private benefits exceed net social benefits).

3. ICANN and others have estimated that prospective registry operators may apply for hundreds of new gTLDs, indicating that private incentives to operate new gTLDs are strong.³ ICANN's task, already underway, will be to consider the effects of new gTLDs on all members of the Internet community and not necessarily to allow private incentives alone determine the number of new gTLDs delegated. Because ICANN can shape the application process and the

² This situation is not particular to gTLDs; in any market where there is a gap between private and social net benefits, private decision-making can lead to sub-optimal outcomes.

³ Based on a study commissioned by ICANN, ICANN expects to receive 400-600 applications in the initial round of new gTLD activity. (ICANN, "Draft: Delegation Rate Scenarios for New gTLDs," available at <http://www.icann.org/en/topics/new-gtlds/anticipated-delegation-rate-model-25feb10-en.pdf>, site visited June 15, 2010.)

rules under which new gTLDs operate, it can take into account any diversion of private and social benefits in defining the process and setting rules. A thorough understanding of the potential sources of the gap between private and social net benefits will provide a basis for determining which application and evaluation processes are most likely to lead to the introduction of gTLDs that promote social welfare and economic efficiency.

4. Understanding a new gTLD's net impact on social welfare requires knowledge of the third-party benefits and costs. We first survey existing studies that shed light on these benefits and costs. These studies are informative, but largely inconclusive. Consequently, we propose a set of empirical studies designed to provide some evidence regarding the relative costs and benefits based on experience from other TLDs and market behavior. No study of past behavior, however, can predict the future costs and benefits for an entirely new set of circumstances. That said, for reasons that we discuss below, the largest sources of potential benefits from the creation of new gTLDs are likely to be:

- additional user benefits that arise from innovative new business models that are very different from those of existing TLDs' registry operators;
- development of gTLDs to serve communities of interest; and
- expansion of gTLDs to include Internationalized Domain Names (IDNs) that use an expanded character set and can thus offer new benefits to specific user communities.

Because business model innovations are difficult to predict, experience with the development of gTLDs that serve specific communities is limited, and the community has no experience with IDNs at the TLD level, it is difficult to describe the expected effects of new gTLDs with precision. Nevertheless, the proposed studies will provide an empirical foundation for understanding the effects of new gTLDs and will provide guidance for procedures and rules governing the delegation and operation of new gTLDs.

II. BACKGROUND

5. This section provides relevant background information regarding the domain name system and the proposed process for approving new gTLDs. In the 1990s, management of the domain name system was revised periodically in attempts to bring more competition to the market for second-level domain names, but the number of available gTLDs, within which all second-level domain names had to be registered, was fixed and small. Beginning in 2000, the set of gTLDs was expanded, and management of the registries evolved in an attempt to foster more competition. Now, at the recommendation of the GNSO, ICANN is overseeing a potentially significant expansion in the number of gTLDs in order to encourage more competition and to serve users better.

A. MANAGEMENT OF THE DNS PRIOR TO 2000

6. The domain name system 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 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.

7. 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.⁴ NSI operated the registry and acted as the sole registrar for .com, .org, and .net.⁵

8. In the early 1990s the most-used gTLD was .edu, but as the commercial possibilities of the Internet became apparent following the development of the World Wide Web, .com quickly became the dominant gTLD. As the .com registry operator and its sole registrar, NSI had a monopoly on the registration of second-level domain names in the dominant gTLD. In 1995 NSI began charging US\$100 to register a domain name for a two-year period.⁶

9. The next few years saw a rapid series of steps designed to increase competition. In 1997, the U.S. Government issued a policy directive stating that the management of the DNS should be privatized.⁷ 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.⁸ In its policy statement, Commerce discussed the different opinions by industry participants on whether new competitive registries (*i.e.*, new gTLDs) should be established. Although it expressed the belief that “competitive systems generally result in greater innovation, consumer choice, and satisfaction in the long run,” and that “the pressure of competition is likely to be the most effective means of discouraging registries from acting

⁴ National Research Council (2005), *Signposts in Cyberspace: The Domain Name System and Internet Navigation*, The National Academies Press, at 75-76.

⁵ *Id.* at 78.

⁶ *Id.* at 76.

⁷ *Id.* at 76-77.

⁸ U.S. Department of Commerce, National Telecommunications and Information Administration, Statement of Policy: Management of Internet Names and Addresses, 63 Fed. Reg. 31741 (1998), available at http://www.ntia.doc.gov/ntiahome/domainname/6_5_98dns.htm, site visited June 15, 2010.

monopolistically,” Commerce left the decision about whether, when, and how new gTLDs would be established to the new corporation that would manage the DNS.⁹

10. The Internet Corporation for Assigned Names and Numbers (“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.”¹⁰ The MOU also described one of ICANN’s main responsibilities as “oversight of the policy for determining the circumstances under which new TLDs are added to the root system,” 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... .”¹¹ Thus, as described in its recent draft guidebook for new gTLD applicants, “one of [ICANN’s] key mandates has been to promote competition in the domain name market.”¹²

11. 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

⁹ *Id.* at 11.

¹⁰ Memorandum of Understanding between the U.S. Department of Commerce and Internet Corporation for Assigned Names and Numbers, *available at* <http://www.icann.org/en/general/icann-mou-25nov98.htm>, *site visited* June 15, 2010, § II.A.

¹¹ “Management of Internet Names and Addresses,” 63 Fed. Reg. 31741 (1998).

¹² ICANN, “Draft Applicant Guidebook, version 4,” *available at* <http://www.icann.org/en/topics/new-gtlds/draft-rfp-clean-28may10-en.pdf>, *site visited* June 15, 2010 (hereinafter *Draft Applicant Guidebook v.4*) at A-1.

with the .com, .org, and .net registry databases.¹³ This led to the entry of hundreds of registrars, but the set of gTLDs remained fixed at a small number.¹⁴

B. PREVIOUS gTLD EXPANSIONS

12. Since its founding, ICANN has held two rounds of gTLD expansion. The first round began in 2000. In that round, ICANN announced that it would create a maximum of seven new gTLDs. It received approximately 50 applications, some from multiple entities proposing jointly to own and operate a registry and some for multiple gTLDs.¹⁵ After evaluating the applications, ICANN added four unsponsored gTLDs (.biz, .info, .name, and .pro) and three sponsored gTLDs (.aero, .coop, and .museum).

13. 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 seven of the applications (.asia, .cat, .jobs, .mobi, .post, .tel, and .travel).¹⁶ Three applications were not approved. Following these two

¹³ By 1998, authority for overseeing the DNS had been transferred from NSF to NTIA. NSI was required to separate registry and registrar functions as a condition of the renewal of its contract with NTIA to operate the registries and several root servers. (*Id.* at 77-78.)

¹⁴ VeriSign, the current .com registry operator, lists more than 800 .com registrars. (VeriSign, “Find a Registrar,” available at <http://www.verisign.com/domain-name-services/find-registrar/index.html>, site visited June 15, 2010.)

¹⁵ For example, NeuStar Inc. applied for six gTLDs (.dot, .info, .site, .spot, .surf, and .web). NeuStar also formed a joint venture with Melbourne IT that applied for other gTLDs (.biz and .per). (See, ICANN, “New TLD Program Application Process Archive,” available at <http://www.icann.org/en/tlds/app-index.htm>, site visited June 15, 2010.)

¹⁶ ICANN, “Status Report on the sTLD Evaluation Process,” December 3, 2005, available at <http://www.icann.org/en/tlds/stld-apps-19mar04/stld-status-report.pdf>, site visited June 15, 2010 (hereinafter *sTLD Status Report*). The registry agreement for .post was signed only recently, in December 2009. (ICANN, “.post Sponsored TLD Agreement,” December 11, 2009, available at <http://www.icann.org/en/tlds/agreements/post/>, site visited June 15, 2010.)

rounds of expansion, there are currently 21 gTLDs, of which seven are unsponsored.¹⁷ The table below provides summary information regarding the current gTLDs.¹⁸

gTLD Restrictions and Registries

gTLD	Introduced	Restrictions, if any	Current Registry Operator (Sponsor)
.arpa	1985	Internet architecture	IANA (Internet Architecture Board)
.com	1985	Unrestricted (but intended for commercial registrants)	VeriSign, Inc.
.edu	1985	United States educational institutions	EDUCAUSE/VeriSign, Inc. (EDUCAUSE)
.gov	1985	United States government	ZoneEdit (US General Services Administration)
.mil	1985	United States military	Defense Information Systems Agency (US DOD Network Information Center)
.net	1985	Unrestricted (but intended for network providers, etc.)	VeriSign, Inc.
.org	1985	Unrestricted (but intended for organizations that do not fit elsewhere)	Public Interest Registry, Afilias
.int	1988	Organizations established by international treaties between governments	ICANN (IANA)
.aero	2001	Air-transport industry	SITA (SITA)
.biz	2001	Businesses	NeuStar
.coop	2001	Cooperatives	DotCooperation, LLC (NCBA)
.info	2001	Unrestricted use	Afilias Limited
.museum	2001	Museums	Museum Domain Management Association (Museum Domain Management Association)
.name	2001	For registration by individuals	VeriSign Information Services, Inc.
.pro	2002	All professionals	RegistryPro (RegistryPro)
.cat	2005	Catalan linguistic & cultural community	Associació puntCAT (Fundació puntCAT)
.jobs	2005	The international human resource management community	Employ Media LLC/Verisign (Society for Human Resource Management)
.mobi	2005	Mobile content providers and users community	dotMobi (Nokia, Vodafone, Microsoft, Afilias)
.travel	2005	Travel and tourism community	Tralliance Registry Management Company, LLC. (The Travel Partnership Corporation)
.tel	2006	For individuals and businesses to store and manage their contact information in the DNS	Telnic Ltd. (Telnic Ltd.)
.asia	2007	From Asia/For Asia	Afilias (dotAsia Organisation)

Sources: ICANN, "Registry Listing," <http://www.icann.org/en/registries/listing.html>.
Various registry websites.

¹⁷ Unsponsored gTLDs operate under ICANN policies rather than the policies of the sponsoring organization but still may have restrictions on who may register domain names. .biz, .name, and .pro are unsponsored gTLDs but are intended for commercial purposes, individuals, and professionals, respectively.

¹⁸ This table excludes .post because it is not yet operational.

C. THE PROPOSAL TO INTRODUCE NEW gTLDs

14. For the past several years, ICANN has been developing a policy and process for delegating additional gTLDs. The GNSO began work on a policy towards issuing new gTLDs in December 2005. Based on its findings that introducing new gTLDs “has the potential to promote competition in the provision of registry services, and to add to consumer choice, market differentiation and geographic and service-provider diversity” and that “[n]o compelling reason has been articulated to not proceed with accepting applications for new top-level domains,” the GNSO recommended in September 2007 that “ICANN must implement a process that allows the introduction of new top-level domains.”¹⁹ The GNSO also approved several principles and policy recommendations with the goal of ensuring a fair and transparent process that, among other things, respects intellectual property rights.²⁰ ICANN’s Board adopted the GNSO’s recommendations in June 2008. ICANN then began devising rules and procedures, drafting materials for applicants, putting those rules, procedures, and materials out for comment, and revising them accordingly.²¹

15. In October 2008, ICANN posted for public comment its proposal to introduce new gTLDs. The Department of Commerce submitted comments on the proposal in December 2008. In those comments, Commerce cited the “core values” expressed in the Commerce-ICANN MOU and the ICANN Board’s 2006 call for an economic study of the domain name market,

¹⁹ GNSO, “Board Report, Introduction of New Generic Top-Level Domains,” September 11, 2007, available at <http://gns0.icann.org/issues/new-gtlds/council-report-to-board-pdp-new-gtlds-11sep07.pdf>, site visited June 15, 2010 at 28 and 19.

²⁰ See, GNSO, “Board Report, Introduction of New Generic Top-Level Domains,” September 11, 2007, available at <http://gns0.icann.org/issues/new-gtlds/council-report-to-board-pdp-new-gtlds-11sep07.pdf>, site visited June 15, 2010 at 16-27.

²¹ The most recent revision of the draft applicant materials was published for comment in June 2010.

which was proposed during the renegotiation of several registry agreements to understand the “changing domain name marketplace.”²² In its call for an economic study, the ICANN Board identified several specific questions as being of potential interest in understanding the domain name marketplace:

1. Is the domain registration market one market, or does each TLD function as a separate market?
2. Are registrations in different TLDs substitutable?
3. How do the switching costs involved in moving from one TLD to another affect consumer and pricing behavior?
4. How does market structure and pricing affect new TLD entrants? Do other markets have similar issues, and, if so, how are they addressed and by who?²³

Commerce found these questions to be relevant to the issue of new gTLDs, stating that “it is unclear that the threshold question of whether the potential consumer benefits [of new gTLDs] outweigh the potential costs has been adequately addressed and determined,”²⁴ and “ICANN needs to complete this economic study and the results should be considered by the community before new gTLDs are introduced.”²⁵

²² ICANN’s Board had adopted a resolution calling on ICANN’s President “to commission an independent study by a reputable economic consulting firm or organization to deliver findings on economic questions relating to the domain registration market... .” (ICANN, Minutes, Special Meeting of the Board, October 18, 2006, available at <http://www.icann.org/en/minutes/minutes-18oct06.htm>, site visited June 15, 2010.) This study was recommended to address questions arising during the renegotiation of the registry agreements for .biz, .info, and .org. Specifically, ICANN wanted to study “the changing domain name marketplace” due to “specific concerns ... regarding potential abuses of ICANN rules as it relates to consumer interests.”

²³ ICANN, Minutes, Special Meeting of the Board, October 18, 2006, available at <http://www.icann.org/en/minutes/minutes-18oct06.htm>, site visited June 15, 2010.

²⁴ Letter from Meredith A. Baker (NTIA) to Peter Dengate Thrush (ICANN), December 18, 2008, available at http://www.ntia.doc.gov/comments/2008/ICANN_081218.pdf, site visited June 15, 2010, at 1.

²⁵ *Id.* at 1.

16. Commerce also asked the Department of Justice (DOJ) for advice on competition issues raised by the new gTLD proposal. The DOJ offered several conclusions. First, the DOJ concluded that some new gTLDs likely would have market power because at least some registrants, *e.g.*, those who needed to protect trademarks or who had invested significantly in their existing domain names, would need to establish domain names in multiple new gTLDs.²⁶ Second, the DOJ concluded that existing gTLDs, especially the .com registry operated by VeriSign, already have market power; with respect to .com, the DOJ noted that domain name registrants considered other gTLDs or ccTLDs to be complements to—rather than substitutes for—.com.²⁷ Third, because of its belief that there were first-mover advantages and network effects, the DOJ concluded that the market power of existing gTLDs, especially Verisign’s.com registry, would not be constrained by new gTLDs.²⁸

17. As with the 2004 round of gTLD introductions, ICANN does not intend to restrict the number of new gTLDs that it may delegate in the current round.²⁹ Under the Board-approved policy, ICANN would accept any new gTLD as long as it met all of the criteria established by ICANN and survived any objections raised by parties with standing to object.

²⁶ Letter from Deborah A. Garza (DOJ) to Meredith A. Baker (NTIA) re: ICANN’s Draft RFP for New gTLDs, December 3, 2008 *available at* http://www.ntia.doc.gov/comments/2008/ICANN_081218.pdf, *site visited* June 15, 2010 at 3.

²⁷ *Id.* at 2.

²⁸ Letter from Deborah A. Garza (DOJ) to Meredith A. Baker (NTIA) re: ICANN’s Draft RFP for New gTLDs, December 3, 2008 *available at* http://www.ntia.doc.gov/comments/2008/ICANN_081218.pdf, *site visited* June 15, 2010 at 4.

²⁹ Depending on the number of applications received, however, ICANN may need to evaluate and delegate new gTLDs in batches. (See, ICANN, “Draft: Delegation Rate Scenarios for New gTLDs,” *available at* <http://www.icann.org/en/topics/new-gtlds/anticipated-delegation-rate-model-25feb10-en.pdf>, *site visited* June 15, 2010.)

18. Any established corporation, organization, or institution may apply for a new gTLD.³⁰ The process for application entails: (1) Initial Evaluation; (2) Extended Evaluation (if the application does not pass the Initial Evaluation); (3) Objection and Dispute Resolution; and (4) String Contention Resolution.³¹ Once all submitted applications are deemed complete from an administrative perspective, the applications will be posted for public comment for a given period of time. At the same time, Initial Evaluation will commence.³² If an application does not meet all requirements in the Initial Evaluation, it may be eligible for Extended Evaluation. Relevant public comment will be considered during Initial Evaluation and Extended Evaluation. Throughout the Initial Evaluation period, parties with standing to object will be able to file objections based on any of four grounds.³³ Formal objections will be resolved using independent dispute resolution services. If more than one qualified applicant seeks the same or similar gTLD strings, the applicants will be encouraged to resolve such string contentions among themselves.

³⁰ See, *Draft Applicant Guidebook v.4*, for details of the application procedure, evaluation criteria and procedures, and dispute resolution process.

³¹ *Draft Applicant Guidebook v.4*, § 1.1.2.

³² The Initial Evaluation is comprised of two types of reviews: the String Review and the Applicant Review. The String Review consists of determining whether the applied-for gTLD string is so similar to others that it would cause user confusion, whether the string might adversely affect DNS security and stability, and whether evidence of government approval is provided in the case of certain geographical names. The Applicant Review focuses on whether the applicant has the requisite technical, operational, and financial capability to operate a registry and whether the registry services offered by the applicant might adversely affect DNS security or stability.

³³ The grounds for objection enumerated by ICANN are (1) String Confusion Objection (the gTLD is confusingly similar to either an existing TLD or another applicant’s proposed gTLD); (2) Legal Rights Objection (infringement of another party’s legal rights); (3) Morality and Public Order Objection (the gTLD string “is contrary to generally accepted legal norms of morality and public order that are recognized under international principles of law”); (4) Community Objection (a substantial portion of the targeted community objects to the application). (*Draft Applicant Guidebook v.4*, § 3.1.1.)

In the absence of resolution by affected applicants, string contention cases will be resolved through a community priority evaluation or auction.³⁴

19. Applicants will pay a gTLD Evaluation Fee of US\$185,000, plus additional fees in some circumstances.³⁵ If ICANN undertakes an extended review of Registry Services, for example, then the applicant may be assessed an additional fee of US\$50,000. In addition, Dispute Resolution Filing Fees are estimated to be US\$1,000 - US\$5,000 for filing a formal objection or responding to a formal objection. The Dispute Resolution Determination fee is payable to the applicable dispute resolution services provider and panel, and is estimated to range from US\$2,000 - US\$122,000, depending on the size of the panel used to review the case and the complexity of the issues.³⁶

III. THEORETICAL FRAMEWORK

20. This section discusses critical elements of economic theory relevant to analyzing the effects of introducing new gTLDs. Our analysis is structured around identifying the theoretical costs and benefits of new gTLDs.³⁷ Although ICANN's intent is to promote the interests of the Internet community as a whole and not just the private interests of prospective new gTLD applicants, we start with the costs and benefits to the new gTLD registry operators. There is an important distinction, however, between the costs and benefits that accrue to new gTLD registry

³⁴ Fees collected during the new gTLD application and approval process are intended to cover all expenses of the process. Auction proceeds would be paid to ICANN, which is required to use the proceeds to support its Mission and Core Values. (*Draft Applicant Guidebook v.4*, § 4.3, note 2.)

³⁵ Under some conditions, partial refunds of the Evaluation Fee are allowed when an applicant withdraws a gTLD application. The amount of the partial refund (20-70 percent of the Evaluation Fee) depends upon the stage at which the application is withdrawn. (*Draft Applicant Guidebook v.4*, § 1.5.1.)

³⁶ *Draft Applicant Guidebook v.4*, § 1.5.2.

³⁷ We do not address any technical issues regarding the introduction of new gTLDs.

operators and those that accrue to the Internet community or society as a whole. Where there is divergence between the net benefits to registry operators and the net benefits to the community, ICANN cannot rely upon the private incentives of the registry operators to produce a result that is optimal for the community or society as a whole.³⁸

A. PRIVATE VERSUS SOCIAL INCENTIVES TO INTRODUCE NEW gTLDs

21. We expect that an applicant’s decision to apply for a new gTLD will be based on its expected costs and benefits from applying for and potentially running a registry. A prospective registry operator would apply for and launch a new gTLD only if the benefits the registry operator expects to receive exceed the costs the registry operator expects to bear. These are often referred to as the *private* benefits and costs:

$$\begin{array}{rcccl} \textit{net} & & \textit{benefits to} & & \textit{costs to} \\ \textit{private} & = & \textit{registry} & - & \textit{registry} \\ \textit{benefits} & & \textit{operator} & & \textit{operator} \end{array}$$

From ICANN’s perspective, which encompasses the interests of the broader Internet community, determining whether a new gTLD would be beneficial depends on whether the *social* benefits are greater than the *social* costs, where social benefits and costs take into account not only the effects on the registry *operator* but also the benefits and costs to other members of society:

$$\begin{array}{rccclcl} \textit{net} & & \textit{benefits to} & & \textit{costs to} & & \textit{benefits to} & & \textit{costs to} \\ \textit{social} & = & \textit{registry} & - & \textit{registry} & + & \textit{other} & - & \textit{other} \\ \textit{benefits} & & \textit{operator} & & \textit{operator} & & \textit{parties} & & \textit{parties} . \end{array}$$

The effects on other parties, which can be positive or negative, are sometimes called the *external effects*:

³⁸ It is important to note that even if relying on private incentives would not lead to an optimal result, intervention might cause other unintended inefficiencies that lead to an outcome further from the social optimum.

$$\begin{array}{l} \textit{net} \\ \textit{social} \\ \textit{benefits} \end{array} = \begin{array}{l} \textit{net} \\ \textit{private} \\ \textit{benefits} \end{array} + \begin{array}{l} \textit{external} \\ \textit{effects} . \end{array}$$

This situation, whereby net private benefits from an economic activity diverge from net social benefits is well-studied in the economics literature. Common examples in the literature include a manufacturing plant that ignores the cost to others of pollution that the plant generates (a “negative externality,” where net social benefits are less than net private net benefits), and a beekeeper whose bees pollinate crops in the surrounding area (a “positive externality,” where net social benefits are greater than net private benefits). Without intervention to align social and private net benefits, too much of the product with negative externalities and too little of the product with positive externalities will be produced relative to the social optimum.

22. As long as gTLD registry applicants are economically rational, the expected value of the *net private benefits* will be positive for any new gTLD for which an application is filed.³⁹ To understand the implications of this fact from the perspective of the entire community, it is necessary to know if there is a divergence between private and social benefits. With positive external effects, net benefits accrue to parties other than the new gTLD operator; because new gTLD operators do not take those benefits into account in their decisions, some new gTLDs that would be beneficial to society as a whole are not applied for because the private benefits to the new gTLD operator are not large enough to justify the application. In other words, too few new gTLDs will be applied for when there are positive external effects. Similarly, when there are negative external effects, net costs accrue to parties other than the new gTLD operator. In this case, gTLD operators will apply for some new gTLDs that harm society as a whole, even though

³⁹ In other words, economically rational applicants must expect that the private benefits of the registry exceed the private costs or they would not apply.

they provide positive benefits to the operator. Therefore too many new gTLDs will be applied for. In this case, approving all new gTLD applications could result in “too many” new gTLDs. If ICANN’s goal is to maximize social benefits minus social costs, it must be cognizant of potential gaps between social and private net benefits in its application and approval process.

23. In theory, ICANN could address the potential divergence between private and social benefits by adjusting the fees assessed on new gTLDs (*e.g.*, the evaluation fees and post-delegation fees paid to ICANN). By setting fees tailored to individual gTLDs to close the gap between a registry’s net private benefits and net social benefits, ICANN *theoretically* could align the registry operator’s private incentives more closely with social incentives.⁴⁰ For example, if the net social benefits for a particular gTLD are high but the private benefits are low, ICANN could reduce the relevant fees for that gTLD. Note that in some cases this even could imply a negative fee—a subsidy—for operating particular gTLDs. Similarly, if the social costs of a particular new gTLD are especially high relative to the private costs, ICANN could raise the fees charged to that gTLD’s registry owner so that the registry owner effectively would take into account (or internalize) the gTLD’s social costs when deciding whether or not to pursue the gTLD. Those increased fees would discourage organizations from applying for gTLDs that impose significant costs on others.⁴¹ By calibrating fees to internalize a new gTLD’s external effects, ICANN theoretically could equalize net private benefits and net social benefits and

⁴⁰ In principle, such a scheme is similar to a subsidy (or tax) applied by a governmental agency to encourage (or discourage) private activities that have positive (or negative) externalities on society.

⁴¹ In this framework, a decision to ban new gTLDs is equivalent to denying all applications and setting an infinite price for new applications. Because external costs and benefits could vary across gTLDs and business models, a decision to ban all new gTLDs would make sense only if one believed that under the best feasible regime for evaluating new gTLD applications, it still would be the case that, on average, the net social benefits associated with *approved* applications would be negative.

approve any new gTLD for which a private party was willing to pay the price specific to that gTLD. Prospective registry operators would apply for new gTLDs only if net social benefits were positive; prospective registry operators would not apply for new gTLDs if net social benefits were negative.⁴² An individualized pricing system that accounted for externalities thus could effectively use prices to encourage new gTLDs with positive social benefits and discourage those with negative social benefits.⁴³

24. In practice, there are severe obstacles to using fees in this manner. First, setting fees to induce the socially optimal set of new gTLD applications would depend on ICANN's ability to develop accurate quantifications of these social costs and benefits, which is likely to be very difficult. Second, ICANN is committed to using fees only to recover its costs, not as a tax/subsidy system to align private and social incentives.

25. As an alternative to adjusting fees to encourage only gTLDs with positive net social benefits, ICANN could structure its approval process to favor those proposals that offer high expected values of *benefits to other parties* and low expected values of *costs to other parties*.⁴⁴

⁴² To address the potential problem of too few applications, ICANN likewise would have to set subsidies at a level that made it worthwhile for someone to apply for new gTLDs that have positive net social benefits but negative net private benefits.

⁴³ One simple example of using fees to internalize external costs involves external costs imposed on ICANN itself. Processing new gTLD applications and monitoring the operation of approved gTLDs is costly to ICANN. ICANN has the ability, however, to set the fees it charges a registry operator to be equal to the costs that ICANN bears. Through these fees, ICANN can convert what would be a social cost to other parties (namely, itself) into a private cost that is internalized by the registry operator. Thus, by setting application fees and other charges equal to its own costs associated with evaluating applications and any ongoing ICANN costs associated with new gTLDs, ICANN can ensure that the costs borne by ICANN to evaluate the applications and monitor the operation of approved gTLDs are not a source of divergence between the private and social net benefits of a gTLD.

⁴⁴ We do not discuss distributional issues, which ICANN may wish to consider. That is, we weigh costs and benefits to different parties equally, but ICANN may weigh different parties' interests differently.

In addition, ICANN could structure its rules for gTLD operations to increase the expected benefits and decrease the expected costs for third parties.

26. In the remainder of this section, we describe expected benefits and costs of gTLDs in greater detail. In a later section, we describe potential projects to estimate the relative sizes of benefits and costs. With some idea of the magnitude and distribution of the costs and benefits, a more informed choice can be made with respect to which, if any, applications for proposed new gTLDs should be approved.

B. BENEFITS OF NEW GTLDS

27. The Domain Name System maps numeric IP addresses to easier-to-remember website names, often reflecting a brand name, trademark, or descriptive phrase. The potential benefits of new gTLDs to Internet users are that they may provide competition to existing gTLDs, add differentiation and new products that are valuable to consumers, and/or relieve congestion problems caused by having only a few gTLDs.

1. New gTLDs might provide competition to existing gTLDs resulting in lower quality-adjusted prices

28. Generally, additional competition provides benefits to consumers in the form of reduced quality-adjusted prices and increased variety, including completely new products and services. However, at least three facts indicate that the competitive benefits of additional gTLDs may not be large.

- First, past gTLD introductions have not seriously impacted .com's dominance. For commercial applications, .com has remained dominant even as new gTLDs such as .biz and .info have been added. A broad look at the evidence to date suggests that other gTLDs provide little competition for .com as those gTLDs have neither attracted a large

number of domains nor shown any signs of catching up with .com. Thus, it would seem doubtful that additional, generic, unrestricted TLDs using the Latin alphabet and a traditional business model of registering domain names would provide significant additional competition for .com. The situation, however, might be very different if a new gTLD registry offered an innovative service that significantly differentiated that gTLD in terms of the user benefits offered. Such an entrant might provide strong competition to .com, at least from the perspective of some groups of users.

- Second, registrants with well-established domain names are probably unlikely to switch to a new gTLD given the potential customer confusion and the need to change web sites, marketing collateral, stationary, and other materials containing the registrant’s domain name.⁴⁵ In this regard, new and old registrants are likely to be significantly different. If a registry has to treat all domain names equally, then, absent price regulation, registries with large installed bases could be expected to pursue relatively high-price strategies to “milk” their registrant customer base, while registries with relatively few existing registrants can be expected to compete for new registrants.⁴⁶ Competition for new registrants could be expected to be intense because the value of a new registrant is high—once that registrant has been attracted, it is unlikely later to switch.
- Third, existing, open registries are subject to price regulation, which to a degree serves as a substitute for competition. We note, however, that there is a broad consensus among

⁴⁵ One situation in which significant amounts of switching may occur, however, is where IDNs are introduced. For example, as IDN versions of ccTLDs are introduced, there could very well be significant switching from the old, Latin-alphabet ccTLD to the new IDN ccTLD.

⁴⁶ For a survey of the economics of competition in the presence of switching costs, see Joseph Farrell and Paul Klemperer (2007), “Coordination and Lock-In: Competition with Switching Costs and Network Effects,” in *Handbook of Industrial Organization, Vol. 3*, M. Armstrong and R. Porter (eds.), Amsterdam: Elsevier.

economists that regulation is an imperfect substitute for competition, particularly with respect to its ability to promote innovation.

2. New gTLDs may support new business models

29. Even if new gTLDs put little direct competitive pressure on existing gTLDs, the new gTLDs could benefit users by offering new or differentiated services.⁴⁷ Innovation and new services are among the most important contributors to economic growth and well-being. The chance that a new gTLD and/or its sponsor could provide an innovative, heretofore unimagined business model is an important reason to consider expanding gTLDs. Such a new business model could put direct competitive pressure on established gTLDs or could expand the market in new directions. One study has identified 106 groups to date that have announced their intent to pursue a gTLD; most are community-based or geographic TLDs, but one major corporation, Canon Inc., has publically announced its intent to launch its own gTLD.⁴⁸

30. For example, a potentially important source of differentiation is in the allowable characters in a gTLD. The current gTLDs are restricted to using the Latin alphabet, Arabic numerals, and hyphens. New gTLDs, however, will be able to use Internationalized Domain Names (IDNs) with characters from other alphabets. IDNs can already be used in some second-level domain names (depending on the rules of the registry), but extending the character set used

⁴⁷ Indeed, it our sense that—from the perspective of evaluating whether the introduction of new gTLDs would benefit Internet users—past discussions have focused too much on the question of whether the introduction of gTLDs would reduce the market power of existing gTLDs. In fact, far greater user benefits could be generated by a new offering that meets needs totally unsatisfied by existing gTLD than would be generated by a new gTLD that largely duplicated existing gTLDs but created competitive pressure by acting as a substitute for existing gTLDs.

⁴⁸ See <http://www.newtlds.tv/newtlds/> for a list of groups announcing their new gTLD plans. Some of the groups have announced their intent to pursue more than one gTLD, and some gTLDs appear more than once in this list because more than one group anticipates submitting an application. For example, two groups on the list intend to apply for .Africa. See <http://www.canon.com/news/2010/mar16e.html> for Canon's announcement that it would seek .canon.

in the top level domains should reduce confusion and difficulty in using the Internet.⁴⁹ To get a sense of the potential scale of benefits that could flow from IDNs, consider the first set of country-specific IDNs delegated by ICANN in May, 2010 for Egypt, Saudi Arabia, United Arab Emirates and the Russian Federation. The total population of these countries is approximately 250 million; using Internet penetration rates estimated by ITU, these countries currently have about 70 million Internet users in total.⁵⁰ As these IDN country TLDs become operational and domain names are registered in them, these 70 million current Internet users will benefit from the ability to navigate the Internet in their own language. Looked at another way, there are currently 2.8 million domain names registered on the non-IDN Russian ccTLD, .ru, and approximately 45 million Internet users in Russia.⁵¹ If the domain names on .ru were located on Russia's new IDN ccTLD and the incremental value to current Russian Internet users was US\$1 per year per user, then the total annual benefits to Russian Internet users would be US\$45 million. A benefit of US\$1 per user per year is less than US\$0.0000004 per user per domain name; thus even very modest per user or per website benefits can result in substantial aggregate benefits. Similar calculations could be done for other IDNs as they are delegated.

31. Another potentially important source of differentiation is in sponsored gTLDs that serve specific communities. The .cat gTLD, for example, is sponsored by Fundació puntCAT for the

⁴⁹ Confusion in using the DNS can arise when an Internet user's native language does not rely on Latin letters (such as Chinese) and/or is read from right to left (such as Arabic). See, ICANN, "IDNs: Internationalized Domain Names," available at <http://www.icann.org/en/topics/idn/factsheet-idn-program-05jun09.pdf>, site visited June 15, 2010.

⁵⁰ International Telecommunications Union, "Telecommunication /ICT Indicators," available at <http://www.itu.int/ITU-D/icteye/Indicators/Indicators.aspx#>, site visited June 15, 2010.

⁵¹ International Telecommunications Union, "Telecommunication /ICT Indicators," available at <http://www.itu.int/ITU-D/icteye/Indicators/Indicators.aspx#>, site visited June 15, 2010; Coordination Center for TLD .RU, "Domain names .RU statistics," available at http://www.cctld.ru/en/domains/domens_ru/stat.php, site visited June 15, 2010.

use and promotion of the Catalan language and culture. In evaluating the .cat application, ICANN evaluators noted that it was “a rather innovative proposal. It ties a domain name to a language and culture, which has not been done before.”⁵² With the new gTLDs, hundreds of such community-based gTLDs may be added, each offering benefits to their unique communities such as geographic, cultural, and interest groups.⁵³

32. In addition to the benefits discussed above, new gTLDs may offer other characteristics such as security or guaranteed levels of customer service that may be attractive to consumers. With many different gTLDs, there may be numerous new business models that benefit consumers.

3. New gTLDs might relieve scarcity in domain names

33. Domain names serve as more than unique identifiers. They are intended to be intuitive and easier to remember than a string of numbers. Because domain names can have meanings, some are more valuable than others—even absent investment by domain name holders in promoting the awareness and reputations of the websites associated with those names. Any given name, *YYY.<gTLD>*, however, can be held by only a single entity, which raises the possibility of congestion.

34. Adding new gTLDs may make it easier for others to have websites with similar names. In some cases, additional gTLDs could make it possible for noncompeting entities that happen to have the same name to create a website based on their names. For example, many companies—especially small ones, such as auto towing companies—have similar business names, but only

⁵² *sTLD Status Report* at 9.

⁵³ The list of potential new gTLD applications include gTLDs focused on geographic areas (*e.g.*, .Africa and .nyc), cultural or community interests (*e.g.*, .irish and .lli), specialized interests (*e.g.*, .film and .poker), and commercial ventures (*e.g.*, .shop, .canon). (*See* <http://www.newtlds.tv/newtlds/>.)

one can have `YYY.<gTLD>`. Here, the benefits of a new gTLD will come from making additional useful domain names available, which can be expected to reduce consumer search costs and generate additional traffic for associated web sites.

35. In other cases, new and incumbent domain name holders will compete with one another. For example, some generic websites offer information about the products they sell and hence may have some ability to drive traffic regardless of the underlying quality of the website. For example people may type cars, pants, cameras, or many other product categories into their address bar to find a starting point for their shopping. Adding competitive alternatives such as `.cars`, `.pants`, and `.cameras` could provide alternatives for consumers browsing for products. If the website `cameras.com` had a substantial share of online camera sales, then adding competition to it from `.camera` could reduce the ultimate price of cameras for consumers.⁵⁴

36. As a general matter, this increase in product-market competition—as opposed to competition among registries—can be expected to benefit consumers of the affected products. There may be additional price competition. The presence of new competitors may also drive incumbents to invest in improving their product offerings. For example, if a new gTLD increased competition for “eyeballs” then existing websites may have to improve their offerings in order to retain or increase their shares of user attention.

4. New gTLDs might reduce search costs

37. Improved navigation of the Internet may be among the benefits generated by new gTLDs because Internet users will be able to use these gTLDs as signposts. New gTLDs might reduce search costs by making it especially easy for Internet users to find an organization’s website and

⁵⁴ In assessing the potential benefits of such competition, it should be noted that competitive names can be created either left or right of the dot (that is at the second level or the top level).

by providing more reliable identification of the website as belonging to that particular or organization. For example, Acme Corporation may be able to send a strong signal of its location on the Internet by registering .acme as a new gTLD. Such a signal would be helpful to Internet users whether they located websites by typing in URLs or by choosing among the hits returned by a search engine. In examining a list of search hits, users would probably view .acme as more likely to be Acme's official website than acme.<gTLD>.

C. COSTS OF NEW gTLDs

38. In addition to potential benefits of additional gTLDs, there are both private and social costs.

1. Costs of obtaining and running a gTLD

39. There are two types of costs associated with a new gTLD. First, obtaining the contractual rights to offer a new gTLD is costly. Costs include application and other fees due to ICANN and the costs of preparing the application, adjusted for the risk that the application will be denied.⁵⁵ If approved, the registry will face operating costs, which have to be adjusted for business risk.⁵⁶ A KPMG survey of gTLDs and ccTLDs estimated that operating a registry currently costs one to two million US\$ annually, depending on registry size.⁵⁷

⁵⁵ In some cases, an applicant is eligible for a partial refund of application fees upon withdrawal of the application. (*Draft Applicant Guidebook v.4*, § 1.5.1.)

⁵⁶ ICANN plans a series of rounds of applications for new gTLDs so that risk-averse potential applicants who did not want to invest in the application fees and start-up costs immediately could wait to see whether other applicants successfully launched new registries.

⁵⁷ "New gTLD Program: Benchmarking of Registry Operations," February 2010, *available at* <http://icann.org/en/topics/new-gtlds/benchmarking-report-15feb10-en.pdf>, *site visited* June 15, 2010, at 29. The survey included seven gTLDs and six ccTLDs; the identities of the participating TLDs were not disclosed. KPMG noted that registry costs per domain name decline with the size of the registry. Small registries (those with fewer than 250,000 registrations) have operating costs of US\$1.5 million per 100,000 domain names and large registries (those with more than 250,000 registrations) have operating costs of US\$175,000 per 100,000 domain names. It is possible that

40. The application and operation costs are private costs. An economically rational applicant would not incur these costs unless it had a business model that the applicant believed would allow it to recover its costs plus a reasonable profit.⁵⁸ The remaining costs discussed below are external costs potentially imposed on parties other than the applicant.

2. Costs to competing registries

41. Competitors (existing registries) may suffer losses due to increased competition (from new registries). In this regard, it should be noted that modern competition policy generally does not attempt to protect incumbents from entry even though the incumbents may suffer economic harm from the resulting increase in competition. Instead, there is a strong presumption that the overall social benefits of competition will be positive—that is, that the gains to consumers from increased competition will outweigh any harms suffered by incumbents. For this reason, we will not discuss these costs further.

3. Increased search costs

42. Although the domain name system is intended to make Internet navigation and search easier, it is theoretically possible that some additional gTLDs could have the opposite effect.

(a) Potential consumer confusion or fragmentation of the Internet

43. One concern is that introducing many new gTLDs could lead to confusion and/or make it harder for users to find the content they are looking for. Although it may be difficult to find specific websites in the current gTLDs, consumers that do not use search engines but find websites by typing in URLs will bear even higher costs of finding the website they are looking for (and may be less likely to find it at all) if any given website might be on only one or several

new gTLDs will not have operating costs at these levels depending on their size and ability to outsource to others to take advantage of economies of scale.

⁵⁸ We note that not-for-profit entities might also apply for new gTLDs. They would also need to believe that the benefits would enable them to cover the costs of their new operations.

of many different gTLDs. In 2000, for example, parties applied for the following gTLDs, among others: .commerce, .direct, .market, .shop, .trade, .inc, .biz, .firm, .ebiz, .ecom, .store, .mall. All of these seem like reasonable TLD choices for a company that is selling goods on the Internet. Hence, had all of these TLDs been approved, a consumer looking for the XYZ company might have to look at XYZ.commerce, XYZ.direct, XYZ.market, XYZ.shop, XYZ.trade, XYZ.inc, XYZ.firm, XYZ.ebiz, XYZ.ecom, XYZ.store, and XYZ.mall, in addition to XYZ.com and XYZ.biz. In many countries, especially those where ccTLDs are widely used, users may look for a second-level domain with the top-level domain being the country code, such as amazon.fr instead of amazon.com so that the introduction of new gTLDs may not cause the same increased search costs.

(b) Increased registration costs for companies that feel the need to be in multiple places on the Internet

44. Similarly, the possibility of many gTLDs serving generic uses raises the issue of whether companies that want a presence on the Internet would need to register new domain names just to avoid “holes” if enough consumers don’t search everywhere (and don’t use search engines) and consumers don’t all start their searches in the same place. For example, suppose that there are ten gTLDs in total, .TLD0, .TLD1, .TLD2, ..., .TLD9, and that each consumer always begins his search for a site in the same gTLD, but different consumers begin in different gTLDs, *i.e.*, User A always starts in .TLD0, while User B always starts in .TLD5. If users start in different places but do not search all ten gTLDs, then a second-level domain name registered on less than all of the available gTLDs will be missed by at least some users. If User A searches a maximum of four gTLDs sequentially beginning with .TLD0, then any website owner that hoped to be found by User A would have to register in at least one of the first four gTLDs. More generally, to be assured of reaching everyone, a website owner would have to register in all ten available gTLDs.

It is also possible that if new gTLDs for specific companies become very popular, consumers might refine their searches to look for company websites at the top level rather than at the second level.

45. The extent to which additional gTLDs increase search costs depends on the number of consumers who search for websites only by typing specific words or website names into URL address bars. According to the Pew Internet and American Life Project, in 2008 about 90 percent of Internet users reported using search engines and nearly 50 percent reported using a search engine on the day before the survey.⁵⁹ The 90 percent of Internet users who have used search engines are less likely to be affected by increased search costs from the introduction of new gTLDs (and are also less likely to benefit from the structure that additional gTLDs might bring), but of course that depends on the fraction of time they use search engines when trying to locate new websites. And the 10 percent of users who have not used search engines may overstate the potential for increased search costs if those users use the Internet less intensively than average. If gTLDs proliferate and cause confusion, then the use of search engines may increase in response.

4. Trademark infringement

46. Another set of external costs arise from potential second-level domain name misappropriation. These costs may have decreased over time as improved trademark protections implemented by ICANN and used by new gTLDs (*e.g.*, sunrise registration periods) may have decreased the incidence of misappropriation, at least in new gTLDs.

⁵⁹ Of users who actually used the Internet on the previous day, 70 percent used a search engine. (PEW Internet and American Life Project (2008), "Search Engine Use," *available at* <http://www.pewinternet.org/Reports/2008/Search-Engine-Use/Questions-and-Data/Spring-Tracking-Survey-2008.aspx?r=1>, *site visited* June 15, 2010.)

(a) Defensive registrations

47. The significant costs of applying for and operating a new gTLD reduce the likelihood of cyber-squatting at the gTLD level. For example, people without a legitimate right to a brand name are unlikely to try to register that brand name or a typo-squatting version of a brand name given the risk of losing the upfront gTLD evaluation fee and subsequent legal fees. The amount of money at risk in attempting to register an infringing gTLD is substantially greater than the US\$10 or so that it costs to register a second-level domain name on the .com gTLD. It is more likely that if cyber-squatting occurs, it will occur at the second level, *i.e.*, within new gTLDs, just as cyber-squatting exists today within .com and other open gTLDs. As discussed below, mechanisms for protection may mitigate this problem.

48. The prospects of cyber-squatting within new gTLDs could force parties to undertake defensive registrations. It is important to be precise about the term “defensive registration.” Consider an owner of a brand, “Widget,” who is faced with a potential new gTLD. If the brand owner (1) prefers that no one be able to register the Widget name in the new gTLD (or equivalently, that the new gTLD didn’t come into existence) but (2) would register the Widget name in the new gTLD if it does come into existence, then we call such a domain name registration “defensive.” Note that, as discussed further below, even defensive registrations can have value to the registrant in addition to their defensive value.

49. Defensive registrations may be undertaken to attempt to deter legitimate competition. Suppose the website widgets.com is devoted to the sale of the generic product widgets. Others in the widget business may seek to register widgets as a second level domain name in any new gTLD that is open and oriented towards commerce, say widgets.store. The owner of widgets.com may want to register widgets.store to head off the competition.

50. Defensive registrations may also be undertaken to protect against trademark infringement or erosion of brand equity. Suppose that widgets are not generic, but instead are a trademarked “Widget” product. In this case, the owner of the trademark “widget” who owns widgets.com may also have to register widgets.store to protect his trademark.⁶⁰

(b) Increased cost to companies to police new gTLD registrations that violate trademarks or copyrights

51. Trademark owners that do not pursue violators can lose the right to defend their trademarks.⁶¹ A proliferation of gTLDs would seem likely to increase the costs of policing, especially where the gTLDs added are open and lack eligibility restrictions on registrants.

5. Adverse investment effects of potential free riding

52. Additional gTLDs could result in increased consumer confusion and the possibility that the holder of one domain name could free ride on the marketing efforts undertaken by another domain name holder. For example, if someone had spent considerable expense developing a strong marketing presence for XYZ.com, another party might benefit from introducing XYZ.store if .store were approved as a gTLD. An enterprise will invest in its web presence to

⁶⁰ The types of injury for which a company can claim harm due to an infringing domain name include not only the diversion of sales (*e.g.*, Princeton Review’s registration of Kaplan.com, where Kaplan was a direct competitor of Princeton Review, or a non-Dell company registering dellcomputers.com to sell computers) but also to “dilution” of a famous mark (*e.g.*, registering barbiesclothing.com to sell hiking gear—there is no chance of consumer confusion (Barbie is not known to hike) but the use of Barbie dilutes a trademark owned by Mattel). Under the Anticybersquatting Consumer Protection Act of 1999 (ACPA) the cybersquatter does not even have to attempt to use the trademark for a commercial purpose in order to be subject to litigation; registering and holding a domain name with an intent to try to sell it for profit is enough to violate the law.

⁶¹ “If a trademark owner does not vigorously monitor and take action against the unauthorized use of its mark, the mark may become legally weak and even generic....When a trademark becomes generic, the trademark owner loses the exclusive right to its use and its investment in developing the mark’s goodwill.” (Elizabeth M. Flanagan (2007), “No Free Parking: Obtaining Relief from Trademark-Infringing Domain Name Parking,” *Minnesota Law Review*, **92**, at 506.)

the extent that the enterprise earns satisfactory returns.⁶² Thus, a potential effect of the increased possibility of free riding would be to make website operators less willing to invest in promoting their brand name and reputation. The reduction in investment incentives could result in harm to consumer welfare. Consumer confusion that resulted in reduced traffic to a given website could similarly reduce incentives to invest. However, this situation already applies today in .com, where slight variants of generic words for websites exist, such as car.com and cars.com. Although these variants may cause some dilution of the value of investment in any particular website, companies controlling these websites still have incentives to invest in their websites and brands.

D. THE DEPARTMENT OF JUSTICE’S FRAMEWORK FOR ANALYZING NEW gTLDs

53. As noted above, in its 2008 analysis, the DOJ was doubtful as to whether ICANN’s new gTLD proposal would benefit consumers.⁶³ Specifically, the DOJ was concerned that: (a) new gTLDs would be unlikely to reduce the market power possessed by existing gTLDs, especially .com, and (b) new gTLDs might themselves possess some market power. Although the DOJ’s predictions might be correct, they do not imply that consumers would be harmed by the introduction of new gTLDs. Indeed, consumers might benefit.

54. Providing competition to .com is not necessary for new gTLDs to yield net benefits to users. The DOJ acknowledged that, even in the absence of .com competition, the new gTLDs “may generate some consumer benefits,” but noted that ICANN had not attempted to quantify

⁶² The types of returns will be different for different types of organizations. Investment by for-profit enterprises will depend on the expected returns in increased profits, but non-profit groups, for example, may use some other metric, such as number of visitors to their website.

⁶³ Letter from Deborah A. Garza (DOJ) to Meredith A. Baker (NTIA) re: ICANN’s Draft RFP for New gTLDs, December 3, 2008 *available at* http://www.ntia.doc.gov/comments/2008/ICANN_081218.pdf, *site visited* June 15, 2010

the consumer benefits that may result. Quantification of consumer benefits is not absolutely necessary to conclude that new gTLDs should be introduced. If external costs are small or absent, or are very likely to be outweighed by external benefits, then new gTLDs should be introduced.

55. New gTLDs may yield positive net social benefits even if they have market power. The introduction of new goods, even when supplied by a monopolist, is generally beneficial because the provision of some goods at a supra-competitive price yields higher consumer welfare than the absence of those goods. In the case of new gTLDs, the potential for market power is a reason to block entry only if net social benefits from a new gTLD would be negative. This could be the case if, as noted by the DOJ, there were strong negative external effects due to, for example, the need for many defensive registrations of additional domain names at a monopoly price. Absent this type of significant external cost imposed on others, the decision of whether to introduce new gTLDs does not hinge on whether the entrants would have market power. Rather, the decision should be made on the basis of whether the net social benefits from their introduction are positive or not. Such a determination can be made on a case-by-case basis, *i.e.*, new gTLDs need not all be approved and they need not all be rejected. Instead, ICANN can evaluate individual applications and judge whether they are likely to result in negative net social benefits because they will spur many defensive registrations or otherwise result in significantly increased costs of defending trademarks.

56. The DOJ stressed, and we concur, that ICANN should craft rules for new gTLDs that are likely to enhance the external benefits and minimize the external costs of new gTLDs. ICANN is already committed to examining applications for potential significant external costs, *e.g.*, new gTLDs must not pose a threat to the stability of the Internet, and has proposed other rules to

reduce the external costs of new gTLDs. For example, ICANN has adopted several of the recommendations of the Implementation Recommendation Team (IRT) to address potential problems associated with trademark protection in new gTLDs, including procedures to prevent infringing domain names from being registered and to eliminate infringing domain names that are discovered after registration.⁶⁴

57. The IRT has recommended, and ICANN has adopted, a Trademark Clearinghouse for use with new gTLDs that will facilitate trademark protection both before and after domain name registration.⁶⁵ The Trademark Clearinghouse will be a central repository for information regarding the existing rights of trademark holders. All new gTLD registries will be required to use the Trademark Clearinghouse to support their pre-launch rights protection mechanisms (RPMs) that must, at a minimum, consist of either a Sunrise Registration Service or Trademark Claims Service. A Sunrise Registration Service will, under certain circumstances, provide for pre-launch registration of a second-level domain name by a holder of a valid trademark that has been entered in the Clearinghouse. A Trademark Claims Service provides notice to a potential registrant that the domain name the registrant is attempting to register is under a trademark in the Clearinghouse. If the registrant proceeds to register the name, the trademark holder will then be notified of that registration.

⁶⁴ See, Implementation Recommendation Team, Final Report on Trademark Protection, May 29, 2010, available at <http://www.icann.org/en/topics/new-gtlds/irt-final-report-trademark-protection-29may09-en.pdf>, site visited June 15, 2010.

⁶⁵ IRT has recommended other preventive measures that ICANN has not yet adopted, such as the creation of a Globally Protected Marks List, against which registries and registrars could check to avoid requesting top level domains or assigning second level domains that are identical to trademarks on the list. Thus, a trademark owner could protect his trademark from infringement at both the top and second levels without being required to establish a gTLD or second level domain using the mark. The mark simply becomes unavailable for registration. (Implementation Recommendation Team, Final Report on Trademark Protection, May 29, 2010, available at <http://www.icann.org/en/topics/new-gtlds/irt-final-report-trademark-protection-29may09-en.pdf>, site visited June 15, 2010.)

58. ICANN’s agreements with registries have evolved over time as ICANN has learned from the experience of past gTLD introductions. Studies of external costs and benefits can help ICANN to craft even better registry rules and procedures in future to increase net social benefits from new gTLDs. Not all IP protection procedures need be mandated by ICANN. Rather, the evaluation of new gTLD applications should include an evaluation of the registry’s proposed IP protection mechanisms, whether mandated by ICANN or voluntarily adopted.

III. SURVEY OF EXISTING STUDIES

59. This section surveys existing studies that shed light on third-party benefits and costs of new gTLDs.

A. BROAD STUDIES OF THE COSTS AND BENEFITS OF NEW gTLDs

60. Summit Strategies International conducted a study for ICANN of new gTLDs that were approved in 2000.⁶⁶ The Summit study addressed several issues that are relevant to the evaluation of costs and benefits of new gTLDs, namely, the effectiveness of each registry’s rules and procedures designed to protect intellectual property and whether the new gTLDs had provided effective competition to existing gTLDs.

61. Regarding intellectual property protection, the Summit study concluded that the start-up registration procedures used by new gTLDs were “generally effective in protecting legitimate trademark owners against cybersquatting.”⁶⁷ The .info registry used a sunrise registration period to allow trademark owners to register their trademarks as .info domain names. Summit reported

⁶⁶ Summit Strategies International, “Evaluation of the New gTLDs: Policy and Legal Issues,” July 10, 2004, available at www.icann.org/en/tlds/new-gtld-eval-31aug04.pdf, site visited June 15, 2010 (hereinafter *Summit Study*).

⁶⁷ *Summit Study* at 79. Summit notes that trademark infringement was not a significant problem in the sponsored gTLDs. We focus here on Summit’s evaluation of two of the two open gTLDs introduced in 2000, .info and .biz.

that, because there was no verification of the applications to ensure that the registrant held the trademark it claimed to hold, 43 percent of the sunrise registrations were eventually cancelled or transferred to rightful trademark owners.⁶⁸ Before opening its registration period, the .biz registry allowed trademark holders to register their trademarks with the registry but, rather than assigning those trademarks to the IP owner as domain names, the .biz registry created a list of “IP Claims” against which all potential registrants’ desired domain names were matched. When a potential registrant requested a domain name on the IP Claims list, the IP owner and potential registrant were notified and the IP owner could contest the registration. The .biz registry did not automatically resolve disputes in favor of the trademark owner. Rather, a potential registrant could defend a claim by an IP owner by showing that it had a legitimate interest in the name.⁶⁹

62. In addition to its start-up registration procedures that likely reduced the incidence of trademark infringement, the .biz registry restricted domain name registrants to those who intended to use the domain name for business or commercial purposes, and prohibited registrations of domain names for the sole purpose of selling the domain name to others. These provisions could reduce the external costs imposed on trademark owners by reducing the need for defensive registrations to protect trademarks. Defensive registrations still exist, however. A

⁶⁸ *Summit Study* at 4.

⁶⁹ *Summit Study* at 4. Buss GmbH & Co. brought a case against Steven Buss, who had registered buss.biz. A WIPO panel found that Mr. Buss, who was an independent consultant who conducted business under his own name, did have legitimate rights in the domain name that he registered, even though he had no trademark rights. (WIPO Arbitration and Mediation Center, Administrative Panel Decision, *BUSS GmbH & Co. KG Fertigerichte v. Steven Buss*, Case No. DBIZ2001-00034, available at <http://www.wipo.int/amc/en/domains/decisions/html/2001/dbiz2001-00034.html>, site visited June 15, 2010.)

survey of registrants showed that 41 percent of .info respondents and 52 percent of .biz respondents had registered their domain name for “defensive” purposes.⁷⁰

63. On the benefit side, the Summit study concluded that the new gTLDs approved in 2000 had introduced some, albeit very limited, competition.⁷¹ As of 2004, three years after the introduction of new gTLDs, .com still held 73 percent of domain names registered in open gTLDs (which includes .com, .net, .org, .info, .biz, and .name) while the new open gTLDs (.biz, .info, and .name) accounted for a total of 6.3 percent of domain names.⁷² The number of domain names registered in the new open gTLDs was far less than each registry had projected during the application stage. The .info registry had 39 percent of its projected registrations as of the end of 2003, while .biz had 61 percent, and .name had just two percent.⁷³

64. Although the new gTLDs had not attracted a large share of domain names and registrations fell short of projections, domain name renewal rates were comparable to those of .com, which Summit suggested is an indication that the domain names are considered by their owners to be valuable. The 2004 renewal rate was 60 percent for .com, while it was 57 percent for .biz, 56 percent for .info, and 67 percent for .name.⁷⁴

65. Summit’s survey of registrants in new gTLDs shows that the new gTLDs broadened the market by providing a differentiated product that registrants perceived to be valuable. For

⁷⁰ The survey defined a “defensive registration” as one intended to “prevent others from using the name.” (*Summit Study* at 148.)

⁷¹ Summit examined data on renewal rates of domain names, growth rates in the number of domain names in each new registry, and collected information from domain name registrants in the new gTLDs. Summit also interviewed registry operators and registrars to collect information on market conditions.

⁷² *Summit Study* at 96.

⁷³ *Summit Study* at 96 and 99.

⁷⁴ *Summit Study* at 97.

example, one-fifth of survey respondents (who had registered domain names in .biz, .info, or .name) had not previously registered a domain name in any gTLD.⁷⁵ And 55 percent of respondents registered a different name in the new gTLD than they had registered in an existing gTLD. In addition, 11 percent indicated that their first choice for a second-level domain name was not available in another gTLD so that the new gTLDs helped relieve name scarcity for this set of registrants.⁷⁶

66. Summit also examined data on duplicate names registered in more than one open gTLD to determine whether new gTLDs were increasing the options available to registrants. Summit found that a high percentage of domain names registered on .info were also registered on .com (89 percent), .net (81 percent), and .org (75 percent), and a high percentage of domain names registered on .biz were also registered on .com (85 percent).⁷⁷ The existence of the same name on two different gTLDs can indicate either that two different registrants value that name (possibly to compete with one another) or that a single registrant holds both names for some purpose. Summit found that only 11 percent of the overlapping .info and .com names were registered to the same owner. For .biz and .com overlap, the percentage registered to the same owner was higher, 42 percent. Summit used the extent to which a website simply redirects users to another website as an indication of whether domain name registrations are being used defensively. Using data provided by the registries, Summit estimated that about one-third of .info and .biz websites were active websites while another 15 percent redirected to a different

⁷⁵ *Summit Study* at 101. Among .biz registrants who responded to the survey, 16 percent had not previously registered a domain name in another gTLD; 14 percent of .info respondents had not previously registered a domain name in another gTLD; 44 percent of .name respondents had not previously registered a domain name in another gTLD.

⁷⁶ *Summit Study* at 98-100.

⁷⁷ *Summit Study* at 102. This appears to be based on a very small sample of names.

site. About half of the registered domain names were inactive.⁷⁸ Duplication and redirection can, in some circumstances, be indicators of defensive registrations, but they also can be indicators that registrants are affirmatively trying to increase traffic by using a portfolio of names that attract a broader set of users. For example, NPR not only maintains npr.org, but has also registered n.pr, which simply redirects users to the npr.org webpage, and has used n.pr in some of its publicity.

67. Summit concludes that although the new gTLDs have provided registrants with more choices of registries, .com is still the first choice of a majority of registrants, even among new registrants.⁷⁹ Thus the new gTLDs have provided only limited direct competition for .com but nonetheless have provided some value to registrants.

B. STUDIES OF THE INCIDENCE AND COST OF CYBERSQUATTING AND TYPOSQUATTING

68. Numerous authors assert that the costs of combating cyber-squatting are significant, at least in part because potential violators are difficult to identify and must be pursued individually.⁸⁰ These authors, however, do not develop explicit, numerical estimates of the costs. One study purports to calculate the costs of cybersquatting enforcement and predicts that the increased costs of enforcement due to new gTLDs will be small. In that study, Krueger and Van Couvering examined data on trademark infringement cases resolved using ICANN's Universal

⁷⁸ *Summit Study* at 103.

⁷⁹ *Summit Study* at 109.

⁸⁰ *See, e.g.*, Elizabeth M. Flanagan (2007), "No Free Parking: Obtaining Relief from Trademark-Infringing Domain Name Parking," *Minnesota Law Review*, **92**, at 501; Christopher G. Clark (2003), "The Truth in Domain Names Act of 2003 and a Preventive Measure to Combat Typosquatting," *Cornell Law Review*, **89** at 1501;

Dispute Resolution Policy (UDRP) from 2001-2010.⁸¹ Krueger and Van Couvering calculated that .com, .net, and .org accounted for 94 percent of all UDRP cases, and the highest rate of infringement cases resolved using UDRP was in .com, with 41 UDRP cases per million .com domain names registered. Across all of the open gTLDs introduced since 2000, the rate of infringement cases resolved using UDRP was 22.5 cases per million domain names registered. If new gTLDs capture 10 percent of registered domain names (which Krueger and Van Couvering characterize as a very optimistic projection) then there will be 14 million domain names in new gTLDs. Applying the average infringement UDRP case rate of 22.5 cases per million domain names yields 316 new UDRP cases annually. Krueger and Van Couvering estimate that the average cost of a UDRP proceeding is US\$5,000, so the increased enforcement costs would be a total of US\$1.58 million, or US\$0.80 per US trademark.⁸²

69. Although this study suggests that the external costs associated with cyber-squatting in new gTLDs would be low, Krueger and Van Couvering account only for the costs of UDRP proceedings; they do not account for any other enforcement costs associated with domain name watching (*e.g.*, costs of services provided by specialized consultancies to monitor domain name registrations and costs of researching domain name registrants) and they do not account for cases that are resolved through means other than UDRP (*e.g.*, sending cease and desist letters, purchasing an infringing domain name, or litigation in one or more jurisdictions).⁸³ Moreover,

⁸¹ Fred Krueger and Antony Van Couvering, “A Quantitative Analysis of Trademark Infringement and Cost to Trademark Holders in New gTLDs,” Minds + Machines Working Paper 2010-1, February 10, 2010 (hereinafter *Kruger and Van Couvering*). The data include only a few cases in 2010.

⁸² *Kruger and Van Couvering* at 6.

⁸³ In addition, because it focuses only on certain costs borne by trademark owners, the study does not consider the cost of potential harm to consumers who are fooled by cyber-squatting websites. The World Intellectual Property Organization, one of the UDRP arbitrators, notes that the number of cyber-squatting cases it handles has been rising since 2003 and that ten percent of complaints

the study's conclusion that the incremental costs of battling trademark infringement in new gTLDs would be low depends on the experience of new gTLDs replicating that of past gTLD introductions, namely, that new gTLDs will have only limited success in competing with .com and attracting large numbers of registrants. As the study correctly notes, the *rate* of infringement is highest in .com: "because most large brands and high volume websites operate in .com, one would expect a somewhat larger impact of typo-squatting and other infringement, even relative to the installed base."⁸⁴ If a few new gTLDs are introduced and their trademark protections and commercial success match those of gTLDs that were introduced in the past, then incremental UDRP costs associated with cyber-squatting likely would not be excessive. But if new gTLDs fail to have adequate trademark protections or if an innovative new gTLD were introduced that attracted large numbers of registrants either because it competed strongly with .com or because it reached a niche market segment that was previously underserved, then infringement rates and/or cybersquatting costs could rise significantly.⁸⁵

70. Moore and Edelman (2010) studied the phenomenon of "typosquatting," whereby an entity registers a domain name that is close to that of a legitimate website (*e.g.*, it differs from google.com by one letter), and earns advertising revenue when errant typists stumble across the

in 2008 were in the biotechnology and pharmaceutical industries including websites set up to sell counterfeit prescription drugs. (World Intellectual Property Organization, "ICANN's New gTLD Program: Trademark-related Concerns," *available at* <http://www.wipo.int/export/sites/www/amc/en/docs/wipopresentationicann.pdf>, *site visited* June 15, 2010, at 6-8.)

⁸⁴ *Kruger and Van Couvering* at 5.

⁸⁵ Even if rates of infringement are constant, enforcement costs could increase if new gTLDs attract large numbers of domain name registrants. Also, if new gTLDs do not attract large numbers of registrants, enforcement costs could still increase if weak trademark protections lead to an increase in infringement rates.

site.⁸⁶ Typosquatting potentially gives rise to two types of external costs. First, consumers may be confused by the site that they reach inadvertently. In the most extreme cases, they may mistakenly believe that they reached their intended site, which denies both consumers and the owners of the intended sites the benefits of interacting with one another. In addition to confusing the consumer, such outcomes can also harm the reputation of the owner of the intended site. For example, some cybersquatters have placed pornography or other offensive content on sites that incorporated a trademark or brand name to encourage the owner of the mark or brand to purchase the domain name from the squatter.⁸⁷

71. To estimate the prevalence of typosquatting, Moore and Edelman first generated plausible misspellings of over 3,000 popular domain names.^{88, 89} They found 1.9 million registered .com domain names that were plausible misspellings of the 3,000 popular domain names, and estimated that about 900,000 of these are typo domains, *i.e.*, they are deliberate misspellings of the target domain name. Google.com was the most common target, with about 2,500 typo domains, and on average, each popular domain name had 280 typo domains.

⁸⁶ Tyler Moore and Benjamin Edelman (2010), “Measuring the Perpetrators and Funders of Typosquatting,” presented to the 14th International Conference on Financial Cryptography and Data Security.

⁸⁷ National Research Council (2005), *Signposts in Cyberspace: The Domain Name System and Internet Navigation*, The National Academies Press, at 65.

⁸⁸ Moore and Edelman chose the 3,264 domains that contained at least five characters and that were listed in the most popular 6,000 domain names by Alexa.com on June 29, 2009.

⁸⁹ Moore and Edelman used the Damarou-Levenshtein methodology of computing the distance between two different strings of letters to generate all close spellings to each of the popular websites studied. The authors also used their own “fat finger distance” method, which measures distance between two strings based on the number of adjacent keys one would have to hit on a QWERTY keyboard to turn one string into another. For example, google.com is one fat finger away from googlw.com.

72. Moore and Edelman next designed a webcrawler to visit about 1/3 of the typo domains and catalog how the sites were being used.⁹⁰ About 80 percent of the sites contained pay-per-click ads for which the domain name owner would be paid advertising revenue if errant visitors clicked on the advertisement. The other 20 percent of typo domains redirect or link to other domains. Of these, 20 percent redirect to the intended site and therefore represent defensive registrations; about 55 percent redirect to the intended site but perhaps through an affiliate marketing agreement where the redirector receives payment if the user makes a purchase; and about 25 percent redirect or link to a site that competes with the target site.

73. Moore and Edelman conclude that although more than 45,000 complaints were filed against cybersquatters and typosquatters under ICANN's UDRP over a ten-year period and still other complaints were filed in U.S. courts under ACPA, even those companies that are most aggressive in filing complaints against individual squatters are still heavily targeted by squatters.

74. There is relatively little information on the costs firms incur to police typosquatting. At a cost of around US\$10 a year, purchasing an additional unclaimed domain is relatively inexpensive, but as Moore and Edelman indicate, users make a large variety of spelling mistakes. Purchasing a troublesome domain from a typosquatter may be much more costly than the US\$10 original registration fee. Firms thus may engage not just in preemptive purchases of similar domain names, but may also use resources to monitor domain registrations to ensure that they are not losing traffic to typosquatters.

⁹⁰ Of the sites the webcrawler tried to visit, it was blocked from a large number, presumably because the host recognized it as a crawler and prevented it from retrieving information or examining links. Ultimately, the crawler was able to retrieve information on about 95,000 typo domains.

75. ICANN obtained information from industry sources estimating that monitoring of domain names currently costs a company between US\$6,000 and US\$15,000 annually per term, such as a brand name or a trademarked slogan, that is being protected.⁹¹ These costs cover activities such as monitoring new domain name registrations, gathering information on the website, if any, associated with possibly infringing domain names, and gathering of information on the registrants of possibly infringing domain names. Because information on registrants and new names registered must be gathered from each TLD registry, the addition of new gTLDs will increase monitoring costs.

76. Costs to organizations of protection against cybersquatter or typosquatters can go beyond simply monitoring domain name registrations. If the organization cares enough to monitor, then presumably it will take some kind of enforcement action if it believes another entity is infringing upon its intellectual property. According to industry sources obtained by ICANN, researching the registrants of a suspicious domain name can cost between US\$200 and US\$500 per instance, and sending a cease and desist order to a registrant costs between US\$200 and US\$650. Should this approach fail, official dispute mechanisms can be costly. ICANN indicates that filing a UDRP complaint costs US\$2,000-4,000 plus an additional US\$1,500-3,300 in related fees. These costs may be dwarfed by fees involved in going to court should it be necessary. The least expensive course of action may be to purchase the name, although trademark owners are reluctant to reward infringing behavior in this manner.

C. SURVEYS OF DEFENSIVE REGISTRATIONS

77. Some evidence suggests that many organizations are not concerned about registering domains in all possible gTLDs but do register in more than one gTLD. Stahura (2009) found

⁹¹ Interview with Nick Wood, Com Laude.

that only about 200,000 second-level domain names were registered in all seven of the most popular gTLDs: .com, .net, .org, .info, .biz, .us, and .mobi.⁹² Of these 200,000 second-level domain names registered in all seven gTLDs studies, Stahura estimated that three percent were registered by the same party.⁹³ Krueger and Van Couvering (2010) surveyed 1,043 brand names of Fortune 100 companies. The authors found that all of those brand names were registered in .com, 76 percent were registered in.org, 84 percent were registered in .net, 69 percent were registered in .info, 65 percent in .biz, and 57 percent in .mobi.⁹⁴ The percentages for other gTLDs were much lower.⁹⁵ This evidence suggests that many of the largest firms are concerned with “filling holes” in their web presence or are engaging in defensive registration.⁹⁶ It tells us little about how smaller firms—who are less likely to have as much brand recognition—behave with respect to such registrations.

78. Zittrain and Edelman (2002) examined usage of the .biz TLD by new registrants.⁹⁷ After a three-month period in which trademark owners could register their trademarks in the IP Claims database, open registration on a first-come, first-served basis began in November 2001. Zittrain

⁹² Paul Stahura (2009) “Analysis of Domain Names Registered Across Multiple Existing gTLDs and Implication for new gTLDs,” *CircleID*, available at http://www.circleid.com/posts/20090202_analysis_domain_names_registered_new_gtlds/, site visited June 15, 2010.

⁹³ Registrant identification is difficult because many registrants protect their identities in the Whois database that catalogs registrant information for each registered domain name.

⁹⁴ Fred Krueger and Antony Van Couvering, “An Analysis of Trademark Registration Data in New gTLDs,” *Minds + Machines Working Paper 2010-02*, available at <http://www.mindsandmachines.com/2010/02/survey-shows-brands-dont-register-defensively-in-new-gtlds/>, site visited June 15, 2010, at 42.

⁹⁵ *Id.*

⁹⁶ We observe in passing that the Krueger and Van Couvering study drew the opposite conclusion from these figures (*i.e.*, that firms were not strongly concerned with filling holes or engaging in defensive registrations). Stahura also concluded that registration across multiple gTLDs was uncommon, but we note that he was examining registration in a very large number of gTLDs.

⁹⁷ Jonathan Zittrain and Benjamin Edelman (2002), “Survey of Usage of the .biz TLD,” mimeo, available at <http://cyber.law.harvard.edu/tlds/001/>, site visited June 15, 2010.

and Edelman surveyed .biz registrants six months after open registration began. Using a ten-percent random sample of domain names registered in .biz, they found that 91 percent of those domain names were also registered in .com, 63 percent were also registered in .net, and 49 percent were also registered in .org. Forty-four percent of the registered .biz names were registered in .com, .net, *and* .org, and just 9 percent were not registered in .com, .net, *or* .org. Because the same name could be registered by different parties in different gTLDs, domain names that are duplicated across different gTLDs don't necessarily indicate that a company is attempting to fill in holes or engage in defensive registration. Based on a small sample of 823 names that were registered in both .biz and .com, Zittrain and Edelman estimated that 20-30 percent were registered to the same person or company and were potentially defensive.⁹⁸

79. Zittrain and Edelman also examined the content of sites registered on .biz and estimated that, at most, 26 percent of the registered domain names led to sites with “actual substantive web content,”⁹⁹ including sites that redirected or contained information that was identical to other sites. The other 74 percent of the registered domain names either were “under construction,” for sale, returned an error, or did not return a website at all. Thus, at least in the early stages of .biz, the great majority of registered domain names were not being used to provide content to users, again indicating that the registrations may have been defensive.

⁹⁸ Zittrain and Edelman attempted to match .com and .biz registrants using postal codes, the domain name's nameserver designation, and the registrant's administrative email address as recorded in WHOIS data for the sample of 823 domain names duplicated on .com and .biz. Because of the difficulty in determining a registrant's identity from Whois data, Zittrain and Edelman's estimate should be thought of as a lower bound on the share of duplicate domain names that are held by a single party.

⁹⁹ Jonathan Zittrain and Benjamin Edelman (2002), “Survey of Usage of the .biz TLD,” mimeo, available at <http://cyber.law.harvard.edu/tlds/001/>, site visited June 15, 2010, at 4.

IV. POTENTIAL PROJECTS

80. In this section, we describe several projects that might provide useful insights into the costs and benefits of introducing new gTLDs. These projects generally would attempt to quantify, at least roughly, the external costs and benefits that create a gap between private and social costs and benefits. The proposed projects include the analysis of market data, surveys, and detailed case studies. As described below, there is a high likelihood that some of the projects would be very likely to confirm results suggested by preliminary analysis, while other projects might be difficult to complete given currently available data. We recommend that ICANN place a low priority on these projects. We also recommend that ICANN address data issues by creating mechanisms for collecting data regarding the experiences of any new gTLDs delegated in the future. The data collected through this process could then be used to inform later decisions regarding additional gTLDs.

A. PROJECTED BENEFITS OF NEW gTLDs

81. We begin by describing several potential studies to project the benefits of new gTLDs. As discussed above, in principle new gTLDs might generate benefits by: providing competition to existing gTLDs resulting in lower quality-adjusted prices; facilitating new business models; relieving scarcity in domain names; and reducing search costs. As also discussed above, the greatest expected benefits would likely come from new business models. However, it is inherently difficult for an economic study of existing registries and business models to anticipate the benefits that could be generated by new business models that rely on unique characteristics of new gTLDs not yet introduced.¹⁰⁰ Therefore, we first focus on benefits to registrants that stem either from increased competition to .com or from the relief of name scarcity.

¹⁰⁰ We propose several case studies in Part C of this section that can shed some light on this issue.

1. Analysis of domain name registration volumes

82. New gTLDs would benefit domain name registrants and/or Internet users if these gTLDs provided competition for existing gTLDs or relieved scarcity by allowing the registration in new gTLDs of second-level domain names that already exist in current gTLDs.¹⁰¹ Data regarding the effects of past gTLD introductions on the number of aggregate second-level domain names registered can provide some insight into the effects of new gTLDs on scarcity. Less obviously, quantity data on domain name registrations can, in some circumstances, provide information about the competitive effects of past gTLD introductions. Ideally, one would assess whether past introductions of new gTLDs provided competition to existing gTLDs by directly examining the effects on the prices or qualities of existing TLDs. Because the .com registry operates under price regulation, and there are data issues associated with quality levels and secondary-market prices, it can also be useful to examine aggregate registration volume data to find indirect evidence of competition.

83. We focus on .com because it has been the dominant existing TLD. Certain ccTLDs are marketed to compete with .com, including .me, .tv, .nu, and .co, but we focus here on .info and .biz, both introduced about eight years ago and designed explicitly to compete with .com. If .info or .biz were good substitutes for, and put competitive pressure on, .com, then one might expect to see the number of domain names registered on .com fall (or not increase as rapidly as it otherwise would have) as the number of domain names registered on .info and .biz increased. In this case, the introduction of .info and .biz would be unambiguously beneficial because they

¹⁰¹ We implicitly assume that these registrations of existing second-level domain names in new gTLDs are undertaken by new registrants. If they were undertaken by the same registrants that controlled the name in .com, then these would potentially be examples of defensive registrations rather than relief of name scarcity.

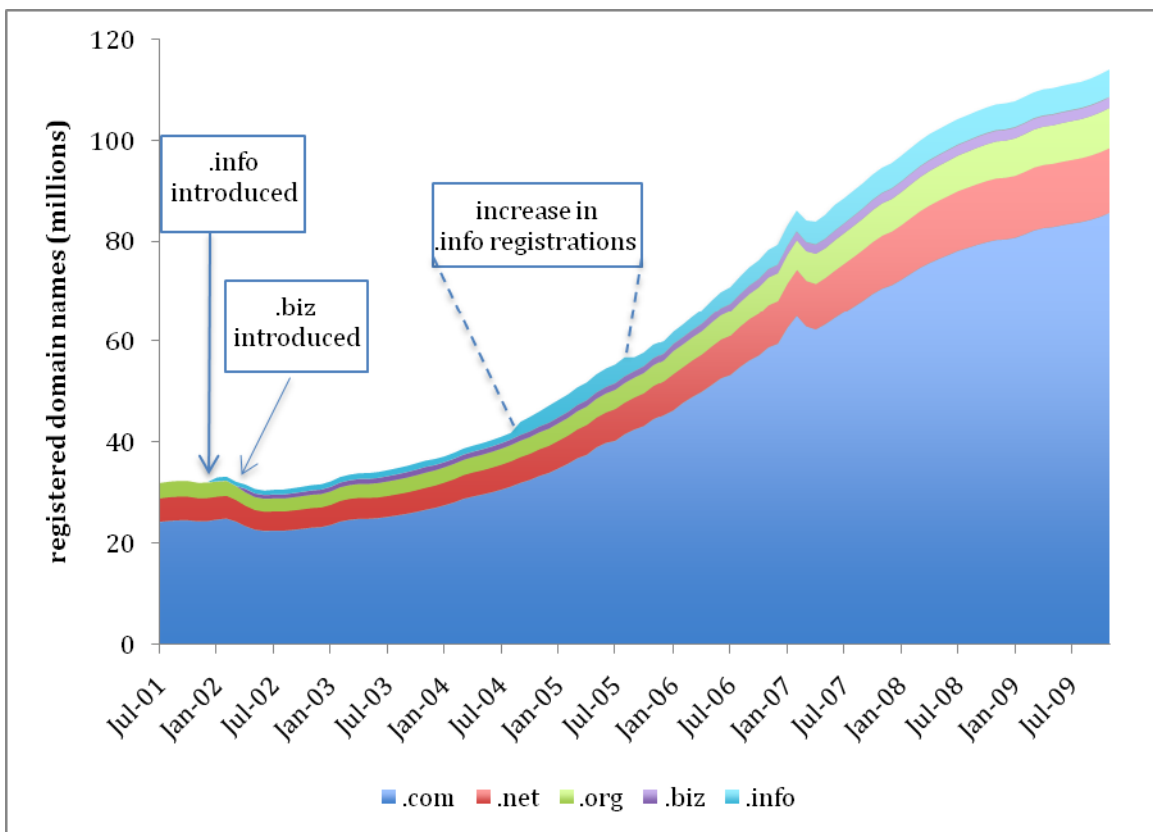
offered registrants sufficient additional benefits to attract registrants away from .com.¹⁰² Other patterns of domain name registration trends are not as informative. For example, suppose one observed that registrations on .com did not fall as the number of registrations on .info and .biz rose. This pattern would be consistent with several different explanations. First, .com might have maintained its registration volume by improving quality in response to the entry of .info and .biz. In this case, registrants would benefit from the increased competition. Second, registrations on .info and .biz might have been purely defensive in the sense that registrants on .com registered the same domain names on .info and .biz simply in order to prevent other entities from doing so. In this case, registrants would not have benefited from the entry of .info and .biz. Third, if the introduction of .info and .biz relieved name scarcity, then registrants and Internet users would have benefited. One cannot tell from an examination of the aggregate domain name volume data which of these explanations is most plausible.

84. A cursory examination of domain names registered does not show a dramatic effect of new gTLD introductions on .com domain name volumes. Figure 1 shows the number of domain names registered in .com, .org, .net, .info, and .biz over time. Although .com dominates, with about 75 percent of all domain names throughout the time period, the figure reveals at least two potentially significant events. First, the number of registered .com domains decreased slightly at the time .biz was introduced, which occurred just after .info was introduced. The number of domains registered under .org and .net also decreased during this time period. The decrease in .com, .org, and .net registrations when .info and .biz were introduced is consistent with the new gTLDs' having created additional competition for incumbent gTLDs. However, it should be noted that the total number of registered domains, even including the new gTLDs, decreased

¹⁰² The registrants attracted away from .com would include both existing .com registrants who switch and new registrants who considered .com, but chose to register on .info or .biz instead.

during this time period, which suggests that factors other than competition from .info and .biz may have driven some or all of the decline in registrations on .com. Second, the number of domains registered under .info increased substantially in 2004 and 2005, coincident with a promotional price on .info domain names beginning in Fall 2004, before falling back to levels more consistent with its previous trend growth rate. There is no obvious effect on .com registrations during this time period.

Figure 1: Number of Domain Names Registered



85. Because factors other than new gTLD competition may affect domain name registrations on .com, a careful economic study would have to attempt to disentangle the competitive effects of new gTLD introductions from these other factors. For example, one could use regression analysis to explain the number of .com registrations as a function of various economic factors

and the existence of the .biz and .info registries. By controlling for factors (other than .biz and .info) that influence the number of .com registrations, one potentially could isolate the effect of the introduction of .biz and .info. Identifying and quantifying all of the relevant factors affecting .com registrations, however, is not likely to be easy and may not be feasible. Because of the econometric difficulties in conducting such a study, the fact that the results are likely to be inconclusive, and our judgment that a resolution of the issue of whether past gTLDs have provided meaningful competition to .com is not central to a decision whether to proceed with new gTLDs, we think this project should be assigned a low priority.

2. Analysis of domain name resale prices

86. Rather than look for indirect evidence of competition on the number of domain name registrations in .com, one could look at pricing of .com for direct evidence of competition. The .com registry operates under a price cap regime, however, meaning that prices to register unclaimed domains may not be directly affected by the entry of new gTLDs.¹⁰³ Instead, the relevant prices to examine are those in the secondary market for second-level domain names. If .info and .biz were good substitutes for .com, then we would expect to see declines in the prices of .com domain names on the secondary market following the introduction of those new gTLDs, controlling for other factors.¹⁰⁴ An analysis of secondary-market prices is difficult, however,

¹⁰³ If the price cap is binding, that is, if the registry always charges the maximum amount allowed, then no price effect would be visible in the data.

¹⁰⁴ The disparity in secondary market prices across different gTLDs may diminish with the introduction of additional new gTLDs. Many browsers today allow auto-completion of partial URLs by adding ".com." Such auto-completion is sensible when .com accounts for such a large percentage of second-level domains, but it also reinforces the dominance of .com, thus explaining, in part, the systematically higher resale prices for .com domains. With more gTLDs available, and assuming that at least some of them are successful in attracting significant numbers of second-level domain names pointing to websites that compete with the same domain names on .com, this auto-completion feature becomes less useful. To the extent that consumers stop using auto-completion or browsers stop featuring it, the value of generic words in .com would be reduced.

because the quality of the domain names sold in each time period may vary greatly and it is not obvious how one could control for this variation in quality. If, independently of the introduction of .info and .biz, the average quality of .com domain names offered for sale trends up or down over time, one risks attributing the effect of these changes in quality to the introduction of .info and .biz. On the other hand, if the average quality of .com domain names offered for sale does not trend in any direction but varies substantially from year to year, then one will be unable to estimate the relationship between prices and the introduction of .info and .biz with precision.

87. As an alternative to examining secondary-market pricing data over time, one could get an idea of whether .biz and .info are substitutes for .com by examining cross-sectional patterns of secondary-market transaction prices. The tables below show average and median sales prices by gTLD for domain names sold through Sedo, a company that handles secondary-market domain name transactions. These preliminary data show that, in any given year (cross-section), mean sales prices differ by gTLD, with .com sites commanding significantly higher prices than other gTLDs.

***Mean Sales Prices of Second-level Domains
on the Secondary Market, by gTLD***

Average Sales Price (US\$)			
	2007	2008	2009
.com	\$5,016	\$2,512	\$1,829
.net	\$2,033	\$1,670	\$1,367
.org	\$1,942	\$1,244	\$1,338
.biz	\$1,126	\$790	\$1,373
.info	\$1,091	\$841	\$624

Source: Sedo's Domain Market Study,
2009 Overview with Q4 Highlights.

88. Median sales prices may be more informative than mean prices because medians are not skewed by extreme outliers (*i.e.*, sales at very high or very low prices). In years prior to 2009,

median sales prices generally showed the same patterns as mean sales prices, with .com domains commanding higher prices than domains in other gTLDs. But in 2009, the median .net sales price exceeded that of .com, and .com and .org had comparable medians; median prices for .biz and .info continued to lag behind. Additional analysis is needed to understand what is driving this pattern of prices. For example, there may be strong selection effects at work (*e.g.*, enterprises may seek .net or .org domain names only in those cases in which the name is particularly valuable and, thus, worth purchasing even though it is not a .com domain).

***Median Sales Prices of Second-level Domains
on the Secondary Market, by gTLD***

gTLD	Median Sales Price		
	Q2 2009	Q3 2009	Q4 2009
.com	\$410	\$490	\$437
.net	\$520	\$501	\$498
.org	\$377	\$496	\$436
.biz	\$272	\$301	\$333
.info	\$219	\$291	\$253

Source: SEDO Domain Market Study,
2009 Overview with Q4 Highlights.

Still, as with the time series analysis, the results of this cross-sectional analysis will be highly dependent on the actual domain names that are offered for sale in any particular time period; in the absence of the ability to control for the quality of the underlying domain names, it will be difficult or impossible to design an accurate study based on aggregated secondary-market prices.

89. A more direct approach would examine sale prices in different gTLDs of a matched sample of second-level domain names. Examination of the same second-level domain name in each gTLD should control for many factors that influence the value of a domain name and isolate

the value of the gTLD itself. Thus the study would shed light on the substitutability or relative value of domain names on different gTLDs and on the extent of competition between gTLDs.¹⁰⁵

90. To determine the feasibility of such a study, we examined information provided by ICANN for a sample of matched domain names sold over the past three years. Those data show that the average .com domain name sold for 10 times more than the same name in another TLD. Those data also show that, when the domain name is generic (not a trademark), the .com version sold for an average of 15 times more than the version in another gTLD.¹⁰⁶ Although we do not know how many examples of matched domain names exist, about 25 percent of the gTLD domains sold in 2009 through Sedo, a major reseller/auctioneer of domain names and websites, were not registered on the .com gTLD; this is roughly equal to the share of non-.com domain names registered.¹⁰⁷ Thus, there is a significant amount of resale activity in gTLDs other than .com, and it is possible that one could find a good-sized sample of matched domain name transactions across gTLDs.

91. In addition to looking at matched transactions, the study could also examine the prices of auctioned .com domain names where the same name was available as a new registration on .biz or .info at the time of the auction. Conceptually this is similar to the comparison proposed for matched domain name transactions, but the offering price on the non-.com domain name is

¹⁰⁵ Because gTLDs are a differentiated product, different gTLDs might compete with each other even though prices differ across gTLDs. Nevertheless, the magnitude of price differences yields some sense of the relative values registrants place on different gTLDs.

¹⁰⁶ Some sold at even higher multiples; for example, FTN.com sold for US\$15,100, while FTN.info sold for US\$162; and Thanksgivingdinner.com sold for US\$3,600, while Thanksgivingdinner.net sold for US\$80. It is unclear whether these sales in different gTLDs were of domain names or developed websites. All else equal, the latter would be expected to command a higher price.

¹⁰⁷ SEDO, "SEDO's Domain Market Study: 2009 Overview with Q4 Highlights," *available at* http://sedo.com/fileadmin/documents/pressdownload/2009_Market_Study.pdf, *site visited* June 15, 2010.

simply the price of registering it with an alternative gTLD rather than purchasing it from a registrant. If a domain name is available on .biz or .info, but is sold at a high price on .com, this suggests that domain names on gTLDs other than .com are not close substitutes for addresses on .com.¹⁰⁸ An analysis of auction prices would be complicated by the fact that .com domain names may have higher value because the original owner of the name had invested in promoting the brand or market presence of that domain name or had developed a website which is being sold along with the rights to the domain name. To isolate the effect of the gTLD itself, we would have to examine carefully the matched domain names being sold in order to make certain they are comparable.

92. Assuming that a large enough sample of secondary-market transactions could be obtained, a study of prices of a matched sample of domain names or prices of domain names on .com when the same name is available on other gTLDs would be feasible. Such a study, however, would be likely to confirm the conventional wisdom that .com domain names are more valuable than domain names in other gTLDs. Moreover, even if the conventional wisdom held true for gTLDs introduced in the past that attempted to compete head on with .com, such a finding would not establish that future new gTLDs would be unable to compete with .com or generate significant new benefits by adopting different business models.¹⁰⁹ Therefore, we think this should be a low-priority project.

¹⁰⁸ Again, competition between different gTLDs does not imply that domain name prices will be equal across the gTLDs. *See* note 105.

¹⁰⁹ Looking at the history of .info and .biz could be helpful, but any empirical results are conditional on the particular business models and rules used by .info and .biz. Future new gTLDs may use significantly different business models and rules, which would render a simple data analysis of .info and .biz much less informative.

3. Switching costs and behavior

93. If .info and .biz provide competition to .com, then one might observe individual domain name registrants switching their registrations from .com to .info and .biz. A concern expressed by some parties, however, is that the introduction of new gTLDs would provide little competition for incumbent gTLDs because users are locked-in to their current domain names as the result of high switching costs (*e.g.*, the costs a company would bear to change its marketing collateral and the loss of equity in the domain name). An assessment of those switching costs or measurement of switching behavior might help in assessing the likelihood that new gTLDs would provide competition to .com.

94. One approach to assessing the extent to which competition is affected by switching costs would be to conduct a survey designed to elicit organizations' estimated costs and benefits from changing their domain names.¹¹⁰ Such an approach would likely obtain a wide range of answers, depending in part on the scale of the business and how it uses the web as a tool for reaching customers.

95. Because surveys are subject to potential biases, an alternative approach would be to examine actual switching behavior. By revealed preference, in those cases where a user has switched, the perceived benefits of switching were greater than the perceived costs. Registration costs on new gTLDs are one of the costs of switching, so that a study could examine the extent

¹¹⁰ To ascertain switching costs, the survey could ask about changing of any part of the domain name; it need not specifically ask about changing the gTLD on which a domain name is registered, although it would have to be recognized that there could be additional costs of such a change stemming from customer confusion and loss of traffic.

of switching when prices of new gTLDs have changed, for example, at the introduction of .info and .biz¹¹¹ and at the time of any special .info and .biz price promotions.

96. Because of the difficulty in determining who has registered particular domain names due to cases in which proxy services are used, it is not clear that sufficient data will be available to determine the extent of switching.¹¹² Furthermore, the benefits of new gTLDs do not depend only upon registrants' switching from other gTLDs. First, domain name registrants may benefit from the introduction of new gTLDs that are purely complementary to .com and other existing gTLDs because the new gTLDs allow registrants to reach new users. Second, new registrants are not locked in to .com or any existing gTLD and may derive benefits from the introduction of new gTLDs. For these reasons, a study of switching may be unnecessary, and it should be assigned a low priority.

B. PROJECTED EXTERNAL COSTS OF NEW GTLDS

97. The projects discussed in this part focus on enumerating and quantifying the external costs of a gTLD, *i.e.*, the costs that are imposed on parties other than the gTLD owner. We do not consider here the costs imposed on ICANN because ICANN can adjust fees charged to registries in order to force the registry to internalize ICANN's costs. We also do not consider costs imposed on other registries due to increased competition because competition policy generally does not protect incumbents from competitive entry.

¹¹¹ In economic terms, the introduction of a new good or service, in this case a new gTLD, is identical to a price reduction from infinity to a finite level.

¹¹² It is also important to observe that registrants might derive large competitive benefits even if few of them switch gTLDs. First, new registrants might benefit from competition. Second, even existing registrants could benefit if their current registries improve their services in order to retain customers and the registries cannot price discriminate.

1. Costs of increased registration, monitoring, and enforcement of trademarks across multiple gTLDs

98. A potentially significant external cost of new gTLDs stems from the need to protect trademarks or brands through the use of defensive registrations. This project would involve estimating the share of organizations or brand names that engage in defensive registrations, as well as the costs incurred by organizations in monitoring domain name registrations and engaging in legal proceedings to protect their brand names and trademarks. The project would evaluate these costs over time, paying particular attention to how those costs have changed with the introduction and changes in the popularity of new domain names, including country codes.

99. The analysis is complicated by the fact that even registrations that are “defensive” may yield benefits to the registrant. One can think of there being two factors that influence whether a potential registrant decides to register a domain name. The potential registrant considers the affirmative value of the domain name to it, *e.g.*, the value of increased sales of a product or increased advertising revenue due to traffic on the domain. The potential registrant also considers the defensive “benefits” from denying the domain name to others, *e.g.*, reduced cost of pursuing litigation for trademark infringement. The sum of these two values is the potential registrant’s willingness to pay for the domain name. We define a purely defensive registration as one that the registrant undertakes solely to prevent others from undertaking it.

100. When willingness to pay exceeds price, the potential registrant will register the name. Suppose, for example, that the affirmative benefit is US\$10 and the defensive benefit is US\$2. If the price is US\$11, then the potential registrant will register the domain name; although the affirmative benefits are less than the price, the ability to deny the name to others yields defensive benefits to the registrant and the total value to the registrant exceeds the price. This type of registration is mixed, with both affirmative and defensive elements. Although the registrant

would not register the name in the absence of the defensive value (or if rules prevented the assignment of the domain name to someone else), the registrant still derives benefits from the domain name. Hence, even though the registrant would prefer that the domain name not exist, the net burden imposed on the registrant is \$1 (the affirmative benefit minus the price), rather than \$11 (the price). This example illustrates the general need to exercise care to avoid overestimating the costs of registrations motivated, at least in part, by defensive considerations.

101. One must also be careful not to miss costs. In particular, a trademark owner may determine that it suffers harm when it does not register a given domain name but that the harm is less than its cost of registering the domain name. In this case, the trademark owner suffers a loss, but there is no defensive registration.

102. These considerations can be expressed more formally. Define a_i and d_i as the affirmative and defensive benefits, respectively, associated with registration i by a legitimate trademark owner on a new gTLD. Let p denote the associated price of registration. Assuming that the trademark owner is not preempted by another registrant, the registration will be made if and only if $a_i + d_i \geq p$. The introduction of the new gTLD can generate the following losses. First, when $a_i + d_i < p$, the organization will not undertake registration, but will suffer the loss of d_i from not registering the domain. Observe that this case will arise only if $d_i \leq p$. Second, when $a_i + d_i \geq p$, the organization will undertake the registration but may suffer a welfare loss of up to $p - a_i \leq p$. Observe that this case will arise only if $p - a_i \leq d_i$. Taking the sum over all possible registrations on the new gTLD, $\sum_i \min\{p, d_i\}$ provides an upper bound on the social costs imposed on trademark owners by the new gTLD. In thinking about this sum, it is

important to recognize that, in most cases, $d_i = 0$. It is also important to recognize that there may be large affirmative benefits that offset these costs.

103. Although price is observable, the affirmative and defensive benefits are not. Using the fact that $\sum_i \min\{p, d_i\} \leq \sum_i p$, one can use $N \times p$ as an upper bound on the losses imposed on trademark owners by the new gTLD, where N is the number of second-level domain names for which $d_i > 0$. N is not observable either, but it may be possible to approximate N by making assumptions about a joint distribution function for a_i and d_i . This distribution function can be used with a measure of the number of almost-purely defensive registrations to estimate the upper bound on trademark owners' losses.

104. To determine the number of almost-purely defensive registrations, the project would begin by examining the extent to which registrants register the same domain names in different gTLDs. This determination would likely have to be made by relying on a sample of registrants.¹¹³ The project would then estimate the number of duplicate registrations that are empty or redirect to another website, as opposed to offering original content. The registrar for .info, Afiliás, estimates that in June, 2009, 36 percent of .info domain names redirected to a domain name on another gTLD and another 14 percent were "referral" sites that referred the user to other websites. Only 19 percent of the .info domain names corresponded to "live, dedicated Web sites with apparent unique content."¹¹⁴ However, even if a domain name simply redirects to another website, the domain name could provide benefits to the registrant if it funnels traffic to the main website that would otherwise be lost.

¹¹³ Krueger and Van Couvering, for example, examined brands registered by Fortune 100 companies on different gTLDs.

¹¹⁴ Afiliás, Annual Report 2009, at 10. These estimates are based on work done by the consulting firm, Pegasus Consulting.

105. A survey of registrants would likely be needed to disentangle the extent to which duplicate registrations are either purely defensive (and constitute external costs) or generate benefits to the registrants. A survey of trademark owners could provide information on the reasons for registration of domain names in multiple gTLDs, such as how registrants use the additional gTLDs (*e.g.*, to provide new content or purely to redirect to another site) and whether the registrants expect to reach a new audience with the new gTLD.¹¹⁵ The survey could also ask whether the registrant would have registered the name if it instead could have been taken out of circulation. The survey could also examine the likelihood that trademark owners would change their use of defensive registrations (potentially decreasing these external costs) given the introduction of new intellectual property protections in new gTLDs.

106. Lastly, differences in the rules of various gTLDs may generate useful information about the costs of defensive registration and the extent to which rules can help to mitigate such costs. The final part of this project would examine how different rules used by existing gTLDs to protect trademark owners have influenced the number and cost of disputes over domain names. For example, this part of the project would examine whether .biz and .info, which used different registration rules when those gTLDs were introduced, experienced material differences in the number, type, or cost of domain name disputes over time.

2. Costs to consumers from increased confusion or fragmentation of the Internet

107. New gTLDs could impose costs on consumers if the new gTLDs increased the time it takes Internet users to find their desired websites or increased the likelihood that users would go

¹¹⁵ Returning to an example described earlier, National Public Radio has registered the domain name n.pr and uses it to redirect users to npr.org. n.pr may be, or may become, an important source of traffic if consumers find the shorter address easier to remember or more convenient to enter into their Internet access devices.

to websites other than the ones they intended to visit. These costs could include lost time as a user tried to locate the correct site, damage inflicted on the user's computer when he or she inadvertently visited a website that downloaded malware onto his or her computer, or the purchasing of counterfeit goods from websites that appear to be legitimate.

108. The extent to which users incur these costs depends in large part on how frequently users find websites via search engines as opposed to typing domain names into the browser's address bar. As discussed earlier, according to the Pew Internet and American Life Project, in 2008 90 percent of all Internet users had used search engines, and 49 percent used one "yesterday," making search engines the second most popular online application, after email. Thus, the number of people subject to this type of increased confusion due to new gTLDs is probably relatively small, though these numbers may overstate or understate the implied costs. We note, however, that even when a search engine is used, the consumer usually must choose between multiple hits returned by the search engine. If proliferation of new gTLDs leads to many search hits that are confusing to the user, then even those relying upon search engines rather than typing in URLs might be harmed.

109. At this point in time, we are unaware of a study methodology that would allow us to measure or predict the amount of consumer confusion that may occur in future from the introduction of new gTLDs. Companies sometimes use focus groups, individual user testing, or other means to observe how users react to different websites and how they navigate the Internet. But the introduction of a large number of new gTLDs has the potential to change Internet navigation and use in a way that would be impossible to model for a focus group or in a controlled user experiment, and confusion that may show up in a short focus group session or user experiment may overstate the likely effect if it is only a transitory state and users adapt to

the new TLD structure. Indeed the very likelihood that new gTLDs will introduce unanticipated innovative business models and services makes it unlikely that a proper focus group or user experiment could be designed. Therefore, although we view user confusion as a potentially important issue, no definitive project could be defined at this point in time. We recommend that ICANN consider the potential for consumer confusion in deciding how quickly to proceed with the introduction of gTLDs, possibly incorporating some methodology to measure consumer confusion as new gTLDs are rolled out over time.

C. CASE STUDIES TO HELP PROJECT EXPECTED NET BENEFITS FROM NEW gTLDs

110. New gTLDs are expected to adopt a variety of business models, either to compete directly with existing gTLDs or to broaden the market and serve a particular unmet need. Economic theory suggests that many new gTLDs will attempt to differentiate themselves rather than try to compete directly with established gTLDs like .com.¹¹⁶ Based on the initial indications of interest, there may be a wide variety of new business plans: although some commercial gTLDs may be established to compete with .com (*e.g.*, .sell or .shop), others may try to differentiate themselves by establishing cultural (*e.g.*, .eus or .irish); geographic (*e.g.*, .london or .nyc); specialized interest (*e.g.*, .music or .rugby); country-specific (*e.g.*, .pr or .fr); or new IDN (*e.g.*, .ﺓﻳﺪﻭﻋﺴﻼ (Saudi Arabia) or .рф (Russian Federation)) gTLDs.

111. Because of the uncertainty surrounding the introduction of innovative new products and business models, it is difficult to analyze or predict the costs and benefits of any particular new gTLD, but one can analyze generally the expected costs and benefits of various types of new gTLDs. This potential project would use case studies to examine the likely costs and benefits in

¹¹⁶ For a discussion of the theory, *see, e.g.*, Damien Neven (1985), "Two Stage (Perfect) Equilibrium in Hotelling's Model," *Journal of Industrial Economics*, 317-326.

broad categories of new gTLDs. Such studies would lead to recommendations on how ICANN could craft its application process and ongoing rules to lessen the likelihood of delegating gTLDs that will have negative net social benefits and to enhance the net social benefits from gTLDs that are designated.¹¹⁷

112. Experience with past introductions of gTLDs may provide insight into how different business models might affect competition and the benefits flowing from new gTLDs. One proposed case study would examine a new gTLD that was designed to compete with .com, such as .biz or .info. The study would look at the outcomes from these introductions along such dimensions as the number of domain names sold, traffic generated, and how registrants use the domain names (*e.g.*, to house original content, to re-direct to another site, or to duplicate content found on other websites). The study would examine the rules of registration, costs to register, and value-added services as possible impediments to, or stimulants of, demand. Finally the study would examine the effectiveness of rules to protect intellectual property, *e.g.*, sunrise registration rules.

113. Similar case studies could be undertaken with respect to gTLDs that were not designed to compete with .com and, instead, were intended to serve an underserved or specific community, *e.g.*, sponsored gTLDs such as .cat or .museum. These case studies would analyze the business models used, how the registry restricts domain name registrants and serves its community of interest, how domain name registrants and users benefit from the gTLD, and the effectiveness of—or need for—intellectual property protection.

¹¹⁷ Business models, rules, and regulations also affect the level of external costs, which we discussed in the section on cost studies.

114. Finally, case studies of ccTLDs that have been marketed as generic TLDs could be performed. Examples include .tv (Tuvalu), .me (Montenegro), and .co (Colombia).

115. In all of these case studies, it would be valuable to pay particular attention to the rules and regulations governing the gTLDs. The rules and procedures used by registries potentially raise a host of questions, but we focus here on the possible interactions between the rules and procedures and the introduction of new gTLDs. Different rules for trademark protection could substantially change the costs and benefits that a new gTLD imposes on third parties. For example, rules that make it very difficult for anyone but a trademark owner to register a second-level domain would reduce the costs to trademark owners while at the same time potentially decreasing the benefits to other third parties. The goal of examining experiences with various rules and regulations is to facilitate the design of future institutions that reduce the chances that new gTLDs with negative net social benefits will be approved and increase the net social benefits of those gTLDs that are delegated by proposing rules that will minimize the negative externalities while allowing socially beneficial innovation.

D. USING THE INTRODUCTION OF NEW gTLDs TO GENERATE ADDITIONAL INFORMATION

116. As discussed above, looking to past experience to shed light on the likely costs and benefits of new gTLDs is problematic for two reasons. First, the introduction of large numbers of new gTLDs—many of them brand- or company-specific and many others designed to promote geographic areas or serve cultural communities or other communities of interest—has the potential to change the way website owners communicate and do business with Internet users, and the way Internet users gather information and communicate with each other. There is no historical experiment—or set of historical experiments—from which one can extrapolate the future costs and benefits of such an advance. Second, piecing together bits of information as we

propose above in various studies, although it may be informative in limited areas, is in many cases seriously hampered by the paucity of relevant data. These facts lead to two conclusions.

117. First, it may be wise to continue ICANN's practice of introducing new gTLDs in discrete, limited rounds. It is impossible to predict the costs and benefits of new gTLDs accurately. By proceeding with multiple rounds, the biggest likely costs—consumer confusion and trademark protection—can be evaluated in the earlier rounds to make more accurate predictions about later rounds.

118. Second, 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. For example, there might be mandatory reporting of trademark disputes.