

**ICANN AT A CROSSROADS:
A PROPOSAL FOR BETTER GOVERNANCE AND PERFORMANCE**

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By

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EXECUTIVE SUMMARY

The Internet Corporation for Assigned Names and Numbers (ICANN)—the non-profit company that is at the center of the Internet—has operated under a Memorandum of Understanding (MOU) with the U.S. Department of Commerce (DOC) since 1998. The MOU was replaced in September 2006 by the Joint Project Agreement (JPA) between ICANN and the DOC, which expires in August 2009. At that time, a decision needs to be made about ICANN’s future. Should the JPA tie with the U.S. Government be retained? Or should the link be wholly severed, as ICANN advocates? And, in either case, what governance structure would best promote Internet efficiency and innovation?

This paper evaluates the structure and governance of ICANN to help inform the upcoming decision. In particular, it reviews ICANN’s structure and functions, and also the structures of a number of other organizations that perform a roughly comparable range of private-sector and quasi-governmental coordination and standard-setting functions, to explore what might be applicable to ICANN.

We find that although ICANN has control over extremely important aspects of the Internet, it is largely accountable to no one. No organization with ICANN’s level of responsibility operates with the independence that ICANN enjoys, even under the current arrangement of nominal oversight by the U.S. Department of Commerce. ICANN’s proposal for complete privatization and termination of the DOC’s oversight would make the accountability problem worse.

Virtually all of the organizations that we reviewed are governed by their direct users, and we believe that this would be a good model for ICANN as well; it would also be consistent with the reduced regulatory role that we envision for ICANN. Governance by its direct users—the registries and the registrars—would provide the external accountability that could allow for eventually ending ICANN’s ties with the U.S. Government. However, we recommend that the new structure be permitted to operate for a while, to allow time for evaluation, before severing those ties

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We also address the issue of ICANN's status as a *de facto* regulator. ICANN's recent proposal to expand the number of generic top-level domains (gTLDs) highlights a distinct choice between alternative regulatory approaches: On the one hand, ICANN could proceed under the assumption that the market for gTLDs is not (and perhaps cannot be) at least workably competitive (as the U.S. Government apparently believes). ICANN would then assume greater public-utility type regulatory responsibilities. Alternatively, ICANN could allow relatively free entry into the domain space, in order to bring the benefits of a competitive gTLD market to consumers. We favor the latter approach, which is consistent with our proposal concerning governance reform. For free entry to work well, however, ICANN needs a less costly mechanism for protecting the intellectual property associated with domain names in order to address the problems of defensive registrations and cybersquatting.

Our specific recommendations are as follows:

- The JPA should be extended beyond its current expiration date. In the absence of changes in governance along the lines that we recommend, the JPA is particularly important. If our recommended changes are adopted, they should be permitted to become established before allowing the JPA to expire.
- ICANN should remain as a nonprofit organization, but its governance should be restructured, so that it is governed by and directly accountable to its direct users: the registries and the registrars. Seats on ICANN's board of directors could be rotated among the major operators in a manner that would reflect the diversity of viewpoints among registries and registrars.
- ICANN should have a clear mission of encouraging competition. This implies a minimal role as a regulator with respect to the creation of new gTLDs. Instead, ICANN should adopt a relatively automatic way of introducing gTLDs, whereby any entity that meets a set of minimum technical and financial qualifications for being a registry should be able to be certified to become a registry for any gTLD that is not already taken.
- For this "open entry" policy to be workable and beneficial, ICANN must also strengthen the protections for incumbent domain name holders, so that they are not subject to "nuisance" or "ransom" demands from new registries; adopting an IP registry and strengthening ICANN's "uniform dispute resolution policy" (UDRP) could be part of these improved protections.

These four recommendations are complementary, and combined they would significantly further the goals of Internet efficiency and innovation.

INTRODUCTION

"One problem with Internet governance as a concept...is that there is no natural institutional home for all of the issues that are involved." Mathiason (2009, p. 133).

"In the new Internet governance regime, private and intergovernmental conflict over the ownership of the root was resolved through the establishment of a central authority that, in effect, owns the entire name space and grants limited privileges of use to suppliers and consumers." Mueller (2002, p. 259).

The central governance structure of the Internet is a puzzle. Governments and for-profit companies are involved in various aspects of the operation of the Internet, but only weakly and indirectly in its governance. Instead, a non-profit corporation—the Internet Corporation for Assigned Names and Numbers (ICANN)—is solely responsible for governance. It attempts to be responsive to the “Internet community” at large, but in fact is largely accountable to no one.

ICANN’s website, which devotes extensive attention to proposals concerning potential changes in Internet policies and requests for public comment on these proposals (with specified comment periods), gives the impression of strong similarities with the regulatory processes of U.S. Government agencies. But the impression is just that, since the link between ICANN and the U.S. Government is weak.

That link is now at issue. ICANN has operated under a Memorandum of Understanding (MOU) with the U.S. Department of Commerce since 1998. The MOU was replaced in September 2006 by the Joint Project Agreement (JPA), which runs through August 2009. ICANN believes that it is meeting its responsibilities under the JPA and that therefore the JPA is no longer necessary.¹ ICANN argues that its long-planned transition to the private sector should now be completed and that any formal tie to the Department of Commerce should be concluded.

This is, therefore, a good time to evaluate the governance structure of ICANN and determine how it can be improved. That is the purpose of this paper.

¹ Comments of Peter Dengate Thrush, Chairman of the Board of Directors, ICANN, January 9, 2008.

Our analysis indicates that a lack of accountability is the major issue surrounding ICANN. Accountability requires some meaningful external checks. We do not believe that it can be improved by adopting new procedures over which ICANN has control. Thus, measures such as those proposed through ICANN's Improving Institutional Confidence Consultation are not likely to be effective.²

Accountability also cannot be improved by making ICANN even less accountable than it is now.³ Moreover, if ICANN's progress in meeting its responsibilities under the JPA is related to the existing tie to the Department of Commerce, then terminating that arrangement might be counterproductive. Therefore, we oppose severing the tie with the Department of Commerce at the present time.

Instead, our review of other institutional models suggests that a change in governance that puts ICANN's direct users effectively in control would make the organization more accountable and would improve incentives for efficient operation. We also recommend that ICANN adopt a less regulatory approach in designating and creating new generic top-level domains (gTLDs). These recommendations are complementary, since both would further the goals of greater Internet efficiency and innovation.

ICANN's STRUCTURE, RESPONSIBILITIES, AND PERFORMANCE

The Domain Name System

In order for the parties connected through the Internet to be able to communicate—whether through e-mail or through the accessing of a web page—they need unique "addresses" to which the relevant communications will be sent. Those addresses, for the purposes of the computers that do the routing, are simply unique strings of numbers, which are called Internet Protocol (IP) addresses.

² See <http://www.icann.org/en/jpa/iic/index.htm>

³ ICANN's accountability and "legitimacy" have been longstanding issues. See, for example, Weinberg (2000) and Mueller (2002).

The coordination of the allocation of IP addresses is the responsibility of ICANN through the Internet Assigned Names Authority (IANA), which is operated by ICANN. IANA is responsible for managing the domain name system (DNS) “root”—the master file of top-level domains.⁴ The root file is continuously copied by 13 main root servers: ten in the United States, two in Europe, and one in Japan.⁵ These are the computers that actually direct Internet communications to the appropriate locations.

Although the IP addresses (the strings of numbers) could also be the addresses that individuals use when directing their computers to send a communication, most individuals find alphabetic letters and words (or mnemonics) easier to recognize, remember, and organize. Hence, e-mail addresses and web page locations are represented by letters and words (sometimes with a few numbers or symbols interspersed), rather than just by the IP addresses. This alphabetic language-based set of addresses is the "domain name system" (DNS). The logic of the communication system's requiring unique addresses means that each complete domain name must be unique and must be uniquely linked to the appropriate IP address (with these links again kept in master files in those 13 root servers). Further, the DNS requires some coherence or hierarchy (instead of, say, just being random strings of letters).

Every resource on the Internet, from a web page to an individual, has a unique Internet Protocol number. The purpose of the DNS is to assure that every URL and every email address resolves (i.e., is linked) to a unique IP address. The failure to achieve this is called “instability,” which might occur if there were alternative or competing roots. In that event, queries made by different people at different computers might resolve to different IP addresses.

The DNS that was developed in the early 1980s relies on the Roman alphabet⁶ and is hierarchical in structure. The hierarchy is demarcated by periods or "dots" between strings of characters. The string of characters to the right of the rightmost dot represents the first- or top-level domain (TLD), with strings progressively to the left indicating progressively lower-level domains.

⁴ IANA has a contract with the U.S. Department of Commerce that specifies this responsibility.

⁵ The VeriSign Corp. is responsible for maintaining these master files, under a contract from the U.S. Department of Commerce.

⁶ ICANN is currently developing and testing the protocols that would allow non-Roman lettering systems to be part

Originally, there were seven generic TLDs (gTLDs): .com, .edu, .org, .net, .int, .mil, and .arpa. Subsequently, a large number of two-letter country code TLDs (ccTLDs) were added. Today, there are 252 two-letter ccTLDs and 21 gTLDs: the original seven plus seven additional gTLDs that were added in 2001 (.info, .biz, .coop, .aero, .museum, .pro, and .name) and another seven gTLDs (.travel, .tel, .jobs, .asia, .cat, .mobi, and .gov) that have been added in recent years.⁷

There is a single "registry" responsible for the coordination and coherence of each gTLD—i.e., making sure that IP and domain name addresses are unique and are properly linked and stored.⁸ The registry maintains the database (zone file) of all the registrations—second-level domain names—under the TLD. The registries operate under contracts with ICANN.

Each registry, in turn, deals with (possibly multiple) "registrars," which register specific second-level domain names (e.g., "aol.com" or "delta.com") within that TLD to the individuals or organizations that desire that second-level domain name. Thus, the registry acts as the "wholesaler" with respect to the distribution of domain name addresses within a TLD, and the registrars act as "retailers."

The entity with the second-level domain name can, in turn, assign third-level domain names (e.g., "stern.nyu.edu"), etc.

Placed at the top of this overall hierarchy is ICANN, with the powers to create gTLDs, to select and contract with registries for the gTLDs, to accredit and contract with the registrars with whom the registries deal, and to coordinate with the country code managers of the ccTLDs.

A Brief History⁹

As is well known, the Internet started in the late 1960s as a small, computer-based telecommunications network that was fostered by the U.S. Department of Defense (DOD), through

of the DNS. This is being done under ICANN's "internationalized domain names" (IDN) program.

⁷ As of early 2009, ICANN was proceeding toward the creation of additional gTLDs.

⁸ For example, VeriSign, Inc., is the company that is the registry for the .com and .net domains. For ccTLDs, the registry function is performed by a country code manager.

⁹ This section draws heavily on Mueller (2002) and Mathiason (2009); see also Abbate (1999), Kesan and Shah (2001), and National Research Council (2005, ch. 3).

the Information Processing Techniques Office (IPTO) of the DOD's Advanced Projects Research Administration (ARPA). The network initially connected about 200 people at 21 nodes and was known as ARPANET.

A decade later, in the late 1970s and early 1980s the key software programs of the Transport Control Protocol and Internet Protocol (TCP/IP) were worked out, which provided the basis for the current Internet address space system and the transport of messages between those addresses. During the 1980s the Internet grew by linking to the internal networks that were in place in agencies of the U.S. Government, such as the National Science Foundation (NSF), the National Aeronautic and Space Administration (NASA), and the Department of Energy, and linking to the networks in universities and research institutions in the United States and abroad. Also, in the late 1980s the NSF began to take a more active role in supporting the Internet backbone and in encouraging educational and research institutions to link to it.

Throughout the 1970s and 1980s the various protocols and procedures for implementing the structural features of the Internet, such as the DNS that evolved as a consequence of the TCP/IP address system, were developed and instituted by computer scientists and software engineers, operating through working groups and relying on the processes of rough consensus among the major interested parties. The Internet Engineering Task Force was formed in 1986, formalizing what had been done informally until then through the circulation of “requests for comments” (RFCs). This was followed in 1992 by the formation of the Internet Society, which became the locus for these development efforts.

In 1992 legislation was enacted that removed restrictions on the interconnection of commercial traffic with the NSFNet. This was followed, in 1993, by the awarding of a contract to Network Solutions, Inc. (which later became VeriSign) to provide registration services for entities that wanted to obtain second-level domain names and establish websites. This expansion of the commercial use of the Internet came on the heels of reduced involvement by the DOD and the NSF. In 1997 the Clinton Administration transferred the remaining U.S. Government role to the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce (DOC), but with explicit direction for the DOC to privatize the governance of the domain name

system. The DOC released an initial proposal (the "Green Paper") in January 1998 and a final proposal (the "White Paper") in June 1998.

Simultaneously, in the summer of 1998, Jon Postel, one of the leaders of the Internet Society, drew up plans for a non-profit corporation to be incorporated in California that would be the private entity that would absorb from the federal government the responsibility for administering the DNS. That entity—ICANN—came into existence in September 1998. The DOC entered into a memorandum of understanding (MOU) with ICANN in November 1998 and officially recognized ICANN as the private non-profit entity that would be responsible for the DNS in February 1999.

ICANN's memorandum with the DOC has been renewed a number of times since 1998. The most recent renewal, signed in August 2006, is called the Joint Project Agreement (JPA) and runs for three years.

ICANN's Functions

As the administrator of the DNS, ICANN has a number of functions:

- Decide on the number of gTLDs, the potential categories of coverage that apply to each domain (e.g., what kinds of organizations can register for a website in a specific domain), and the specific letters or mnemonic that will be the suffix for that domain;¹⁰
- Designate and contract with specific organizations to serve as the registries for specific gTLDs;
- Accredite and contract with the registrars with whom the registries deal;
- Negotiate with the country code managers for each ccTLD to ensure that they carry out registry-like functions;¹¹

¹⁰ This function includes decisions as to whether non-Roman alphabets can be part of the DNS.

¹¹ Unlike the gTLDs, over which ICANN has direct authority and control, the ccTLDs and their country code managers have a considerably looser relationship with ICANN.

- Maintain a system for settling disputes among website holders (e.g., as to who is entitled to specific character strings in their second-level domain name);¹²
- Generally maintain the compatibility, capacity (in terms of IP addresses), and stability (in terms of the uniqueness of IP and DNS addresses) of the DNS; and
- Through IANA, which is operated by ICANN and which has its own contract with the Department of Commerce, coordinate the allocation of IP addresses and manage the DNS “root”—the master file of top-level domain names (TLDs). The root file is continuously copied by 13 root servers around the world, which are the computers that actually resolve TLD queries. This latter function is performed by VeriSign, under a separate contract with the Department of Commerce.

Organizational Structure/Procedures

ICANN is headquartered in Marina del Rey in Southern California. It has a CEO,¹³ a staff, and a 21-person board of directors. It coordinates its actions with a number of other organizations and advisory groups, including the Internet Engineering Task Force (IETF), and similar advisory bodies (many of which came into being as a consequence of ICANN's bylaws).

When undertaking new actions—say, creating new gTLDs—ICANN announces its general intentions and invites public comments. In coordination and consultation with other organizations and advisory boards, ICANN gradually develops more specific proposals and again invites public comments. Eventually, its board of directors votes on the specific proposal; if the board approves, the proposal is put into action.

The Board

The ICANN board of directors has 21 members.¹⁴ About two-thirds of the board are from countries other than the U.S. Of the full board, 15 are voting members; their (staggered) terms are for three years. Eight of the voting members are selected by a nominating committee that is drawn

¹² ICANN's current system is called its "uniform dispute resolution policy" (UDRP).

¹³ Paul Twomey, as of early 2009.

¹⁴ ICANN's initial board in 1998 had only nine members.

from the advisory groups with which ICANN coordinates and from organizations that are associated with various Internet constituency groups. In addition, two members each are selected by the Address Supporting Organization, the Country Code Names Supporting Organization, and the Generic Names Supporting Organization. (These three organizations are specified in and created by the ICANN bylaws.) The fifteenth voting member is ICANN's CEO.

The remaining six non-voting members are liaisons from and selected by the Internet Engineering Task Force and five advisory committees that are established by the ICANN bylaws. Their terms are for one year.

Although ICANN's board structure is designed to have board members that are drawn from various constituencies, such memberships do not "represent" those constituencies, since the constituencies themselves have not voted for these board members and since the obligations of board members (as is specified in ICANN's bylaws) are to act in the interests of ICANN and not of the organizations that selected them.

Finances

ICANN has grown rapidly in the years since its inception. From 2000 to 2009, ICANN's revenues increased from about \$5 million to over \$60 million. Over the same period, operating expenses increased from just under \$3 million to about \$52 million. ICANN projects that it will have assets of more than \$45 million at the end of FY2009.¹⁵

ICANN receives over 90 percent of its revenues from registrars and registries, none of which can operate without ICANN's permission.¹⁶ The gTLD registrars will contribute about \$31 million to the FY09 revenue figure. Registrars pay application fees of \$2,500, annual accreditation fees of \$4,000 each, variable fees of \$3.8 million divided among the registrars, and transaction fees of 20 cents per registration. gTLD registries will contribute about \$25 million to the FY09 revenues. Registries pay application fees as well as fees determined by their agreement with ICANN, and each one is different. For example, the .com registry pays a fixed fee of \$12

¹⁵ 2001-2007 data from annual audited financial reports; 2008-2009 data from ICANN FY 09 Operating Plan and Budget.

¹⁶ ICANN FY09 Operating Plan and Budget.

million; the .net registry pays a \$0.75 fee per transaction for a total of about \$9.9 million; and the .org registry pays a \$0.15 fee per transaction for a total of about \$1.1 million.

The budget for ICANN's fiscal year 2009 is presented in Table 1. As can be seen, its expenses will be about 90 percent of its revenues. Operating expenses—personnel, travel and meetings, professional services, and administration—account for over 90 percent of ICANN's expenses.

Table 1
ICANN Budget for FY2009 (ending June 30)
(in millions of US\$)

<i>Revenue</i>	
Registrars	30.9
Registries	25.1
Regional Internet Registries	0.8
ccTLDs	2.3
Other	1.5
Total	<u>\$60.7</u>
<i>Expenses</i>	
Personnel	19.9
Travel & meetings	12.5
Professional services	11.9
Administration	7.6
Bad debt expense	1.2
Depreciation	0.9
Total	<u>\$53.9</u>
<i>Surplus</i>	\$6.8

Source: ICANN

Accountability

ICANN makes extensive efforts to be responsive to "the Internet community." It does so through requests for comments on proposed actions, public meetings in various parts of the world, consultations and coordination with other Internet-related organizations, and the board membership structure that draws members from various constituencies. Nevertheless ICANN is not formally

accountable to any group or constituency, other than the U.S. Department of Commerce through the JPA, and through the contract that the DOC has with IANA.

The DOC has oversight over ICANN through the JPA and through the contract with IANA to manage the Internet root. Presumably, if the DOC were unhappy with ICANN's actions, the DOC could claim that ICANN was violating one of these agreements. If the DOC and ICANN were unable to reconcile their differences, the DOC could in theory attempt to replace ICANN with a different organization. Whether that would be a politically feasible (nationally or internationally) action for the DOC to undertake is a separate question.

The JPA expires in August 2009. Its purpose is “the joint development of the mechanisms, methods, and procedures necessary to effect the transition of Internet domain name and addressing system (DNS) to the private sector.” The National Telecommunications and Information Administration (NTIA) in the Department of Commerce undertook a midterm review of the JPA in early 2008. During that review, ICANN argued that it was meeting its responsibilities under the JPA and that therefore the JPA was no longer necessary.¹⁷ ICANN recommended that the JPA should be concluded and that ICANN should complete its transition to the private sector. Another interpretation of that transition, of course, would be that ICANN then would be truly accountable to no one.¹⁸

If the JPA were to expire, a major question would then be what would happen to the IANA contract with the DOC. If the IANA contract continued (and IANA continued to be operated by ICANN), that would provide some accountability.

Improving Institutional Confidence Consultation

In the last year, ICANN has undertaken a major project—the Improving Institutional Confidence Consultation—designed to complete ICANN’s transition when the JPA expires in

¹⁷ Comments of Peter Dengate Thrush, Chairman of the Board of Directors, ICANN, January 9, 2008.

¹⁸ The National Research Council (2005, pp. 217-219) is similarly concerned about the severing of ICANN’s link with the DOC before a suitable governance structure for ICANN is in place.

September 2009. A major focus of this project was to strengthen ICANN's accountability to its multi-stakeholder community.¹⁹ Its major recommendations are:²⁰

1. Establish an additional mechanism whereby the community can require the board to reexamine a decision, based on a well-defined process;
2. Establish an extraordinary mechanism by which the community can remove and replace the Board in special circumstances;
3. Maintain the advisory role of the Government Advisory Committee;
4. Continue regular periodic reviews of ICANN's structure, and of the Board Reconsideration, Independent Review, and Ombudsman functions; and
5. Enhance and expand contractual compliance and enforcement.

These recommendations illustrate how difficult it is to provide meaningful accountability within the current institutional structure. For example, establishing a procedure for the board to reexamine its decisions simply makes the board accountable to itself. The second recommendation—establishing a procedure to remove the entire board—has come to be called the “nuclear option” because it is so extreme that no one believes it would ever be used. The other options provide nothing new.

Problems with the Current Structure

ICANN sits at the center of and has control over extremely important aspects of the Internet. This is an extraordinary position for a modest-sized non-profit organization that has almost no accountability. ICANN's board is the ultimate decision-making authority for the organization. But that board has no shareholders to which it is accountable and no government agency to which it must answer (other than the loose oversight of the U.S. Department of Commerce). The board itself has considerable influence over the processes and entities that determine board membership.

¹⁹ <http://www.icann.org/en/jpa/iic/>. Other requirements ICANN addressed as part of its transition plan include: safeguarding ICANN against capture by any particular stakeholder group; internationalizing ICANN; ensuring financial and operational security; and maintaining secure and stable operations.

²⁰ See Transition Action Plan (revised September 2008), <http://www.icann.org/en/jpa/iic/action-plan-revised.htm>

And, of course, ICANN itself is not a governmental organization and thus does not have the ultimate legislative accountability that would accompany a governmental structure.

This absence of accountability is worrisome because ICANN's actions can have important consequences for the structure of the Internet and the important economic, communication, and social activity that now occurs on and through the Internet. For example, the number and nature of the gTLDs may have important consequences for competition among firms that conduct commerce through the Internet. ICANN's fee structure and pricing of second-level domain name registrations could influence who decides to register for a domain name and who does not. ICANN's dispute resolution process—the Uniform Dispute Resolution Policy (UDRP)—has important consequences for the strength of protection for the intellectual property (such as trademarks) associated with domain names.

Although in its decade of existence ICANN has taken seriously its responsibility to maintain the stability of the root, it is also hard to know whether ICANN's limited expansion of the gTLDs has been less than—or more than—the socially worthwhile levels. And, without accountability, there's no assurance that ICANN might not take substantially misguided actions in the future. After all, ICANN is a monopoly.

However, it is also difficult to conjure an alternative structure for ICANN that would not also have substantial flaws:

- A private for-profit corporation might try to create artificial scarcities and extract high prices as a consequence (again, ICANN is a monopoly);
- Subjecting ICANN (in either its current form or in a private for-profit form) to governmental regulation raises the questions of which government(s) (the United States? another country? a consortium of countries?) should regulate it and what the principles of that regulation should be, as well as raising a set of well-known problems concerning the distortions that regulation can induce;

- Reconstituting ICANN as a governmental agency again raises the question of which government and the related questions of governmental inefficiencies and political influence; and
- Reconstituting ICANN as an international agency—perhaps as part of the United Nations, such as the International Telecommunications Union (ITU) or the Universal Postal Union (UPU)—raises similar questions of inefficiencies, sluggishness, and political influence.

The remainder of this paper will address these accountability and governance questions, develop principles that should guide any restructuring of ICANN's governance, and offer our recommendations for that restructuring.

CRITERIA FOR ICANN GOING FORWARD

ICANN's current institutional structure, combined with its technical role, presents difficult challenges for institutional reform. To the extent possible, ICANN's institutional structure should be based on a set of well-defined criteria, and designed with incentives and constraints that will cause ICANN to satisfy those criteria. The criteria we propose for ICANN are as follows:

1. ICANN's scope should be clearly delineated. It should hew closely to the technical functions involved in administering the Domain Name System—i.e., coordinating the allocation of IP addresses, managing the DNS “root,” and ensuring the stability of the DNS—and do little more.
2. ICANN should minimize its role as a regulator. In particular, it should adopt a system of relatively free entry into the gTLD registry business—provided that the intellectual property protection improvements covered in criterion 3 are implemented. We outline below what such a system might look like.

3. ICANN needs to adopt a less costly mechanism for protecting the intellectual property associated with domain names. Failure to do this makes it difficult to satisfy criterion 2, above.
4. ICANN's growth should be limited in order to restrict mission creep and unnecessary bureaucracy. It is unclear how to determine reasonable limitations, but ICANN currently operates without normal budgetary constraints.
5. ICANN should be accountable to external parties. Internal procedures are not sufficient.
6. ICANN should be subject to United States antitrust laws and other jurisdictions' antitrust laws if applicable.²¹

Technical Role

ICANN should continue to perform the function of coordinating the Domain Name System. This function is actually shared between ICANN, IANA (the Internet Assigned Names Authority), which is operated by ICANN, and VeriSign, which is a profit-making corporation.

Regulatory/Policy Role

ICANN's technical function of administering the Domain Name System requires it to, in effect, "license" registries and registrars that coordinate and sell rights to use domain names. This licensing function is similar to functions performed by regulatory agencies—for example, the U.S. Federal Communications Commission (FCC) when it licenses broadcasters or other uses and users of the radio spectrum. The licensing function enables ICANN to specify the terms and conditions under which the registries and registrars operate, including the prices at which they sell the rights to use domain names.

ICANN's regulatory potential stems from its role of designating registries for the TLDs and negotiating contracts for their terms of service. Under the current system each TLD has a single registry.

²¹ Froomkin and Lemley (2001) suggest that ICANN is subject to U.S. antitrust law.

The rationale for the single registry is that, due to economies of scale and network effects, registries may be natural monopolies (Kobayashi 2006). More than one registry per TLD could result in more than one registration per domain name, which would mean that domain names would not resolve to a unique IP address—the problem of “instability.”

The registry function’s natural monopoly characteristics provide a possible rationale for monopoly-type regulation. Indeed, ICANN’s actions are, in many respects, indistinguishable from those of a regulatory agency. It has awarded registry contracts for fixed time periods through “competitive” processes much like the FCC gives out broadcast licenses. These contracts specify terms and conditions, including the prices that the registries can charge. Unlike most rate regulation cases, however, ICANN does not go through well-defined procedures or data analysis. ICANN has also regulated complementary services that registries might offer. All of these are characteristics of the regulated monopoly approach.

ICANN should not engage in economic regulation for two reasons. First, while each registry may (arguably) be a natural monopoly, there is competition—both actual and potential—between TLDs. For example, .com competes with .net and .biz., as well as with ccTLDs, to be the domain where enterprises choose to establish their Internet presence. Although we believe that ICANN has been overly restrictive in authorizing new gTLDs, there has nonetheless been an increase in competition between registries (Kobayashi 2006). Recently, ICANN adopted a policy to facilitate applications for new gTLDs.

In addition, ICANN is not equipped to be a regulator. It has no specified criteria against which its regulatory decisions can be judged, no administrative procedures, no professional staff with the qualifications to make regulatory decisions, and no procedures for appeals of ICANN decisions to a judicial body. In countries that operate under the rule of law, regulatory agencies operate under statutes that specify the criteria for regulatory decision-making. Regulatory decisions are aided by professional staffs, including economists, who, for example, attempt to determine whether allowable rates accurately reflect costs. There are defined procedures, including the right to appeal decisions outside the agency to the courts. ICANN has none of these.

The issue of ICANN's status as a regulator has been put into sharper relief following its recent proposal to expand the number of gTLDs, which has been criticized by many in the business community as well as by the U.S. Government.

While it is not our purpose to comment on the details of that proposal, it highlights a choice between two distinct alternatives in regulatory approaches: On the one hand, ICANN can proceed under the assumption that the market for gTLDs is not (and perhaps cannot be) at least workably competitive. This would require ICANN to take on greater regulatory responsibilities than it now has and would mark a significant increase in ICANN's authority and scope. Alternatively, ICANN can adopt a liberal policy of relatively free entry into the domain space, with the objective of bringing the benefits of a competitive gTLD market to consumers. This would obviate the need for ICANN to act as a regulator.

The U.S. Government appears to be recommending the first, more regulatory, course. In comments filed with ICANN on its proposed procedures to introduce new gTLDs, the Department of Commerce, informed by a Department of Justice Antitrust Division analysis, expressed the view that:²²

- Both existing and new gTLDs have market power.
- The introduction of new gTLDs is unlikely to constrain the market power of existing gTLDs.
- ICANN needs to weigh harms against benefits before introducing new gTLDs or renewing gTLD agreements.
- ICANN should establish a competitive application process, whereby prospective gTLD operators would compete by proposing registry terms, including price, for new gTLDs and for renewals.

²² http://www.ntia.doc.gov/comments/2008/ICANN_081218.pdf

- To constrain the exercise of market power, new registry agreements should include provisions such as price caps and restrictions against price discrimination, bundling, and tying.

Ordinarily, entry into a market would be expected to alleviate market power. At the very least, it would not create new market power. New entrants usually compete for customers by offering lower prices and/or improved (innovative) products and services. In the case of new gTLDs, the greater competition among gTLDs would likely mean lower registration fees for registrants and more responsiveness to their concerns, as well as the opening of new domains where generic second-level domain names (e.g., www.cars.abc) might be established. Indeed, one of the hallmarks of new competition is often the ability of entrants to offer new products and services that incumbents (and their customers) hadn't envisaged.

However, the business community and the U.S. Government are concerned that the need for registrants to purchase domain names on new gTLDs for defensive purposes would confer market power on new gTLD registry owners. For example, if .abc becomes a new gTLD and General Motors wants to avoid the possibility that someone else will register the domain name generalmotors.abc, the .abc registry owner may be able to extract a considerable price from General Motors. In essence, the new gTLDs would have the power to create potential "nuisances" that would induce incumbent registrants to pay fees so as to avoid the potentiality from becoming a reality.

This is a legitimate concern.²³ It should, however, be addressed directly, rather than indirectly by restricting competition in the TLD market and creating an artificial scarcity. Such an indirect policy would be the equivalent of restricting the supply of land available for development as a way to address a trespassing problem.

ICANN's "uniform dispute resolution policy" (UDRP) is supposed to address these problems; but if there is general agreement that the UDRP is ineffective or too slow and too costly, it can be strengthened in a variety of ways that should have as their goal faster and less

²³ One illustration of this is the substantial judgment in favor of Verizon in its suit over domain names. See http://www.nytimes.com/2008/12/25/technology/companies/25verizon.html?_r=1

costly resolutions (and that, if possible, should reduce ICANN's "judicial" role overall).²⁴ For example:

- ICANN could establish an "IP Registry" of sanctioned names that could then be restricted to their "owners."²⁵ Brand holders would bear the burden of proof, according to ICANN-defined procedures, of establishing their ownership of a brand name.
- ICANN could establish a "loser pays" policy for the UDRP, where the losing party would pay the litigation costs of the prevailing rights holder. This would provide an incentive for applicants to make sure that they weren't infringing on a trademark or copyrighted name, or at least quickly to relinquish their claim on a name when the legitimate owner made a complaint.
- ICANN could place the responsibility on the registrars to enforce these property rights and the liability to pay rights holders' costs associated with infringement. Registrars may be in the best position to perform this policing function.

Absent the problem of defensive registrations and cybersquatting, the introduction of new gTLDs would appear to be unambiguously a good thing. It would expand registrant choice and consumer choice and provide competition to existing gTLDs in an environment in which the introduction of new gTLDs is based on real economic demand, not on the ability to extract payments from companies who are compelled to register for defensive purposes.

On the assumption that the procedures for protecting brand names can be substantially improved, ICANN should adopt a relatively automatic way of introducing new gTLDs:²⁶

- ICANN should establish minimum technical and financial qualifications for registries.

²⁴ Another possibility is that markets themselves will solve the problem: Since a large fraction of Internet users use search engines to find websites with which they are unfamiliar, the owners of search engines (e.g., Google, Yahoo!, etc.) are likely to feel competitive pressures from users to guide users to a company's correct website and not a bogus site.

²⁵ See, for example, comments of corporate domain name registrar MarkMonitor on the ICANN's proposed gTLD program. <http://forum.icann.org/lists/gtld-guide/msg00130.html>

²⁶ A somewhat similar proposal is discussed in National Research Council (2005, pp. 247-248).

- Any entity meeting those qualifications should be able to apply to and be certified by ICANN to become the registry for any gTLD that is not already taken.²⁷
- The fees that ICANN charges a registry should be close to ICANN’s marginal (or incremental) costs of dealing with that registry, plus a modest contribution toward covering ICANN’s overhead costs. Fees should not be used to build large reserves or engage in cross-subsidies.

Because this process will promote competition, contracts with registries should not include price caps or other provisions designed to constrain market power.

Finances

ICANN receives its income from the registries and registrars through a series of contracts and other arrangements. The licenses—i.e., the rights to be a registry or a registrar—have substantial economic value, and ICANN is currently able to capture a portion of that value.

Revenues are growing because of the overall growth of the domain name market. Because ICANN is in the position of granting registries and registrars licenses to operate, it also has the ability to dictate the fees that they pay, so long as it doesn’t drive them out of the market.

ICANN’s growth should be limited. The cost-based fee structure suggested above would be consistent with modest growth. However, it is difficult to determine what ICANN needs and what is excessive. This is related to the accountability question. If these issues are solved, they can be solved simultaneously.

Accountability

In principle, the concept of suitable accountability for ICANN as an organization is not controversial; but it is subject to differing interpretations. ICANN has procedures to consult with

²⁷ It is quite possible that many companies and other organizations—if they were otherwise qualified—might choose to operate registries that had their own “brand name TLDs” (e.g., “.ibm”, “.generalmotors”, “.nyu”, “.redcross”, etc.; see National Research Council [2005, p. 236]) instead of gTLDs, although there may be operational issues (such as security) that might make companies and organizations prefer to buy their domain name services from a specialized registry. If, however, such self-operation of “bnTLDs” became widespread, ICANN would likely need to

the various constituencies of the Internet community. However, these constituencies have limited leverage. In our view, accountability means being accountable to external parties in a way that promotes the desired behavior.

ICANN's non-profit corporation status combined with the way that it is funded make accountability a serious problem. Profit-making corporations have a well-defined goal of maximizing value for their shareholders. They have boards of directors who are supposed to be accountable to the shareholders. Corporate management is accountable to the board as well as to the customers who need to be satisfied in order for the corporation to be profitable.

Government agencies also are accountable to external parties. In the U.S., government agencies are accountable to the courts, to Congress, and ultimately to the voters for the policy choices that they make. If agencies fail to operate in a manner that is consistent with their statutes, their decisions can be appealed to an outside party—the judiciary.

Many non-profit organizations are also accountable to external parties—their contributors—who can cease funding the organization if they find that it is not pursuing its goals in the way that they want.²⁸ ICANN's funders—the registries and registrars—can't pull their funding without going out of business.²⁹

In contrast, ICANN faces none of these constraints, and its goals are harder to define and change over time. ICANN likely has multiple internal (or implicit) goals in addition to the technical administration of the DNS. Some of those goals may be useful, but they may well also include objectives that are not socially beneficial, such as: increasing ICANN's influence on Internet policy; increasing the size of the organization; and increasing employees' compensation, perquisites, and stature.

Because of ICANN's structure, it operates with almost no oversight. Management is accountable neither to shareholders, customers, nor funders. Management is accountable to a

subcontract its dealings with these self-operated registries to a “super-registry” operator.

²⁸ Some non-profit organizations, such as hospitals and schools, also have customers to whom they are accountable.

²⁹ Below, we outline a proposal that would make ICANN accountable to its funders.

board of directors, but the board determines the rules under which the board itself operates, including the rules governing election to the board.

While ICANN has established a number of accountability procedures, they largely reflect internal policies. ICANN perceives itself to be accountable to the “global community” or the “public at large rather than any member or group of members” (ICANN 2008a, p. 5). However, being accountable to the public at large really means being accountable to no one. For example, although ICANN’s bylaws provide that certain constituencies have board seats, those board members have an obligation to ICANN, not to their constituencies. Finally, all of ICANN’s procedures, including those for electing board members, are the result of bylaws or other policies adopted by the board or the management, all of which are subject to change by the board or management. The bylaws can be amended by two-thirds vote of the board, and other procedures can be changed more easily.

The only factors that make ICANN accountable to external parties are its ties to the DOC—the JPA between ICANN and the DOC, and the contractual relationship between IANA and the DOC.

LESSONS FROM OTHER MODELS

In this section we summarize the operations and structures of a number of other organizations that perform a range of private-sector and quasi-governmental coordination and standard-setting functions, to explore what might be applicable to ICANN.³⁰ In particular, we are interested in how these institutional structures address accountability, which is the major issue for ICANN.

We have reviewed the operations and structures of the following nine organizations:

1. The American National Standards Institute (ANSI) coordinates the standard-setting process for a wide range of standards. It is a non-profit organization governed by a 50-

³⁰ More detailed descriptions of the operations of these organizations can be found in the appendix.

member board elected by the ANSI dues-paying member companies. ANSI earns additional revenue by selling its standards. ANSI standards are voluntary, and it operates independent of government oversight.

2. The Depository Trust and Clearing Corporation (DTCC) is the centralized clearinghouse for most securities traded in the United States. DTCC is owned by its principal users—banks, brokerages, and exchanges—and receives transactions fees from its customers. Although it is a for-profit company, it returns any surplus over costs to its customers. Its board of directors consists primarily of representatives of the major firms that use DTCC to clear securities. Several regulatory agencies, including the Securities and Exchange Commission (SEC), the Board of Governors of the Federal Reserve System, and New York banking regulators, have oversight responsibilities.
3. GS1 US (formerly the Uniform Code Council) coordinates product identification and transmission systems, such as bar codes and RFID tags. It is a non-profit organization governed by its users, including manufacturers and retailers. It is funded by users in proportion to sales revenue and is not subject to regulatory oversight (although it is subject to the U.S. antitrust laws).³¹
4. The International Telecommunications Union is an organization that performs a variety of international telecommunications coordination functions. It is a specialized agency of the United Nations, with member states and member companies from the telecommunications industry (broadly defined).
5. The National Automated Clearinghouse Association (NACHA) sets standards for nationwide payments exchange networks. NACHA is a not-for-profit association composed of representatives of the banks and payment processors that use the automated clearinghouse system. NACHA members are regulated by the Federal Trade

³¹ See Brown, 2006, pp. 51-55, 66-67.

Commission, the Federal Reserve Board, the U.S. Treasury Department, the Office of the Comptroller of the Currency, the Office of Foreign Assets Control, and various state and local banking authorities.

6. Nav Canada owns and operates Canada's nationwide air traffic control system. Nav Canada is a non-profit organization and relies on income from user fees. It is governed by a board of directors with representatives from the major users—the commercial airlines and general aviation—as well as the Canadian government and Nav Canada employees. Transport Canada, the Canadian airline regulator, has regulatory authority over Nav Canada.
7. The North American Numbering Plan Administrator (NANPA) oversees the telephone numbering system for 19 North American countries, including Canada and a number of Caribbean nations, but not including Mexico and Central America. Since 1997, NeuStar, a publicly held corporation, has been the NANPA under a contract from the Federal Communications Commission (FCC).³² This contract is awarded by competitive bidding every five years.
8. The Options Clearing Corporation (OCC) performs a clearing function similar to the DTCC for equity derivatives traded on major options exchanges. OCC is owned by five major options-trading exchanges. Its board consists of representatives of the exchanges and brokerage firms. The SEC and the Commodity Futures Trading Commission (CFTC) have oversight responsibility.
9. The Universal Postal Union is an international organization established by treaty to harmonize postal standards. It is an agency of the United Nations and is governed by representatives from its member governments.

There are several major lessons to be learned from these models, which span a fairly wide range of activities. None of them operates with ICANN's independence. In virtually all cases,

³² NeuStar also provides registry services for several TLDs, including .biz and .us.

the organizations—both non-profit and for-profit—are governed by their users. In addition, in virtually all cases, there is some form of government oversight.

ANSI and GS1 US are both voluntary standard setting bodies. Like ICANN, they are non-profits and are funded in various ways by their users. Unlike ICANN, however, they are also governed by their users. Their users are both their customers—ANSI and GS1 US sell their standards—and their governors. This structure assures substantial accountability.

NACHA and Nav Canada are also non-profits governed by their users (Nav Canada also has representation from labor and the government), but perhaps in a different category than ANSI and GS1 US because of their market power. An airline operating in Canada, for example, has no choice but to deal with Nav Canada. But these organizations also are subject to regulatory oversight, which provides another layer of accountability.

DTCC and OCC are for-profit organizations, although their goal is not to maximize profits. They are owned by their users, a structure that yields incentives similar to a non-profit governed by its users. In addition, both organizations are overseen by a number of financial regulatory agencies.

In some respects, the closest analog to ICANN in terms of its function is NeuStar, which operates the North American Numbering Plan. NeuStar is a for-profit company, which operates under a contract with the FCC. It is required to compete for the contract every five years, and thus is accountable to the FCC.

The International Telecommunications Union and the Universal Postal Union are international organizations, accountable to their member governments. Their principal reason for being is to coordinate interconnection between national telecommunications and postal systems (respectively), although (particularly in the case of the ITU) their activities have expanded over the years.

Each of these organizations (except for the ITU and UPU) is either governed by its users, subject to external regulatory oversight, or both.³³ Thus, each of them has considerably more accountability to external parties built into its structure than does ICANN. We think that the incentives provided by the user-governance framework are quite positive, particularly for an organization that does not face competition.

There is no organization that operates with the independence that ICANN enjoys even under the current arrangement of nominal oversight by the U.S. Department of Commerce, to say nothing of ICANN's proposal for complete "privatization" and the termination of the DOC's oversight.

OPTIONS FOR ICANN GOVERNANCE STRUCTURE AND ACCOUNTABILITY

After reviewing these models, we believe that there are four options for ICANN's governance structure and accountability:

1. The status quo. Under this option, ICANN would retain its current structure, including the MOU and IANA's contract with the Department of Commerce. This system, while not ideal, has worked tolerably well over the years. It retains some external accountability, although the accountability to the U.S. Government is weak and the U.S. Government cannot always be counted on to provide the right guidance. Retaining the tie to the U.S. Government would not be popular in many other countries.
2. Complete transition to the private sector. Under ICANN's preferred alternative, the JPA and ICANN's tie with the Department of Commerce would be allowed to expire. The contract with IANA would continue, but its future status would be uncertain. This option would diminish (and perhaps eventually eliminate) the very limited external accountability to which ICANN is now subject. Breaking the tie with the U.S. Government would be popular internationally.

³³ The ITU and UPU are accountable to member governments, which in a sense are their users.

3. Place ICANN under the oversight of an international organization, such as the ITU.

Under this arrangement, ICANN would presumably have a contract or some type of memorandum of understanding with the ITU. This contract could be re-competed periodically, as in the case of NeuStar's contract to operate the NANP.

This third option might be popular with constituencies who believe that the U.S. now has disproportionate influence. However, its disadvantages outweigh that advantage. The Internet is a rapidly changing environment, and it needs a governance structure that can respond accordingly. International organizations, which usually require agreement among a large number of governments, are by their nature slow moving. Such a governance structure might seriously impede the development of the Internet.

In addition, the postal and telecommunications systems that are coordinated by the UPU and ITU, respectively, are quite different in nature from the Internet. There are well-defined national postal and telecommunications systems, and there was a need to coordinate so that mail and telephone calls could go from one country to another. There are no national internets. Thus, the coordination and governance functions are quite different.³⁴

4. Modify ICANN's governance structure. Virtually all of the organizations that we have surveyed (as summarized above) are governed by their direct users, and we believe that this would be a good model for ICANN as well. Therefore, we suggest modifying ICANN's governance structure so that it is governed by its direct users—the registries and the registrars—rather than by the vaguely specified “Internet community” at large.³⁵ Seats on the board of directors could be rotated among the major operators in a manner that would reflect the diversity of viewpoints among registries and registrars. ICANN would maintain its non-profit status to protect against the operators' trying to exercise

³⁴ The National Research Council (2005, pp. 192-195) similarly takes a dim view of having the ITU or an international organization more generally take control of the DNS system.

³⁵ The National Research Council (2005, pp. 208-210) discusses a somewhat similar proposal (its “Alternative C”) as a possible restructuring for ICANN's governance.

market power through ICANN.³⁶ In addition, ICANN would be subject to the U.S. antitrust laws.

This approach, though a radical departure from the status quo, has some potentially significant advantages. It goes a long way toward solving the accountability problem. The registries and registrars have a strong incentive to assure that ICANN fulfills its responsibilities efficiently and with budgetary discipline. Its incentives in this respect would seem to be aligned with the ultimate end users of the Internet—businesses and individuals.³⁷ Since ICANN would be a non-profit organization, it would be unlikely to generate monopoly profits for the registries or the registrars through excessive fees; and these entities, as the governors of ICANN, should object to excessive ICANN fees that are absorbed through perquisites and emoluments by ICANN’s employees.³⁸ Further, with an ICANN charter that would embody a strong presumption of encouraging greater competition among a large number of registries,³⁹ and with a large and growing number of registries, incumbent registries would be unlikely to find worthwhile any efforts to use ICANN as a vehicle for restricting the entry of further registries.⁴⁰

Because it has its own external accountability built in, this structure could also allow for ending the ties with the U.S. Government, which are imperfect means for providing accountability and which are unpopular internationally. However, we recommend that the new structure be permitted to operate for a while before severing those ties.

³⁶ The exercise of market power by the registries as owners of a for-profit ICANN could occur through ICANN’s levying a (profit-maximizing) fee on registrations and then distributing the resulting profits to the owners under a formula that did not mimic their registrations. See, for example, Lewis and Reynolds (1979).

³⁷ We recognize that a whole range of entities, including individuals and businesses, are users of ICANN. However, their use of ICANN is intermediated through the registries and registrars just as any individual’s use of organizations such as ANSI and GS1 US is intermediated through manufacturers and retailers.

³⁸ Earlier in this report we recommended that ICANN should adopt a less regulatory stance, with an emphasis on relatively open entry into gTLDs and fees that are close to marginal costs. That stance would be consistent with the governance structure that we recommend.

³⁹ In this context, we again emphasize the importance of establishing a quick and low-cost way for established trademark holders to protect their intellectual property and prevent cybersquatting and other nuisance registrations on new registries, so that the benefits of greater competition are not undercut by nuisance costs.

⁴⁰ In this respect, the experience of GS1 US is instructive. The ability to attach barcodes (for a new manufacturer of consumer goods) and to scan barcodes (for a new retail chain) is surely a necessity for either category of entrant; but we are aware of no efforts by GS1 US governors (manufacturers or retailers) to restrict barcode use by rivals. Instead, the ethos of the organization has been to expand the use and usefulness of the barcode as widely as possible. See, for example, Brown (1997).

Since we envision an eventual ending of the restructured ICANN's ties with the U.S. Government, we also do not envision formal ties between other governments and ICANN (and thus would not allot seats on ICANN's board of directors to representatives of governments). It is worth remembering, in this context, that most of the ccTLDs maintain only informal coordinating connections with ICANN (unlike ICANN's formal contractual relationships with the gTLD registries and registrars) and do not make any regular payments to ICANN (again, in contrast to the gTLD registries and registrars). Perhaps, however, an advisory committee (to ICANN) of interested governments could be established.

CONCLUSION AND RECOMMENDATIONS

No organization compares to ICANN either in terms of global reach or institutional structure. ICANN has operated under a series of agreements with the U.S. Government and now wants to complete its transition to the private sector. Under its current structure, however, it has limited accountability to its users or, for that matter, to anyone else. If it were to complete its transition, it would have even less accountability. This leads us to the following interrelated recommendations:

- The JPA with the Department of Commerce should be extended in some form, until our recommended changes in governance have become established. If such changes in governance are not adopted, the JPA (and its extension) becomes even more important in providing for some external accountability.
- ICANN's governance structure should be modified in order to increase its accountability. Specifically, ICANN should remain a nonprofit organization, but it should be governed by and accountable to its direct users: the registries and the registrars. The seats on ICANN's board could be rotated among the major operators in a manner that would reflect the diversity of viewpoints among the registries and registrars. All of the organizations that we have studied that have some comparability to ICANN are governed by their direct users—that is, companies who purchase services—and not just a broad

“community” of people who might have some interest in the organization. This focused governance by direct users would be a good governance structure for ICANN as well.

- ICANN should have a clear mission to encourage competition and should therefore take a far less regulatory approach in its policies with respect to the designation and creation of new generic top-level domains (gTLDs). ICANN should establish minimum technical and financial standards for registries and then let any qualified entity establish any gTLD that is not already taken.
- This approach needs to be combined with improved protections for incumbent domain name holders, so as to avoid existing website registrants’ being held up for “ransom” by the registries of newly established gTLDs. There are several possibilities that should be explored, including adopting an IP registry and reforming the uniform dispute resolution policy (UDRP).

These four recommendations are complementary. In combination, they would significantly further the goals of Internet efficiency and innovation.

APPENDIX: DESCRIPTIONS OF OTHER MODELS

American National Standards Institute (ANSI)

The nonprofit American National Standards Institute coordinates the standards-setting process in the United States, by overseeing the development of uniform specifications and technical standards used by businesses, government, and researchers. ANSI curates a collection of documents outlining specific standards for things as varied as the size of manufactured parts, the terms for different components of programming languages and business processes, and methods of measurement for scientists and engineers. These standards help solve coordination problems among firms and ensure that new technologies are interoperable. ANSI sells its standards to the public, which uses them for designing and developing new products.

In addition to maintaining existing standards, ANSI helps its members write and approve new ones, primarily by accrediting and coordinating a network of small industry-based groups that submit standards to ANSI for approval. ANSI does not certify or assess products, but does accredit third-party certification agencies. ANSI also represents the United States as a member of international standards organizations, such as the International Organization for Standardization (ISO) and the International Electrotechnical Commission.

Although ANSI's standards are theoretically voluntary and agreed upon by consensus from those who use them, lawmakers and government agencies often refer to standards when writing regulations. For example, Lazzara (2004) notes that federal workplace safety regulations require machinery to comply with ANSI's B7.1-1970 standard on safety guards. This can make regulations more flexible, since ANSI regularly updates its standards, but it also gives a non-elected private body the power to make rules backed by the de facto force of law. Similarly, private entities often reference ANSI standards in legal contracts.

Structure

ANSI's domain is huge, and its structure is complex. According to Bhatia (2005), the standards-drafting process is meant to be a "bottom-up" effort in which various private consortia create their own standards and present them to ANSI for approval, but ANSI's basic structure is a

complicated hierarchy. A 50-member board of directors nominated by the ANSI membership has ultimate authority and oversees four “member forums,” five “standards panels,” and three committees. These bodies oversee 11 subcommittees, which in turn oversee six sub-subcommittees, which oversee 15 member committees, each responsible for a different domain of ANSI’s responsibility—the standards process, accreditation, intellectual property, international standardization, and interaction with other standards organizations (ANSI 2009). With the exception of a team of executives and about 90 employees in charge of running the ANSI administration, ANSI members volunteer or are nominated to staff these committees.

In practice, most of ANSI’s many committees operate independently, with each one responsible for a different, self-contained area of responsibility—things like accreditation, intellectual property rights, and developing international standards. Higher-level committees meet much less frequently than do lower-level ones, and many operate without physically convening, by mailing ballots to voting members.

To create a new standard, an outside party like an industry consortium, professional society, or public interest group first submits a proposal for a standard to ANSI. Alternatively, proposals may come from one of ANSI’s five “standards panels,” established to focus on new markets and technologies that are identified as priorities. As of early 2009, there are panels focusing on homeland security, nanotechnology, health IT, identity theft, and biofuels. An ANSI committee reviews the proposal, and if approved, sets up a “working group” to write a full standard. ANSI usually appoints the author of the proposal to head the working group, which includes ANSI members who are experts in the area addressed by the standard—for example, a past audio standard working group was staffed with an audiologist and a representative from the audio industry (see Burkard 2004). Once standards are drafted, they are presented via ANSI’s various committees to both the public and ANSI members affected by the standard, for comments and revision. Ultimately, all ANSI members may vote on a standard, and if there are few “no” votes, consensus is assumed and the standard approved.

ANSI has several membership categories: companies, government agencies, scientific organizations, educators, international organizations, and individuals. Organizations may join as

basic members, allowing them one representative per membership to sit on one of ANSI's many committees and vote on relevant standards. Alternatively, they may pay extra and join as full members, allowing them unlimited representation within ANSI.

ANSI is incorporated as a 501(c)(3) nonprofit organization. It sells standards not for profit, but in order to cover their development costs. New members pay a membership fee, and all members pay annual dues.

Accountability

ANSI standards are voluntary, so the organization is ultimately accountable to its membership and the forces of the marketplaces in which its standards are applied. ANSI does have an internal appeal process for members that object to specific standards or provisions, and asks for public comments as part of the standards-drafting process. Committees are also encouraged to seek a broadly defined consensus rather than majority rule, making the process of setting standards longer but more inclusive. To a degree, ANSI is internationally accountable to multinational standards-creation organizations, such as ISO; but although they seek to “harmonize” standards, their decisions remain voluntary like ANSI's own.

Government sometimes chooses to adopt ANSI standards as regulatory requirements rather than delegating regulatory power. Both the Occupational Safety and Health Administration and the Consumer Products Safety Commission have referenced ANSI standards in regulations, but they do not appear to have influenced ANSI to approve particular standards beyond the scope of government representation in the normal standards-drafting process.

Depository Trust & Clearing Corporation (DTCC)

The DTCC is a holding company created in 1999 by the U.S. Securities and Exchange Commission (SEC) to combine the functions of the Depository Trust Company (DTC), which stored securities and recorded trades, and the National Securities Clearing Corporation (NSCC),

which cleared and settled equity exchanges.⁴¹ Today, DTCC is a centralized clearinghouse for nearly all securities traded in the United States, including stocks traded on the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX), and the NASDAQ exchange, corporate bonds, government securities, mortgage-backed assets, and a variety of other financial instruments.

The clearing services that DTCC's six subsidiaries provide are a crucial component of the capital markets. They encourage exchange by acting as an intermediary ensuring that shares get to buyers and cash to sellers, lower risk by guaranteeing trades against default, and lower transaction costs by "netting out" trading obligations and increasing trading capacity.

The market for equity clearing was once much more fragmented. In the early 1970's, most regional exchanges relied on separate, independent clearing and settlement services. Over the next few decades, however, two factors drove the industry to consolidate: rapid increases in trading volume drove redundant and inefficient firms out of business (many of them destroyed by mounting piles of records and paperwork), while regulators from the U.S. Securities and Exchange Commission "sought to encourage the creation of a unified national market mechanism" for clearing securities (NACHA 2006). Today, that mechanism is in place—DTCC provides clearing and settlement "for virtually all trades" made in equity markets in the United States.

Structure

DTCC's principal users—brokerages, banks, and exchanges—co-own the company, which is organized much like any other corporation. Although it is a for-profit enterprise, DTCC attempts to operate at cost, and returns profits from transaction fees to customers and member firms. In a questionnaire conducted by the Bank for International Settlements (2002) the DTCC reports that participants "are allocated entitlements to purchase the common stock of DTCC based upon their usage of all five registered clearing agencies," although they are not required to own shares to use DTCC services.

⁴¹ DTC and NSCC have remained as subsidiaries of DTCC.

A 21-member board of directors oversees DTCC. Seventeen members represent the major firms that use DTCC to clear securities transactions. The NYSE and the Financial Industry Regulatory Authority (FINRA), an independent non-governmental regulator for U.S. securities firms, are designated “preferred shareholders” and appoint one member each. DTCC’s chief executive officer and president fill the remaining two seats. With the exception of the two preferred appointees, all members are elected annually, nominated by shareholders “based on their ability to represent DTCC’s diverse base of participants” (DTCC 2009). These directors also oversee each of DTCC’s six subsidiaries, which offer similar clearing services in various markets, including the exchange of government securities and mortgage-backed assets. Each subsidiary has its own board-appointed management team, which handles day-to-day operations of the firm.

Accountability

DTCC is internally accountable to the member firms that hold its shares, and externally accountable to several regulatory agencies. As a limited purpose trust company under New York State banking law, a registered clearing agency with the SEC, and a member of the Federal Reserve System, DTCC is externally accountable to regulation by the New York State Banking Department, the Board of Governors of the Federal Reserve, and the SEC. NSCC is only a registered clearing agency, and thus only regulated by the SEC. Other subsidiaries are also subject to SEC regulation.

The New York State Banking Department audits DTCC annually, and the Federal Reserve has the authority to set margin requirements for users of some services, but the SEC is by far the most important regulator of DTCC and its subsidiaries. Under SEC rules, DTCC is considered a “self-regulating organization” (SRO) and given a large degree of autonomy in creating its own internal rules and procedures—at least in principle.

The relationship between the SEC and its self-regulating organizations is a particular form of federalism. Under the Securities Exchange Act of 1934, the SEC “has regulatory authority over the clearing and settlement of all equities and equity options” (US Congress OTA 1990) and the power to “abrogate, add to and delete from” internal rules (Oesterle 2000)—

essentially all-encompassing power to set its own rules for securities clearinghouses. However, SEC regulators delegate most of this power to the clearinghouses themselves. In practice, DTCC makes its own internal rules regarding risk, collateral, membership, and margin. The SEC's job is to regulate from a distance, as McCaffrey (1998) puts it, "by establishing principles to which the SRO's must adhere, by evaluating the SRO's surveillance and supervisory systems, and by nudging them in particular directions desired by the SEC." The threat of intervention is intended as an incentive for SROs to develop rigorous internal rules and standards on their own. But if internal regulatory schemes fail to meet muster with federal regulators, "the SEC can impose their own system," a scenario described by one SRO official as "the ultimate threat."

Thus, DTCC "is an example of a quasi-self-regulating system, in that nothing in the law prevents a second organization from being formed to compete with the DTCC to provide either depository or clearance services," but the firm is still "recognized and approved for its activities by the SEC," a regulatory design that advocates contend "produces an equilibrium of efficiency and security" (Borden 2002). On the other hand, this brand of self-regulation is far from a non-interventionist policy. Over the last several decades "the SRO system has steadily evolved away from the pure form rooted in the 1934 Act toward a system of more overt SEC intervention" (Oesterle 2000) and although the SEC does not necessarily need to intervene to put its preferred rules in place, it often pressures SROs to "voluntarily" adopt its guidelines. For example, in 2007, the SEC intervened to create new regulations on "naked" short selling, despite opposition from DTCC reported by the *Wall Street Journal* (July 5, 2007).

Internally, DTCC is accountable to the member firms that hold its shares and fill seats on its board of directors. Member firms must comply with its rules and procedures: a detailed code covering the obligations and process of securities clearing and exchange. The board of directors must approve rule changes and submit them to the SEC for publication in the *Federal Record*.

International Telecommunication Union (ITU)

The International Telecommunication Union is the second-oldest international organization still in existence. It was founded as the International Telegraph Union in 1865, but

has since been renamed and now operates as a specialized agency of the United Nations. The Geneva-based group seeks to “enable the growth and sustained development of telecommunications and information networks,” and to facilitate universal access to the “emerging information society” (ITU 2009a). In practice, this mission translates into three key functions: 1) promoting telecommunications standardization across borders, 2) managing the world’s radio-frequency spectrum and satellite orbits, and 3) supporting the growth of telecommunications in developing nations. ITU has played a pivotal role in the evolution of modern communication by leading the global community in its efforts toward seamless and interference-free integration of connections.

Structure

As might be expected of such a large and enduring agency, ITU has an extensive and complicated bureaucracy and procedures. At its base the organization is a collection of member states, which are nations whose officials have acceded to the ITU constitution and convention, and “sector” members and associates: private companies or other organizations that contribute to its groups and meetings. The Union is comprised of 191 member states and over 700 other participants

At its highest level the agency is led by the Plenipotentiary Conference. This is the meeting of states that determines ITU’s direction by making strategic and financial plans, setting general policies, and choosing senior management to head the organization for four-year terms (until the next conference). The proceedings include electing the Council—a supervisory group of no more than 25 percent of the total members states, which is elected by the field of states “with due regard to the need for equitable distribution of ... seats among the five world regions”—as well as the secretary- and deputy secretary-general (ITU 2009b).

Beneath its top-level bodies ITU is divided into three core “sectors” that mirror the Union’s aforementioned directives: the Telecommunication Standardization Sector (ITU-T), the Radiocommunication Sector (ITU-R), and the Telecommunication Development Sector (ITU-D). Each is led by a director (who is elected at the Plenipotentiary Conference) and operates its own assembly, advisory board, and study groups in order to propose and agree upon policy within its

area of expertise. It is at this lower level that sector members and associates have direct say; ITU's "Recommendations" (always capitalized) are primarily developed by specialists from such organizations working in its study groups. These Recommendations range from decisions on new standards for telecommunications networks, to regulations and regional agreements for efficient and effective radio transmissions, to advice for nations with less-developed telecom infrastructures. Once the experts of a study group consider a Recommendation draft mature, it must be given "consent" by the study group in general, and then pass a period in which it is open to review by the remainder of ITU participants. Even if it passes the approval period unchallenged, such a pronouncement is not mandatory until signed into law by member states. Nevertheless the ITU-T (for example) reports a high level of compliance with its Recommendations due to their "international applicability" along with the "high quality guaranteed by the ITU-T's secretariat and members from the world's foremost ICT companies and global administrations" (ITU 2009c).

Accountability

ITU is accountable most directly to its member states as these are the entities that set its policy discussions and select its leaders. Though affiliated with the United Nations, ITU stands under its own constitution and even accepts states without UN membership if two-thirds of the members approve of the entry. On the other hand, this affiliation does submit ITU to the UN's "common system" of financial, human resources, and information system regulations, and allows the UN and other specialized agencies to attend Union functions as observers (MacLean 2007). The organization is funded by its various participants, who are given some degree of freedom to choose the amount of their contribution, though requirements are ultimately commensurate with the privileges of membership level; member states are expected to pledge most, and associates the least (MacLean 2007). ITU attempts to remain neutral by yielding its highest offices to the majority-decisions of states with equal votes, and by allotting Council positions in relation to the Union's various regional constituents. Additionally, in that the specific business of each of the three sectors is open to debate by companies and other interested parties provided they are willing to pay membership fees or obtain a waiver, ITU is accountable to the most active and vocal agents in its relevant fields.

National Automated Clearinghouse Association (NACHA)

The National Automated Clearinghouse Association is the rulemaking body governing automated clearinghouse (ACH) payment networks in the United States. Several regional ACH associations combined to form NACHA in 1974, when they agreed to set standards for nationwide payment exchange between their own networks. Originally designed to cut down on the amount of paperwork necessary to track and account for checking transactions, the ACH system has since developed into an automated nationwide electronic payment system (NACHA 2006).

Today, the ACH system is an integral piece of financial infrastructure. Debit card transactions, ATM withdrawals, online billing, automated tax payment, Social Security and child support benefits, bank-to-bank transfers, and direct deposit systems all rely on the ACH network, and new payment innovations using the ACH system are rapidly emerging on the Web. Payments that do not involve cash, a paper check, or a credit card are transmitted through the ACH system. The association reported in 2008 that in the previous year its network processed about 18 billion payments, with payment volume continuing to increase at a steady 10-12 percent annually (NACHA 2008).

Two ACH operator networks offer interbank clearing in the United States: The Federal Reserve operates the first, which processes about 60 percent of all ACH transactions (Mott 2006). The Electronic Payments Network, the only private ACH operator in the U.S., processes the rest. Banks, credit unions, and other depository institutions connect their own ACH-enabled systems to one of the two interoperable networks.

Structure

Unlike DTCC and the Options Clearing Corporation (OCC),⁴² which are for-profit corporations, NACHA is a not-for-profit association composed of representatives from the banks and payment processors that use the ACH system. The organization is governed by a 16-member board of directors that delegates management authority to executives (NACHA 2009b).

⁴² See the description of OCC below.

Rulemaking is not the exclusive domain of the directors. Instead, the board oversees a Rules & Operations committee, which vets rules proposed by individual NACHA members. This committee is composed of 13 board-approved members, plus non-voting representatives from the Federal Reserve, the U.S. Treasury, and the two ACH networks. Any NACHA member, along with any federal regulator or either of the ACH network operators, may submit a written rule proposal to the Rules & Operations committee, which will accept the proposed rule and pass it on to another committee or a vote of the NACHA membership, ask for clarification, or reject it (NACHA 2009c).

If accepted, the committee evaluates the rule's potential impact on the ACH network and places it into one of four categories. The Rules & Operations committee refers "Category A" changes—those with a significant economic impact on the ACH network, like new products, changes in network standards, and major rule changes—to a 15-member Product Group committee composed of NACHA members, and a 20-member Industry Support Group composed of third-party users of the ACH network. Meanwhile, the Rules & Operations committee accepts public comments from industry representatives. Both bodies evaluate comments and approve the proposed rule before passing it on to NACHA members for a vote.

The committee assigns "Category B" changes, which have a "moderate" impact on the ACH network, to a Category B Rules Work Group, a subsidiary committee that may include up to 20 representatives drawn from NACHA's membership, plus one representative from each of the two ACH operators. The Rules & Operations committee classifies most new rules and regulations as Category B. They also accept industry comments and evaluate the proposal before passing it on for a vote. The committee assigns "Category C" changes to identical work groups, but does not solicit industry comments. These changes cover minor rule alterations, including clarifying the intent of a rule or fixing incompatible software between networks. "Category D" changes are simply approved or rejected by the Rules & Operations committee, and cover the most minor rule changes, like correcting typos and grammar errors.

Ultimately, NACHA members vote on all proposed rules. Voting membership requires approval from the board of directors and payment of a \$5000 annual fee. Banks do not need to

be NACHA members in order to access the ACH system, but they must be NACHA members in order to propose and vote on rules. Moreover, regardless of membership, all users of the ACH system agree to comply with NACHA's operating rules, which outline potential fines and arbitration requirements for violators.

In addition to rulemaking, NACHA runs educational programs on ACH rules, markets electronic payments to banks and other financial firms, and serves as the public face of the ACH network.

Accountability

NACHA and the ACH network are subject to more federal regulatory oversight than are the clearinghouses in the securities markets. NACHA members are externally regulated by the Federal Trade Commission, the Federal Reserve, the U.S. Treasury, the Office of the Comptroller of the Currency, the Office of Foreign Assets Control, and various state and local banking regulations. However, most regulators work within NACHA's governance system. Since Federal regulators are represented on NACHA's rulemaking committees and have the authority to propose rules, they generally choose to regulate through NACHA's internal process.

Internal accountability comes from a system of self-regulation backed by fines. The NACHA "National System of Fines" relies on the NACHA members, along with the public, to police ACH users for violations of the NACHA operating rules. Any party to a transaction that may be in violation of NACHA's rules may report it by submitting a report and a statement of facts to NACHA, both of which are available online. These reports are referred to a Rules Enforcement Panel that has the authority to issue a warning letter or impose a fine on any ACH user that has violated the rules (fines are, of course, immediately paid via ACH transfer). This panel is not independent from NACHA—like its other committees, it is composed of "representatives from ACH Operators, financial institutions, regional ACH associations, NACHA and NACHA Affiliate Members." It is unclear whether there are rules in place to prevent potential conflicts of interest on the Rules Enforcement Panel, which has ultimate authority over all fines and discipline decisions. Additionally, the NACHA rules require periodic

self-audits by each member. More detailed rules are available to NACHA members, but they are proprietary and must be purchased as part of a NACHA membership.

Nav Canada

Nav Canada is the private corporation that owns and operates Canada's nationwide air traffic control system. In the 1990s Canada's government-owned air traffic control system faced a number of problems, including "rigid personnel and procurement systems, micromanagement, budgetary constraints, and conflict of interest" (Poole 1997). After several years of negotiations and policy proposals, both government and the aviation industry agreed to reorganize Canadian air traffic control as a private nonprofit enterprise; in 1996, Nav Canada purchased Canada's air traffic control system from the Canadian government for \$1.1 billion (Turner 1996). Today, Nav Canada continues to operate as a not-for-profit, non-share capital corporation financed entirely by publicly traded debt and user fees.

Structure

A board of 15 directors oversees Nav Canada. The board is designed to represent the four stakeholders in the firm's services: the Canadian government, commercial airlines, general aviation firms, and Nav Canada employees. Commercial air carriers, represented by the Air Transport Association of Canada, appoint four directors. The Canadian government appoints three directors, labor unions representing the employees of Nav Canada appoint two, and the Canadian Business Aviation Association appoints one. This subset of ten appoints four independent directors, and the full board appoints a CEO to sit on the board and to lead the Executive Management Committee, which runs the firm's day-to-day operations. Although these four major stakeholders govern the company, they do not own any equity in it—all operations are financed by issuing public bonds.

Since Nav Canada is designed to have no shareholders, but instead to rely on tradable debt and income from user fees, in theory the firm "will not seek to make a profit...only to cover its costs, and—in the interests of its stakeholders—to keep those costs to a minimum" (Poole

1997). This not-for-profit structure is meant to prevent the firm from being regulated as a monopoly, since it precludes Nav Canada from monopoly pricing.

Accountability

Transport Canada, the Canadian government agency that regulates commercial airlines, also has regulatory authority over Nav Canada. Before being privatized Nav Canada was part of Transport Canada, and both agencies continue to work closely (Hoover's 2009). Internally, Nav Canada's governance structure ensures that it is accountable to its four major stakeholders. Their competing shares of influence on the board of directors are intended to check and balance each other, although the individual proportions of influence are asymmetric (McDougall 2003). In addition to the structure of the board, an internal corporate governance committee is responsible for performing audits and drafting internal regulations.

North American Numbering Plan Administrator

In 1947 AT&T, then the major provider of long-distance telephone communications in the United States, designed the North American Numbering Plan (NANP) to simplify long-distance calling between U.S. states and across the border to Canada. The NANP system established the format for telephone numbering used today, including a comprehensive area code system that replaced the older system of exchange numbers. Today, the phone systems of 19 North American countries follow the guidelines of the NANP, including Canada and a number of Caribbean island nations. Mexico and Central America are not part of the NANP.

Structure

From 1947 until the 1980s, AT&T administered NANP. After AT&T was broken up in the 1980s, Bellcore (an R&D firm established by the Regional Bell Operating Companies to replace the Bell Labs) was in charge of the NANP. However, concerns about the neutrality of a universal numbering plan owned by a consortium of telecom companies directly benefiting from favorable number assignments led to a provision in the 1996 Telecommunications Act instructing

the FCC to appoint a third party as the NANP administrator. The FCC awarded this contract to defense contractor Lockheed, which spun off its NANP division into an independent company called “NeuStar” in 1997 to avoid a conflict of interest of its own. NeuStar has been the NANP administrator since 1997.

As NANP administrator (NANPA), NeuStar “holds overall responsibility for neutrally overseeing the assignment and use of NANP numbering resources” among the participants in the NANP. Within the United States, NANPA is also responsible for planning for area code expansions, collecting usage data, and forecasting the future use and growth of particular area codes. Outside the U.S., governments usually assign these responsibilities to a regulatory agency, a dominant phone operator, or a private corporation. Beyond its capacity as NANPA, NeuStar provides a number of other supplementary network and telecommunications services.

NeuStar is a publicly held corporation, governed by a nine-member board of directors elected by its shareholders and managed by executives appointed by the board.

Accountability

NANPA is primarily accountable to the FCC. According to NANPA, “In making assignment decisions, NANPA follows regulatory directives and industry-developed guidelines” (Neustar 2009). These directives and guidelines are either direct instructions from the FCC, or FCC-approved “comprehensive technical requirements” proposed by the telecom industry. These regulations are meant to ensure that NeuStar is neutral in its capacity as NANPA. The firm is also subject to yearly neutrality audits by the FCC. One other measure of accountability is the fact that NANP administrators must reapply to the FCC and undergo a competitive bidding process every five years—at least, in principle. In the second quarter of 2008, the FCC extended NeuStar’s current contract by six months.

Options Clearing Corporation (OCC)

The Options Clearing Corporation (OCC), established in 1973, serves the same purpose as DTCC in the market for financial derivatives—guaranteeing, clearing, and settling options trades. OCC clears and settles the exchange of equity derivatives on major options-trading exchanges like the American Stock Exchange (AMEX) and the Chicago Board Options Exchange (CBOE). By controlling membership standards and setting margin requirements, OCC has some degree of rulemaking authority over the participants in options exchange. It also actively seeks to educate brokers and lawmakers about the fundamentals of options trading, and in this capacity it is more similar to a trade organization than a for-profit corporation.

Structure

Five options-trading exchanges own equal shares in OCC: AMEX, CBOE, the International Securities Exchange, the Pacific Exchange, and the Philadelphia Stock Exchange. Like DTCC, it returns its profits to member firms. Unlike DTCC, however, it is not the only centralized clearinghouse for options. Both the Chicago Mercantile Exchange and the Chicago Board of Trade have their own in-house options clearing agencies, and although both primarily clear options on futures contracts, there is overlap between clearinghouses in some foreign exchange and futures options.

A fifteen-member board of directors governs OCC. One seat is filled by the CEO and chairman of the board, one by a public director, and the remaining thirteen by representatives of member exchanges and brokerage firms, elected by shareholder exchanges for staggered three-year terms. The board entrusts day-to-day management to a team of appointed executives.

Accountability

OCC is internally accountable to its member firms and externally accountable to both the SEC and the Commodity Futures Trading Commission (CFTC), which share jurisdiction over different aspects of its financial activity. The primary external regulator is the SEC.

Like DTCC, OCC is a registered clearing organization with the SEC. Likewise, OCC is considered a self-regulatory organization, allowed to follow its own internal procedures but potentially subject to SEC (or in some cases CFTC) intervention. OCC's most basic internal rules are stringent margin requirements, along with required registration and review plus capital requirements for potential members. Like DTCC, the board of directors of OCC must approve rule changes and submit them to the SEC.

Universal Postal Union

The Universal Postal Union is similar to the ITU in age, institutional affiliation, and mission. The 1874 Treaty of Berne established a "General Postal Union" to draft standards for exchanging mail between nineteen European nations plus Egypt, Turkey, and the United States. As more nations adopted these postal standards, the General Union became a universal one, dedicated to harmonizing postal standards through diplomatic agreements between its members. In 1948, the UPU became an official agency of the United Nations.

Structure

All member states of the United Nations may accede to the UPU, and all but four (all of them Pacific micronations) participate in the Union. Delegates from each member country make up the UPU's highest authority, the Universal Postal Congress, which meets every four years to draft rules and policies regarding international mail. Delegates to the UPC are generally diplomats and bureaucrats sent by member governments—for example, the State Department (2003) reports that the United States usually sends foreign service officers as well as postal officers from the U.S. Postal Service in its delegation. According to the UPU, "the recent tendency" of the Congress has been to grant greater regulatory power to two lower bodies, the Postal Operations Council and the Council of Administration, in order to "focus more on strategic and broad policy issues" (UPU 2009a). In addition to rulemaking, the Congress elects a Director General and Deputy Director General along with members of the two lower councils.

The Postal Operations Council consists of forty elected member countries and “deals with the operational, economic and commercial aspects of the international postal service” (UPU 2009b). It designs rules, standards, and regulations. The Council of Administration is composed of forty-one elected member countries and has the power to approve rule proposals from the Postal Operations Council during years without a Universal Postal Congress.

In 2004, the UPU established a third lower body, the Consultative Committee, which “consists of non-governmental organizations representing customers, delivery service providers, workers’ organizations, suppliers of goods and services to the postal sector and other organizations that have an interest in international postal services, including direct marketers, private operators, international mailers, philatelic associations and publishers.”⁴³ It has no rulemaking authority, but advises the Congress and its other bodies.

Accountability

The UPU is bound by the Constitution of the Universal Postal Union, a diplomatic Act ratified by each member country. Any amendments to the constitution must be proposed during an official Congress, and ratified by each member. As an international organization, it is not directly accountable to a regulator or national government authority, although its members have all agreed to comply with its rules and regulations.

⁴³ UPU.

REFERENCES

Abbate, Janet. 1999. *Inventing the Internet*. Cambridge, Mass.: MIT Press.

American National Standards Institute. 2005. "Overview of the U.S. Standards Strategy: Background, Purpose, and Current Revision Status." *United States Standards Strategy: A Public Forum* presentation notes. Available at <http://publicaa.ansi.org/sites/apdl/Documents/Standards%20Activities/NSSC/04-15-05%20%20Public%20Forum.pdf>.

American National Standards Institute. 2009. Webpage with heading "About Ansi," Subheading "Structure and Management." http://www.ansi.org/about_ansi/organization_chart/chart_text.aspx?menuid=1, accessed in January.

Bank for International Settlements. 2002. "The Depository Trust Company Response to the Disclosure Framework for Securities Settlement Systems." Available at <http://www.bis.org/publ/cpss20r3.pdf>.

Borden, Karl J., and Charles E. Rounds. 2002. "A Proposed Legal, Regulatory, and Operational Structure for an Investment-Based Social Security System." *The Cato Project on Social Security Privatization*, No. 25.

Burkard, Robert. 2004 "Development of ANSI Standards: An Audiologist's View." *The ASHA Leader*. June 8, p. 25.

Depository Trust and Clearing Corporation. 2008. *An Introduction to DTCC: Services and Capabilities*. Available at http://www.dtcc.com/downloads/about/Introduction_to_DTCC.pdf.

Depository Trust and Clearing Corporation. 2009. Webpage with heading "About DTCC," subheading "Board of Directors." <http://www.dtcc.com/about/governance/board.php>, accessed in January.

Electronic Authentication Partnership. 2006. "Board of Directors of NACHA – The Electronic Payments Association. Available at http://eap.projectliberty.org/BODHome/docs/Mar2006/March_2006_BOD_Board_Roster_2-09-06.pdf

Emshwiller, John R. 2007. "Blame the 'Stock Vault'? Clearinghouse Faulted on Short-Selling Abuse; Finding the Naked Truth." *The Wall Street Journal*, July 5.

Froomkin, A. Michael, and Mark A. Lemley. 2001. "ICANN and Antitrust," *UC Berkeley Public Law and Legal Theory Working Paper No. 73*.

Hoover's Inc. 2009. Webpage with heading "Nav Canada Company description."
http://www.hoovers.com/nav-canada/--ID__98986--/free-co-profile.xhtml, accessed in January.

ICANN. 2008a (January). *Accountability & Transparency Frameworks and Principles*. Available at <http://www.icann.org/en/transparency/acct-trans-frameworks-principles-10jan08.pdf>.

ICANN. 2008b. *Adopted FY09 Operating Plan and Budget, Fiscal Year Ending 30 June 2009*. <http://www.icann.org/en/financials/adopted-opplan-budget-v3-fy09-25jun08-en.pdf>. Updated 25 June 2008.

International Telecommunication Union. 2009a. Webpage with heading "Background Information." <http://www.itu.int/newsarchive/pp06/background/stratplan/index.html>, accessed in January.

International Telecommunication Union. 2009b. Webpage with heading "ITU Council." <http://www.itu.int/council>, accessed in January.

International Telecommunication Union. 2009c. Webpage with heading "ITU Telecommunication Standardization Sector (ITU-T) Products" subheading "ITU-T Recommendations." <http://www.itu.int/ITU-T/publications/recs.html>, accessed in January.

Kesan, Jay P. and Rajiv C. Shah. 2001. "Fool Us Once Shame on You—Fool Us Twice Shame on Us: What We Can learn from the Privatizations of the Internet Backbone Network and the Domain Name System." *Washington University Law Quarterly*, 79 (Spring): 89-220.

Kobayashi, Bruce. 2006. "After the MOU Extension: More Competition, Less Regulation is the Solution to ICANN's Problems," The Progress & Freedom Foundation, October.

Lazzara, Joseph. 2004. "Safeguarding: Are ANSI Standards Really Voluntary?" *Occupational Hazards*.

Lewis, Lucinda M. and Robert J. Reynolds. 1979. "Appraising Alternatives to Regulation for Natural Monopolies," in Edward J. Mitchell, ed., *Oil Pipelines and Public Policy*. Washington, D.C.: American Enterprise Institute, 1979, pp. 135-140.

MacLean, Don. 2007 "International Telecommunication Union (ITU)." Available at http://www.giswatch.org/files/pdf/GISW_ITU.pdf.

Mathiason, John. 2009. *Internet Governance: The New Frontier of Global Institutions*. New York: Routledge.

McCaffrey, David P., and David W. Hart. 1998. *Wall Street Polices Itself: How Securities Firms Manage the Legal Hazards of Competitive Pressures*. Oxford University Press, 1998.

McDougall, Glen. 2003. "Nav Canada: A Multi-Stakeholder Approach To Alternative Service Delivery." Available at <http://www.mbsottawa.com/MSAASD.pdf>.

Mott, Steve. 2006. "Can ACH and Image Convergence Succeed?" *Banking Strategies* Vol. 82. Issue 5. Available at <http://www.bai.org/BANKINGSTRATEGIES/2006-sep-oct/PaymentsStrategies/achimageconvergence/index.asp#band>.

Mueller, Milton L. 2002. *Ruling the Root: Internet Governance and the Taming of Cyberspace*. Cambridge, Mass.: MIT Press.

National Automated Clearinghouse Association. 2008. "NACHA Reports More Than 18 Billion ACH Payments in 2007." Available at http://www.nacha.org/news/news/pressreleases/2008/2008/Volume_Final.pdf.

National Automated Clearinghouse Association. 2009a. Online document with heading "The History of NACHA - The Electronic Payments Association." Available at <http://www.nacha.org/news/NACHA%20History.pdf>. Accessed in January.

National Automated Clearinghouse Association. 2009b. Webpage with heading "NACHA Executive Management Bios." <http://www.nacha.org/news/NACHAExecMgmt.htm>, accessed in January.

National Automated Clearinghouse Association. 2009c. Webpage with heading "Rulemaking Process." http://www.nacha.org/ACH_Rules/Rule_Making_Process/rule_making_process.htm. Accessed in January.

National Research Council. 2005. *Signposts in Cyberspace: The Domain Name System and Internet Navigation*. Washington, D.C.: National Academies Press.

Neustar, Inc. 2009. Webpage with heading "NANPA: North American Numbering Plan Administration – About Us." http://www.nanpa.com/about_us/index.html, accessed in January.

Oesterle, Dale Arthur. 2000. "Securities Markets Regulation: Time to Move to a Market-Based Approach." *Policy Analysis*, June, No. 374.

Poole, Robert W. Jr. 1997. "Commercializing Air Traffic Control: A New Window of Opportunity to Solve an Old Problem." *Regulation*. 1997, Vol. 20, 3.

Turner, Craig. 1996. "Canada Plans To Privatize Air Control." *The Washington Post*, May 4.

Universal Postal Union. 2009a. Webpage with heading "About us," subheading "Congress" <http://www.upu.int/congress/en/index.shtml>, accessed in January.

Universal Postal Union. 2009b. Webpage with heading "About us," subheading "Postal Operations Council." <http://www.upu.int/cep/en/index.shtml>, accessed in January.

Universal Postal Union. 2009c. Webpage with heading “About us,” subheading “Consultative Committee.” http://www.upu.int/consultative_committee/en/index.shtml, accessed in January.

U.S. Congress, Office of Technology Assessment. 1990. *Electronic Bulls and Bears: U.S. Securities Markets and Information Technology*. Available at <http://www.princeton.edu/~ota/disk2/1990/9015/9015.pdf>.

U.S. State Department Bureau of International Organizational Affairs. 2003. “Department of State Report on the Meeting of the Postal Operations Council of the Universal Postal Union (UPU), Bern, Switzerland, March 31-April 11, 2003.” Available at <http://www.state.gov/p/io/rls/rpt/2003/20076.htm>

Weinberg, Jonathan. 2000. “ICANN and the Problem of Legitimacy.” *Duke Law Journal*, 50:187-260.