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B-327398

September 12, 2016

The Honorable Charles E. Grassley  
Chairman, Committee on the Judiciary  
United States Senate

The Honorable Ted Cruz  
United States Senate

The Honorable Bob Goodlatte  
Chairman, Committee on the Judiciary  
House of Representatives

The Honorable Darrell Issa  
House of Representatives

Subject: *Department of Commerce—Property Implications of Proposed Transition of U.S. Government Oversight of Key Internet Technical Functions*

Congressional Requesters:

This responds to your request for our legal opinion regarding the property implications of the proposed transition, by the Department of Commerce's (Commerce) National Telecommunications and Information Administration (NTIA), of the United States Government's oversight of key technical functions supporting the Internet including the Internet domain name system. These technical functions, known as the Internet Assigned Numbers Authority (IANA) functions, are currently performed by the Internet Corporation for Assigned Names and Numbers (ICANN), a non-profit corporation, pursuant to a contract with Commerce administered by NTIA (referred to herein as the NTIA-ICANN contract). Verisign, Inc. (Verisign) currently performs related root zone management services pursuant to a cooperative agreement with Commerce, also administered by NTIA (referred to herein as the NTIA-Verisign cooperative agreement).

For nearly two decades, NTIA has been leading efforts to transfer the U.S. Government's oversight role to a global multistakeholder community<sup>1</sup> pursuant to a 1997 Presidential policy directive. On March 10, 2016, the ICANN Board of Directors submitted a detailed transition proposal (2016 Transition Proposal) for NTIA's review, developed at NTIA's request by the

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<sup>1</sup> In this opinion, as in our previous report on these matters, we use the term "global multistakeholder community" to refer to parties interested in Internet governance and policy from around the world and from multiple sectors and industries, including technical, government, business, and public-interest organizations and individuals. See GAO, *INTERNET MANAGEMENT: Structured Evaluation Could Help Assess Proposed Transition of Key Domain Name and Other Technical Functions*, GAO-15-642 (Washington, D.C.: Aug. 19, 2015) (2015 GAO Report).

global multistakeholder community over the past two years.<sup>2</sup> The 2016 Transition Proposal consists of two parts, one addressing the technical transition of NTIA's oversight role and the other addressing new measures to be put in place to ensure the accountability of ICANN to the global multistakeholder community after NTIA withdraws from its role. On June 9, 2016, NTIA reported that it had determined the 2016 Transition Proposal meets criteria the agency established in 2014.<sup>3</sup> NTIA also reported that it had followed recommendations we made to NTIA in 2015<sup>4</sup> regarding a framework for the agency's assessment of the transition proposal.

NTIA is currently prohibited by statute, through at least September 30, 2016, from using appropriated funds to relinquish its responsibilities regarding the IANA functions including the Internet domain name system.<sup>5</sup> A number of steps also remain before the transition can occur, including putting new organizational structures and legal agreements into place. NTIA has advised Members of Congress that while it "maintains the flexibility to extend its contract with ICANN if necessary" beyond the contract's current September 30, 2016 expiration date,<sup>6</sup> NTIA intends to allow the contract to expire as of October 1, barring any significant impediment.

You asked whether the transition would result in the transfer of any kind of U.S. Government property without the legal authorization by Congress required by the Property Clause of the U.S. Constitution. That provision, in Article IV of the Constitution, states in relevant part:

"The Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States . . . ."

U.S. Const. art. IV, § 3, cl. 2. Disposal of U.S. Government property by NTIA without the requisite statutory authority would violate the Constitution.

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<sup>2</sup> See Letter from Dr. Steven Crocker, Chairman, ICANN Board of Directors, to Hon. Lawrence E. Strickling, Assistant Secretary for Communications and Information, Department of Commerce, and Administrator, NTIA, March 10, 2016, and enclosures, available at <https://www.icann.org/en/system/files/files/iana-stewardship-transition-package-10mar16-en.pdf> (last visited Sept. 1, 2016).

<sup>3</sup> U.S. Department of Commerce, NTIA, *IANA Stewardship Transition Proposal Assessment Report* (June 9, 2016) (2016 NTIA Assessment Report) available at [https://www.ntia.doc.gov/files/ntia/publications/iana\\_stewardship\\_transition\\_assessment\\_report.pdf](https://www.ntia.doc.gov/files/ntia/publications/iana_stewardship_transition_assessment_report.pdf) (last visited Sept. 1, 2016). NTIA's 2014 criteria were that the proposal must have broad community support; must not replace NTIA's role with a government-led or inter-governmental organization; and must establish a structure that: (1) supports and enhances the multistakeholder model; (2) maintains the security, stability, and resiliency of the Internet domain name system; (3) meets the needs and expectations of the global customers and partners of the IANA services; and (4) maintains the openness of the Internet.

<sup>4</sup> See 2015 GAO Report, *supra* note 1.

<sup>5</sup> See Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, § 539, 129 Stat. 2242 (2015).

<sup>6</sup> NTIA, Quarterly Report on the Transition of the Stewardship of the Internet Assigned Numbers Authority Functions Q2 FY2016 (May 2016) at 3. The NTIA-ICANN contract authorizes unilateral extension by NTIA through September 30, 2019. NTIA's cooperative agreement with Verisign, which will require modification to implement the proposed transition, currently expires on November 30, 2018 and also provides for extension by NTIA in certain circumstances. Because Verisign performs additional services for NTIA under the cooperative agreement unrelated to the proposed transition, the agreement is expected to remain in effect in some form after the transition.

We agreed to address:

(1) whether the authoritative root zone file, the Internet domain name system, or any aspect of the IANA technical functions is U.S. Government property; and

(2) if so, whether the proposed transition would result in the transfer or other disposal of such property and whether NTIA has the statutory authority for such disposal required by Article IV.

Our practice when preparing legal opinions is to obtain the views of the relevant agencies in order to establish a factual record and obtain the agencies' legal positions on the subject matter of the request. GAO, *Procedures and Practices for Legal Decisions and Opinions*, GAO-06-1064SP (Washington, D.C.: Sept. 2006), available at [www.gao.gov/products/GAO-06-1064SP](http://www.gao.gov/products/GAO-06-1064SP). In response to our requests, we received responses and documentation from officials at Commerce, including NTIA; the Department of Defense's (DOD) Defense Advanced Research Projects Agency (DARPA); the National Science Foundation (NSF); and others.<sup>7</sup>

## SUMMARY

This is a case of first impression. Determining U.S. Government property interests involved in the proposed transition raises a series of novel, complex, and highly fact-specific issues. Courts have applied property law principles to certain aspects of Internet activity with varying results, but we are aware of no case in which a court has addressed the key questions presented here. In addition, while we obtained copies of NTIA's current and four predecessor IANA-functions contracts with ICANN and the NTIA-Verisign cooperative agreement, identifying Government property potentially affected by the transition is complicated by the absence, due to the passage of time, of key 1970s-1990s contract documents that may have addressed the parties' respective property rights. Because of the current state of the case law, the incomplete record before us, and other uncertainties, our opinion with respect to the U.S. Government's property rights is necessarily limited.

With these caveats and for the reasons discussed below, we find as follows:

(1) It is unlikely that either the authoritative root zone file—the public “address book” for the top level of the Internet domain name system—or the Internet domain name system as a whole, is U.S. Government property under Article IV. We did not identify any Government-held copyrights, patents, licenses, or other traditional intellectual property interests in either the root zone file or the domain name system. It also is doubtful that either would be considered property under common law principles, because no entity appears to have a right to their exclusive possession or use.

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<sup>7</sup> We received oral and written responses and documentation from Commerce and NTIA officials on multiple occasions between December 2015 and August 2016; from DARPA officials between February and March 2016; from NSF officials in May 2016; and from ICANN and Verisign officials between February and August 2016. We also sought views and information from, among others, officials formerly at NTIA and ICANN; officials at the Congressional Research Service and the National Archives and Records Administration; and officials and researchers currently or formerly at the University of Southern California (USC), which carried out research and development under a series of contracts with DARPA considered to have resulted in the Internet domain name system, the authoritative root zone file, and the IANA functions (we interviewed Dr. Paul Mockapetris, credited as a lead developer of the domain name system and the authoritative root zone file; reviewed the archives of the late Dr. Jon Postel, credited as a lead developer of the IANA functions; and obtained documentation from officials at USC's Office of Contracts and Grants and Office of General Counsel and USC's Information Sciences Institute).

However, we find that the U.S. Government does have certain rights under a series of contracts and agreements related to the domain name system and the IANA functions, and has title to limited intellectual and tangible property related to performance of these functions, all of which constitute U.S. Government property under Article IV. This property includes: (a) possible rights, licenses, and ownership of data and information produced under current and previous contracts and agreements; (b) a service mark for InterNIC®, held by Commerce and licensed to ICANN to provide domain name system-related public information; (c) minimal tangible property the Government has received as “deliverables” under the NTIA-ICANN and NTIA-Verisign agreements in the form of hard copies of reports, data, and other information; and (d) the Government’s right to ICANN’s and Verisign’s continued performance of the IANA functions and root zone management services, through expiration of their current agreements with NTIA.

(2) We find that almost all of U.S. Government property that we have identified will be retained and not transferred or otherwise disposed of in connection with the proposed transition. The Government’s right to ICANN’s and Verisign’s continued performance under their current agreements—which right constitutes Article IV property—would be disposed of if NTIA terminates the agreements or relevant provisions rather than allowing them to expire. However, we also find that NTIA has the requisite authority to terminate the agreements and thus to dispose of this Government property interest.

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Although it is unlikely that NTIA’s planned actions would violate the Constitution, we acknowledge that the proposed transition would result in NTIA surrendering the role that the U.S. Government has played in some form for nearly 50 years. Today, NTIA exercises both broad contractual oversight and specific contractual control regarding the IANA functions and domain name system, a role described by the global multistakeholder community and NTIA itself as providing “stewardship,” an “accountability backstop,” and a “safety net.” Congress may wish to take steps to address the broader issues raised by the transition if it believes there should continue to be direct U.S. oversight and control. This opinion expresses no views on the merits of the proposed transition.

## **TECHNICAL BACKGROUND: THE INTERNET, ITS SUPPORTING TECHNICAL FUNCTIONS, AND THE DOMAIN NAME SYSTEM**

To determine whether U.S. Government property may be affected by the proposed transition, we begin by reviewing the basic structure and systems in which the transition will occur: the Internet, its supporting technical functions, and the domain name system including the authoritative root zone file.

### **I. The Internet**

The Internet is not a single system but a “network of networks”—a collection of interconnected networks (hence the name, Internet)—allowing millions of users to communicate across distance and computer platforms. For purposes of this opinion, we use the term Internet to refer to the infrastructure, such as routers, servers, and connected devices, through which communication occurs. Today, there are an increasing number of connected devices—not just computers but, for example, smartphones, tablets, and, as part of the so-called “Internet of things,” cameras, cars, and buildings with network connectivity.

It is also important to understand that no formal institutional or governmental mechanism enforces the way the Internet works. The effectiveness of the current system relies on the mutual agreement of users to abide by the now-standard protocols and processes, with the utility of the system increasing as more people use the same system. While nothing stops any user from opting out of this system, a computer or other device that deviates from the standards risks losing the ability to communicate with other devices that do follow the standards.

## **II. The Internet Technical Functions and the Domain Name System**

The legal issues addressed in this opinion pertain only to the aspects of Internet activity that may be affected by the proposed transition—the IANA technical functions, the domain name system, and the authoritative root zone file, which make efficient Internet communication possible. The IANA functions have been described as helping to “keep[] the Internet running smoothly”<sup>8</sup> and fall into three basic categories—numbers, names, and protocol parameters. These functions are currently carried out pursuant to NTIA’s contract with ICANN and its related cooperative agreement with Verisign.

### **A. The Numbers Function**

To enable the billions of devices connected to the Internet to communicate with each other, each device is assigned a unique numeric Internet Protocol (IP) address that designates its location within the network. This system of unique IP addresses makes it possible for users to send and receive messages, conduct business transactions online, and access information from connected devices anywhere on the Internet. ICANN’s role, under its contract with NTIA and a memorandum of understanding with five Regional Internet Registries around the world, is to allocate large blocks of IP addresses and other numbers to the regional registries in accordance with globally developed policies. Each regional registry then further allocates blocks of IP addresses within in its region; the addresses eventually reach Internet Service Providers who allocate them to end users.<sup>9</sup>

### **B. The Names Function, including the Domain Name System and the Authoritative Root Zone File**

As more and more users connected to the Internet, a naming system was developed known today as the domain name system. The domain name system makes it easier for individuals to navigate the Internet by translating easier-to-remember domain names (e.g., [www.gao.gov](http://www.gao.gov)) into the corresponding numerical IP addresses needed for sending and receiving information (e.g., 161.203.16.77, the IP address for GAO’s website). Domain names reflect a hierarchy. In left-to-right languages such as English, the “top level” of the domain name is at the far right, following the final period or “dot.” Today, there are over 1,400 top-level domain names, both generic top-level domain names (“gTLDs”), such as .gov, .com, and .org, and country-code top-level domain names (“ccTLDs”), such as .us and .ca.<sup>10</sup>

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<sup>8</sup> See “Introducing IANA,” available at <https://www.iana.org/about> (last visited Sept. 1, 2016).

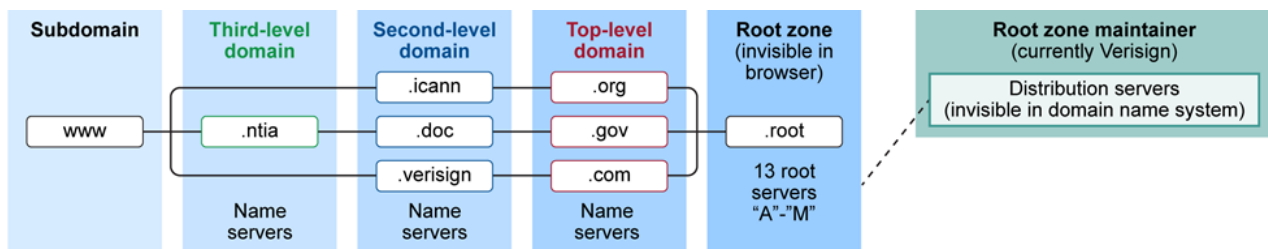
<sup>9</sup> Regional Internet Registries are nonprofit corporations that administer and register IP address space and Autonomous System numbers within a defined region. Internet service providers generally assign a single IP address to a home or organization’s network router, which then assigns local IP addresses to connected devices within the local network.

<sup>10</sup> At a more tangible level, the domain name system has been described as a system of interconnected databases and also as a set of protocol specifications, software application programs, network infrastructure, and a “namespace” *i.e.*, all of the unique domain names that can be looked up. See Letter from General Counsel,

One of the critical components of the domain name system is the authoritative root zone file. The authoritative root zone file functions as a type of “address book” or “master directory” for the top level—and only the top level—of the domain name system. The file contains, among other things, the IP addresses of all of the top-level domains’ root servers,<sup>11</sup> as well as technical and administrative information about the designated operators of each top-level domain. The content of the authoritative root zone file is public<sup>12</sup> and generally is updated at least once a day. The authoritative root zone file is placed on a set of distribution servers where it can only be accessed by operators of 13 root servers.<sup>13</sup>

When a user types a domain name into an Internet browser to reach a website, this generally starts a search, known a query, to a root server.<sup>14</sup> The root server then uses the authoritative root zone file to respond with information on the location of the relevant top-level domain name server. The top-level domain name server, which contains similar information about the operators and IP addresses of all of the second-level domains’ name servers registered within each respective top-level domain, in turn sends queries to these and other servers, and the website ultimately is delivered to the user. (There may also be queries to third-level and other level domains’ name servers, depending on the domain name.) Figure 1 depicts the relationship of the root zone to the remainder of the domain name system.

**Figure 1: Relationship of the Root Zone to Other Components of the Domain Name System**



Source: GAO. | B-327398

Department of Commerce, to Managing Associate General Counsel, GAO (Dec. 15, 2015) (2015 Commerce Letter) at 1; ICANN Security and Stability Advisory Committee, *Overview and History of the IANA Functions*, SAC067 (Aug. 15, 2014) at 10.

<sup>11</sup> Servers in the root zone are often referred to as root servers, while servers in the top level and below are often referred to as name servers.

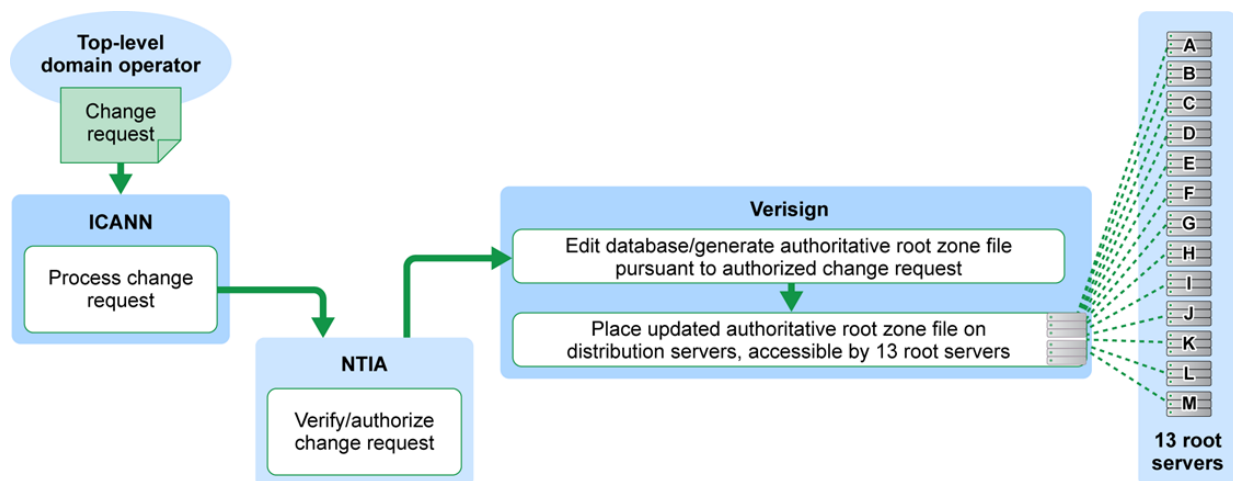
<sup>12</sup> A copy of the authoritative root zone file is available on the InterNIC® website, for example, currently managed by ICANN under a service mark license from Commerce. See <https://www.internic.net/domain/root.zone> (last visited Sept. 1, 2016).

<sup>13</sup> There are 13 servers, known as “A” through “M,” in the “root zone” (also known as the “root level”) above the top-level domain. These are operated by 12 entities including Verisign, ICANN, and U.S. Government agencies such as the U.S. Department of Defense. The “A” root server originally functioned as the “master” root server because the authoritative root zone file was placed there. For security reasons, the master role was transferred in 2002 to a separate set of distribution servers, which are not visible in the domain name system.

<sup>14</sup> Individual computers store information from recent queries of the domain name system in a local cache file, including records of where to access recently-used top-level domains. This means the Internet user’s computer does not always need access to root servers when converting an Internet domain name to an IP address.

Changes to the authoritative root zone file are currently made through a process carried out by ICANN, NTIA, and Verisign, pursuant to their respective agreements. Top-level domain operators submit requests to ICANN for changes to the root zone file—for example, to add, modify, or delete name servers or points of contact. Additions of new top-level domain names, or changes to the top-level domain operator of an existing top-level domain (referred to as re-delegation), also are processed via requests for changes to the root zone file. ICANN processes all change requests in accordance with globally developed policies and forwards them to NTIA, with a copy sent simultaneously to Verisign. NTIA verifies that ICANN has followed processes and procedures ICANN has put in place to implement the global policies and, without exercising policy judgment over the content of the change, authorizes Verisign to implement the change. Finally, Verisign makes the change in the authoritative root zone file and places the updated file on the distribution servers, where it can be accessed by operators of the 13 root servers. This process is depicted in Figure 2.

**Figure 2: Current Authoritative Root Zone Management Process**



Source: GAO. | B-327398

### C. The Protocol Parameters Function

Computers and other devices on the Internet communicate using structured commands and data. Protocols define the structure and format of information to be sent over a network and the commands to manage the transfer of information. (The hypertext transfer protocol, for example, is “.http.”) Protocols ensure that information can be sent and received in a standard, interoperable way. Protocol parameters, in turn, refer to the commands or identifiers (sequences of letters, numbers, or symbols) that manage the transfer of information. ICANN’s role, under its contract with NTIA and a memorandum of understanding with the Internet Engineering Task Force,<sup>15</sup> is to maintain a complete and public database of the protocol parameters.

<sup>15</sup> The Internet Engineering Task Force is an open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet.

## ANALYSIS

The U.S. Government's potential property rights with respect to IANA technical functions, the Internet domain name system, and the authoritative root zone file are governed in the first instance by the terms of the Government contracts and agreements under which they were developed and have been carried out. After describing the meaning of "property" under the Article IV Property Clause, we therefore review, to the extent possible, the specific rights or types of rights that the Government may have obtained in any such property under the terms of the contracts and agreements. We then determine whether any Government property would be transferred or otherwise disposed of in connection with the proposed transition and if so, whether NTIA has the statutory authority required by Article IV.

### I. Whether There is Property Related to the Domain Name System and the IANA Functions That Constitutes U.S. Government Property under the Article IV Property Clause and Relevant Government Contracts and Agreements

#### A. The Scope of the Article IV Property Clause

Courts and commentators have addressed whether certain aspects of Internet activity, most notably domain names, constitute property.<sup>16</sup> We are aware of no case, however, in which a court has addressed the threshold question presented here: whether entire components of the Internet system, such as the domain name system, the authoritative root zone file, or aspects of the IANA technical functions, constitute U.S. Government property under Article IV.

As noted, the Property Clause states in relevant part that "[t]he Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States . . . ." By virtue of the Property Clause, no agency or official of the U.S. Government is authorized to sell, lease, give away, or otherwise dispose of Government property without statutory authority, either explicit or by necessary implication. *Royal Indemnity Co. v. United States*, 313 U.S. 289 (1941). This principle has been consistently applied by both the courts and this Office.<sup>17</sup>

The courts have interpreted Congress's authority under the Property Clause expansively. In a case involving real property, for example, the Supreme Court declared in *Kleppe v. New Mexico*, 426 U.S. 529, 539 (1976), that "while the furthest reaches of the power granted by the Property Clause have not yet been definitively resolved, we have repeatedly observed that '[the] power over the public land thus entrusted to Congress is without limitations.'" (Citation omitted.)

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<sup>16</sup> Most recently, the U.S. Court of Appeals for the D.C. Circuit held that although country-code top-level domain names may constitute property under the Federal Sovereign Immunities Act, attachment and sale of the names was inappropriate because it would substantially impair ICANN's interests and those of other third parties worldwide. See *Weinstein v. Islamic Republic of Iran*, 2016 U.S. App. LEXIS 13981 (D.C. Cir. Aug. 2, 2016). Other recent "Internet property" decisions include *Stern v. Islamic Republic of Iran*, 73 F. Supp. 3d 46 (D.D.C. 2014) (country-code top-level domain names may be property under state law but not attachable under District of Columbia statute), *aff'd on other grounds*, *Weinstein, supra*, and *Sprinkler Warehouse, Inc. v. Systematic Rain, Inc.*, 880 N.W. 2d 16 (Minn. 2016) (second-level domain names are property under state law and subject to writ of execution). See generally Markus Muller, *Who Owns the Internet? Ownership as a Legal Basis for American Control of the Internet*, 15 Fordham Intell. Prop. Media & Ent. L.J. 709 (Spring 2005); William Larsen, *A Stern Look at the Property Status of Top-Level Domains*, 82 U. Chi. L. Rev. 1457 (Summer 2015).

<sup>17</sup> For a general discussion of the scope of the Property Clause, see GAO, *Principles of Federal Appropriations Law*, Vol. III, 3<sup>rd</sup> ed. Ch. 12, § A.5, Ch. 13, § H.1, GAO-08-978SP (Washington, D.C.: Sept. 2008).



The Property Clause also applies to personal property, both tangible (e.g., Government maps<sup>18</sup>) and intangible (e.g., intellectual property such as Government-held patents<sup>19</sup>). As the Supreme Court explained in *Ashwander v. Tenn. Valley Auth.*, 297 U.S. 288 (1936), in finding that electrical energy—generated at a federally owned dam from water power within the Government’s exclusive control—constitutes Government property under Article IV:

“The grant [in the Property Clause] was made in broad terms, and the power of regulation and disposition was not confined to territory, but extended to ‘other property belonging to the United States,’ so that the power may be applied, as Story says, ‘to the due regulation of all other personal and real property rightfully belonging to the United States.’ And so, he adds, ‘it has been constantly understood and acted upon.’”

*Id.* at 331.

The *Ashwander* Court also made clear that the method by which Government property is disposed of must be in the public interest:

“The [Property Clause] provision is silent as to the method of disposing of property belonging to the United States. That method, of course, must be an appropriate means of disposition according to the nature of the property, it must be one adopted in the public interest as distinguished from private or personal ends . . . .”

*Id.* at 338. Applying these standards, the Court found that the Tennessee Valley Authority had the requisite statutory authority to “dispose of” the electrical energy by selling it to a power company.

Vested legal rights—where there is an immediate and fixed right of present or future enjoyment—also constitute intangible property under Article IV, including the Government’s right to contract performance in accordance with the original contract terms. See, e.g., *Royal Indemnity, supra* (Government’s contractual right to full payment under surety bond itself constituted Government property; acceptance of less than full payment by unauthorized official violated Article IV).<sup>20</sup> GAO has likewise found that Article IV requires agencies to have statutory authority before they may “dispose of” their contractual rights to full performance. As we explained in B-156883, June 23, 1965:

“[T]he courts have held that once a contractual right has become vested in the United States . . . to demand performance [of] a valid and otherwise legal contract[,] . . . there exists no authority . . . gratuitously to

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<sup>18</sup> See, e.g., *Puerto Rico Reconstruction Co. – Sale of Prints of Survey Map*, 39 Op. Att’y Gen. 324 (1939) (agency’s proposed sale of U.S. Government aerial survey maps to private individuals in absence of statutory authority would violate Art. IV).

<sup>19</sup> See, e.g., *Grant of Revocable Licenses Under Government-Owned Patents*, 34 Op. Att’y Gen. 320 (1924) (U.S. Navy-held patents constitute Article IV property).

<sup>20</sup> See also *United States v. San Francisco*, 112 F. Supp. 451, 453 (N.D. Cal. 1953), *aff’d*, 223 F.2d 737 (9<sup>th</sup> Cir.), *cert. denied*, 350 U.S. 903 (1955) (Secretary of Interior’s waiver of right to city’s reimbursement of road maintenance costs constituted “giv[ing] away [of] property of the United States” in violation of Article IV).

waive or surrender such right. . . . It is a well-established principle of law that valid contracts are to be enforced and performed as written . . . .”<sup>21</sup>

Finally, as a guidepost in determining what may constitute “property” beyond these examples, the Supreme Court has recognized the “basic axiom that “[property] interests . . . are not created by the Constitution. Rather, they are created and their dimensions are defined by existing rules or understandings that stem from an independent source such as state law.” *Ruckelshaus v. Monsanto Co.*, 467 U.S. 986, 1001 (1984) (citations omitted). Courts addressing property interests under state and federal common law principles, in turn, have long recognized that property is comprised of a legal “bundle of rights.” See *generally* 63C Am. Jur. 2d Property § 1 (2016). These rights are recognized to include the right to possess, exclude, use, control, and dispose,<sup>22</sup> with the right to exclude being “one of the most essential sticks in the bundle of rights that are commonly characterized as property.”<sup>23</sup>

#### **B. Article IV Government Property Based on the Contracts and Agreements under which the Domain Name System and IANA Functions Were Developed and Continue to be Carried Out**

As NTIA has stated succinctly, “the U.S. Government has played a pivotal role in creating the Internet as we know it today.”<sup>24</sup> Through a series of contracts and agreements beginning in the late 1960s, described in Appendix I to this opinion, the U.S. Government is considered to have been principally responsible for funding the development of the Internet and its supporting technical functions and for overseeing and providing accountability as these functions have been carried out. The contracts and agreements most relevant to whether there is Government property under Article IV which may be affected by the proposed transition are:

- (1) 1970s-1990s DARPA contracts with the University of California at Los Angeles (UCLA) and the University of Southern California (USC), under which the Internet domain name system, authoritative root zone file, and IANA technical functions are considered to have been created and initially carried out;
- (2) a 1993 NSF cooperative agreement with Network Solutions, Inc., now in effect as the NTIA-Verisign agreement, under which various domain name system services, including changes to the authoritative root zone file, have been carried out;

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<sup>21</sup> See also B-276550, Dec. 15, 1997 (finding GSA lacked statutory authority required by Article IV to compromise the Government’s right to the City of Boston’s full payment under a promissory note). See *generally* Staff Judge Advocate, U.S. Air Force, *Acquiring and Enforcing the Government’s Rights in Technical Data and Computer Software* (7<sup>th</sup> ed. Aug. 2015) at 65 (waiver of Government’s contractual technical data rights, without Congressional authorization, may violate the Constitution).

<sup>22</sup> See, e.g., *United States v. General Motors Corp.*, 323 U.S. 373 (1945); *United States v. Lutz*, 295 F.2d 736 (5<sup>th</sup> Cir. 1961).

<sup>23</sup> *Dolan v. City of Tigard*, 512 U.S. 374, 384 (1994) (citation omitted). See, e.g., *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 435-36 (1982) (“The power to exclude has traditionally been one of the most treasured strands in an owner’s bundle of property rights.”); *Kaiser Aetna v. United States*, 444 U.S. 164, 179-80 (1979) (citations omitted) (right to exclude is “so universally held to be a fundamental element of the property right”).

<sup>24</sup> 63 Fed. Reg. 31741, 31742 (June 10, 1998).

- (3) a 1998 Commerce joint project agreement with ICANN, under which ICANN began to assume the responsibilities of overseeing the technical management of the Internet, including the domain name system; and
- (4) 2000-present NTIA contracts with ICANN, for performance of the IANA functions.

Whether any equipment, data, rights, or other property created or used under these agreements in fact belongs to the United States depends in the first instance on the terms of the agreements. Government contracts and agreements often address matters such as which party shall furnish and own tangible property used to perform the required work; which party shall own patents or copyrights obtained on the work and what rights (licenses) the other party shall have; and what rights the parties shall have in other data, software, or processes developed or used under the agreement.

The types of property most likely to have been developed or used under the above-noted agreements are equipment and other tangible property; intellectual property (specifically patents, copyrights, trademarks and service marks, and trade secrets); technical data, computer software, and other information; and Government rights in any of the foregoing or any other Government rights under the contracts and agreements. In the remainder of this section and to the extent possible based on the limited record before us, we review the agreement terms to determine what property the Government may have obtained.

## **1. 1970s-1990s DARPA Contracts with UCLA and USC**

### **a. 1980s DARPA Contracts: the Authoritative Root Zone File, the Domain Name System, and Related Tangible Property**

We were unable to obtain copies of the 1980s DARPA contracts under which the authoritative root zone file and the domain name system are considered to have been developed.<sup>25</sup> While we therefore cannot determine what specific rights the contracts may have granted to the Government, we are able to comment on whether what was developed—the authoritative root zone file and the domain name system—likely constituted property, and U.S. Government property, at that time and today. We also can comment on whether any U.S. Government-owned equipment or other tangible property used to perform these contracts is likely still in use today. If the root zone file and the domain name system do not constitute Government property, and if any Government equipment used to perform the contracts is no longer in use, then the contract terms addressing the parties' property rights respecting these items may, to some extent, be moot.

For the reasons discussed below, we find it is unlikely that either the authoritative root zone file or the domain name system is U.S. Government property. We also find that any Government equipment or other tangible property used to perform the contracts under which they were developed likely would now be obsolete and no longer in use.

Patent rights in the root zone file and the domain name system. Federal patent statutes protect four broad categories of inventions or discoveries: "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof" which is, among other things, novel, nonobvious, and fully and particularly described. Patent holders are

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<sup>25</sup> Dr. Mockapetris told us the contracts did not require development of a specific product, but rather called for "performance of Internet research," for example.

given the right to exclude others from making, using, or selling the invention for a period of time, previously 17 years and now 20 years, from the filing of the patent. See 35 U.S.C. §§ 101-103, 112, 154.

We did not identify any U.S. Government-held patents associated with the authoritative root zone file or the domain name system in the U.S. Patent and Trademark Office's patent databases, nor were any of the Government officials or other individuals to whom we spoke aware of any such U.S. Government-held patents, including officials from Commerce (which issues patents). In addition, the root zone file appears ineligible for patent protection because it appears to be strictly a data file. By comparison, while aspects of the domain name system may have been patentable, Dr. Mockapetris, credited as a lead developer of the domain name system and the authoritative root zone file, told us that Government contractors involved at the time considered but declined to seek patents for the system or its components for various reasons. We also question whether a patent could have been obtained for the system once it became widely known and used, as it is now, because it may no longer have been able to meet the "novelty" requirement.

Copyrights in the root zone file and the domain name system. Federal copyright statutes protect "original works of authorship fixed in any tangible medium of expression" including "literary works." 17 U.S.C. § 102(a) (emphasis added).<sup>26</sup> We did not identify any U.S. Government-held copyrights<sup>27</sup> associated with the root zone file or the domain name system in the U.S. Copyright Office's copyright registration system, nor were any U.S. Government officials or other individuals to whom we spoke, including officials from Commerce and Verisign (which makes changes to the authoritative root zone file, as noted), aware of any Government-held copyrights or licenses for the file or domain name system.

Moreover, we question whether the authoritative root zone file would qualify for copyright protection, either in its original configuration or today. The Supreme Court recognized in *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340 (1991), that mere databases or compilations of factual information, without the degree of "originality" required by the copyright laws, are ineligible for copyright protection. The Court in *Feist* therefore held that a telephone company's "White Pages" could not be copyrighted because it lacked the requisite originality. The company merely published basic subscriber information—name, town, and telephone number—and arranged it alphabetically. It is Commerce's position, see 2015 Commerce Letter at 4-5, that because the root zone file is a purely factual listing of top-level domains and corresponding numerical IP addresses and other factual information, without any apparent degree of creative originality, the authoritative root zone file is not eligible for copyright protection under *Feist*. We agree.

Trademark or service marks in the root zone file and the domain name system. Trademarks are words, phrases, logos, or other graphic symbols used by manufacturers or merchants to identify their goods and distinguish them from others. 15 U.S.C. §§ 1051-1127. Service marks are generally the same as trademarks except they identify and distinguish the source of services rather than goods. 15 U.S.C. § 1053. We did not identify any Government-held trademarks or

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<sup>26</sup> "Literary works" is broadly defined as "works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects, such as books, periodicals, manuscripts, phonorecords, film, tapes, disks, or cards, in which they are embodied." 17 U.S.C. § 101.

<sup>27</sup> Copyrights cannot be obtained for works prepared by an officer or employee of the U.S. Government as part of that person's official duties. However, the Government may receive and hold copyrights obtained by others. 17 U.S.C. § 105.

service marks associated with the authoritative root zone file or the domain name system in the U.S. Patent and Trademark Office's Trademark Electronic Search System, nor were any U.S. Government officials or other individuals to whom we spoke, including officials from Commerce (which issues trademarks and service marks), aware of any such Government-held marks.

Trade secrets in the root zone file and the domain name system. Federal and state law provides various protections for information that constitutes a trade secret. See, e.g., 18 U.S.C. §§ 1832, 1839, 1905; National Conference of Commissioners on Uniform State Laws, Uniform Trade Secrets Act (UTSA) (1985). Trade secret information is generally defined as information for which the owner has taken reasonable measures to keep secret and the information derives independent economic value from not being generally known by the public. 18 U.S.C. § 1839; UTSA § 1(4). To our knowledge, no assertions of trade secret status for the root zone file or the domain name system have been made by the U.S. Government or others, and no efforts have been taken to protect the file or the system from disclosure. Indeed, because the value of the root zone file in particular is in its public dissemination, a copy is freely available to the public and not kept secret.

Common law property rights in the root zone file and the domain name system. As discussed above, courts applying traditional common law property principles have defined property in terms of a "bundle of rights," with a key right being the right to exclude others from the property. Commerce asserts that no entity (including the U.S. Government) owns the authoritative root zone file based in part on cases finding that telephone numbers, zip codes, and home addresses are incapable of exclusive possession or control.<sup>28</sup> As Commerce told us, "[a]s a dynamic collection of technical, locational information published in the public domain for the nonexclusive use of Internet users, the root zone file cannot appropriately be described in terms of property interests." 2015 Commerce Letter at 5.

We find that while the root zone file and the domain name system may or may not initially have been subject to exclusive Government possession or use pursuant to the DARPA contracts under which they were created, today copies are freely available to the public. Neither the U.S. Government nor any other entity appears to have a right to their exclusive possession or use. Although NTIA oversees and has some control over the file and the system through its ICANN and Verisign agreements, this does not make NTIA their "owner."<sup>29</sup>

Equipment and other tangible property used in performing the 1980s DARPA contracts. There is evidence that some Government-funded equipment (e.g., computers) was used to perform the contracts under which the root zone file and domain name system were developed. Dr. Mockapetris told us he believed the first root zone file was created on a DARPA-funded computer at USC, for example. It is not clear whether USC or DARPA held title to any such equipment, however, and in any event, the equipment likely would now be obsolete and no longer in use.

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<sup>28</sup> Commerce cites to *In re Best Re-Mfg. Co.*, 453 F.2d 848 (9th Cir. 1971), and *In re iPhone App. Litig.*, 844 F. Supp. 2d 1040 (N.D. Cal. 2012). 2015 Commerce Letter at 5.

<sup>29</sup> Although we find it is unlikely that the root zone file and the domain name system constitute U.S. Government property, the Government may nonetheless have obtained rights in these or other data under the 1980s contracts, which rights themselves would constitute Government property under Article IV. Government procurement contracts today, for example, often provide the Government with non-exclusive rights to use data first produced in the performance of the contract regardless of whether the data constitute "property." Such a non-exclusive use right in the root zone file might be of limited practical value today, however, because a copy is available to everyone.

**b. 1970s-1990s DARPA Contracts, Including the Tera-node Network Technology Contract: the IANA Functions and Related Tangible Property**

We were unable to obtain copies of the 1970s-1990s DARPA contracts under which the IANA functions are considered to have been developed and performed. We obtained information about key terms of Task 4 of DARPA's final IANA-functions contract with USC, however, known as the Tera-node Network Technology (TNT) contract, No. DABT63-95-C-0095. Task 4, "Network Infrastructure Activities," required performance of the IANA functions, among other things, and was in effect from July 1995 to July 1999. We also obtained considerable information about IANA-functions related data and intellectual property produced by USC under Task 4 or prior DARPA-USC IANA-functions contracts. We therefore offer observations about what property rights the Government may have obtained related to the IANA functions.

Patents, copyrights, data, and other information rights related to the IANA functions. At the time the TNT contract was awarded, DOD's general procurement policy was to balance the Government's need to acquire technical data produced under its contracts, and rights to use that data, with the contractor's competing property rights and economic interests in such data, and to acquire only the minimum essential technical data and data rights needed by the Government.<sup>30</sup> For technical data specified to be delivered to the Government and computer software<sup>31</sup> that "may be originated, developed, or delivered," DOD policy generally prescribed use of a standard contract clause, "Rights in Technical Data and Computer Software," which, depending on various factors, provided for Government data use rights rather than data acquisition.<sup>32</sup> In addition, DOD policy generally allowed the contractor to copyright any technical data or computer software produced or developed under the contract, with the Government obtaining a non-exclusive, paid-up license in the copyright for Government purposes, with the scope based on the type of rights the Government held in the work.<sup>33</sup> Finally, DOD policy at the time called for inclusion of various patent rights clauses.<sup>34</sup> In light of these DOD general policies and the corresponding standard contract clauses, it is possible the TNT/Task 4 contract provided the Government with some type of non-exclusive rights in data and computer software developed by USC under the contract, some type of non-exclusive, paid-up license to any USC-copyrighted work prepared under the contract, and some type of non-exclusive license in any patents or inventions USC may have obtained or conceived of under the contract.

Inclusion of such contract terms and Government rights in the TNT/Task 4 contract would have been consistent, in turn, with the rights USC proposed to grant the Government with respect to

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<sup>30</sup> See Department of Defense Federal Acquisition Regulation Supplement (DFARS) §§ 227.402-70, 227.402-71(a) (1994). These basic DOD procurement policies remain in effect today. See DFARS §§ 227.7103-1(a), 227.7203-1(a) (2015). All citations to the DFARS and the Federal Acquisition Regulation (FAR) in this opinion are found in the corresponding section of Title 48 of the Code of Federal Regulations.

<sup>31</sup> "Computer software" was defined as computer programs and computer data bases. DFARS § 227.401(5) (1994).

<sup>32</sup> In general, the Government was granted standard license rights (either "unlimited rights," "Government purpose license rights," or "limited rights") or it negotiated specific alternative rights. See DFARS §§ 227.402-72, 227.403-70, 227.403-77 (1994); § 252.227-7013 (Oct. 1988). DOD policy today states that the Government obtains rights in technical data and computer software under an irrevocable license and the contractor retains all rights not granted to the Government. See DFARS §§ 227.7103-4(a), 227.7203-4(a) (2015).

<sup>33</sup> See DFARS § 227.403-76 (1994); § 252.227-7013(e) (Oct. 1988).

<sup>34</sup> See, e.g., DFARS subpart 227.3 (1994).

any results of its Task 4 work. In particular, USC offered to grant the Government “nonexclusive[] . . . rights to any results, prototypes, or other products of this effort” and to give a free copy of any software created to any organization for non-commercial use.<sup>35</sup> Agreements signed after award of the TNT/Task 4 contract also suggest the Government obtained some kind of non-exclusive data, copyright, and patent licenses, with USC retaining title.<sup>36</sup> *First*, in December 1998, USC signed a Transition Agreement with the newly formed ICANN. As of January 1, 1999, the agreement transferred to ICANN all of USC’s IANA-functions responsibilities and title or a license (and, at ICANN’s option, title) in all of USC’s IANA-related “assets.” USC’s IANA assets were identified as a service mark in “Internet Assigned Numbers Authority,” a copyright in the IANA logo, a list of IANA “intellectual property” items, and any additional intellectual property “created or received in IANA’s operations” after January 1, 1999. *Second*, in February 2000, ICANN exercised its option to acquire title to the listed USC intellectual property<sup>37</sup> and NTIA approved this acquisition in its first IANA-functions contract with ICANN. The NTIA contract incorporated ICANN’s contract quotation, which stated that “[b]ecause the Government is not giving up any *rights* it holds in the [USC] intellectual property, but is merely consenting to transfer of *title* in the intellectual property from one party (the former contractor) to another (the new contractor), this term involves no cost to the Government.” (Emphasis added.)

NTIA told us it has not attempted to define the Government’s specific rights in the USC intellectual property acquired by ICANN (or the Government’s other possible rights under the 1970s-1990s DARPA contracts), and ICANN declined to offer its view of the Government’s or its own rights.<sup>38</sup>

We find that if there are any Government licenses or other rights in this former USC intellectual property now owned by ICANN, or in other data or property produced under the 1970s-1990s IANA-functions contracts, these rights would constitute Government property under Article IV.

Equipment and other tangible property used in performing the TNT contract. The TNT contract/Task 4 documents we obtained state that USC was to provide “all personnel, materials, and facilities” for performance of the required work. The Government thus was not required to provide any equipment or other Government property to USC, and even if such equipment were provided and used, it likely would now be obsolete and no longer in use.

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<sup>35</sup> USC’s TNT contract proposal for Task 4 stated, “Proprietary Claims. This proposal may contain original ideas for network administration and management. We wish those ideas to be protected from dissemination unless and until the effort is funded, in accordance with federal procurement regulations. *The government has (non-exclusively) all rights to any results, prototypes, or other products of this effort.* Any software created in this effort will be provided free of charge, except for a nominal handling fee, to any organization for non-commercial use. USC wishes to retain the rights to share in profits of any commercial exploitation of the results and products of this effort.” (Emphasis added.)

<sup>36</sup> Because USC had been performing the IANA functions under contract to DARPA since 1977, as noted in Appendix I, the Government’s possible data rights licenses under the TNT/Task 4 contract may also have included rights in any technical data, copyrights, and other property developed by USC under these previous contracts.

<sup>37</sup> See Feb. 9, 2000 USC-ICANN Agreement and Assignment of Licensed Rights.

<sup>38</sup> ICANN did assert that the listed USC intellectual property to which ICANN took title in 2000 reflected the relatively unsophisticated and fully manual nature of how the IANA functions were performed at that time and included some open source software freely available for use, outdated databases, and various other items no longer in use.

## **2. 1993 NSF Cooperative Agreement with Network Solutions, now in effect as the NTIA Cooperative Agreement with Verisign**

As discussed in Appendix I, NSF entered into a cooperative agreement with Network Solutions, Inc., in 1993 to assist in providing expanded and coordinated network information services for the non-military Internet. Among other things, Network Solutions provided second-level domain name registration services to the non-governmental sector and, in cooperation with USC, managed the root zone and made changes to the authoritative root zone file. As an early part of the NTIA-led transition efforts, NSF transferred administration of the agreement to NTIA in September 1998, and Verisign took over Network Solutions' role under the agreement when it acquired the company in 2000.

The Government's right to Verisign's continued performance. Because Verisign is under an enforceable agreement with NTIA through at least November 30, 2018, the Government has a fixed and immediate right to Verisign's continued performance of the root zone management services through that date. In fact, the agreement explicitly authorizes NTIA to seek specific performance of any or all provisions. This right to performance constitutes Government property under Article IV.

Data rights under the agreement. The cooperative agreement grants the Government broad use rights in any "data first produced under an award" where the awardee is a non-profit institution or, if the awardee is a commercial entity, the agency exercises its discretion to apply this data rights provision. NSF and NTIA did not indicate whether they elected to apply this provision to Network Solutions or Verisign.

Patent licenses under the agreement. The cooperative agreement grants the U.S. Government a non-exclusive, non-transferable, irrevocable, paid-up license in any invention, conceived or first reduced to practice by the awardee, in the performance of any "experimental, developmental, or research" work under the agreement if the awardee elects to retain title to the invention. We believe this license would apply to work by Network Solutions both before and after NTIA took over the agreement in 1998 (including work reflected in a copy of software and data that Network Solutions delivered to NTIA when it took over, discussed below) and to work by Verisign after it acquired Network Solutions. NSF told us work under the agreement at the time it was the administrator was reasonably considered as experimental, developmental, or research work, while NTIA said work under the agreement since it has been the administrator does not qualify as such. NSF said it was unaware of any inventions by Network Solutions under the agreement; Verisign told us it holds patents for what it describes as its "unnaturally perfect" root zone management processes (but was uncertain whether these processes are considered work under the cooperative agreement). We believe that if there are any Government licenses in any covered inventions, they would constitute Government property under Article IV.

Copyright licenses under the agreement. The cooperative agreement grants the U.S. Government a non-exclusive, non-transferable, irrevocable, royalty-free license in any copyright obtained by the awardee or others in material produced by the awardee under the agreement. We believe this license would apply to work by Network Solutions both before and after NTIA took over the agreement in 1998 (including work reflected in a copy of software and data that Network Solutions delivered to NTIA when it took over, discussed below) and to work by



Verisign after it acquired Network Solutions. NSF and NTIA told us they had no information or records indicating any such copyrights had been obtained to date. We believe that if there are any Government licenses in any such copyrights, they would constitute Government property under Article IV.

Service mark under the agreement: the InterNIC® service mark. The cooperative agreement originally required Network Solutions to collaborate with other named parties to operate an interface for registration of domain names and other services. That interface, an Internet “network information center,” became known as InterNIC®. NSF acquired title to the InterNIC® service mark and the services were offered by Network Solutions through the InterNIC® website. NSF assigned the mark to Commerce in 1998 as part of the NTIA-led transition and Commerce reduced some of Network Solutions’ InterNIC® services starting in 1999. Since 2001, Commerce has licensed the mark to ICANN, which manages the InterNIC® website as a public resource for domain name system information, including posting a copy of the authoritative root zone file. We conclude that Commerce’s service mark is Government property under Article IV.

Equipment and other tangible property received under or used to perform work under the cooperative agreement. The cooperative agreement vests title in the Government in any equipment used to perform work under the agreement that is purchased or fabricated with Government funds. According to NSF, its records indicate it awarded a total of \$80,747 to Network Solutions for the purchase of equipment, but do not indicate what, if any, equipment Network Solutions may have purchased. Verisign and NTIA have no information about the purchase of any such Government-owned equipment or its possible transfer to Verisign, and even if it was purchased, it likely would now be obsolete and no longer in use, according to Verisign and NTIA.

Separately, Appendix 11 to the cooperative agreement, added by NTIA when it took over the agreement in 1998, required, among other things, that Network Solutions deliver an electronic copy of all software and data it had generated under the agreement up to October 1998, as well as a copy of all documentation for such data and software. NTIA told us that Network Solutions delivered these copies—ten 8 mm data cartridges containing database files with a 3-ring binder listing the databases on the cartridges, and several additional 3-ring binders containing the data and software documentation—and the copies are now stored in agency files. We conclude these “hard copies” of data and software are Government property under Article IV. The Government’s possible patent and copyrights licenses and other data rights in the work contained in these copies are discussed above.

### **3. 1998 Commerce Joint Project Agreement with ICANN**

As noted in Appendix I, another early step in the NTIA-led transition was a November 1998 “joint project agreement” (JPA) between Commerce and ICANN to carry out the Domain Name System Project. According to NTIA, the JPA was intended “to transition the U.S. Government’s technical domain name system coordination and management functions to the private sector”<sup>39</sup> and ICANN began “assuming the responsibilities of overseeing the technical management of the Internet, including the Domain Name System” under the JPA.<sup>40</sup> ICANN subsequently took

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<sup>39</sup> See 2016 NTIA Assessment Report, *supra* note 3, at 3.

<sup>40</sup> See NTIA-ICANN License Agreement for InterNIC® service mark (Jan. 8, 2001) (“[O]n November 25, 1998, [Commerce] and [ICANN] entered into a Memorandum of Understanding establishing a joint project under which ICANN is assuming the responsibilities of overseeing the technical management of the Internet, including the Domain

over the IANA functions from USC following execution of the December 1998 USC-ICANN Transition Agreement and performed these functions for approximately 14 months without a formal Government contract, before being awarded the initial IANA-functions contract by NTIA in February 2000.

The only overarching agreement between the Government and ICANN during this 14-month gap period appears to be the 1998 JPA. The agreement does not grant the Government any explicit ownership or licenses in any copyrights, patents, data, or other property that may have been produced under the agreement, however. Further, as required by Commerce's JPA statutory authority, 15 U.S.C. § 1525, the agreement requires the parties to bear the costs of their own activities with the costs "equitably apportioned." The fact that any data or other property ICANN may have created under the JPA would have been produced at its own expense also could weigh against the Government's obtaining rights in any such property.

NTIA told us it does not believe the Government obtained any ownership or other rights in any property that may have been produced under the JPA (and it is unaware that any such property was produced), nor has NTIA identified grounds on which the Government could assert such rights. ICANN characterized the JPA as aspirational and advisory only.

On these facts, we find it unlikely that the Government obtained any rights or title in any data or other property that ICANN may have produced during the 14-month gap period before ICANN was under contract to NTIA.

#### **4. 2000-present NTIA Contracts with ICANN for Performance of the IANA functions**

The final source of potential U.S. Government property that may be affected by the proposed transition is the series of five services contracts between NTIA and ICANN for performance of the IANA functions. The first contract was awarded on February 9, 2000, and similar contracts were awarded in 2001, 2003, 2006, and 2012. These contracts include and incorporate by reference numerous FAR contract provisions. The required ICANN services have varied to some extent from contract to contract, but the core services have been the numbers, names, and protocol parameters IANA functions. As discussed below, we find the Government has or may have obtained certain rights and minimal tangible property under these contracts which would constitute Government property under Article IV.

The Government's right to ICANN's continued performance. Because ICANN is under an enforceable contract with NTIA through at least September 30, 2016, the Government has a fixed and immediate right to ICANN's continued performance of the IANA functions through that date. This right to performance constitutes Government property under Article IV.

Data, software, and other information rights, including data in the ICANN "deliverables." The 2003, 2006, and 2012 contracts require ICANN to perform specific tasks in addition to the core IANA functions. The 2012 contract includes 18 such tasks, for example, some of which simply require submission of routine monthly progress reports and other contract administration-related information. Other tasks require ICANN's development of new data and processes. Under the 2012 contract, for instance, ICANN must deploy a fully automated and secure root zone

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Name System"). See also ICANN, Response to Commerce Solicitation SA 1301-12-RP-0043, Vol. I, Technical Proposal (May 31, 2012) (2012 ICANN Contract Proposal) at 23 ("ICANN's first MoU with [NTIA] contained provisions governing ICANN's performance of the IANA Functions.").

management system; develop performance standards for each of the IANA functions; establish a customer complaint process; and develop user instructions for each IANA function. As we previously reported, NTIA required many of these additional tasks based on input from the global multistakeholder community, which wanted greater accountability from ICANN. 2015 GAO Report at 11-12.

The 2012 contract's 18 additional tasks, and the 8 additional tasks required by the 2003 and 2006 contracts, are designated as "deliverables." The contracts require NTIA to review and inspect the deliverables, determine their acceptability, and approve any publication or posting of the deliverables called for by the contracts.<sup>41</sup> The 2003, 2006, and 2012 contracts also declare that "[a]ll deliverables provided under this contract become the property of the U.S. Government." (Emphasis added.)

Literally read, this broad and unqualified "U.S. Government property" provision could be interpreted to mean the Government obtained title not only in the hard copies of the deliverables, but also in the data contained in the deliverables. While NTIA acknowledges that this provision creates confusion, it states that because contracts must be read as a whole, the provision should be read together with some (but not all) of the contracts' multiple data rights provisions.<sup>42</sup> In particular, NTIA asserts this "U.S. Government property" provision should be read together with FAR § 52.227-14 Alternative III, Rights in Data—General (Dec. 2007), incorporated into the 2003, 2006, and 2012 contracts. NTIA states that when the "U.S. Government property" provision is read together with this data rights provision, the result is that the Government took title only to the physical medium in which deliverables were transmitted, while it obtained use rights or potential use rights in, not title to, the underlying data and software contained in the deliverables.<sup>43</sup>

In particular, NTIA states that it has the following rights in data contained in the deliverables:

(a) the Government holds "unlimited rights"<sup>44</sup> in deliverables consisting of "data first produced in the performance of the contract[s]"<sup>45</sup> (10 of the 18 deliverables in the 2012 contract, e.g., the

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<sup>41</sup> Because NTIA required some of the 2012 contract deliverables for the benefit of the public and Internet community, the contract requires several deliverables to be posted on a public website. (ICANN has posted these items on its website.) According to NTIA, only the deliverables relating to security or ICANN's proprietary business operations have not been made publicly available.

<sup>42</sup> The 2003, 2006, and 2012 contracts incorporate multiple and different data rights clauses and alternatives. The 2012 contract incorporates seven data rights clauses and alternatives, for example, while the 2003 contract incorporates six somewhat different clauses and alternatives (not including the separate patent clause, discussed below).

<sup>43</sup> Some commentators have suggested that because the authoritative root zone file is not one of the 18 deliverables in the 2012 contract, it is not U.S. Government property. Others have suggested that because the 2012 contract deliverables included deployment of an automated root zone management system, the authoritative root zone file is U.S. Government property. In our view, the terms of the 2012 contract are not determinative since we conclude the root zone file likely is not Government property for the reasons discussed above.

<sup>44</sup> FAR § 52.227-14(a) (Dec. 2007) defined "unlimited rights" as "the rights of the Government to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, in any manner and for any purpose, and to have or permit others to do so."

<sup>45</sup> The Government's unlimited rights in such "data first produced" are subject to potential copyright assertions under FAR § 52.227-14(c) (Dec. 2007). Our conclusions regarding the Government's potential rights in ICANN copyrights are discussed below.

new IANA-functions performance standards);

(b) the Government holds similar unlimited use rights in deliverables consisting of “information incidental to contract administration,” because such information is not even deemed “data” in which the Government obtains specific rights under the FAR<sup>46</sup> (7 of the 18 deliverables in the 2012 contract and all 8 deliverables in the 2003 and 2006 contracts, e.g., monthly performance progress reports); and

(c) the Government has the ability to obtain “restricted rights” in the remaining deliverable under the 2012 contract, that is, the automated root zone management system.<sup>47</sup> Specifically, NTIA states that under FAR § 52.227-14(g) Alternate III (Dec. 2007), incorporating FAR 52.227-14(g)(4)(i), it may request delivery of the ICANN software used to operate this system. If and when it requests delivery, it would then negotiate a “restricted rights” license from ICANN. NTIA indicates it does not plan to request ICANN’s software, however, because it does not need it—the Government is not performing the IANA functions now and, in light of the proposed transition, does not plan to do so in the future. NTIA indicates it may still request the software after the contract expires, however, as part of post-contract procurement-related and close-out activities.

ICANN generally declined to offer its view of NTIA’s or its own rights under the five contracts. ICANN stated, however, that because it has never been requested or required to deliver, and has not delivered, what ICANN states is its proprietary software used to perform the IANA functions, the U.S. Government does not currently have any rights in that software under the 2012 contract or otherwise. ICANN also declined to offer its view about whether NTIA may request and obtain negotiated restricted rights in its software after the current contract expires.<sup>48</sup>

We lack the record necessary to analyze the Government’s property rights under the five NTIA-ICANN contracts. The contracts contain multiple data rights provisions without distinguishing the portion of contract performance to which each provision pertains. The three most recent contracts also include the non-standard “U.S. Government property” clause. NTIA acknowledges the ambiguity created by having multiple data rights provisions and the confusion created by inclusion of the “U.S. Government property” clause, but states that its interpretation of the contract is reasonable based on its understanding of the contract and what the parties intended.

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<sup>46</sup> FAR § 52.227-14(a) (Dec. 2007) defined “data” to include technical data and software but excluded “information incidental to contract administration such as financial, administrative, cost or pricing, or management information.”

<sup>47</sup> ICANN asserts that the software it uses to operate the root zone management system is not itself a deliverable. ICANN asserted in its 2012 Contract Proposal that the root zone management software, along with 14 additional pieces of software, is proprietary and qualifies as “restricted computer software.” FAR § 52.227-14(a) (Dec. 2007) defined “restricted computer software” as “computer software developed at private expense and that is a trade secret, is commercial or financial and confidential or privileged, or is copyrighted computer software, including minor modifications of the computer software.”

<sup>48</sup> ICANN did assert that the 15 items of software it listed in its 2012 Contract Proposal were developed wholly at private expense and therefore are proprietary. It also asserted that the 15 software items are not a legacy of any of the USC intellectual property listed in the 1998 USC-ICANN Transition Agreement in which ICANN obtained a license in 1999 and title in 2000. ICANN believes there is no overlap between the USC intellectual property and the custom software, tools, and systems that ICANN uses to perform the IANA functions today.

We agree contracts should be read as a whole<sup>49</sup> and should be interpreted in accordance with the parties' understanding, as shown by their conduct prior to any dispute.<sup>50</sup> We also agree there is a difference between the Government obtaining title to the physical medium in which data are delivered and obtaining title to, or rights in, the underlying data itself.<sup>51</sup> Reading the contract as NTIA suggests—granting the Government title to the “hard copies” of the deliverables and use rights in the deliverables data—also would be consistent with the fact that these are services contracts, with the “deliverables” requirement being a mechanism to ensure the additional tasks are performed.

NTIA may nonetheless be understating the Government's rights. While NTIA appears to argue it has data rights only with respect to the deliverables, FAR § 52.227-14 (Dec. 2007) provided “unlimited rights” to the Government in data first produced under the contract irrespective of whether the contract specifies delivery. The Government therefore may have rights in data or software produced under the NTIA-ICANN contracts even if it has not been specified for delivery.<sup>52</sup> Additionally, for the contracts containing the “U.S. Government property” clause in addition to the standard data rights clause (FAR § 52.227-14), the Government may also have title to such “first produced” data. See *Ervin and Assoc., Inc. v. United States*, 59 Fed. Cl. 267 (2004), *aff'd per curiam*, 120 F. App'x 353 (Fed. Cir. 2005); *Cygnus Corp., Inc.*, ASBCA No. 53,618, 03-1 BCA ¶ 32,140 (2003).<sup>53</sup>

We conclude that the Government holds title to the minimal tangible property in which it received any of the 26 deliverables under the contracts, e.g., hard copies of reports and other documents, and that this constitutes U.S. Government property under Article IV. In light of the multiple uncertainties with respect to data and software produced under or used to perform the contracts, we can only say that if the Government has any rights or licenses in such data or software, they would constitute Government property under Article IV.

Patent licenses under the contracts. Each of the contracts includes a FAR patent clause (not always the same clause). In general, the clauses authorize ICANN to retain title to any potentially patentable invention made in performing work under the contracts, or any invention conceived of or first reduced to practice in performing the contracts. If ICANN retains title, the Government obtains either a non-exclusive, non-transferable, irrevocable, paid-up license to

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<sup>49</sup> Contract interpretation begins with the language of the written agreement, see *Foley Co. v. United States*, 11 F.3d 1032 (Fed. Cir.1993), but the document must be considered as a whole and interpreted so as to harmonize and give reasonable meaning to all of its parts. *McAbee Constr., Inc. v. United States*, 97 F.3d 1431 (Fed. Cir.1996).

<sup>50</sup> See, e.g., *Jowett, Inc. v. United States*, 234 F.3d 1364 (Fed. Cir. 2000); *Julius Goldman's Egg City v. United States*, 697 F.2d 1051 (Fed. Cir.), *cert. denied*, 464 U.S. 814 (1983).

<sup>51</sup> The Government generally obtains title to the physical medium in which data are delivered—paper copies or a compact disc, for example. By contrast, to balance the Government's need to acquire or obtain access to data against the contractor's proprietary interests in the data, the Government generally obtains rights in data, with the precise rights depending on the terms of the contract. See, e.g., FAR §§ 27.402 (2015), 52.227-14 (May 2014).

<sup>52</sup> The 2000, 2001, 2003 and 2006 NTIA-ICANN contracts did not specify delivery of the software ICANN used to perform those contracts, for example, and ICANN asserted no restrictions on the Government's rights in that software as it did for the 2012 contract.

<sup>53</sup> The *Ervin* court appeared to accept the United States' characterization of a “U.S. Government property” clause as a second data rights clause (in addition to the standard FAR § 52.227-14 data rights clause). The Board in *Cygnus* found that a “U.S. Government property” clause, accompanied by the standard data rights clause, gave the Government “preemptive ownership rights.” See Maj. Katherine White, *Losing Rights to Intellectual Property: The Perils of Contracting with the Federal Government*, 2005 Army Law. 146 (Jan. 2005) (discussing *Ervin*).

practice the invention or, if ICANN declines or fails to elect to retain title, the Government may obtain title. We identified no such inventions or patents and NTIA and ICANN told us they are unaware of any.

Copyright licenses under the contracts. FAR § 52.227-14(c)(1)(iii) (Dec. 2007), which NTIA states applies to the NTIA-ICANN contracts, allows ICANN, with NTIA's permission, to assert a copyright in data first produced in performing the contracts. The Government obtains a broad paid-up, non-exclusive, irrevocable, worldwide license in such copyrighted data (and obtains a more limited license if the data are computer software). We identified no registered ICANN copyrights in such data or software.<sup>54</sup>

Equipment and other tangible property received under or used to perform the ICANN contracts. The contracts require ICANN to provide all equipment and other material needed to perform the required services. This is reflected in the contracts' Statement of Work, which specifies that ICANN is to "furnish the necessary personnel, *materials, equipment, services and facilities* to perform [the tasks] without any cost to the Government." (Emphasis added.)<sup>55</sup> The contracts did not require the Government to provide ICANN with any equipment and Commerce told us no Government property has, in fact, been provided. 2015 Commerce Letter at 3.<sup>56</sup>

## **II. Whether the Proposed Transition Would Result in the Transfer or Other Disposal of U.S. Government Property and NTIA's Statutory Authority for Such Disposal**

Almost all of the Article IV Government property we have identified related to the domain name system and IANA functions will not, according to NTIA, be transferred or otherwise disposed of in connection with the proposed transition. Specifically, based on NTIA's representations:

- If the Government has any vested data use or ownership rights under the 1970s-1990s DARPA contracts, the 1993 cooperative agreement with Network Solutions and now Verisign, the 1998 Commerce-ICANN joint project agreement, or the 2000-present NTIA-ICANN IANA-functions contracts, these rights survive expiration or termination of the agreements and the Government will not transfer, waive, renounce, or otherwise dispose of these rights;<sup>57</sup>
- Commerce's InterNIC® service mark, currently licensed to ICANN through 2025 for use in providing domain name system information to the public, will remain in effect and not be disposed of; and

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<sup>54</sup> ICANN told us it may hold common-law copyrights in some of the software it is using to perform the 2012 contract to which it has asserted restrictions, but states the software was *not* first produced under the contract.

<sup>55</sup> In some of the contracts, this provision includes an exception under which NTIA might furnish equipment to perform the contract. Commerce told us no Government equipment was furnished under these exceptions. See 2015 Commerce Letter at 3.

<sup>56</sup> As noted above, we also conclude the Government owns the minimal tangible property in the 26 deliverables transmitted to NTIA under the 2003, 2006, and 2012 contracts.

<sup>57</sup> Government data rights generally survive expiration or termination of the contracts unless provided otherwise. See *generally INSLAW, Inc. v. United States*, 40 Fed. Cl. 843 (1998). Moreover, as noted, certain of the Government's potential rights are stated as "irrevocable" and others are stated as "unlimited rights" in both scope and time.

- The tangible property (hard copies of information) that NTIA has received from Network Solutions and ICANN will continue to be stored in agency files and retained pursuant to applicable records retention requirements.

The one category of Government property we identified that might be disposed of in connection with the transition is the Government's right to ICANN's and Verisign's continued performance under their NTIA agreements, if NTIA terminates the agreements or relevant provisions before they expire. This would constitute disposal under Article IV because the Government would be waiving continued performance.<sup>58</sup>

However, we find NTIA has the authority required by Article IV to terminate the agreements. NTIA stated, and we agree, that it has broad statutory authority for its IANA-functions contracts with ICANN and its assumption of the cooperative agreement with Network Solutions in 1998, now in effect as the Verisign agreement.<sup>59</sup> NTIA's statutory contracting authority, in turn, authorizes it to terminate these agreements if doing so would be in the public interest. *United States v. Corliss Steam-Engine Co.*, 91 U.S. 321 (1875).<sup>60</sup> The ICANN and Verisign agreements' termination-for-convenience provisions require NTIA to apply this "public interest" standard,<sup>61</sup> which echoes the Supreme Court's declaration in *Ashwander*, *supra* page 9, that Article IV Government property must be disposed of in a manner serving the public interest. Thus NTIA has the requisite authority to terminate the agreements.

## CONCLUSION

For the foregoing reasons, we find it is unlikely that either the authoritative root zone file or the Internet domain name system is U.S. Government property under Article IV. We also find that the possible U.S. property interests that we have identified either would not be disposed of in connection with the proposed transition or would be disposed of in compliance with Article IV.

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<sup>58</sup> If NTIA allows the agreements or relevant provisions to expire, this would not constitute disposal because ICANN's and Verisign's required performances would have been completed.

<sup>59</sup> When we addressed similar matters in 2000, NTIA cited to 15 U.S.C. § 1512 (Commerce authority to foster, promote, and develop foreign and domestic commerce) and 47 U.S.C. § 902(b)(2) (NTIA authority to coordinate the telecommunications activities of the executive branch). See [GAO, Department of Commerce: Relationship with Internet Corporation for Assigned Names and Numbers](#), GAO/OGC-00-33R (Washington, D.C.: July 7, 2000) (2000 GAO Legal Opinion) at 3-4, 8-9. We find these statutes authorize NTIA's ICANN and Verisign agreements, supported by the Federal Grant and Cooperative Agreement Act, 31 U.S.C. §§ 6301-6308 (governing executive department use of procurement contracts, cooperative agreements, and grant agreements); the general authorities governing executive agency procurements, 41 U.S.C. §§ 3101 *et seq.*; and the Government's inherent authority to contract in order to exercise its powers and discharge its duties. See *generally* John Cibinic, Jr., Ralph C. Nash, Jr. & Christopher R. Yukins, *Formation of Government Contracts* (4<sup>th</sup> ed. 2011), Ch. 1, Sec. II, and cases discussed therein.

<sup>60</sup> See also B-180381, May 3, 1974 (citing *Corliss* as authority for the Government's termination-for-convenience); B-106595, Nov. 28, 1951 (same); 18 Comp. Gen. 826 (1939) (same).

<sup>61</sup> The ICANN contract authorizes termination-for-convenience "in the Government's interest" and the Verisign cooperative agreement authorizes such termination "whenever, for any reason, . . . in the best interest of the Government."

If you have any questions, please contact Susan D. Sawtelle, Managing Associate General Counsel, at (202) 512-6417 or [SawtelleS@gao.gov](mailto:SawtelleS@gao.gov). Assistant General Counsel Hannah Laufe, Senior Attorney Geoffrey Hamilton, Director Mark Goldstein, Assistant Directors Katharine K. Perl and Alwynne Wilbur, and Senior Analyst John Healey also made key contributions to this opinion.

Sincerely,

A handwritten signature in black ink, appearing to read "S. Poling". The signature is written in a cursive, flowing style.

Susan A. Poling  
General Counsel

Appendix I: Chronology of the U.S. Government's Support of the Development of the Internet and Its Technical Functions and the Decision to Relinquish the Government's Oversight Role



## **APPENDIX I: Chronology of the U.S. Government's Support of the Development of the Internet and Its Technical Functions and the Decision to Relinquish the Government's Oversight Role**

### **I. The U.S. Government's Support of the Development of the Internet, Supporting Technical Functions, and the Domain Name System**

#### **A. U.S. Support of Development of the Internet**

What began as a research project involving four host computers in the 1960s has evolved to the vast global system of interconnected networks used by billions of people worldwide today. In the United States, where most of the research and development work occurred, this work largely occurred as part of a series of U.S. Government-funded computer networking contract efforts, beginning with the Defense Department's ARPANET in 1969.

Several other U.S. Government agencies, notably NSF, also developed networks so that their researchers could communicate and share data. NSF's NSFNET went online in 1986 and eventually became the largest and most advanced of the U.S. Government networks, providing a "backbone" to connect other networks serving more than 4,000 research and educational institutions throughout the country.<sup>62</sup> In 1991, NSF took on responsibility for coordinating and funding the management of the non-military portion of the Internet infrastructure. After Congress authorized NSF to allow commercial activity on the NSFNET in 1992<sup>63</sup> and firms saw the opportunities for commerce, education, and other activity, commercial entities began to build their own infrastructure networks. This led to the decommissioning of the NSFNET backbone in 1995, and in 1998, NSF's direct role in development of the Internet infrastructure ended.

#### **B. U.S. Support of Development and Oversight of the Internet Technical Functions and the Domain Name System**

At the same time that the U.S. Government was funding development of the ARPANET and NSFNET infrastructure, the Government also was supporting development of technical functions and systems needed to make these systems run smoothly—what became the IANA functions, the Internet domain name system, and the authoritative root zone file. These efforts were carried out in large part by a series of U.S. Government contracts and cooperative agreements. According to the available records and our interviews of key individuals involved at the time, these U.S. Government contract-funded efforts included the following:

##### **1. The IANA technical functions**

The concept of what later became known as the IANA functions was initially developed in the early 1970s by a team led by the late Dr. Jon Postel at the University of California at Los Angeles.<sup>64</sup> When Dr. Postel moved to the University of Southern California's Information

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<sup>62</sup> The National Aeronautics and Space Administration (NASA) and the U.S. Department of Energy also developed backbone facilities. The ARPANET was decommissioned in 1990.

<sup>63</sup> See Scientific and Advanced-Technology Act of 1992, Pub. L. No. 102-476, § 4, 42 U.S.C. § 1862(g).

<sup>64</sup> One of the documents authored by Dr. Postel, often cited as the beginning of what became the IANA functions, is Jon Postel, UCLA Computer Science Department, "Proposed Standard Socket Numbers," Request for Comments (RFC) 349 (May 30, 1972) ("I propose that there be a czar (me ?) who hands out official socket numbers for use by

Sciences Institute in 1977, this work moved with him;<sup>65</sup> the work was performed under various U.S. Defense Department-funded research projects. Development and implementation of the IANA functions continued at USC until around 1999, including through the final DARPA-USC contract awarded in 1995. This contract, for work on the Tera-node Network Technology (TNT) project, contained Task 4 requiring performance of “network infrastructure activities” including “acting as the Internet Assigned Numbers Authority.” As discussed below, ICANN began taking over the IANA functions in December 1998 or January 1999 as part of the NTIA-led transition efforts.

## **2. The domain name system and the authoritative root zone file**

One of the initial concepts of what became the domain name system and the authoritative root zone file was developed in 1983 by a team led by Dr. Paul Mockapetris, in collaboration with Dr. Postel and others, under a DARPA contract with USC.<sup>66</sup> The domain name system was initially created to support the ARPANET. Dr. Mockapetris introduced an updated domain name system in 1987, replacing the 1983 system. According to Dr. Mockapetris, these DARPA contracts did not require development of a specific product; rather, they were more general and called for “performance of Internet research,” for example.

By 1992, there was a need for expanded and coordinated network information services for the non-military Internet and, as noted above, NSF took on this role with its new statutory authority allowing commercial activity on the NSFNET. As part of its new role, NSF awarded a cooperative agreement to Network Solutions, Inc., effective January 1, 1993. Among other things, Network Solutions was responsible for managing the NSFNET and, through the InterNIC® Internet Network Information Center, providing second-level domain name registration and other services to the non-governmental community, in cooperation with USC. USC was carrying out the IANA functions led by Dr. Postel, including under the TNT contract as of 1995. DARPA and other DOD agencies also contracted with SRI International at this time to carry out certain domain name system functions, in coordination with Dr. Postel. Network Solutions’ work under NSF continued until September 1998, when, as part of the NTIA-led transition efforts discussed below, NSF transferred responsibility for administering the cooperative agreement to NTIA.

## **II. The Decision to Relinquish the U.S. Government’s Oversight Role**

By the late 1990s, it became clear that the Internet could benefit not just the U.S. military and scientific communities that had developed it, but the commercial, education, and other communities as well. Some saw a need for a corresponding change in the oversight role still played by the U.S. Government. As NTIA described some of the concerns at the time:

“From its origins as a U.S.-based research vehicle, the Internet is rapidly becoming an international medium for commerce, education and

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standard protocols. This czar should also keep track of and publish a list of those socket numbers where host specific services can be obtained. . . .”), available at <https://tools.ietf.org/html/rfc349> (last visited Sept. 1, 2016).

<sup>65</sup> An attorney for USC told us USC started performing the IANA functions in 1977 under various DOD contracts. See 2000 GAO Legal Opinion, *supra* note 59 at 18, n. 26.

<sup>66</sup> See generally Paul V. Mockapetris & Kevin J. Dunlap, “Development of the Domain Name System,” 18 ACM SIGCOMM Computer Comm. Rev. 123 (Aug. 1988).

communication. . . . As the Internet becomes commercial, it becomes less appropriate for U.S. research agencies to direct and fund these functions.”<sup>67</sup>

On July 1, 1997, President Clinton issued a policy memorandum directing the Secretary of Commerce to “support efforts to make the governance of the domain name system private and competitive and to create a contractually based self-regulatory regime . . . .”<sup>68</sup> This policy directive officially launched the United States’ efforts to transition out of its contractual role and responsibilities in the development, performance, and oversight of the Internet technical functions.

In response to the President’s policy directive, NTIA solicited public input in 1997 and 1998 on how best to accomplish this transition<sup>69</sup> and issued a Statement of Policy in June 1998 (known as the “White Paper”) describing the public input it had received and laying out how it planned to move forward with the transition.<sup>70</sup> Among these plans was to enter into an agreement with a new, not-for-profit entity, referred to as the “new corporation” (and later as “NewCo”), that would establish and coordinate a process to transition current U.S. Government management of the domain name system based on the principles of stability, competition, bottom-up coordination, and representation. As discussed below, that entity, formed later in 1998, was ICANN.

In September 1998, NSF and the Department of Commerce entered into a Memorandum of Agreement transferring NSF’s responsibility for administering the 1993 cooperative agreement with Network Solutions to Commerce, as the lead agency responsible for the transition. NTIA, charged with administering the agreement, modified it the following month by adding Amendment 11. Among other things, Amendment 11 designated Network Solutions as the root zone administrator and made it responsible for implementing changes to the authoritative root zone file. Significantly, Amendment 11 required Network Solutions to request NTIA’s “written direction” before “making or rejecting any modifications, additions or deletions to the root zone file.” According to a former NTIA official involved at the time, this pre-authorization requirement—which is the basis of NTIA’s current control over changes to the authoritative root zone file—was motivated in part by NTIA concerns that Network Solutions might attempt to assert unilateral control over the root zone file.<sup>71</sup> NTIA subsequently reduced Network Solutions’ responsibilities under the cooperative agreement (e.g., it scaled back the InterNIC® services and took over management of the InterNIC® website) and Verisign replaced Network Solutions as the awardee after it acquired Network Solutions in 2000. The cooperative agreement currently is scheduled to expire on November 30, 2018, and may be extended by Commerce under certain circumstances.

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<sup>67</sup> NTIA, Statement of Policy, Management of Internet Names and Addresses, 63 Fed. Reg. 31741, 31741 (June 10, 1998) (known as the “White Paper”).

<sup>68</sup> The White House, *Memorandum for the Heads of Executive Departments and Agencies* (July 1, 1997), available at <http://clinton4.nara.gov/WH/New/Commerce/directive.html> (last visited Sept. 1, 2016).

<sup>69</sup> See Request for Comment, Registration and Administration of Internet Domain Names, 62 Fed. Reg. 35896 (July 2, 1997); Request for Comment, Proposed Rule, Improvement of Technical Management of Internet Names and Addresses, 63 Fed. Reg. 8826 (Feb. 20, 1998) (known as the “Green Paper”).

<sup>70</sup> NTIA White Paper, *supra* note 67.

<sup>71</sup> Another motivation, according to the former NTIA official, was to provide Network Solutions with a defense against allegations of antitrust violations. See *PGMedia, Inc. v. Network Solutions, Inc.*, 51 F. Supp. 2d 389, 403 (S.D.N.Y. 1999), *aff’d sub nom. Name.Space, Inc. v. Network Solutions, Inc.*, 202 F.3d 573 (2d Cir. 2000).

Also in September 1998, ICANN was formed as a not-for-profit “public benefit” corporation.<sup>72</sup> According to ICANN, its primary functions are: (1) to coordinate, at the top level, the global Internet’s systems of unique identifiers (names, numbers and protocol parameters) and (2) to operate as a private sector-led, multistakeholder organization responsible for bottom-up policy development reasonably and appropriately related to these technical functions.<sup>73</sup>

On November 25, 1998, Commerce and ICANN signed a joint project agreement (JPA) for the “Domain Name System Project.” The stated purpose of the project was to jointly “design, develop, and test the mechanisms, methods, and procedures that should be in place and the steps necessary to transition management responsibility for DNS functions now performed by, or on behalf of, the U.S. Government to a private-sector not-for-profit entity. Once testing is successfully completed, it is contemplated that management of the DNS will be transitioned to the mechanisms, methods, and procedures designed and developed in the DNS project.” According to NTIA, ICANN began assuming the IANA responsibilities under the JPA.<sup>74</sup>

On December 24, 1998, ICANN and USC signed a Transition Agreement. The agreement provided for USC’s transfer of its IANA-function responsibilities to ICANN as of January 1, 1999,<sup>75</sup> along with its IANA-related assets, including an IANA copyright and service mark and a license in other listed intellectual property, with an option to obtain title to that intellectual property.<sup>76</sup> Persons involved at the time told us that because the transition from NTIA to ICANN and the global multistakeholder community was planned to occur relatively quickly—to start in late 1998 and be completed in 1999 or 2000—no new contract was initially put in place following the DARPA-USC TNT contract. ICANN nevertheless began performing the IANA functions in late 1998 or early 1999 after it signed the December Transition Agreement with USC.<sup>77</sup> From this time until February 2000, ICANN performed the IANA functions without a formal U.S. Government contract; the only overarching ICANN agreement with the U.S. Government during this time was the November 1998 JPA.

On February 9, 2000, NTIA awarded ICANN the first in a series of contracts to perform the IANA functions on behalf of the U.S. Government. ICANN simultaneously exercised its option to acquire title to USC’s intellectual property<sup>78</sup> and NTIA approved this acquisition, as well as

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<sup>72</sup> ICANN was incorporated in California; its Articles of Incorporation state it is “not organized for the private gain of any person. It is organized under the California Nonprofit Public Benefit Corporation Law for charitable and public purposes.”

<sup>73</sup> 2012 ICANN Contract Proposal, Vol. I, *supra* note 40, at 267.

<sup>74</sup> See note 40, *supra*.

<sup>75</sup> The effective date of the agreement was the later of January 1, 1999 or the date when Government approval was received. Persons involved at the time told us the November 25, 1998 JPA was considered to constitute that approval.

<sup>76</sup> The listed intellectual property included specific “computer programs, data, documents, protocols, processes, and other materials” as well as “[a]ll intellectual property rights (including all patents, copyrights, trademarks, service marks, and trade secret rights) in all computer programs, data, documents, protocols, and processes.”

<sup>77</sup> ICANN indicates it began performing the IANA functions on December 24, 1998, the date of the USC-ICANN Transition Agreement. See 2012 ICANN Proposal, *supra* note 40, at 267-68 (“ICANN has successfully performed the IANA Functions since December 24, 1998 . . . Having assumed these key [USC] resources . . . ICANN was tasked, in December 1998, with the responsibilities of the IANA functions.”).

<sup>78</sup> See Feb. 9, 2000 USC-ICANN Agreement and Assignment of Licensed Rights.

USC's transfer of its IANA-functions responsibilities, as part of the contract. NTIA awarded additional IANA functions contracts to ICANN in 2001, 2003, 2006, and 2012, with the current contract scheduled to expire on September 30, 2016, unless extended (NTIA may unilaterally extend through September 30, 2019). All of the NTIA contracts have been performed at no cost to the Government, although with NTIA's approval, they allow ICANN to charge fees for the IANA functions to third parties.<sup>79</sup>

On March 14, 2014, NTIA announced that it planned to proceed with the transition if a proposal were developed that met its criteria, including maintaining the security, stability, and resiliency of the Internet domain name system, maintaining the openness of the Internet, and establishing structures and procedures that are not led by governments or inter-governmental organizations. Following a two-year proposal development process coordinated by ICANN, the multistakeholder community submitted a proposal to the ICANN Board of Directors in early 2016 which it believed fulfilled NTIA's criteria. The Board submitted the proposal to NTIA on March 10 for its review and assessment, and NTIA reported to Congress and the public on June 9 that the proposal meets NTIA's 2014 criteria.

The key feature of the proposed transition is NTIA's relinquishment of its rights and responsibilities under its current contract with ICANN—there will no longer be any U.S. Government contract for performance of the IANA functions. NTIA's current cooperative agreement with Verisign also will require modification to eliminate NTIA's role in root zone management, but the agency and Verisign have not yet announced what specific changes will be made. In the meantime, ICANN has negotiated an agreement with Verisign to replace that portion of the NTIA-Verisign agreement and posted the draft agreement for public review.<sup>80</sup> According to ICANN, the replacement agreement with Verisign will go into effect upon expiration of the current NTIA-ICANN contract.

Finally, ICANN reported to NTIA on August 12, 2016 that all tasks remaining to be completed prior to the transition will be completed by September 30.<sup>81</sup> Based on this representation, NTIA advised several dozen Members of Congress on August 16 that it intends to allow its current contract with ICANN to expire as of October 1, barring any significant impediment. NTIA is prohibited by statute, through at least September 30, from using appropriated funds to relinquish its domain name and IANA functions responsibilities.

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<sup>79</sup> As we previously reported, to date ICANN has not charged fees for these services. Rather, its revenue comes primarily from fees for other services charged to operators of generic top-level domains (such as Verisign, which operates .com, .net, and .name) and registrars for generic top-level domains (such as GoDaddy) that register new second-level domain names. See 2015 GAO Report at 13-18, 55-57.

<sup>80</sup> "Root Zone Maintainer Service Agreement," available at [https://www.icann.org/iana\\_imp\\_docs/67-root-zone-maintainer-service-agreement-v-1-0](https://www.icann.org/iana_imp_docs/67-root-zone-maintainer-service-agreement-v-1-0) (last visited Sept. 1, 2016).

<sup>81</sup> These tasks do not, however, include addressing all of NTIA's recommendations regarding internal controls matters the agency identified in its assessment of the 2016 Transition Proposal. NTIA did not require that its internal controls recommendations be addressed as a pre-condition to the transition, and ICANN has indicated it will continue to consider NTIA's recommendations after the transition.