

# THE GOVERNMENT AT THE STANDARDS BAZAAR

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In recent years, there has been heightened interest in having government intervene in what has become primarily a market activity to mandate information technology standards. This article will provide an analytical framework by which government can consider such actions. I premise my proposal on the conclusion that government should be reluctant to intervene in the setting of information technology standards (and particularly, to mandate a particular standard that has not been developed and/or widely adopted by the market) because: (1) the relevant industries are sophisticated in regard to standards setting and have many well-developed types of standards, and forums in which to develop standards; (2) the U. S. government has a strong preference for market-developed information technology standards and promotes this preference as a matter of both domestic law and policy and foreign trade policy; (3) international trade agreements limit the degree to which participating governments can mandate standards; and (4) in contrast to the sophistication of the marketplace, government is rarely as informed, sophisticated in its understanding of the market, or nimble enough to respond to market conditions; therefore, the risk of government failure is significant, and indeed greatest where the market is young and dynamic, as is the case with regard to the current market affected by information technology standards.

Based on these premises, this article proposes the following test, which appears as a flow chart in the Appendix. First, the government should identify which of three categories describe the instant circumstances: (1) clear cases for intervention, those where there is a government responsibility to meet a critical public interest objective and the standard is essential for the government to meet that objective; (2) “gray area” cases, where the standard is relevant to either (a) meeting a public interest objective arising in the context of a non-critical issue in the area of national security, defense, public safety, health or

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welfare, or (b) providing an essential but non-critical government service; and (3) cases that are clearly not circumstances for government intervention. As to determining whether to intervene in a case arising within the first category, where a critical public interest objective is at stake and a standard is essential to meet the objective, the government should take all necessary measures to address the objective. That said, pursuant to clear government policy, even in these cases government should be predisposed to implement market-developed standards and may apply the same test as described for “gray area” cases. In a “gray area” case, there must be a significant and substantial market failure to develop a standard to meet the important public interest objective before the government should consider mandating a particular standard. “Significant and substantial” means the market failure has proved to be a barrier to government action to address the important public interest objective. The government should further consider mitigating factors, such as whether the market has had a reasonable time, relative to the circumstances, to develop, approve, and implement the standard and whether there is cohesiveness among the stakeholders (i.e., whether stakeholders have adequate forums in which to act in the specific situation). The government and industry should support credible and informed non-governmental public interest (e.g., consumer-oriented) representation to potentially obviate the need for direct government action later on.

Where a government decides to intervene, intervention should be reasonably tailored to rectify the identified market failure and to achieve the particular public interest objective. The government should limit the scope of intervention and define objectives. In order to assure the most narrowly tailored intervention, government should clearly articulate: (a) the specifics of the important public interest objective in the establishment of a particular information technology standard; (b) the purpose and scope of the government intervention; and (c) defined objectives for government intervention to achieve. The government should proceed incrementally with intervention. The first step should be to encourage market behavior through incentives. As a second step, the government should use its leverage as a major market participant and potential regulator to influence market behavior; however, the government should behave as a rational consumer, and it should consider not only the public interest objective at issue, but also the general public good. At each stage of intervention, the government should consider how best to mitigate the risk of harm of “non-market failure.” To this end, where the government does intervene, intervention should reflect the market norms and market behaviors to the greatest extent possible.

## I. INTRODUCTION

In recent years, there has been heightened interest in having the state or federal government (or a corresponding foreign governing body) intervene in

the information technology standards-setting process to mandate a particular standard.<sup>1</sup> The question of whether the government should mandate a particular information technology standard has arisen in several contexts, including entertainment content protection (e.g., efforts to implement standardized copy protection measures such as the broadcast flag, digital rights management, etc.), access to government services (e.g., state government requirement of the open-standard formats for all government documents), and efforts to achieve greater interoperability for data exchange in the areas of law enforcement, national security, and healthcare. The question of the government's proper role in setting standards has spurred substantial debate. However, to date there has been no objective analysis by which the need for and nature of government action may be determined. It is up to government policymakers to determine the best course in the public interest. This Article will outline a framework to

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1. For the purpose of this discussion, I define the term "standard" as a written specification that facilitates interoperability between information technology networks, applications, or services, enabling such components to exchange and use information. In simple terms, an information technology standard enables software, hardware, or information technology services to "talk" to each other. More specifically, a standard is a technical description of the functionality or features necessary for interoperability; it is a description of the *requirements* to achieve interoperability, not a specific implementation of such a "description." For example, a standard for automobiles might be the technical requirement that the engine would run on gasoline with an octane rating ranging from 86 to 92. An implementation might be the General Motors design of a piston engine, or a Mazda design of a Wankel rotary engine. In the information technology sphere, one example of a standard is the XML file format that enables the creation of documents that can be read, revised, managed, saved, and stored across a broader array of applications and platforms. In terms of interoperability, this is not the same as "interchangeability," which is the ability to substitute one product or system for another to perform the same functions (i.e., the creation of a piece of software or an information technology system that functions in the same manner as another product and is used to replace such other product). As two U. S. courts have concluded, describing "interoperability" in this manner would be overly broad. *See Massachusetts v. Microsoft Corp.*, 373 F.3d 1199, 1225 n.16 (D.C. Cir. 2004); *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76, 122 (D.D.C. 2002). Interoperability, in the meaning I give the term, allows information technologies to provide differing features and characteristics, while at the same time ensuring that such different technologies can communicate to exchange data with one another.

I use the terms "government intervention in the setting of information technology standards" and "government-mandated standards" to describe a government action to establish or mandate by law or policy a particular information technology standard in cases where the market/industry has not developed and/or approved a standard. I do not mean to include in my definition the government's participation in the standard-setting process as a full participant in standards-setting organizations, or as a potential customer for (or even developer of) a standard. I also do not mean to necessarily frown upon situations where governments simply "ratify," "bless," or "codify" in their rules for enforcement purposes information technology standards that have previously been developed, tested, and approved by industry (assuming the government action provides an opportunity to expeditiously adapt or revise the standard as technology evolves). I also take the liberty of conflating computing technology with consumer electronics, and discuss them collectively as "information technology." Finally, I will feel free to take examples from each sector, given their ongoing convergence.

guide government policy when the following question arises: should the government intervene in the market to mandate an information technology standard?

## II. BACKGROUND

The past decade has been a dynamic period in the information technology standards-setting world. The explosive growth of the role of information technology in our society and as a component of our economy has dramatically elevated the importance of information technology interoperability. Interoperability may be achieved in a number of ways, through intellectual property licensing and cross-licensing, relatively simple technical means (for instance, in information technologies and consumer electronics, converters and translators are commonplace in both software and hardware), through industry collaboration with companies working to facilitate interoperability among their products, through a company designing its product to interoperate with the products of other companies, and through consulting services that facilitate interoperability among otherwise non-interoperable technologies. And indeed, as I suggest above, interoperability between modern technologies is often a far simpler task than during previous eras of technological evolution wherein inventors were limited by physical characteristics and mechanical interactions. This said, I will be focusing on standards and standard setting, as standards have been the focal point for government action and significantly, an integral part of some commercial competitive strategies.

The increased need for interoperability has in turn resulted in enormous demand for standards at a pace that challenges traditional standards-setting processes. Concurrently, government programs have transitioned from reliance on government-specific standards, such as MilSPEC/MilStandards, to voluntary standards developed in the private sector, placing an additional burden on standards-setting forums.<sup>2</sup> As a result of these factors, the information technologies industries are in an extremely competitive commercial environment, one that is also reliant on standards that facilitate interoperability among increasingly heterogeneous products and services. The high demand for interoperability is in turn creating an environment wherein stakeholders are more likely to turn to government to intervene in the market to aid in achieving particular goals more rapidly than may occur in the natural course of market activity.

In some cases, the government is being asked by one business sector or

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2. MilSPEC and MilStandards are respectively the "military specifications" and "military standards" developed by Department of Defense engineers and technicians to describe the products to be made by contractors. See U.S. GEN. ACCOUNTING OFFICE, GAO/NSIAD-95-14, ACQUISITION REFORM: DOD BEGINS PROGRAM TO REFORM SPECIFICATIONS AND STANDARDS (Oct. 1994), *available at* <http://www.gao.gov/archive/1995/ns95014.pdf>.

another to play a role in, or even to take responsibility for, setting information technology standards, the development of which were vexing the industry with conflicting interests, or identified by one proponent or another to need government assistance to accelerate the advancement of one technological solution, business model, or corporate venture over another. Throughout this dynamic period, governments have been asked by stakeholders, or have independently pursued mandating particular information technology standards, in several areas:

*Copyright protection and digital rights management for copyrighted works.* This has been a technical, legal, and political issue for years. Examples include recent efforts to seek a government mandate, such as legislation introduced by U.S. Senator Hollings that set a deadline for market action, the failure of which would precipitate a government mandate for digital rights management standards.<sup>3</sup> There have been efforts by both Congress<sup>4</sup> and the Federal Communications Commission (FCC)<sup>5</sup> to establish a “broadcast flag” with specific technical standards for digital broadcast television.<sup>6</sup>

*Open Source Software.* There is an ongoing debate as to whether governments should mandate standards that are implemented with open source code software over proprietary software because, proponents of open source argue, open source software has characteristics that are better aligned with the needs of government (e.g., Massachusetts’s selection of open standards formats for all state government documents<sup>7</sup>) and government adoption would accelerate broader market adoption of open source applications.

*National security information sharing.* Subsequent to the events of September 11, 2001, there has been heightened attention given to improving data interoperability to facilitate better information sharing between law enforcement, intelligence, immigration, and foreign service agencies, to better

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3. Consumer Broadband and Digital Television Promotion Act, S. 2048, 107th Cong. (2002), available at [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=107\\_cong\\_bills&docid=f:s2048is.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=107_cong_bills&docid=f:s2048is.txt.pdf).

4. See Perform Act of 2007, S. 256, 110th Cong. (2007); Digital Transition Content Security Act of 2005, H.R. 4596, 109th Cong. (2005); Communications Opportunity, Promotion, and Enhancement Act of 2006, H.R. 5252, 109th Cong. (2005).

5. See *infra* notes 149-151, 166-168 and accompanying text.

6. The term “broadcast flag” refers to a digital “marker” encoded into a digital television program that triggers compliance rules in a broadcast flag-compliant digital television receiving device (that which is designed to recognize and comply with the flag). These rules instruct the device as to how to treat the content, for instance, whether to allow copying or not. The term “broadcast flag” is often used to describe in the collective the marker, compliance rules, and a statutory or regulatory requirement that the technology be incorporated into receiving devices. See CTR. FOR DEMOCRACY & TECH., IMPLICATIONS OF THE BROADCAST FLAG: A PUBLIC INTEREST PRIMER (VERSION 2.0) (2003), available at <http://www.cdt.org/copyright/20031216broadcastflag.pdf#search=%22cdt%20broadcast%20flag%22>.

7. See *infra* notes 153-157 and accompanying text.

protect our borders and U.S. citizens. The USA PATRIOT Act<sup>8</sup> and its progeny addressed this and related issues.

*Emergency communications interoperability.* Also subsequent to the events of September 11th, there has been greater interest in improving radio and data communications interoperability for fire, law enforcement, and other “first responders.” The USA PATRIOT Act and its progeny took steps to accomplish improvements, and several bills in Congress seek to provide spectrum and other resources to fully execute an interoperability strategy.<sup>9</sup>

*Electronic medical records.* Since the early 1990s, research has shown that conversion from paper to interoperable electronic health care records and prescription systems, would save thousands of lives and billions of dollars annually. Recently, the government has given significant attention to this problem. Numerous bills have been introduced in Congress and the President has made this a priority.<sup>10</sup>

*Law enforcement interception of electronic communications.* With voice-over-internet-protocol (VoIP) gaining popularity, early in the development of VoIP, the FBI sought legislation to require VoIP service providers to comply

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8. Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT Act) Act of 2001, Pub. L. No. 107-56, 115 Stat. 272.

9. Including, in the 109th Congress, see 21st Century Emergency Communications Act, H.R. 5852, 109th Cong. (2006), *available at* [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_bills&docid=f:h5852rfs.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:h5852rfs.txt.pdf); Communications, Consumer’s Choice, and Broadband Deployment Act, S. 2686, 109th Cong. (2006), *available at* [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_bills&docid=f:s2686is.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:s2686is.txt.pdf); SAVE LIVES Act, S. 1268, 109th Cong. (2005), *available at* [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_bills&docid=f:s1268is.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:s1268is.txt.pdf).

10. Also in the 109th Congress, see Electronic Health Information Technology Act, H.R. 4832, 109th Cong. (2006), *available at* [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_bills&docid=f:h4832ih.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:h4832ih.txt.pdf); Information Technology for Health Care Quality Act, S. 1223, 109th Cong. (2005), *available at* [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_bills&docid=f:s1223is.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:s1223is.txt.pdf); Patient Safety and Quality Improvement Act, S. 554, 109th Cong. (2005), *available at* [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_bills&docid=f:s554is.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:s554is.txt.pdf); Healthy America Act, S. 1503, 109th Cong. (2005), *available at* [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_bills&docid=f:s1503is.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:s1503is.txt.pdf); Affordable Healthcare Act, S. 16, 109th Cong. (2005), *available at* [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_bills&docid=f:s16is.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:s16is.txt.pdf); Health Technology to Enhance Quality Act, S. 1262, 109th Cong. (2005), *available at* [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_bills&docid=f:s1262is.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:s1262is.txt.pdf); Health Information Technology Act, S. 1227, 109th Cong. (2005), *available at* [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_bills&docid=f:s1227is.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:s1227is.txt.pdf); 21st Century Health Information Act, H.R. 2234, 109th Cong. (2005), *available at* [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_bills&docid=f:h2234ih.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:h2234ih.txt.pdf).

with Communications Assistance for Law Enforcement Act (CALEA)<sup>11</sup> requirements to make the providers' facilities accessible to law enforcement for the interception of VoIP communications. The FCC ultimately published a rulemaking describing the requirements.<sup>12</sup>

### III. SUBSTANTIAL BASIS FOR GOVERNMENT RELUCTANCE IN MANDATING INFORMATION TECHNOLOGY STANDARDS

There are several premises upon which I base my conclusion that government should be reluctant to mandate an information technology standard. The first is that the information technology industries are generally sophisticated and well structured to develop standards. The second is that U.S. law and public policy guides government, particularly the U.S. federal government, to a preference for market-developed standards. Third, trade agreements may preclude government from setting technology standards that may impact international trade. The fourth factor is the high risk of government failure, or "non-market failure." Upon this substantial basis for government reluctance, I base the analytic process described herein.

#### A. THE RELEVANT INDUSTRIES ARE WELL STRUCTURED TO DEVELOP STANDARDS

One of the first set of factors for the government in analyzing an apparent market failure is to consider how sophisticated the market participants are and how well-developed the market is. In the context of standards development, the questions to consider might include: is the industry mature; are the participants sophisticated in their ability to develop standards; are there well-developed institutional structures to facilitate standards development. The industries this article describes as the information technology sector include the computing and software industries, the entertainment industry, and consumer electronics industry, and, in some instances, telecommunications and broadcast industries. Each of these industries has a long and successful history of standards setting. In relation to each industry and the broad convergence of these industries, there are many now well-trodden paths the market can take to establish an information technology standard. Indeed, these are sophisticated participants in mature industries, experienced in developing standards. As evidence of this, there are a number of approaches and institutions, well-established and newly-

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11. 47 U.S.C. §§ 1001-10 (1994).

12. *In re* Communications Assistance for Law Enforcement Act & Broadband Access & Services, 20 F.C.C.R. 14,989 (Sept. 23, 2005); *In re* Communications Assistance for Law Enforcement Act & Broadband Access & Services, 19 F.C.C.R. 15,676 (Aug. 9, 2004). Congress and the FCC recently imposed CALEA requirements on VoIP providers. *See* Communications Assistance for Law Enforcement Act, 47 U.S.C. § 1001-10 (1994); *In re* Communications Assistance for Law Enforcement Act & Broadband Access & Services, 21 F.C.C.R. 5360 (May 12, 2006).

evolving, in which these industries develop standards. Further, there are many and varied types of standards used by these industries.

#### 1. MANY AVENUES AND FORUMS EXIST FOR INFORMATION TECHNOLOGY STANDARDS DEVELOPMENT

There are numerous forums for the development of information technology standards. The traditional courses for standards development are voluntary consensus forums including formal standards development organizations such as Institute of Electrical and Electronics Engineers (IEEE), International Electrotechnical Commission (IEC), International Telecommunications Union (ITU), industry or sector-specific standards-setting organizations (e.g., InterNational Committee for Information Technology Standards (INCITS), Internet Engineering Task Force (IETF), Telecommunications Industry Association (TIA), Organization for the Advancement of Structured Information Standards (OASIS), European Computer Manufacturers Association (ECMA), Association of Computing Machinery (ACM), Audio Engineering Society (AES), and Society of Motion Picture and Television Engineers (SMPTE)), and trade associations (e.g., Consumer Electronics Association (CEA) and the National Association of Broadcasters (NAB)). These forums have produced an endless list of standards, including: IEEE 802.11 (popularly known as Wi-Fi, a wireless digital interconnect); IEEE 1394 (also known as Sony iLink or Apple Firewire high bandwidth digital interconnect), and TCP/IP Internet communications protocol (IETF). These standards development organizations are exceedingly credible and common to all industries that rely on standards. At the most formal end of standards setting are standards development organizations accredited by ANSI, the American National Standards Institute. ANSI is the only accredited U.S. entity that is a member of the International Standards Organization and the International Electrotechnical Commission (IEC). A standard set by an ANSI-accredited standards development organization may be approved by ANSI as an American National Standard. Several of the formal standards development organizations listed above are ANSI accredited.

There is also a robust ecosystem for informal standards development. A now common approach to standards setting is where the relevant industries or businesses develop and support a standard by mutual agreement through a consortium. Consortia are organizations formed by companies interested in developing a standard to serve their mutual interests. Typically, because these organizations are formed to meet the specific standards needs of the interested companies, the process can be more efficient.<sup>13</sup> Consortia come in many

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13. In fact, although it may, to the uninitiated, appear that fewer participants with a greater commonality in interest would result in a less contentious process, participants often have as many competing interests as those in common, so often consortia can be as rigorous a process as formal standards development organizations.



flavors, from very informal to very formal, having very similar processes and characteristics as a traditional standards development organization. Consortia-developed standards examples abound including video standards such as VGA and SXGA analog computer display standards (VESA); digital transmission standards such as digital subscriber line, or DSL (DSL Forum); Internet-related developer standards such as HTML (W3C), XML (W3C and OASIS), SOAP (W3C) and Synchronized Multimedia Integration Language (SMIL, W3C); OpenCable Application Platform (or OCAP, a set of standards that will facilitate interactive video interoperability, i.e., a unified developers platform for set-top boxes, consumer electronics devices, game devices, digital video recorders, portable devices, PCs, etc.),<sup>14</sup> the Advanced Access Content System

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14. OpenCable is the result of the work of FCC authorized consortium, CableLabs. OCAP uses some patented software that are licensed to users of the standard. Numerous diverse companies have agreed to license OCAP from CableLabs. See Press Release, CableLabs, Twenty-eight Firms Demonstrate Interoperability on OCAP and eTV Platforms at CableLabs Event (Aug. 17, 2005), available at [http://www.cablelabs.com/news/pr/2005/05\\_pr\\_ocap\\_interop\\_081705.html](http://www.cablelabs.com/news/pr/2005/05_pr_ocap_interop_081705.html). See, e.g., Press Release, CableLabs, Funai Licenses CableLabs® Technology for Interactive Digital Cable Products (Oct. 17, 2006), available at [http://www.cablelabs.com/news/pr/2006/06\\_pr\\_funai\\_chila\\_101706.html](http://www.cablelabs.com/news/pr/2006/06_pr_funai_chila_101706.html). In addition, see generally OpenCable press releases describing several major licensing agreements at <http://www.opencable.com/news/archive.html>. There have been concerns over the specifics of OpenCable standards and the credibility of the organization developing the standards, CableLabs. The FCC designated the standard development authority to CableLabs, an organization created by cable companies. Initially, CableLabs worked with consumer electronics companies and excluded participation by the computer and software industries. There was (and continues to be) consternation that CableLabs was developing standards that implicated industries other than cable and consumer electronics without allowing for the input from these other industries. In 2003, the FCC agreed with the commenters that raised these concerns and issued an order requiring CableLabs to consider the input of these sectors. See *In re* Implementation of Section 304 of the Telecommunications Act of 1996, 18 F.C.C.R. 20,885, 20,919 ¶ 78 (Oct. 9, 2003). The FCC further established an interim rule creating a route for companies to appeal CableLabs decisions, placing the burden on CableLabs to prove their objectivity in denying the recommendations by these participants. The order stated:

Any interested party, including but not limited to consumer electronics manufacturers, content providers, information technology companies or consumers, may appeal an initial decision by CableLabs to the Commission. CableLabs shall bear the burden of proof that its initial determination, whether an approval or disapproval, was justified. In any responsive pleading to an appeal before the Commission, CableLabs will specify each of the objective criteria used to evaluate the proposed output and copy protection technology and articulate in detail how such proposed output and copy protection technology met or failed to meet each of the criteria. Should CableLabs disapprove a particular output or content protection technology, we expect that CableLabs will articulate in detail the reasons for its disapproval. The Commission will review *de novo* both the reasonableness and necessity of the objective criteria, as well as CableLab's application thereof to the proposal under consideration. We clarify that parties seeking Commission review may file a petition for special relief pursuant to our normal procedures under Section 76.7 of the Commission's rules. The Commission will address such petitions on an expedited basis.

Licensing Administrator (AACSLA) digital rights management for high-definition videodisk standards (adopted into both HD-DVD and BluRay standards), Universal Plug-N-Play developed by Microsoft and numerous third-party equipment manufacturers (UPnP Forum) ostensibly to simplify and automate an end-user's installation of hardware on a computer that uses the Windows operating system.

Although consortia can be less transparent or open in their processes than traditional standards development organization, they have their important place in the standards arena. As Oliver Smoot, then Chairman of the Board of ANSI, testified before Congress:

The information technology industry does have a special challenge because it uses every kind of standardization process imaginable, ranging from the most informal meeting possible to the very formal processes that result in an American National Standard. However these challenges do not impair their ability to compete domestically or internationally. Now, even within the subset of standards development, and it is this very flexibility that makes them useful. . . . Because they meet real needs, consortia-developed standards are fully acceptable to, and widely used by, industry and the U.S. Government to procure and use advanced technologies and, in fact, to procure and use technologies of all kinds. . . .<sup>15</sup>

As Gerald Ritterbusch, the Director of Standards for Catapiller, observed at that same hearing:

[T]he IT industry needs the right mix of standards that are developed in both the formal and those that can develop through the consortia process. The IT industry has a definite need for speediness in bringing standards to the market so they can be used. Consortia provide the speed while the formal standards system, through its openness and balance, takes a little longer, but I believe that there needs to be the right mix of using both the formal and the consortia and that needs to be chosen by the users of the standards and the players in the process.<sup>16</sup>

Some have expressed the concern that consortia are potentially at risk of capture by the largest of industry players. Standards expert and Director of

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*Id.* at ¶ 79 (footnotes omitted).

Recently, the consumer electronic industry, with support from the computer and software industry, filed a joint proposal with the FCC to withdraw support from OCAP. *See* Letter from Michael T. Williams, Executive Vice President, Sec'y & Gen. Counsel, Sony Electronics Inc., et al. to the Hon. Kevin J. Martin, Chairman, Federal Comm'n Comm'n, CS Docket No. 97-80 (Nov. 7, 2006), available at [http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6518539866](http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6518539866).

15. *Standards-setting and United States Competitiveness: Hearing Before the H. Subcomm. on Environment, Technology & Standards*, 107th Cong. 23 (2001) (statement of Oliver Smoot, Chairman of Board, American National Standards Institute), available at [http://commdocs.house.gov/committees/science/hsy73317.000/hsy73317\\_of.htm](http://commdocs.house.gov/committees/science/hsy73317.000/hsy73317_of.htm) [hereinafter Standards-Setting Hearing].

16. *Id.* at 26 (statement of Gerald H. Ritterbusch, Director of Standards, Catapiller, Inc.).

Standards for Sun Microsystem, Carl Cargill, in testifying before Congress, observed, “Very rarely do you get a captive consortia that is trying to prejudice the market in its own favor. Normally, consortia benefit the entire market. That is one of the requirements.”<sup>17</sup> In regard to mitigating the risk of antitrust issues in the context of standards setting, as the FTC’s David Balto observed, “where the standard setting process is dominated by users or other vertically related firms, rather than rival producers, competitive injury is unlikely. The involvement of buyers in the design of standards may reduce competitive concerns.”<sup>18</sup>

One mechanism that is used to address complex patent licensing issues surrounding standards in an efficient manner is the “patent pool.” A “patent pool” is the sharing, or pooling, of patent ownership interests to benefit the market at large. There is a long history of the use of “patent pools” in connection with the development of standards, or the adoption of a proprietary technology into a standard; the broadcasting, consumer electronics and information technology industries have long been part of that history. Often it is the pioneers in an industry or technical achievement that take this approach. An early example in the information technology sphere was the Associated Radio Manufacturers, later renamed the Radio Corporation of America. Formed in 1924, the Associated Radio Manufacturers brought together the radio interests of American Marconi, American Telephone and Telegraph (AT&T), General Electric and Westinghouse, to develop standards for radio parts, spectrum management, and television transmission standards.<sup>19</sup> Fast forward to 1998, when Sony, Philips, and Pioneer developed the DVD-Video and DVD-ROM standard specifications, and 1999, when Hitachi, Matsushita, Time-Warner, Toshiba, and others pooled patents for DVD compliant products. Modern computing technology standards using patent pools include MPEG, MPEG-2 AAC audio codec, DVI, and USB. Even as recently as last year, RFID vendors formed a patent pool to resolve intellectual property rights ownership issues.<sup>20</sup> The U.S. Patent and Trademark Office has clearly stated its

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17. *Id.* at 31 (statement of Carl Cargill, Director of Standards, Sun Microsystems).

18. David Balto, Assistant Dir., Office of Policy & Evaluation, Bureau of Competition, Fed. Trade Comm’n, Address at the Cutting Edge Antitrust Law Seminars International (Feb. 17, 2000), *available at* [www.ftc.gov/speeches/other/standardsetting.htm](http://www.ftc.gov/speeches/other/standardsetting.htm) (citing 13 HERBERT HOVENKAMP, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION 367 ¶ 2233 (1999)).

19. See JEANNE CLARK ET AL., PATENT POOLS: A SOLUTION TO THE PROBLEM OF ACCESS IN BIOTECHNOLOGY PATENTS? 4 (2000), *available at* <http://www.uspto.gov/web/offices/pac/dapp/opla/patentpool.pdf> (citing The Radio Manufacturers Association, [http://www.terracom.net/~john\\_b/radiodocs/RETMA/ccodeindex.htm](http://www.terracom.net/~john_b/radiodocs/RETMA/ccodeindex.htm) (Aug. 5, 1998) (Radio Manufacturers Association Website is no longer available.)).

20. See CPTech, Collective Management of IP Rights: Patent Pool, <http://www.cptech.org/cm/patentpool.html> (providing a useful discussion of patent pools and from which I have drawn several of these examples), ; *see also* Suzanne Deffree, *NFC Jumps in the Patent Pool*, ELECTRONIC NEWS, Feb. 1, 2006, *available at*

support for patent pools, as has the Federal Trade Commission and the Department of Justice, providing guidelines for antitrust enforcement in regard to such collective rights management.<sup>21</sup>

It is important as a matter of background to understand that the federal government has endorsed consortia, informal multi-company standards development activities (including those that implicate “patent pools”), and even single-enterprise standards-setting activities as on the same footing as formal standards-setting organizations in meeting federal government requirements for “voluntary consensus standards.” The National Technology Transfer and Advancement Act (NTTAA) sets out the mandate that federal government agencies use commercially developed “voluntary consensus standards” unless doing so would be against the law or otherwise impractical.<sup>22</sup> The revised Office of Management and Budget Circular A-119, which provides detailed guidance to federal agencies regarding this statutory mandate, is clear that standards developed by any private sector standards-setting enterprise would meet the meaning of voluntary consensus standards for the purposes of the requirements of Circular A-119.<sup>23</sup> The *Eighth Annual Report on Federal*

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electronics.com/electronicnews/article/CA6303827.html; Mark Johnson, *The RFID Patent Pool: Playing Poker—RFID Consortium Charts Its Next Move*, MORERFID, Dec. 23, 2005, available at

[http://morerfid.com/details.php?subdetail=Report&action=details&report\\_id=1081&print=true](http://morerfid.com/details.php?subdetail=Report&action=details&report_id=1081&print=true); Mark Roberti, *RFID Vendors to Launch Patent Pool*, RFID J., Aug. 9, 2005, available at <http://www.rfidjournal.com/article/articleprint/1786/-1/1/>; Mark Roberti, *The RFID Patent Pool: Next Steps*, RFID J., Aug. 10, 2005, available at <http://www.rfidjournal.com/article/articleprint/1798/-1/1/>.

21. See JEANNE CLARK ET AL., *supra* note 19; Letter from Charles A. James, Assistant Att’y Gen., Antitrust Div., Dep’t of Justice, to Ky P. Ewing, Vinson & Elkins L.L.P. (Nov. 12, 2002) (DOJ opinion letter on 3GPP), available at <http://www.usdoj.gov/atr/public/busreview/200455.htm>; Letter from Joel I. Klein, Assistant Att’y Gen., Antitrust Div., Dep’t of Justice, to Carey R. Ramos, Paul, Weiss, Rifkind, Wharton & Garrison (June 10, 1999) (DOJ opinion letter on DVD), <http://www.usdoj.gov/atr/public/busreview/2485.htm>; Letter from Joel I. Klein, Assistant Att’y Gen., Antitrust Div., Dep’t of Justice, to Garrard R. Beeney, Sullivan & Cromwell (Dec. 16, 1998) (DOJ opinion letter on DVD), available at <http://www.usdoj.gov/atr/public/busreview/2121.htm>; Letter from Joel I. Klein, Assistant Att’y Gen., Antitrust Div., Dep’t of Justice, to Garrard R. Beeney, Sullivan & Cromwell (June 26, 1997) (DOJ opinion letter on MPEG-2), available at <http://www.usdoj.gov/atr/public/busreview/215742.htm>; see also U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY § 5.5 (1995), available at <http://www.usdoj.gov/atr/public/guidelines/0558.pdf>; Abbot B. Lipsky, Jr., *Special Considerations Concerning International Patent and Know-How Licensing and Joint Research and Development Activities: Current Antitrust Division Views on Patent Licensing Practices*, 50 ANTITRUST L.J. 515 (1981).

22. National Technology Transfer and Advancement Act of 1995, Pub. L. No. 104-113, § 12(d), 110 Stat. 775, 783 (1996) (codified at 15 U.S.C. § 272 (2006)).

23. The OMB emphasized that it is “not the intent of the Circular to create the basis for discrimination among standards developed in the private sector, whether consensus-based or, alternatively, industry-based or company-based.” OFFICE OF MGMT. & BUDGET, EXECUTIVE OFFICE OF THE PRESIDENT, OMB CIRCULAR A-119, FEDERAL PARTICIPATION IN

*Agency Use of Voluntary Consensus Standards and Conformity Assessment*, issued in May 2005 by NIST, reinforced this reading of the law:

In reporting the full measure of their efforts at minimizing reliance on government-unique standards, Federal agencies have historically reported the use of private sector standards including other than voluntary consensus standards. The OMB Circular classifies these other private sector standards as non-consensus standards, industry standards, company standards, or de facto standards. The Circular also states that it does not establish a preference among standards developed in the private sector. Consequently, the information contained in this report, as received from the agencies, includes the use of standards by, and participation in standards development activities of, both consensus and non-consensus standards developing organizations.<sup>24</sup>

It is clear, too, that formal standards bodies such as ANSI and ISO acknowledge the importance of the use of the full range of standards-setting forums including those that incorporate proprietary technologies, as well.<sup>25</sup>

The final avenue for the development of a standard is where a technology is so widely adopted by consumers or users that it becomes a de facto standard. Examples of de facto information technology standards include the mini-DV videocassette format, Adobe PDF file format, Apple iTunes's AAC audio file format, Microsoft Windows Media Player WMP file format, Hewlett-Packard's Printer Control Language (PCL), and Sun Microsystem's JAVA programming language, among numerous others.

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THE DEVELOPMENT AND USE OF VOLUNTARY CONSENSUS STANDARDS AND IN CONFORMITY ASSESSMENT ACTIVITIES (1998) (revised to conform to NTTAA standards) [hereinafter OMB Circular A-119].

24. KEVIN L. MCINTYRE & MICHAEL B. MOORE, NAT'L INST. OF STANDARDS AND TECH., EIGHTH ANNUAL REPORT ON FEDERAL AGENCY USE OF VOLUNTARY CONSENSUS STANDARDS AND CONFORMITY ASSESSMENT 2 (2005), *available at* [http://www.whitehouse.gov/omb/inforeg/reports/8th\\_annual\\_nist\\_rpt\\_2004.pdf](http://www.whitehouse.gov/omb/inforeg/reports/8th_annual_nist_rpt_2004.pdf) [hereinafter NIST Annual Report].

25. While ANSI generally espouses the consensus model of standards development, it has no objections to the use of proprietary technologies within standards that have undergone canvassing. *See* AM. NAT'L STANDARDS INST., ANSI ESSENTIAL REQUIREMENTS: DUE PROCESS REQUIREMENTS FOR AMERICAN NATIONAL STANDARDS 9 § 3.1 (2006), *available at* <http://publicaa.ansi.org/sites/apdl/Documents/Standards%20Activities/American%20National%20Standards/Procedures,%20Guides,%20and%20Forms/ER0106.doc> ("There is no objection in principle to drafting a proposed American National Standard in terms that include the use of a patented item, if it is considered that technical reasons justify this approach."). Moreover, ANSI will accredit standards that have been developed initially on a proprietary basis. For example, the C programming language was developed by Bell Labs in the early 1970s, and was not officially standardized until the early 1980s by the ANSI X3J11 committee, which then issued today's standard: ANSI X3.159-1989. *See* Dennis Ritchie, *Development of the C Language*, in HISTORY OF PROGRAMMING LANGUAGES (Thomas J. Bergin, Jr. & Richard G. Gibson, Jr. eds., 2d ed. 1996), *available at* <http://cm.bell-labs.com/cm/cs/who/dmr/chist.html>. ISO has also approved Microsoft's C# and Common Language Interface (CLI). *See also* Press Release, ECMA Int'l, ISO/IEC Finishes Fast-Track Standardization of Ecma Standards for C# Programming Language And Common Language Infrastructure (Apr. 2, 2003), *available at* <http://www.ecma-international.org/news/ECMA%20ISO%20CSharp%20Final.pdf>.

There are also circumstances in which consumers or other users (i.e., industry members or segments) embrace multiple competing standards that then co-exist in the market. Some examples of widely adopted, yet competing standards include the various flavors of high speed communications standards such as IEEE 802.11 (a/b/g/n and so on), USB-2, IEEE 1394, and DVI; the competing digital video disc formats, DVD+ and DVD-; the competing EISA v. MCA, current multiple format standards for digital video (i.e., progressive, interlaced formats in various resolutions: 480p, 480i, 720p, 720i, 1080p, 1080i), and in earlier days, the Ethernet architecture as it competed with IBM's Token Ring. Notable cases where competition between standards resulted in consumer confusion and a delay in consumer interest in the overall commercial offering include the competition between Betamax and VHS, SuperAudio CD and DVD-Audio, and potentially Blu-ray and HD DVD.<sup>26</sup> On the upside, such market behavior results in user choice. Competing standards that survive in the market may each meet users' differing needs even at the expense of true interoperability. Similarly, if multiple standards develop and are each adopted by the market, the result may be standards-agnostic platforms (devices) or multi-standard platforms that are interoperable through conversion or gateway tools or otherwise (this is a less difficult matter, and therefore more common, in regard to software as compared to hardware). The downside is the potential for inefficiency or consumer confusion that could forestall widespread adoption.

Eventually, where there is a viable commercial market (the convergence of a mature technology or standard and the conditions where consumers are truly interested in having the products made possible by the standard), either the market formally adopts a standard or multiple standards (and those standards coexist), or a de facto choice evolves.

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26. Note that slow market adoption could be the result of an absence of consumer interest in the product because the technology is not adequately mature and the market recognizes this fact. Some technologies that failed to become standards in the marketplace because the technology was immature include early WAP implementation from providers such as AT&T (Wireless Pocketnet) and Nextel, many consumer electronics technologies, such as RCA SelectaVision video disc and Philips/MCA VideoDisc, Phillips Interactive CD-I, and the competing and incompatible early matrix four-channel surround audio phonograph technologies offered by CBS and Sansui, confusingly named Quadraphonic and Quadrasonic, respectively. Regardless of the maturity of the technology, the failure to establish a standard may quite simply highlight another kind of failure: market research failure. There may be little consumer interest in having the standard, or even in having the particular type of technology. In other words, the public may not be interested in the overall commercial offering, let alone interested enough to choose between one technology and another to establish a standard. Examples of the market not being ready include the Phillips/Sony Compact Disc (it took ten years for the compact disc to supplant the Phillips audio cassette in the market); and the recordable Sony MiniDisc format.

## 2. WELL-DEVELOPED DIFFERING TYPES OF STANDARDS REFLECT A SOPHISTICATED STANDARDS-SETTING ENVIRONMENT

As evidence of the sophistication of the information technology standards-setting marketplace, there are numerous and highly differentiated types of market-developed standards that can achieve interoperability: open standards developed through formal standards-setting organizations; proprietary standards developed by informal standards bodies, consortia or by individual or groups of companies; de facto standards, i.e., a technology, usually proprietary, so widely adopted it effectively becomes a standard; or technologies which may have initially been a proprietary or a de facto standard yet are subsequently submitted to a formal standards-setting organization and become an open standard.

The two most prominent types of standards are “open standards” and “proprietary standards.” There are many definitions for the term or concept of an “open standard.” I will offer the following as a guideline for comparison. An open standard is a technical specification that has the following characteristics:

- (a) It is developed, maintained, approved, or affirmed by rough consensus, in a voluntary private-sector (i.e., non-governmental) standards-setting organization that is transparent in its process and open to all interested and qualified participants;
- (b) It is published (i.e., made available openly to the public) including specifications and supporting material providing sufficient detail to enable a complete understanding of the scope and purpose of the standard;
- (c) The documentation of the standard is publicly available without cost or for a reasonable fee for adoption and implementation by any interested party; and
- (d) Any patent rights necessary to implement the standard are made available by those developing the standard to all implementers on reasonable and non-discriminatory (RAND) terms (either with or without payment of a reasonable royalty or fee).<sup>27</sup>

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27. This definition is very similar to and is drawn from the definitions of “open standards” adopted by leading standards development organizations and industry associations. See AM. NAT’L STANDARDS INST., CURRENT ATTEMPTS TO CHANGE ESTABLISHED DEFINITION OF “OPEN STANDARDS” (2005) *available at* <http://public.ansi.org/ansionline/Documents/Standards%20Activities/Critical%20Issues%20Papers/Open-Stds.pdf>; BUS. SOFTWARE ALLIANCE, BSA STATEMENT ON TECHNOLOGY STANDARDS (2005), <http://www.bsa.org/usa/policy/loader.cfm?url=/commonspot/security/getfile.cfm&pageid=22407&hitboxdone=yes>; GLOBAL STANDARDS COLLABORATION (GSC-10) (2005), *available at* [http://portal.etsi.org/docbox/workshop/gsc/gsc10archive/GSC10\\_Closing\\_Plenary/gsc10\\_closing\\_12%20Resolution%2004%20Open%20Standards.doc](http://portal.etsi.org/docbox/workshop/gsc/gsc10archive/GSC10_Closing_Plenary/gsc10_closing_12%20Resolution%2004%20Open%20Standards.doc); TSB Dir.’s Ad Hoc Group on IPR, Int’l Telecomm. Union (ITU), Definition of “Open Standards” (2005), <http://www.itu.int/ITU-T/othergroups/ipr-adhoc/openstandards.html>; I have also drawn from the definition provided in BERKMAN CTR. FOR INTERNET AND SOC’Y AT HARVARD LAW SCH., ROADMAP FOR OPEN ICT ECOSYSTEMS 6, *available at*

Well-known and widely implemented open standards include TCP/IP, HTML, HTTP, 802.11, MPEG, XML, SNMP, and SMTP.

“Proprietary standards” are technical specifications developed and maintained by a single entity or more typically by a private, small group of cooperating entities. Standards are by their nature intellectual property and, thus, are potentially subject to ownership protected by copyright or patent law. Since proprietary standards are created by a small group of private parties, often working ad hoc, they are typically not subject to the formalized rules of a traditional standards-setting organization; and thus, the owners of the underlying intellectual property may control implementation of such a standard more tightly through the licensing terms. The key reason proprietary standards are developed is that working in small groups without many of the procedural issues of an open standards-setting organization (particularly issues having to do with consensus among many and the openness of the process) is more efficient, and thus, interoperable products can be developed and brought to market more quickly.

The status of a proprietary standard may change over time. Commonly, proprietary standards are technologies developed by groups of companies working in consortia, less formal efforts with the use of “patent pools” or cross-licensing, or even by a single company, and emerge as de facto standards.<sup>28</sup> Some of these proprietary standards are subsequently submitted to formal standards-setting organizations to become de jure, or formal open standards. For example, it may be a good business decision for only a few companies to work together to develop a standard for their mutual benefit, since doing so can be done more quickly than in a formal setting. Eventually, more adopt the standard to achieve interoperability and the standard becomes a de facto standard. At this point, the standard may be submitted to a standards-setting organization, such as TIA, IEEE, ITU, or ISO, for formal adoption as an open standard (de jure standard) to encourage yet wider adoption. Examples include Bell Laboratories C Programming Language;<sup>29</sup> ANSI CAT-5 Cable (and other such cable specifications developed by the Telecommunications Industry Association, a trade association and ANSI-accredited standards developing organization) and hundreds of information technology standards (many designated as ISO or ANSI standards) developed by International Committee for Information Technology Standards (INCITS, an ANSI-accredited standards development organization supported by the Information Technology Industry Council (ITI), a trade association), Adobe’s PDF format (various parts of which have been submitted to ISO for adoption as an open standard) and Microsoft’s

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<http://cyber.law.harvard.edu/epolicy/roadmap.pdf>.

28. I will discuss each of these various modes of developing proprietary standards in detail *infra* at Part III.A.1.

29. See CHRISTINE R. DEVAUX, U.S. DEP’T OF COMMERCE, A GUIDE TO DOCUMENTARY STANDARDS, NISTIR 6802, at 16-17 (2001), available at <http://ts.nist.gov/Standards/Conformity/upload/ir6802.pdf>.



open XML file formats (which have been submitted for adoption as an open standard).

Many, if not most, information technology standards, including open standards, have patented components that are owned or controlled by one or a few companies. Whether open standards or proprietary standards are involved, entities that develop standards and own the associated patents typically license the technology on RAND terms, either with or without a reasonable royalty, and therefore facilitate the wider adoption of the standard.<sup>30</sup>

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30. Although there is ongoing debate as to how RAND royalties should be calculated and when those terms can be disclosed in the standards-setting process, the overwhelming consensus by leading international standards and industry organizations such as ANSI, ITU, BSA, and others is that RAND licensing strikes the proper balance between the interests of patent holders on the one hand and implementers of standards on the other. *See, e.g.*, AM. NAT'L STANDARDS INST., *supra* note 27. This perspective is held by a broad international coalition. For example, several of the world's leading standards organizations (including the European Telecommunications Standards Institute, International Telecommunication Union (United Nations-based), Association of Radio Industries and Businesses (Japan), Telecommunications Industry Association (United States), among others), acting as part of the "Global Standards Collaboration," recently resolved to: (1) "strongly support the adoption of effective intellectual property rights policies that are transparent, widely accepted and encourage broad-based participation and the contribution of valuable technical solutions by respecting intellectual property rights, including the right of the intellectual property holder to receive reasonable and adequate compensation for the shared use of its technology;" (2) "strongly support definitions of 'open standards' that reflect the following characteristics: such standards are (i) made available to the general public, (ii) developed (or approved) and maintained via a collaborative and consensus driven process, and (iii) subject to a RAND/FRAND intellectual property rights policy;" and (3) "strongly voice their opposition to policies that mandate compensation-free licensing provisions." GLOBAL STANDARDS COLLABORATION, GSC #10 MEETING: PARTNERS FOR COLLABORATION, *available at* [http://www.gsc.etsi.org/GSC\\_10.htm](http://www.gsc.etsi.org/GSC_10.htm) (follow "GSC #10 Final Resolutions"; then open "Resolution 15, Intellectual Property Rights and Policies"). This was also reiterated in the new IPR and open standards resolution from GSC-11 in June, 2006. *See* GLOBAL STANDARDS COLLABORATION, RESOLUTION GSC-11/04: (JOINT) OPEN STANDARDS (2006), *available at* <http://webapp.etsi.org/meetingDocuments/ViewDocumentDetails.asp?DOCId=86936>.

U.S. technology transfer laws exemplify the public interest in commercializing intellectual property in a competitive marketplace, producing innovation protected by intellectual property laws. *See* Stevenson-Wydler Technology Innovation Act of 1980, Pub. L. No. 96-480, 94 Stat. 2311 (codified at 15 U.S.C. §§ 3701-3714); Small Business Innovation Development Act of 1982, Pub. L. No. 97-219, 96 Stat. 217 (codified at 15 U.S.C. §§ 631-638); National Cooperative Research Act of 1984, Pub. L. No. 98-462, 98 Stat. 1815 (codified at 15 U.S.C. §§ 4301-4306); Federal Technology Transfer Act of 1986, Pub. L. No. 99-502, 100 Stat. 1785 (codified at 15 U.S.C. §§ 3710a-3710d); Malcolm Baldrige National Quality Improvement Act of 1987, Pub. L. No. 100-107, 101 Stat. 724 (codified at 15 U.S.C. § 3711a); Bayh-Dole Act of 1980, Pub. L. No. 96-517, 94 Stat. 3015 (codified at 35 U.S.C. §§ 202-211); Exec. Order No. 12,591, 52 Fed. Reg. 13,414 (Apr. 10, 1987).

As a general proposition, the adoption of intellectual property into a standard should not diminish the value of intellectual property. In a copyright context, the Supreme Court noted that "[i]t is fundamentally at odds with the scheme of copyright to accord lesser rights in those works that are of greatest importance to the public. Such a notion ignores the major premise of copyright and injures author and public alike." *Harper & Row Pub., Inc. v.*

### 3. EACH RELEVANT INDUSTRY HAS A LONG AND WELL-DEVELOPED HISTORY OF STANDARDS SETTING

Each industry converging in the information technology environment has unto itself a long history of success relying on these many avenues for standards setting in the commercial marketplace. That success continues to this day. Although not without substantial discord, the early radio and television industry standards were developed by only a few competing companies under the auspices (and occasionally mediation) of the FCC, its predecessor, the Federal Radio Commission (and in the case of television standards, the National Television Systems Committee (NTSC)), and these were subsequently adopted as government-mandated standards (e.g., NTSC-adopted 525 line/30 frames per second monochrome broadcast standards and the RCA-developed electronic color standards selected by the NTSC and the FCC over Columbia's color-wheel).<sup>31</sup> More recently, digital television standards have been developed in the marketplace and ratified by the FCC.<sup>32</sup> The movie and music industries share similar histories (and really, the same companies have long been involved in both industries), but entertainment standards have generally been market-driven de facto standards. Take, for instance the Edison cylinder which competed with the Berliner phonograph disk, Columbia's patented 33-1/3 R.P.M. LP that co-existed in the market with the RCA's 45 R.P.M. disk and the many film format standards (and now digital cinema standards) that have facilitated international film distribution over the years.<sup>33</sup> The consumer electronics industry shares much history with the entertainment industry, but is also often subject to government mandates (T.V. and radio standards, again typically standards developed by the consumer electronics and broadcast industries and then ratified and mandated by the FCC for enforcement purposes). But consumer electronics standards have also been substantially

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Nation Enter., 471 U.S. 539, 558 (1985). The Court's conclusion is equally applicable to standards and patents.

All of this is not to say that a creator of a standard cannot make a standard available for free under extremely flexible terms. In fact, even single-company created standards are often made available for free and with few restrictions. Doing so often is ultimately valuable in expanding the adoption of the standard.

31. See DONALD FINK, *THE FORCES AT WORK BEHIND THE NTSC STANDARDS* (1981), available at <http://www.ntsc-tv.com/ntsc-main-01.htm>; EDWIN HOWARD REITAN JR., *THE FOLLOWING PROGRAM IS BROUGHT TO YOU IN LIVING COLOR* (1997), available at [http://novia.net/~ereitan/NTSC\\_overview.html](http://novia.net/~ereitan/NTSC_overview.html).

32. *In re Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service*, 11 F.C.C.R. 17,771 (Dec. 27, 1996).

33. The list goes on with obvious examples including Philips's compact cassette versus the Lear 8-Track, the compact disc which eventually eviscerated the compact cassette market, Dolby's patented noise reduction (which competed, yet briefly coexisted, with DBX in analog audio devices), multi-channel audio formats (currently Dolby standards coexisting with DTS), Panasonic and Sony's MiniDV video media format, the Toshiba/Warner (and others) DVD and of course, HD DVD and Blu-ray.

driven by consumer behavior.<sup>34</sup> And, of course, the computer industry utilizes patent pools and cross-licensing and the full range of forums, those being informal groups, consortia, and formal standards-development organizations to an extent similar to that of the broadcast and consumer electronics industries. Computer standards include the twisted nematic liquid crystal display (invented by James Fergason, which lead to the LCD of modern computer and television monitors), the Kensington security socket (the mechanical connector used to physically secure a computer to a desk by a cable), the ISO-adopted Moving Picture Experts Group (MPEG) digital audio and video compression specifications including MPEG-2, MPEG-4, Thompson's MPEG-1, Layer III (AKA MP3), Apple's IEEE 1394 digital communication specification, the joint ITU-ISO/IEC specification AVC/H.264 video codec (a mandatory specification of both Blu-ray and HD DVD), Small Computer System Interface (SCSI), Universal Serial Bus (USB and USB2), AT Attachment (ATA), a digital transport standard, accelerated graphics port (AGP), Peripheral Component Interconnect bus (PCI) and an alphabet soup of other standards.

As the NIST Acting Director testified before Congress in 2005, there are over 450 U.S. standards-setting organizations and an additional 150 consortia standards-development activities ongoing. Approximately twenty standards-setting organizations develop about eighty percent of the standards in the United States. Although the U.S. standards system is highly decentralized and naturally partitioned into industrial sectors, ANSI alone is composed of more than 700 companies, 30 government agencies, 20 other institutions and 260 professional, technical, trade, labor, and commercial organizations. There are more than 13,000 private sector standards in use by the federal government. "Our decentralized, private sector, demand-driven U.S. standards system has many strengths. U.S. companies derive significant advantage from the system's flexibility and responsiveness. The government also derives great benefit from the system, both as a customer and user of standards."<sup>35</sup>

As is the case with most human endeavors, there is no assurance of success. Indeed, some standards are not successful even if they are adopted by formal means. Furthermore, standards setting through any one of the numerous means available does not assure the greatest efficiency in standards development, although given the several paths standardization, efficiencies are more likely than where there may be limited fora to develop a standard.

Given the facts I have described, it is well established, through the long history and up-to-date practices of formal and informal standards-setting

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34. Consider again, LPs, cassettes, and CDs, but also such devices as the RCA/phono connector and the Sony-Phillips-developed Digital Optical connector.

35. *China, Europe, and the use of standards as trade barriers: How should the U.S. respond?: Hearing Before the H. Comm. on Science & H. Subcomm. on Environment, Technology and Standards*, 109th Cong. (2005) (statement of Hrach G. Semerjian, Acting Director, National Institute of Standards and Technology), available at [http://www.nist.gov/testimony/2005/hs\\_house\\_science\\_ets\\_intl\\_stds\\_5-11.html](http://www.nist.gov/testimony/2005/hs_house_science_ets_intl_stds_5-11.html) [hereinafter Semerjian Testimony].

organizations, the vibrancy of ad hoc standards setting or adoption through consortia and the use of “patent pools,” and marketplace adoption of both open standards and proprietary standards, that the information technology industries are well suited to develop standards in the marketplace.

#### B. U.S. FEDERAL LAW AND POLICY PREFERS THAT STANDARDS BE DEVELOPED IN THE MARKETPLACE

It almost goes without saying that as a general matter, because the United States is a market-oriented economy (i.e., a free market, or “bazaar” where goods are freely exchanged for value with little government involvement), the government is restrained in interfering with the operation of the market. As Alan Greenspan recently observed in discussing the importance of Adam Smith and his theory of a market freedom to modern economic growth in the United States:

By the 1980s, the success of that strategy in the United States confirmed the earlier views that a loosening of regulatory restraint on business would improve the flexibility of our economies . . . . Enhanced flexibility has the advantage of enabling market economies to adjust automatically and not having to rest on policymakers' initiatives, which often come too late or are misguided. Such views . . . clearly have been paramount in a renewed twenty-first century appreciation of Adam Smith's contributions.<sup>36</sup>

In the context of standards setting, there is a substantial early history of the government as the exclusive or predominant standards-setting entity, rooted in its British heritage dating back many hundreds of years.<sup>37</sup> However, over the course of the last two centuries, U.S. government policy has reflected an appreciation that industry is typically the most efficient and informed, as well as the most capable of developing standards. And as our system has evolved, the U.S. federal government policy has come to reflect a strong preference for developing standards in the private sector with a concomitant aversion to government-unique standards.

#### 1. U.S. DOMESTIC LAW AND POLICY

In December of 2005, ANSI published *The United States Standards Strategy* (USSS). The Strategy is approved by the Board of Directors of ANSI and is endorsed by the U.S. Department of Commerce.<sup>38</sup> As the introduction to

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36. Alan Greenspan, Chairman, Fed. Reserve, Remarks at the Adam Smith Memorial Lecture, (Feb. 6, 2005), available at <http://www.federalreserve.gov/boarddocs/Speeches/2005/20050206/default.htm>.

37. See JOHAN RAMSEY MCCULLOCH, A TREATISE ON THE PRINCIPLES, PRACTICE, & HISTORY OF COMMERCE 111-12 (1833).

38. U.S. DEP'T OF COMMERCE, STANDARDS AND COMPETITIVENESS—COORDINATING FOR RESULTS: REMOVING STANDARDS-RELATED TRADE BARRIERS THROUGH EFFECTIVE

the USSS states,

Voluntary consensus standards are at the foundation of the U.S. economy . . . . The United States is a market-driven, highly diversified society, and its standards system encompasses and reflects this framework . . . . [A] standards system is strengthened whenever standards developers share a common vision for meeting stakeholders needs . . . . Standards are essential to a sound national economy and to the facilitation of global commerce.<sup>39</sup>

Congress has expressed statutorily a strong preference for private sector-developed standards and restraint in government mandating standards. In enacting the National Technology Transfer and Advancement Act of 1995 (NTTAA), Congress formally adopted into law what had since 1980 been the policy of the Executive Branch and embodied in guidance to federal agencies issued by the Office of Management and Budget Circular A-119.<sup>40</sup> With the NTTAA, Congress required federal agencies to abide by a preference for voluntary standards over government-specific standards. The preference for market-developed standards is evident in the report language that accompanied the NTTAA. To assure absolute clarity, the House Committee Report stated: "It is . . . the intent of the Committee to make private sector-developed consensus standards the rule, rather than the exception."<sup>41</sup> As I have described in detail above, the 1998 revision of OMB Circular A-119 emphasized that it had "not been the intent of the Circular to create the basis for discrimination among standards developed in the private sector, whether consensus-based or, alternatively, industry-based or company-based."<sup>42</sup> Thus, it is clear that the federal government preference is not only to rely on private sector-developed standards, but those standards developed in the full range of private sector forums.<sup>43</sup>

The results of the enactment of the NTTAA are noteworthy. During fiscal year 2004, federal agencies reported using 4559 private sector standards developed by the private sector.<sup>44</sup> In contrast, during the same year, they reported using only seventy-one government-unique standards.<sup>45</sup> The impact of

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COLLABORATION 17 (2004), *available at*  
<http://www.ita.doc.gov/td/standards/Final%20Site/Standards%20and%20Competitiveness.pdf>

39. U.S. STANDARDS STRATEGY COMM., UNITED STATES STANDARDS STRATEGY 4 (2005), *available at* <http://publicaa.ansi.org/sites/apdl/Documents/Standards%20Activities/NSSC/USSS-2005%20-%20FINAL.pdf> [hereinafter USSS].

40. See National Technology Transfer and Advancement Act of 1995, Pub. L. No. 104-113, § 12(d), 110 Stat. 775 (1996) (codified at 15 U.S.C. § 272 Note). *But see* OMB Circular A-119, *supra* note 23.

41. H.R. REP. NO. 104-390, at 25 (1995).

42. OMB Circular A-119, *supra* note 23.

43. This is evidenced by the implementation of the NTTAA and revised OMB Circular A-119. See NIST Annual Report, *supra* note 24.

44. *Id.* at 1.

45. *Id.*

the NTTAA can be observed in regard to many key federal agencies that rely on standards. The FCC has also articulated a preference that standards be developed in the marketplace rather than by governmental fiat.<sup>46</sup> The Communications Act of 1934 requires that the FCC regularly review all of its regulations to determine whether they are still necessary, given the current state of competition.<sup>47</sup> These Biennial Reviews of Regulations have reflected a deregulatory approach. For example, in 2000, the Commission eliminated some 130 pages of technical specifications in the FCC rules for telephone terminal equipment. Instead, the FCC articulated the principles it sought to serve and left standards development to the private sector.<sup>48</sup>

An example of the FCC's approach to market-developed information technology standards can be found in their management of the development of the standards to facilitate interoperability among digital cable devices:

[W]e have emphasized our reliance on market forces to bring innovation, choice and better prices to consumers. It is the work of private entities and the economic incentives motivating the participants in the OpenCable process that provide the most immediate opportunity for a degree of standardization that will both create scale economies reducing the cost of equipment and developing interfaces allowing the equipment to be readily sold through retail outlets.<sup>49</sup>

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46. *In re* Year 2000, 19 F.C.C.R. 3239, 3259 ¶ 48 (Feb. 12, 2004) (“We prefer, as a general policy, to allow market forces to determine technical standards wherever possible, and to avoid mandating detailed hardware design requirements for telecommunications equipment, except where doing so is necessary to achieve a specific public interest goal.”).

47. 47 U.S.C. § 161(a) (2007).

48. *See In re* 2000 Biennial Regulatory Review of Part 68 of Comm'n's Rules and Regulations, 15 F.C.C.R. 24,944, 24,946 (Dec. 21, 2000). The Commission stated,

In the *Notice*, we tentatively concluded that the public interest would be better served if private industry, rather than the Commission, developed the technical criteria that are necessary to protect the public switched telephone network from harms. We therefore proposed in the *Notice* to use one of several potential industry standards-setting processes. To ensure that the public interest is adequately protected, we proposed to provide for *de novo* Commission review and enforcement, where necessary, of the industry-established technical criteria in the event of an appeal regarding the criteria. We noted our expectation, however, that such Commission involvement would be extremely limited.

*Id.* at 24,950 ¶ 18 (footnotes omitted).

The Order concluded that the FCC would rely on market-developed standards, stating

industry rather than Commission development of technical criteria will decrease development time and allow manufacturers to bring innovative consumer products, especially for the provision of advanced services, to the market on an expedited basis. This expedited process should benefit consumers by lowering the costs of terminal equipment and by ensuring that new technologies are widely available.

*Id.* at 24,952 ¶ 21. *See also* 47 U.S.C. § 161 (2002).

49. *In re* Implementation of Section 304 of the Telecommunications Act of 1996, 13 F.C.C.R. 14,775, 14,821 ¶ 117 (June 24, 1998). However, see also *supra* note 14 (discussing the successes and failures in the navigational devices standards-setting process).

Similarly, HDTV standards were developed in a consortium standards-setting process (humbly named the Grand Alliance) under the auspices of the standards-setting organization, the Advanced Television Systems Committee, and subsequently ratified by the FCC.<sup>50</sup>

Another example of the impact of the OMB Circular A-119 and the NTTAA can be found in examining the Department of Defense policies on standards. In 1994, Secretary of Defense William Perry issued a memorandum entitled “Specifications and Standards—A New Way of Doing Business” (often referred to as “MilSPEC Reform”). The memo set out as a priority for the Department of Defense the increase in use of commercial technologies and the use of performance standards and commercial specifications and standards in “in lieu of military specifications and standards, unless no practical alternative exists to meet the user’s needs.”<sup>51</sup> MilSPEC Reform evidences the importance the federal government placed on taking the government out of the technical specifications-setting role. In announcing the new policy, the Secretary stated: “We’re going to rely on performance standards . . . instead of relying on [MilSPECS] to tell our contractors how to build something. . . .”<sup>52</sup> A Defense Department newsletter described remarks by Secretary Perry delivered at a conference in November of 1996: “acquisition reform encompasses more than just saving money—it also deals with the quality of the things we buy . . . actually speeding up access to rapidly evolving commercial technologies.”<sup>53</sup>

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50. See *In re* the Matter of Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Services, 11 F.C.C.R. 17,771 (Dec. 27, 1996).

51. See Memorandum from William Perry, Sec’y of Def., to the Secretaries of the Military Departments et al. (June 29, 1994), reprinted in THE IMPACT OF ACQUISITION REFORM ON DEPARTMENT OF DEFENSE SPECIFICATIONS AND STANDARDS FOR MATERIALS AND PROCESSES: REPORT OF THE WORKSHOP ON TECHNICAL STRATEGIES FOR ADOPTION OF COMMERCIAL MATERIALS AND PROCESSING STANDARDS IN DEFENSE PROCUREMENT 37-38 (2000), available at [http://www.nap.edu/catalog.php?record\\_id=10345](http://www.nap.edu/catalog.php?record_id=10345) [hereinafter MilSPEC Reform].

52. THE STANDARDIZATION NEWSLETTER (Defense Standardization Program, Washington, D.C.), Oct. 1994, at 2 (quoting William Perry, Sec’y of Def., Remarks at Press Conference (June 29, 1994)), available at <http://www.dsp.dla.mil/newsletters/archive/news9410.pdf>.

53. See Trudie Williams, *Secretary of Defense Perry Recognized at Joint Industry Conference*, THE STANDARDIZATION NEWSLETTER (Defense Standardization Program, Washington, D.C.), Dec. 1996, at 3, available at <https://www.dsp.dla.mil/newsletters/archive/news9612.pdf>. The transition from MilSPEC/MilStandards reform was not without its challenges. A workshop report undertaken at the request of the Department of Defense by the National Materials Advisory Board in 2000 stated: “The key barrier to military use of commercial materials and process specification appears to be a lack of DoD participation in [standards-setting organizations], which poses a significant risk that specifications may not meet military needs.” NAT’L ACAD. OF SCIENCES, THE IMPACT OF ACQUISITION REFORM ON DEPARTMENT OF DEFENSE SPECIFICATIONS AND STANDARDS FOR MATERIALS AND PROCESSES: REPORT OF THE WORKSHOP ON TECHNICAL STRATEGIES FOR ADOPTION OF COMMERCIAL MATERIALS AND PROCESSING STANDARDS IN DEFENSE PROCUREMENT 3 (2002). The Defense Department’s response to the concern was an increase in resources dedicated to standards-setting organizations, strengthening their performance. See Gregory E. Saunders, *Director’s Forum*,

Thus, the Department of Defense, with a long history of setting government-specific standards (highly regarded standards, at that) shifted policy dramatically to participation in the free market development of standards and, in fact, more frequent adoption of off-the-shelf solutions.

A third federal agency that long relied on government-specific standards is the National Aeronautics and Space Administration (NASA). As with the Department of Defense, NASA has shifted policy and in compliance with Circular A-119:

approximately fifty-four percent of all standards utilized by NASA over the past four years were derived from the private sector. The balance are MilSPECS (25.84 percent), NASA unique (Center Developed - 10.31 percent, or NASA Preferred - 5.54 percent), or other government standards (4.39 percent) . . . . NASA's standards program has adopted (or is in the process of adopting) some 3,400 standards, only 60 of which were developed by NASA internally for agency-wide use (although there are other Center-unique standards in use as well).<sup>54</sup>

Even where public safety and law enforcement are concerned, the government does not commonly mandate standards. For example, pursuant to CALEA, the FBI is to have technical access to intercept telephone communications through what are commonly known as “wiretaps.”<sup>55</sup> Compliance requires that carriers develop their networks to ensure that they can deliver specific types of information to law enforcement agencies. However, the FCC did not mandate a particular technology or methodology for compliance. Instead, the statute requires the FCC to designate a standard as a “safe harbor” for compliance,<sup>56</sup> which it did by endorsing standardized interception technologies, developed through a private-sector “voluntary

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DEFENSE STANDARDIZATION PROGRAM J., Oct./Dec. 2003, at 1, *available at* <http://www.dsp.dla.mil/newsletters/journal/DSPJ-10-03.pdf> (stating

[u]sing [non-government standards (NGSs)] is not a cheap alternative for DoD. To participate effectively in NGS development, our engineers and scientists must spend some of their valuable time writing standards for the committees, researching technical information, reviewing draft standards, and resolving issues among a wide array of users and manufacturers. They also must spend both time and travel dollars to attend meetings. And, once the document is completed, DoD has to buy it, and so do our suppliers and their suppliers. Oddly, travel dollars and purchase price are often identified as cost drivers, but the largest dollar investment is the burdened cost of our experts. The roughly \$100-per-hour expert who spends 3 or 4 weeks per year—at his desk, in the air, or at committee meetings—working on standards represents an investment of \$12,000 to \$16,000, exclusive of travel costs.)

54. Andrew Updegrove, *Trends: Standard Setting at NASA: An Interview With Paul Gill*, CONSORTIUM STANDARDS BULLETIN, July 2005, *available at* <http://www.consortiuminfo.org/bulletins/july05/standardatnasa.php>.

55. *See* Communications Assistance for Law Enforcement Act, 47 U.S.C. § 1001-10 (1994).

56. 47 U.S.C. § 1006(a)(2).



consensus process.”<sup>57</sup> Telephone service carriers and manufacturers are presumptively in compliance when they implement those standards.

Harmonious with the intent of Congress, the USSS, published in 2005, is intended to guide American standards policies and U.S. trade relations as they implicate standards. The USSS sets as its cornerstone the process of sector-specific, market-driven, private sector led standards, not a top-down, one-size-fits-all approach as found in some other countries.<sup>58</sup> It is based on the proposition that the U.S. standards system is the most innovative

- . . . through alliances and processes provided by companies, associations, standards developing organizations, consortia, and collaborative projects.
- This market-driven, private sector-led approach to global standardization is substantially different from the top-down approach favored in many other countries. . . .
- [Stakeholders] continue to explore new modalities of standards development. Organizations such as consortia and Internet-based processes that enable worldwide participation of stakeholders are creating an innovative environment that is becoming increasingly important in the global marketplace.<sup>59</sup>

Regardless of the specific process used, formal standards should be developed according to globally accepted principles of transparency, openness (participation by all stakeholders), impartiality, consensus, coherence to avoid overlapping or conflicting standards, and due process so that all views are considered. The development process should also include assistance to stakeholders that may not have adequate technical expertise, particularly those in foreign countries, and should be performance-based.<sup>60</sup> “[T]he process should be [f]lexible, allowing the use of different methodologies to meet the needs of different sectors; [t]imely so administrative matters do not result in a failure to meet market expectations; and [b]alanced among all affected interests.”<sup>61</sup> Governments should encourage flexible standards solutions and rely on standards from diverse sources, including consortia and forums.<sup>62</sup> According to the USSS, as a matter of its strategic vision, the standards community is committed to the notion that “[g]overnments rely on voluntary consensus standards as much as possible in regulation and procurement rather than creating additional regulatory requirements.”<sup>63</sup> Thus, it is clear that the federal

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57. *In re Communications Assistance for Law Enforcement Act*, 14 F.C.C.R. 16794, 16794 ¶ 1 (Aug. 31, 1999).

58. *See* USSS, *supra* note 39, at 8.

59. *See* USSS, *supra* note 39, at 5.

60. *Id.* at 6.

61. *Id.*

62. *Id.* at 5.

63. *Id.* at 7. As previously noted, OMB Circular A-119 describes the U.S. government position as not favoring voluntary consensus standards over industry-developed or even company-developed standards, but considering each on equal footing as the others. OMB Circular A-119, *supra* note 23.

government is generally opposed to government intervention into the standards marketplace and such an intervention would be contrary to both the spirit of the policy and, potentially, the law.

C. U. S. TRADE POLICY PLACES SUPPORT FOR MARKET-DEVELOPED  
STANDARDS AS FUNDAMENTAL TO ELIMINATING TECHNICAL BARRIERS TO  
TRADE

The USSS articulates clearly that from the U.S. government perspective, standards are at the core of U.S. trade policy. Then-Secretary of Commerce Donald L. Evans prefaced the USSS stating, “[t]he international language of commerce is standards . . . . Without standards, it would be difficult to imagine the tremendous volume and complexity of international trade.”<sup>64</sup> A goal of foreign trade policy is to unify the approach governments take to develop standards, encouraging foreign governments to adopt the approach of using voluntary consensus-developed standards. Further, “the U.S. government should work with other WTO members to seek full implementation of the Technical Barriers to Trade (TBT) Agreement and annexes . . . [and to] identify and eliminate or minimize the effect of technical barriers to trade that result from technical standards and their application.”<sup>65</sup> The USSS outlines

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64. See USSS, *supra* note 39, at 3.

65. *Id.* at 12. See also Agreement on Technical Barriers to Trade, Multilateral Agreements on Trade in Goods, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, Apr. 15, 1994, 33 I.L.M. 1125, 1154 (1994), available at [http://www.wto.org/english/docs\\_e/legal\\_e/17-tbt.pdf](http://www.wto.org/english/docs_e/legal_e/17-tbt.pdf) [hereinafter TBT Agreement]. The TBT Agreement encourages the use of international standards in order to minimize technical barriers to trade. Pursuant to the TBT Agreement, when a government prepares a technical regulation to achieve a certain policy objective, whether protection of human health, safety, or the environment, the negotiations shall not be more trade-restrictive than necessary to fulfill the legitimate objective. The TBT Agreement encourages governments to specify, whenever appropriate, product regulations in terms of performance rather than design or descriptive characteristics, as doing so will also help in avoiding unnecessary obstacles to international trade. *Id.* at art. 2.8. The obligation to avoid unnecessary obstacles to trade applies also to conformity assessment procedures. An unnecessary obstacle to trade could result from stricter or more time-consuming procedures than are necessary to assess that a product complies with the domestic laws and regulations of the importing country. *Id.* at arts. 5.2.3 and 5.2.6. The Agreement encourages Members to use existing international standards for their national regulations, or for parts of them, unless “their use would be ineffective or inappropriate” to fulfill a given policy objective. This may be the case, for example, “because of fundamental climatic and geographical factors or fundamental technological problems.” *Id.* at art. 2.4. As explained previously, technical regulations in accordance with relevant international standards are rebuttably presumed “not to create an unnecessary obstacle to international trade.” *Id.* at art. 2.5. Similar provisions apply to conformity assessment procedures: international guides or recommendations issued by international standardizing bodies, or the relevant parts of them, are to be used for national procedures for conformity assessment unless they are “inappropriate for the Members concerned for, inter alia, such reasons as national security requirements, prevention of deceptive practices, protection of human health or safety, animal or plant life

recommendations that will encourage the U.S. standards community to continue to fully engage the global standards community to recognize the strength of the public-private partnership of the U.S. standards system and embrace the sector-specific approach to standards development.<sup>66</sup>

As Dr. Hratch G. Semerjian, Acting Director of the National Institute of Standards and Technology testified before Congress in 2005, the Department of Commerce intends “to partner with U.S. industry and standards developers to more effectively promote the virtues of an open, transparent and impartial approach to standards development and implementation.”<sup>67</sup> He continued, “[b]oth U.S. standards interests and policy objectives will be served when the governments of our most important export markets are convinced of the strengths of this approach versus alternatives that are less open and transparent, and more subjective.”<sup>68</sup>

The clearly articulated U.S. government domestic policy preference for market-developed standards, and the success of this policy, is a critical argument in support of U.S. government opposition to the use of government-established standards by foreign governments. Correspondingly, government intervention in the U.S. market to establish or mandate a particular information technology standard undercuts the U.S. position in this context. An action by the U.S. government or a government in the United States to intervene in the market to mandate a standard would be perceived by foreign governments as, at a minimum, hypocritical to U.S. foreign policy, and more likely, support for similar behavior by the foreign government.

#### D. RISK OF “GOVERNMENT FAILURE” SHOULD GIVE GOVERNMENT CAUSE TO PAUSE

It is often observed that the market is more well-informed, efficient, flexible, and capable than government in developing information technology standards. In general, this observation leads to a concern that one major consequence of government intervention to address a market failure is the high risk of “non-market failure,” also called “government failure.” A non-market failure can be defined as the unintended and undesirable consequences of

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or health, or protection of the environment; fundamental climatic or other geographical factors; fundamental technological or infrastructural problems.” *Id.* at art. 5.4. Widespread participation in international standardizing bodies can ensure that international standards reflect country-specific production and trade interests. The TBT Agreement encourages Members to participate, within the limits of their resources, in the work of international bodies for the preparation of standards, *id.* at art. 2.6, and guides or recommendations for conformity assessment procedures, *id.* at art. 5.5.

66. See USSS, *supra* note 39, at 11-12 (providing an extensive outline of the recommendation).

67. Semerjian Testimony, *supra* note 35 (including comments supporting this position as stated by the U.S. representative to ISO and IEC).

68. *Id.*

government failure where it intervenes to address a market failure.<sup>69</sup> Economist Thomas Sowell observed, “Markets are indeed imperfect, as everything human is imperfect. But ‘market failure’ is not a magic phrase that automatically justifies government intervention, because the government can also fail—or can even make things worse.”<sup>70</sup>

In setting information technology standards, the risk of getting it wrong is very high and the consequences may be very large because technology that has broad economic and social impact advances rapidly. Standards development in the area of information technology requires eloquence in incorporating flexibility into a standard to accommodate technical advances and changes in the marketplace. The market itself generally has the most sophisticated expertise in establishing standards (technical knowledge, institutional knowledge, standards-setting bodies, etc.) and the ability to revise standards as appropriate.

Federal Reserve Bank of Chicago senior economist Victor Stango observed:

[Early literature examining the economics of standards reflects] that even in instances where the market would move too swiftly or slowly between standards, a policymaker will have difficulty improving upon the market. For instance, when there is uncertainty regarding the benefits that would accrue from adoption, or which standard will achieve adoption first, a policymaker can improve on the market outcome only if it possesses superior information. Moreover, little is known about the positive aspects of standard-setting. For example, a policymaker may resolve uncertainty more quickly than would be the case in a standards war but also might be more likely to choose the “wrong” standard.<sup>71</sup>

An example of a “government failure” in what was in part essentially a standards setting can be found in the U.S. government policy in regard to encryption. In the early 1990s, a public debate erupted with the creation of software called “Pretty Good Privacy,” or PGP. PGP allowed a user to encrypt e-mail messages so that only the intended recipient could unlock the message with a pre-assigned key. This scheme (and the strength of the encryption) prevented law enforcement access to these encrypted e-mail messages. In 1993, the federal government proposed the “Clipper Chip.” The Clipper Chip was a National Security Agency (NSA) developed encryption device that could be attached by a user to phone lines. The Clipper Chip encrypted communications using a system called “key escrow.” Key escrow allowed the recipient to decrypt a message, but also placed into “escrow” a second key that could be

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69. See Charles Wolf, Jr., *A Theory of Nonmarket Failure: Framework for Implementation and Analysis*, 22 J.L. & ECON. 107 (1979).

70. THOMAS SOWELL, *BASIC ECONOMICS: A CITIZEN’S GUIDE TO THE ECONOMY* 300 (rev. and expanded ed. 2004) (1930). Although I do not agree with Professor Sowell on many points, as to this, he is charmingly eloquent.

71. Victor Stango, *The Economics of Standards Wars*, 3 REV. OF NETWORK ECON. 1, 9-10 (2004) (citing S.J. Liebowitz and S.E. Margolis, *Path Dependence, Lock-In and History*, 11 J.L. ECON. & ORG. 205 (1995)).

used by law enforcement to access the message with proper authorization.<sup>72</sup> This “back door” to individuals’ computers was viewed as an invasion of privacy and critics thought it was preposterous to expect criminals to use the technology by choice. At the same time the government proposed the Clipper Chip, it restricted the export of U.S.-made encryption products.<sup>73</sup>

Indeed, while at the time America was at the forefront of encryption technology, the industry predicted that were the government to limit American encryption to the Clipper Chip and preclude export of U.S. encryption products, industrious developers around the world would advance encryption technology and surpass the United States in this area. Commercial business would be lost to foreign competitors and the law enforcement advantages of the Clipper Chip would be lost at the same time. And this is exactly what happened. With export restrictions in place, and a long debate ongoing regarding the Clipper Chip, foreign software developers took substantial encryption market share from U.S. companies. Ultimately, the government succumbed to the critics, relented regarding the Clipper Chip, and eventually relaxed export controls on encryption products.<sup>74</sup> As Oliver Smoot, Director of the ANSI Board stated in a congressional hearing in 2001, “[o]ver the past decade, our government export policies squelched new encryption technologies, which in turn, gave rise to a robust encryption industry in other countries.”<sup>75</sup> This view is now widely held; despite the best of intentions regarding the preservation of national security, the government attempt to mandate the Clipper Chip failed. The Clipper Chip and encryption export controls were intended to limit public access to encryption technology (without a government back door), thereby making it harder for criminals and terrorists to communicate using encryption. We know now that criminals often communicate in the open (for example, using cell phones), or if

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72. In announcing the “Clipper Chip,” the White House touted,

[a] state-of-the-art microcircuit called the “Clipper Chip” has been developed by government engineers. The chip represents a new approach to encryption technology. It can be used in new, relatively inexpensive encryption devices that can be attached to an ordinary telephone. It scrambles telephone communications using an encryption algorithm that is more powerful than many in commercial use today.

Press Release, The White House, Statement by the Press Secretary (Apr. 16, 1993), available at <http://www.cdt.org/crypto/admin/041693whpress.txt>. The Clipper Chip used an NSA-developed 80-bit algorithm they named Skipjack. Upon announcement of the Clipper Chip, the government made available Skipjack to industry for review. Even as they were announcing the Clipper Chip, the government was preparing the successor, “Capstone,” and “MYK-80” developed by Mykotronx. The government was essentially going into the business of developing commercial software.

73. See Jay P. Kesan, & Rajiv C. Shah, *Shaping Code*, 18 HARVARD J. L. TECH 319, 330 n. 53 (2005) (citing Peter H. Lewis, *Privacy For Computers?: Clinton Sets the Stage For a Debate on Data Encryption*, N.Y. TIMES, Sept. 11, 1995, at D7).

74. *Id.* at 323 n. 18 (citing John Markoff, *White House Eases Exports*, N.Y. TIMES, Jan. 11, 2001, at C4).

75. Standards-Setting Hearing, *supra* note 15, at 21-24 (statement of Oliver Smoot, Chairman of the Board, American National Standards Institute).

they use encryption, they can get it off the shelf in any country. The proposed U.S. policy really did not solve the identified problem.

Justice Stephen Breyer, prior to his appointment to the U.S. Supreme Court, described “government failure” in his seminal book, *Regulation and its Reform*.<sup>76</sup> Breyer posited that regulatory failure occurs because of “mismatches,” i.e., the failure “to correctly match the [regulatory] tool to the problem at hand.”<sup>77</sup> Sidney Shapiro succinctly describes this situation: “A mismatch can occur because government can mis-diagnose the problem that it is attempting to solve and apply the wrong regulatory approach as a result, or even if a problem is correctly identified, government chooses a regulatory tool that is less effective and more expensive than other options.”<sup>78</sup> The U.S. federal policy toward encryption in the 1990s represented such a mismatch.

Government failure is most likely to occur when a market is new. As the FCC observed, it is a perilous time to regulate “when consumer demands, business plans, and technologies remain unknown, unformed or incomplete.”<sup>79</sup> In information technologies, rapid innovation is driven by industrial creativity, a healthy economy, commercial and government need, and enthusiastic consumer appetite. Standards are central to this innovation. Although the several industries that constitute the evolving information technology sector are established and sophisticated, in some regards the sector is relatively young in that we are seeing a paradigm-changing convergence of these industries, the confluence of which is in progress and advancing swiftly. It is counterintuitive to inject the government into such a highly dynamic environment.

Stanley M. Besen and Leland L. Johnson, two prominent experts on technological standards, have long argued that when industry is in a period of high innovation and volatility, the likelihood that a government standard will result in inefficient and/or artificial technological decisions is particularly

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76. STEPHEN BREYER, *REGULATION AND ITS REFORM* (1982).

77. *Id.* at 191.

78. Sidney A. Shapiro, *American Regulatory Policy: Have We Found the “Third Way”?*, 48 U. KAN. L. REV. 689, 698 (2000).

79. *In re* Implementation of Section 304 of the Telecommunications Act of 1996, 13 F.C.C.R. 14,775, 14,781 ¶ 15 (June 24, 1998). *See also In re* Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities, 21 F.C.C.R. 5442 ¶ 51, 56 (May 9, 2006) (stating

[i]n declining to mandate the provision of VRS [or any particular VRS standard protocol] in the *Improved TRS Order*, the Commission stated because VRS was in its early stages of technological development the Commission would “permit market forces, not the Commission, to determine the technology and equipment best suited for the provision of [VRS], and allow[] for the development of new and improved technology.”).

However, the FCC is currently seeking comment on whether it should mandate specific Internet protocols that VRS providers must use to receive and place VRS calls. *In re* Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities, 21 F.C.C.R. 5,442, ¶¶ 51-57 (May 9, 2006).

acute.<sup>80</sup> Thus, formal standard-setting in rapidly changing industries should always be avoided. When the technology “settles down,” the advantages of standards will present themselves, resulting in de facto standards being established by the market or industry bodies. As Besen and Johnson conclude:

[T]he government should refrain from attempting to mandate or evaluate standards when the technologies themselves are subject to rapid change.

A major reason for the Commission’s difficulty in establishing the first color television standard was the fact that competing technologies were undergoing rapid change even during the Commission’s deliberations. It is only after the technologies have “settled down” that government action is most likely to be fruitful.<sup>81</sup>

This perspective is reflected in the FCC’s thinking in regard to regulatory intervention in telecommunications standard-setting. For example, the Commission adopted this market-based approach in the licensing of Personal Communications Service (PCS) spectrum, concluding that the rapid technological change in PCS development demanded a flexible regulatory approach to technical standards:

[M]ost parties recognize that PCS is at a nascent stage in its development and that imposition of a rigid technical framework at this time may stifle the introduction of important new technology. We agree, and find that the flexible approach toward PCS standards that we are adopting is the most appropriate approach.<sup>82</sup>

The FCC recognized that telecommunications is currently in a highly dynamic period, and, given the dynamic environment, it is both an opportune and a perilous time for government regulation, as the FCC described in regard to interoperability standards for video navigation devices:

The markets involved [for navigational devices] are in the early stages of becoming competitive, and the participants in these markets are on the precipice of a change from analog to digital communications. Because of these changes, this is both a particularly opportune and a particularly perilous time for the adoption of regulations. . . . It is perilous because regulations have the potential to stifle growth, innovation, and technical developments at a time when consumer demands, business plans, and technologies remain unknown, unformed or incomplete.<sup>83</sup>

However, it may be that the FCC’s role in developing navigational devices will serve as evidence of the perils of government intervention. The FCC is adopting the work of CableLabs, a consortium of cable service providers and equipment manufacturers, and others, to develop interoperability standards for navigational devices. “[C]ommercial interests, fueled by consumer demand,

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80. STANLEY M. BESEN & LELAND L. JOHNSON, COMPATIBILITY STANDARDS, COMPETITION, AND INNOVATION IN THE BROADCASTING INDUSTRY (1986).

81. *Id.* at 135.

82. *In re* Amendment of the Commission’s Rules to Establish New Personal Communications Services, 73 Rad. Reg. 2d (P & F) 1477, ¶ 137 (report and order Oct. 22, 1993).

83. *In re* the Matter of Implementation of Section 304 of the Telecommunications Act of 1996, 18 F.C.C.R. 14,775, 14,781 ¶ 15 (June 24, 1998).

will agree on specifications . . . .”<sup>84</sup> It is worth noting that even in the context of CableLabs, which was initiated by cable companies in a process blessed by the FCC, the FCC had to intervene to make possible greater participation by computer, software, and entertainment companies; yet in 2006, concerns remain.<sup>85</sup> It appears that the cable companies dominated the process early on to the exclusion of these other key market sectors. It is probably safe to characterize the FCC’s selection of the cable industry to lead this effort as short-sighted and made with insufficient attention to the dynamics of the market environment. Arguably, the problems with the process the FCC established are rooted in the initial decision to give a single highly interested industry a dominant role in the standards-setting process.

The government is typically not as nimble, efficient, or informed as the private sector at developing and advancing technology standards. Indeed, government may behave more like a tourist than an experienced local would in the bazaar, failing to understand or even perceive the nuances of each potential transaction, or failing to distinguish a good deal from a bad one. It is not overstating the truth to say that even those within the industry are often surprised by market behavior. But faced with that surprise, a business or sector is more rapidly able to adapt and take advantage of the turn of events than is government.

By contrast, the process of creating or changing a government-mandated standard typically takes years to accomplish. If a government mandates a standard, it is difficult to replace dated technologies embodied in the standard. For example, it took the FCC over two years to amend its ISDN rules to accommodate new technology.<sup>86</sup> Of course, such time frames are inconsistent with the current rapid pace of innovation in the digital media distribution marketplace. The Commission acknowledged that by imposing a standard it “could reduce the incentive to conduct the research and development that leads to innovation.”<sup>87</sup>

In a notable example of “government failure,” in the early 1980s, Japan

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84. *Id.* at 14,780-81 ¶ 14. *See also supra* note 14 (discussing the successes and failures in the navigational devices standards-setting process).

85. *See supra* note 14 (discussing the successes and failures in the navigational devices standards-setting process).

86. *See In re* Petition to Amend Part 68 of the Commission’s Rules to Include Terminal Equipment Connected to Basic Rate Access Service Provided via Integrated Services Digital Network Access Technology & Public Switched Digital Service, 11 F.C.C.R. 5091 (Mar. 7, 1996).

87. *In re* Advanced Television Systems & Their Impact Upon the Existing Television Broadcast Service, 11 F.C.C.R. 6235, 6251 ¶ 42 (May 20, 1996). In fact, this is precisely why very few innovations have been implemented in the NTSC transmission standard. *Id.* at 6248, ¶ 34. It is worth mentioning that these same problems could occur where the government codifies a market-developed standard for enforcement purposes and should stand as a warning that, when doing so, government should incorporate expeditious means for a government-blessed standard to be revised as technology evolves.



established a government-mandated analog HDTV standard.<sup>88</sup> At the time, the FCC had been considering the need to develop a high-definition standard. In fact, one early FCC requirement for the new standard was backwards compatibility to standard definition, a requirement later dropped.<sup>89</sup> But high-definition technology in the 1980s was immature, equipment was large, and it required a great deal of maintenance and consumed enormous amounts of power, and the U.S. industry and FCC recognized this fact. Ultimately, with advances in digital technology that would result in more efficient use of spectrum and a higher quality picture, the United States and other countries chose to pursue digital for their high definition television standards. Very simply put, the Japanese government's standard was premature and essentially failed before it was launched.

A more recent situation in which some have questioned whether government intervention in standards-setting is appropriate or instead the path to non-market failure is the case of France's parliament proposing legislation addressing standards in digital rights management (DRM). In March 2006, the French Assemblée Nationale passed legislation that required digital rights management interoperability to improve consumer choice in music and video entertainment devices.<sup>90</sup> The legislation's intent was to require vendors to make available to third parties adequate information about their technology so the third parties could provide interoperability. The bill required disclosure of all technical documentation and programming interfaces necessary to facilitate interoperability. For example, market leader Apple would have had to provide enough information to competitors so they could make their music and video files play on an iPod, or make devices that would play songs downloaded from iTunes. The bill also provided that the publication of the source code and technical documentation of an interoperating independent software is permissible.<sup>91</sup>

The point of the bill was to make iPods accessible to competitors and to allow competitors' players to play songs downloaded from iTunes. A major problem, critics observed, was in the approach. The legislation would have had the effect of opening to competitors the use of Apple's FairPlay DRM (the bill did not name any specific technology, so it would have applied to any system such as the Sony Walkman using Sony's proprietary ATRAC3 DRM, or any other proprietary DRM). But it appeared to critics that the bill undermined the functional protections of the subject DRM. As one observer noted when the bill

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88. Sony/NHK Hi-Vision, a 1125-line analog technology, was first used in broadcasting in 1991. See David E. Sanger, *Few See Japan Make TV History*, N.Y. TIMES, Nov. 26, 1991, at D6.

89. See William F. Schreiber, *The FCC Digital Television Standards Decision in THE ECONOMICS, TECHNOLOGY AND CONTENT OF DIGITAL TV* 37, 38-39 (ed. Darcy Gebarg 1999).

90. Bill Rosenblatt, *French Parliament Passes DRM Interoperability Legislation*, DRM WATCH, Mar. 23, 2006, available at <http://www.drmwatch.com/legal/article.php/3593841>.

91. *Id.*

was under consideration, “the problem is that the type of information necessary to achieve interoperability is also precisely the information necessary to render DRM useless: the encryption algorithms, keys, content metadata, and so on.”<sup>92</sup> The bill was lauded by some who claimed this a victory for consumers, but the information technology industry and the U.S. government were highly critical.

In May of 2006, the Sénat, the upper house of the French Parliament, declined to pass the same legislation, passing instead a bill that establishes a government tribunal to adjudicate DRM interoperability issues. Some observers saw this as a complete backtrack from the initial legislation and one noted “one wonders if the French parliament should not just leave well enough alone and remove all of the interoperability-related sections of the legislation.”<sup>93</sup> Indeed, it is likely these two versions of the legislation reflect the push and pull of advocates for competing interests upon government officials, and not sophisticated public policy analysis by government experts.

As further evidence of the difficulties at the intersection of technology and law, and the potential for government failure, in August 2006, the French Conseil Constitutionnel vacated as unconstitutional provisions of the new law that permitted circumvention of DRM to accomplish interoperability, concluding that the definition of “interoperability” was too vague.<sup>94</sup>

The situation in France exemplifies why government should be reluctant to intervene in information technology standards-setting. At a minimum, the case supports the notion that such government intervention carries with it substantial risk of the government getting it wrong. Potentially in this case, the result of the government action could have been precisely contrary to the stated public policy goals. Setting aside the question of whether there is an adequate public interest objective in requiring government intervention, it is uncertain that government could have accomplished its stated goal of interoperability by statutorily requiring DRMs to be opened for competitors in the manner the French government undertook. Some have observed that in the long-term, giving competitors the keys to Apple’s DRM could have strengthened Apple’s position in the market, as other content services sell to the iPod market and neglect competitive technologies. Indeed, the proposed law was designed to foster competition, but one must wonder if the legislative solution was a mismatch to the problem of iTunes market dominance. Competitors in this case have certainly not given up on the market for music downloads. The success of iTunes and the iPod *should* encourage competitors to work harder to compete for a rapidly growing market.<sup>95</sup> This is a situation in which competitors should

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92. *Id.*

93. Bill Rosenblatt, *French Parliament Backs Off from DRM Interoperability*, DRM WATCH, May 3, 2006, available at <http://www.drmwatch.com/legal/article.php/3603486>.

94. See Estelle Dumout & Jo Best, *French DRM-busting law strokes Apple, hurts P2P*, SILICON.COM, July 31, 2006, <http://management.silicon.com/government/0,39024677,39161055,00.htm>.

95. Indeed, interoperability between entertainment technologies, including DRM interoperability, would be of benefit to consumers, particularly given the growing market

aggressively pursue greater and more successful competition, but it requires heightened creativity in technological innovation and consumer offerings, rather than government intervention. Time (and far greater analysis) will tell whether digital rights management interoperability is appropriate fodder for a legislative solution or whether the market will produce technological solutions. Regardless, the French experience illustrates the risk of legislating in the area of an information technology standard, i.e. the risk of non-market failure.

Given the dynamic conditions in the markets impacted by information technology standards, the balance of expertise favoring commercial developers over the government, the ability of industry to be more nimble in reacting to market conditions, and the open acknowledgement of these factors by government in the information technology standards-setting context, it is critical to recognize that as a general matter, the risk of and potential harm from government failure, as compared to a market failure, is substantial.

It is worth mentioning at this point that the market has also had its failures in standards-setting. Even a standard that becomes formalized by a standards developing organization may not meet with market success. I'm sure it has been said elsewhere that the roads of the information superhighway are littered with discarded standards. Businesses, like governments, often may try to anticipate the direction of the market and fail to do so. But when a company or industry fails with a particular standard, they can simply abandon it. When the government makes this type of mistake, it takes time to undo it through either legislative or regulatory action.

To summarize, governments should be reluctant to intervene in information technology standards because: (1) the relevant industries are sophisticated in regard to standards setting and have many well-developed types of standards and forums and avenues to develop standards; (2) the U.S. government has a strong preference for market-developed information technology standards and promotes this preference as a matter of both domestic law and policy and that of foreign trade; (3) international trade agreements limit the degree to which government can mandate standards; and (4) in contrast to the sophistication of the marketplace, government is rarely as informed or sophisticated in its understanding of the technology or market, or nimble enough to respond rapidly to market conditions. Therefore, the risk of government failure is significant, and indeed greatest where the market is young and dynamic, as is

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and the number of different types of devices that now and in the future will play music and video. It would appear that the industry recognizes this and is working in at least two forums to develop just such interoperability standards. Coral, whose members include Hewlett-Packard, Sony Corporation, NBC Universal, Phillips, 20th Century Fox, LG Electronics and Matsushita Electric, is developing a standard using Intertrust technologies, and Microsoft, Time-Warner, and Thompson are working to establish what would be a competing standard. Apple is not participating in either effort. There are several other standards being developed as well, some for cross-platform interoperability, some exclusively for portable devices. See Bill Rosenblatt, *2005 Year in Review: DRM Standards*, DRM WATCH, Jan. 2, 2006, <http://www.drmwatch.com/standards/article.php/3574511>.

the case with regard to the current market affected by information technology standards. Based on these premises, a test to evaluate whether government should intervene in setting an information technology standard should be biased toward avoiding intervention.

#### IV. THE TEST (PART ONE): THREE TYPES OF CASES FOR ANALYSIS

To help understand government's role in setting standards, I will divide the universe of possible circumstances into three broad categories: clear cases for government intervention; cases in a large "gray area" where analysis will determine whether the government should intervene, and if so, in what manner; and finally, those circumstances in which it is generally inappropriate for the government to intervene.

##### A. CLEAR CASES FOR GOVERNMENT INTERVENTION

Cases in which there is a government responsibility to meet a *critical public interest objective*, and *the information technology standard is essential* for the government to meet that objective are clear cases for government intervention. These cases are clear, in that the government responsibility to the public interest is of paramount import and may only be met if the essential standard exists.<sup>96</sup>

First, there must be a *critical public interest objective* at stake, that is, the public interest in question must involve a critical issue in the area of national security, defense, public safety, health, or welfare. By "critical," I mean urgently affecting government's responsibilities such as protecting life, the safety of the public, national security or defense and is therefore of the absolutely highest priority for government action. For example, subsequent to the events of September 11, 2001, federal, state, and local governments

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96. In some cases, however, a government requirement may be met by the market *before* a government mandated standard is in place. Such market response may foreclose the need for a government mandate or may simply require a government blessing or other limited government action. This is the case with radio interoperability for first-responders (i.e., local law enforcement and fire departments). Radio manufacturer Motorola was among those that developed the technology to facilitate interoperability between current generation radio systems and new technologies. It is only a question of the federal government allocating adequate spectrum and deployment of the necessary new equipment. *See The Spectrum Needs of Our Nation's First Responders: Hearing Before the Subcomm. on Telecommunications and the Internet of the H. Comm. on Energy and Commerce*, 108th Cong. 40-56 (2003) (statement of Gregory Q. Brown, Executive Vice President, Motorola, President & Chief Executive Officer, Commercial, Government, & Industrial Solutions Sector), available at <http://republicans.energycommerce.house.gov/108/action/108-34.pdf>; *In re Development of Requirements for Meeting Public Safety Agency Communication Requirements Through the Year 2010*, 14 F.C.C.R. 152 (Sept. 29, 1998); *In re Development of Requirements for Meeting Public Safety Agency Communication Requirements Through the Year 2010*, 15 F.C.C.R. 16,899 (Aug. 2, 2000).

examined the circumstances and identified several issues related to standards that adversely affected preparation for and response to a terrorist attack. Among the problems cited even in the earliest examinations were failures in inter-agency communications.<sup>97</sup> It was determined that the government needed to improve radio interoperability to facilitate emergency inter-agency communications and data interoperability to improve information sharing between local, state, and federal law enforcement, intelligence, emergency preparedness, and response agencies. It was also clear after examination that there were inadequate standards in place in data systems used for immigration background checks. To address these issues, the USA PATRIOT Act and its progeny addressed several communications interoperability issues.<sup>98</sup> The law now requires that spectrum be made available for radio communications and that newly-interoperable radio systems be deployed.<sup>99</sup> It also requires that new standards be developed to facilitate inter-agency data exchange; standards that include biometrics and immigration document technologies to facilitate background checks on individuals entering the United States from foreign countries.<sup>100</sup> Some of these standards were to be developed under the auspices of NIST, coordinating the activities of other federal agencies.<sup>101</sup>

The second element of the test is that the technology standard is essential to the government's ability to meet its obligation to address the critical public interest objective. In each example I have described, the critical public interest objective can only be addressed through technical interoperability, and the technology standard itself is *essential* to ensuring such interoperability.<sup>102</sup>

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97. See, e.g. H.R. REP. NO. 107-792, at 231-47 (2002).

98. See, e.g., USA PATRIOT Act of 2001, Pub. L. No. 107-56, 115 Stat. 272; Intelligence Reform and Terrorism Prevention Act of 2004, Pub. L. No. 108-458, 118 Stat. 3638; Enhanced Border Security and Visa Entry Reform Act of 2002, Pub. L. No. 107-173, 116 Stat. 543; Homeland Security Act of 2002, Pub. L. No. 107-296, 116 Stat. 2135;.

99. Digital Television Transition and Public Safety Act of 2005, Title III of the Deficit Reduction Act of 2005, Pub. L. No. 109-171, 120 Stat. 4, 21-27.

100. USA PATRIOT Act of 2001 §§ 403(c), 1005(b), *amended by* Enhanced Border Security and Visa Entry Reform Act of 2002; Enhanced Border Security and Visa Entry Reform Act of 2002 §§ 201-204..

101. USA PATRIOT Act of 2001 § 403(c).

102. It is notable that even in such highly critical circumstances, the federal government looks to marketplace solutions to meet the government's needs. For instance, in the case of the USA PATRIOT Act requirements, NIST worked with commercial vendors to identify the technologies best suited to the requirements and where appropriate, conformed final requirements to the available technologies. However, there are examples where government set out interoperability requirements to meet critical public interest objectives. One such example can be found in the reform of the public emergency warning system. In 1994, FEMA and the FCC replaced the Emergency Broadcast System with the Emergency Alert System (EAS). The EAS serves two purposes. First, it is to provide a means for the president to address all Americans in the time of an emergency; second, it is to allow state and local officials to issue warning messages of imminent or ongoing emergencies through broadcast stations in specific regions. National alerts are issued via the telephone system to thirty-four U.S. radio stations, which cover in theory approximately ninety percent of the country and its territories. The EAS message is subsequently relayed by television, cable,

But let me emphasize the point that, given the statutory requirement that the federal government give preference to market-developed standards unless doing so would violate law or would be “otherwise impractical,”<sup>103</sup> and the other previously described national and international legal and practical arguments favoring market-developed standards over government-mandated standards, it is incumbent on government to work with the private sector to develop the appropriate standards to meet government needs. And indeed, this is what government almost invariably does. Even in circumstances where there is heightened urgency to meet the public interest needs, possibly even a critical public interest objective (such as meeting critical needs of the Department of Defense or law enforcement), government typically looks to industry to develop standards to satisfy the government requirements. Therefore, it is likely appropriate to apply the test herein described to apply to “gray area cases” even in the situation of a critical public interest objective, and apply it with constant awareness of the aforementioned practical constraints and legal preferences.

#### B. THE “GRAY AREA” CASES

In the “gray area” are cases where *the information technology standard is relevant to an important public interest objective*. I define “relevant” for the purpose of this examination to mean having an objectively reasonable connection to the important public interest objective. Although this is seemingly a broad category, this is only a threshold criterion that should trigger an analysis to determine whether government intervention of any nature is appropriate. Once this criterion is met, the analysis would guide a

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and satellite television broadcasters to their audiences. EAS equipment sends and receives messages using a standardized format referred to as the EAS digital protocol, which was developed by the government in coordination with manufacturers. EAS equipment implements manufacturer developed standards for reception and transmission of the EAS digital protocol, and must be certified by the FCC. *See* EAS Protocol, 47 C.F.R. § 11.31 (2007); *In re* Review of the Emergency Alert System, 20 F.C.C.R. 18,625 (Nov. 10, 2005); *see generally* Emergency Alert System, 47 C.F.R. § 11 (2006).

Another example can be found in the 9-1-1 emergency call system. The goal of the 9-1-1 system is to be accessible to all individuals in the United States with a telephone. The notion is that one can dial 9-1-1 to report an emergency, and the 9-1-1 dispatcher will be able to identify the location of the caller and dispatch the appropriate emergency service. However, wireless carriers were not required to obtain or provide customer location information. The system is administered through 7000 local Public Safety Answering Points (PSAPs). As the use of wireless telephones grew, the system was challenged by the need to locate wireless 9-1-1 callers. To address this interoperability problem, the FCC adopted a rule in 1996 to require wireless carriers to provide location information for all wireless 9-1-1 calls by 2005, provided that the local PSAP is equipped to receive and use the information. *See* Federal Communications Commission, Enhanced 911-Wireless Services (2006), <http://www.fcc.gov/911/enhanced/>; *see also* Wireless Communications and Public Safety Act of 1999 (911 Act), Pub. L. No. 106-81, 113 Stat. 1286 (establishing 9-1-1 as the universal emergency telephone number).

103. National Technology Transfer and Advancement Act of 1995, Pub. L. No. 104-113, 110 Stat. 775, 783 (1996).

determination as to whether, given the legal, policy and practical constraints I have described, intervention *is* appropriate, and, if so, how that intervention should proceed.

There are two categories by which I define an *important public interest objective*. First, cases where an information technology standard may be relevant (but may not be essential) to the government's ability to meet its obligation to address a *non-critical* issue in the area of national security, defense, or public safety, health, and welfare. A second category is where *the information technology standard is relevant to providing an essential but non-critical government service* (e.g., access to public records). These are rough characterizations intended to distinguish important government responsibilities from those that I have described previously as critical and further, to distinguish circumstances wherein the standard *itself* may not be essential to government's ability to meet the public interest objective.

The first example illustrates the case where the government has a responsibility to protect the health and welfare of its citizens. Although it may be rare that an information technology standard is central to addressing an important public interest objective (and obviously this centrality weighs heavily in the determination of whether government should intervene in the event of a market failure to produce such a standard), there is at least one example where the implementation of an information technology standard will significantly contribute to improving healthcare outcomes *and* reducing a major burden on the U.S. budget and the economy as a whole: healthcare data standards.

The federal government is the largest "customer" paying for healthcare in the United States. In 2000, federal spending constituted approximately half of U.S. healthcare spending.<sup>104</sup> Medicare plus Medicaid alone constitutes approximately 19.5% of the federal budget.<sup>105</sup> Department of Defense healthcare spending has doubled from \$19 billion in 2001 to \$38 billion in 2006, constituting 12% of the DOD budget.<sup>106</sup> Healthcare costs are nearly 15% of GDP.<sup>107</sup> The costs are not only in dollars; there is substantial data that indicates the cost in lives. Between 44,000 and 98,000 Americans die as a result of medical errors each year,<sup>108</sup> about 7000 from medication errors

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104. Cathy Cowan et al., *National Health Expenditures 2002*, 25 HEALTH CARE FIN. REV. 143, 146 (2004). The authors are employed by U.S. Department of Health and Human Services Centers for Medicare and Medicaid Services, Office of the Actuary.

105. OFFICE OF MGMT. & BUDGET, EXECUTIVE OFFICE OF THE PRESIDENT, HISTORICAL TABLES, BUDGET OF THE UNITED STATES GOVERNMENT, FISCAL YEAR 2006, 308 tbl.16.1, available at <http://www.whitehouse.gov/omb/budget/fy2006/pdf/hist.pdf>. Including spending on healthcare for defense, the total percentage is estimated at 26.3%. *Id.*

106. Bob Brewin, *DOD Eyes Changes in Healthcare Benefits*, GOV'T HEALTH IT, Jan. 30, 2006, available at <http://www.govhealthit.com/article92143-01-30-06-Web>.

107. NAT'L CTR. FOR HEALTH STATISTICS, HEALTH, UNITED STATES, WITH CHARTBOOK ON TRENDS IN THE HEALTH OF AMERICANS 30 (2005).

108. COMM. ON QUALITY OF HEALTH CARE IN AM., INST. OF MED., TO ERR IS HUMAN: BUILDING A SAFER HEALTH SYSTEM 1 (Linda T. Kohn et al. eds., 2000) [hereinafter TO ERR IS HUMAN].

alone,<sup>109</sup> with an estimated 770,000 injured due to adverse drug events; up to 70% of these events may be avoidable.<sup>110</sup> The Institute of Medicine estimates that medical errors cost the United States approximately \$37.6 billion per year; about \$17 billion are associated with preventable errors.<sup>111</sup> This is both an economic and health issue of enormous magnitude.

There is broad consensus among experts that the absence of a unified set of open information technology standards for healthcare data is a significant barrier to substantially reducing the cost of healthcare and improving healthcare outcomes. A recent study estimates that adoption of electronic patient records and an open-standard health information technology network could yield \$78 billion in annual savings.<sup>112</sup> Further, it is widely acknowledged that there has been a market failure to address the problem in a reasonable time frame (in that information technology companies in the healthcare field have not implemented open standards after having many years to do so).<sup>113</sup> Leading proponents of the development of standards to accomplish creating a health information technology environment have recommended that the role of government should be to encourage market-developed standards by creating incentives that are “predicated on improving quality of care through [information technology], [by] investing (with the private sector) in the creation of” a public-private collaborative entity to establish and administer standards and policy rules, identify and recommend for implementation technical standards for interoperability developed among stakeholders (among other responsibilities), and “provid[e] seed funding to define and disseminate the . . .

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109. *Id.* at 2.

110. See Jason Lazarou et al., *Incidence of Adverse Drug Reactions in Hospitalized Patients: A Meta-analysis of Prospective Studies*, 279 J. AM. MED. ASS'N 1200, 1200-05 (1998); see also D.C. Classen et al., *Adverse Drug Events in Hospitalized Patients*, 277 J. AM. MED. ASS'N 301 (1997).

111. TO ERR IS HUMAN, *supra* note 108, at 41.

112. Jan Walker et al., *The Value of Healthcare Information Exchange and Interoperability*, HEALTH AFF. WEB EXCLUSIVE, January 19, 2005, at W5-10, <http://content.healthaffairs.org/cgi/reprint/hlthaff.w5.10v1?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=The+Value+of+Healthcare+Information+Exchange+and+Interoperability&andorexactfulltext=and&searchid=1&FIRSTINDEX=0&resourcetype=HW> CIT (discussing CTR. FOR INFO. TECH., THE VALUE OF HEALTHCARE INFORMATION EXCHANGE AND INTEROPERABILITY (Jan Walker et al. eds., 2004)).

113. See MARKLE FOUND., DATA STANDARDS WORKING GROUP, CONNECTING FOR HEALTH, REPORT AND RECOMMENDATIONS (2003), available at [http://www.markle.org/downloadable\\_assets/dswg\\_report.pdf](http://www.markle.org/downloadable_assets/dswg_report.pdf) [hereinafter REPORT AND RECOMMENDATIONS]; see also MARKLE FOUND., CONNECTING FOR HEALTH, ACHIEVING ELECTRONIC CONNECTIVITY IN HEALTHCARE: A PRELIMINARY ROADMAP FROM THE NATION'S PUBLIC AND PRIVATE-SECTOR HEALTHCARE LEADERS (2004), available at [http://www.connectingforhealth.org/resources/cfh\\_aech\\_roadmap\\_072004.pdf](http://www.connectingforhealth.org/resources/cfh_aech_roadmap_072004.pdf); U.S. GEN. ACCOUNTING OFFICE, AUTOMATED MEDICAL RECORDS: LEADERSHIP NEEDED TO EXPEDITE STANDARDS DEVELOPMENT (1993), available at <http://archive.gao.gov/t2pbat5/149267.pdf>; U.S. GEN. ACCOUNTING OFFICE, MEDICAL ADP SYSTEMS: AUTOMATED MEDICAL RECORDS HOLD PROMISE TO IMPROVE PATIENT CARE (1991), available at <http://archive.gao.gov/t2pbat8/143217.pdf>.



profiles for interoperability.”<sup>114</sup> This is in contrast to requiring the market to deploy government-mandated standards.<sup>115</sup> Indeed, in 2005, ANSI established the Healthcare Information Technology Standards Panel, a public-private forum to address healthcare data interoperability issues.<sup>116</sup>

In the second category, a government may have to examine whether to intervene in the market to develop or mandate an information technology standard where the information technology standard is relevant to providing an essential, although not critical, government service. For example, governments have the responsibility to assure that official government documents and public records are readily accessible by their citizens for examination and use in perpetuity. Beyond the practical implications for those touched by government action, there is the need for transparency in governing in the United States, and governments have a responsibility to maintain records reflecting the operation of the government for current and future generations. Governments have long recognized the challenges of converting official records from a paper-based system to one of digital creation, storage, and retrieval. Given the rapid evolution of digital technology, there is a concern that government records created in a digital format available today will not be accessible by the public in perpetuity. Many in both the public and private sectors have sought to address this issue. Factors such as file format standards, record retention policies and strategies, and public access to electronic files are critical issues to be addressed in the standards-setting context.<sup>117</sup>

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114. MARKLE FOUND. ET AL., CONNECTING FOR HEALTH: A PUBLIC-PRIVATE COLLABORATIVE, COLLABORATIVE RESPONSE TO ONCHIT REQUEST FOR INFORMATION 42 (2005),

[http://www.connectingforhealth.org/resources/collaborative\\_response/collaborative\\_response.pdf](http://www.connectingforhealth.org/resources/collaborative_response/collaborative_response.pdf) (a consensus response to the U.S. Department of Health and Human Services Office of the National Coordinator for Health Information Technology Request for Information, developed by thirteen leading health and information technology organizations under the auspices of Connecting For Health, a collaborative of representatives of over 130 health and information technology organizations, providing recommendations for a national health information network) [hereinafter PUBLIC-PRIVATE COLLABORATIVE].

115. See REPORT AND RECOMMENDATIONS, *supra* note 113; see also PUBLIC-PRIVATE COLLABORATIVE, *supra* note 114.

116. See *New Healthcare Information Technology Standards Panel Formed Under Contract from DHHS: ANSI Partners with HIMSS, ATI and Booz Allen Hamilton to Lead Initiative*, ANSI NEWS & PUBLICATIONS, Oct. 6, 2005, [http://www.ansi.org/news\\_publications/news\\_story.aspx?menuid=7&articleid=1054](http://www.ansi.org/news_publications/news_story.aspx?menuid=7&articleid=1054).

117. See *Electronic Records Management and Preservation Pose Challenges: Hearing Before the Subcomm. on Technology, Information Policy, Intergovernmental Relations, and the Census of the H. Comm. on Government Reform*, 108th Cong. (2003) (statement of Linda D. Koontz, Director, Information Management Issues, Government Accounting Office), available at <http://www.gao.gov/new.items/d03936t.pdf>; James A. Jacobs et al., *Government Information in the Digital Age: The Once and Future Federal Depository Library Program*, 31 J. ACAD. LIBRARIANSHIP 198 (2005), available at <http://repositories.cdlib.org/cgi/viewcontent.cgi?article=2377&context=postprints> (arguing that the traditional roles of the Federal Joint Committee on Printing, Government Printing Office, and the Federal Depository Library Program libraries in selecting, acquiring,

There are other “gray area” cases that warrant consideration. In rare cases, the government has intervened to modify market behavior to enhance competition. In such cases, the government has often not developed a particular standard itself, but rather mandated interoperability, and ultimately ratified a market-developed standard. For example, the FCC’s cable TV “plug-and-play” technical standards were developed and agreed to through voluntary consensus by the cable TV and consumer electronics industries, which then asked the FCC to codify them in its rules to ensure interoperability going forward. The rules in general were adopted to benefit consumer electronics manufacturers and retailers that compete with cable operators in providing customer equipment.<sup>118</sup>

Some advocate that the government is the best positioned to promote leading edge or untested technologies that may bring about substantial change in the market that is favorable to society. They argue that the government is uniquely positioned to encourage or require the use of such technology where others would avoid adoption due to the risks of uncertainty or costs associated with implementing such technologies. For example, some proponents of open source software argue that only the government, as consumer, is positioned to encourage widespread adoption of open source applications.<sup>119</sup> In some instances, they advocate that the government mandate such a procurement requirement.<sup>120</sup> Some extend the argument to advocating that governments should implement new technologies simply because the technology may not get “fair” opportunity to compete in the marketplace. However, such is the case with every type of product from cars to television shows. Although there may be merit to a product, sometimes consumers will overlook the product in favor

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organizing, preserving, and providing access to and services for government information are more important than ever in the digital age).

118. See 47 C.F.R. § 76.602 (2006); 47 C.F.R. § 76.640 (2006); *In re* Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices, 18 F.C.C.R. 20,885 (Oct. 9, 2003).

119. See Andy Updegrave, Editorial, *Governments as Accelerators*, CONSORTIUM STANDARDS BULL., Sept. 2005, available at <http://www.consortiuminfo.org/bulletins/sep05.php#editorial>. Some proponents of open source software argue that government has an interest in using software that is not potentially subject to control of a single vendor. Although this may be a valid argument regarding open standards, I would distinguish open standards from open source software in this regard: Whereas the use of software that implements open standards (or possibly even broadly accessible and licensed proprietary standards) may meet the goal of protecting government from control by a single vendor, open source software does not necessarily do so, since an open source implementation may be unique to a particular company, and, but for that company’s product, the use of the implementation by government may be impractical. Moreover, most open source software has been commercialized and is acquired under specific terms and conditions.

120. This is to say a procurement requirement that would not only mandate a particular technology, but mandates the use of the licensing scheme and development model. It is important to understand that the term “open source software” does not define the utility or functionality of a particular software, but rather a development scheme, i.e., who writes the code, and very often, particular licensing terms embodied in what is called a General Public License, or GPL.

of known quantities, regardless of the projected benefits of the new product. It is not unusual for the market to simply favor the incumbent over a new, untested product. This is not to say that where the best business case for the government as consumer urges the use of a new or untested technology standard, the government should refrain. The point is that even in this situation the business case must still be made, and good judgment as a rational consumer must be relied upon.<sup>121</sup>

### C. CASES THAT ARE CLEARLY NOT CIRCUMSTANCES FOR GOVERNMENT INTERVENTION

Under the third category, as a general matter government should not intervene in the setting of information technology standards in circumstances where the competitive market is vibrant (i.e., there is market competition and viable means to set the relevant information technology standards) and where (1) the market is not clearly failing to meet an important public interest objective, or (2) there is no important public interest objective or creating the standard is tangential to an important public interest objective. By tangential, I mean that creating the standard is not the only way to achieve the public interest objective; thus, even in a case of market failure, such would not be a barrier to the government in accomplishing the important public interest objective.

Let me step back at this point to be clear as to what constitutes the public interest. For the purpose of examining the government's role in setting standards, policymakers must keep a broad view of what the public interest is—that is, to maintain proper perspective, they should examine the narrow issue at hand in light of the greater public good. Indeed, this may be a difficult task. However, given the strong preference for government restraint in mandating standards, and given the extremely small likelihood that the setting of any particular standard will negatively impact the public at large, it is an extremely important consideration. Where there may be a more narrowly defined public interest sector impacted by the setting of a standard, it is important to have the relevant public interest representation informed and meaningfully involved in the standard-setting process, as I describe in Part VI.

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121. See Dep't of Def., Open Systems Joint Task Force Frequently Asked Questions, available at <http://www.acq.osd.mil/osjtf/faqs.html#dejure> [hereinafter OSJTF FAQ] (describing the Defense Department's decision-making process in regard to standards implemented in open systems: "Overall, you should select the standard that provides the best business case, whether it's *de facto* or *de jure*, and that provides your program the best chance for success over the life of the program . . . . Selecting a standard that is too immature may not satisfy functional/performance requirements."). Thus it is clear that the Department of Defense is not opposed to selecting emerging standards over a standard that is in widespread use; however, the policy mandates that the choice be made on the best business case. The OSJTF FAQ emphasizes that "market analysis is key to making the best choice (a key risk mitigation technique)." *Id.*

One circumstance not warranting government action would be intervention absent a market failure that is detrimental to the public interest.<sup>122</sup> For example, in a situation in which a standard has not evolved, the government need not intervene for the sole reason that adoption of a standard would provide a consumer benefit unto itself. Keep in mind the long history of “would-be” standards rejected by the public described at the outset of this article. Although there are many roads that can lead to the development of a standard, some dead-end because, as I have described, the technology is not mature, affected industries are unresolved as to the appropriate standard, the standard-in-waiting is superceded, or the market simply is not ready or interested. In these cases, and even where competing technologies flummox the market, delaying the adoption of a standard, consumer rejection of a standard as such is not rationale enough for government intervention.

A frequently cited example where some argue the market is failing to meet an important public interest objective is in the context of consumer access to, and use of, works protected by copyright. Major aspects of the current debate are whether or how government should address the competing interests of various stakeholders (e.g., relative competitive advantage of an incumbent technology or commercial interest),<sup>123</sup> the preservation of the fair use doctrine,<sup>124</sup> and whether the law and the industries are meeting consumer expectations regarding the use of copyrighted works.<sup>125</sup> Without a doubt, important public interests are at stake. However, it is not so certain that standards are essential to achieving these public interest objectives. Indeed, standards are possibly only tangential to achieving these objectives. Other laws and behaviors are implicated and may be regulated pursuant to non-technical (i.e., not standards-related) means.

As to the fair use issues, clearly important public interest objectives are

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122. I distinguish consumer benefit from consumer protection, which would certainly fall under other areas of law such as antitrust or general consumer protection laws rather than the government intervening in the standards-setting process per se.

123. See Peter Cohen, *Disney Boss Accuses Apple of Fostering Piracy*, MACWORLD MAGAZINE, Mar. 1, 2002, available at <http://www.macworld.com/news/2002/03/01/eisner/>. For evidence of congressional attention given competing interests in regard to the distribution of music, see *Protecting Content in a Digital Age—Promoting Broadband and the Digital Television Transition: Hearing of the S. Comm. on Commerce, Science & Transportation*, 107th Cong. (2002), available at <http://commerce.senate.gov/hearings/hearings0202.htm>; *Online Entertainment: Coming Soon to a Digital Device Near You: Hearing of the S. Judiciary Comm.*, 107th Cong. (2001), available at <http://judiciary.senate.gov/hearing.cfm?id=198>.

124. See FRED VON LOHMANN, ELEC. FRONTIER FOUND., FAIR USE AND DIGITAL RIGHTS MANAGEMENT: PRELIMINARY THOUGHTS ON THE (IRRECONCILABLE?) TENSION BETWEEN THEM (2002), available at [http://www.eff.org/IP/DRM/cfp\\_fair\\_use\\_and\\_drm.pdf](http://www.eff.org/IP/DRM/cfp_fair_use_and_drm.pdf); Pamela Samuelson, *Anti-Circumvention Rules Threaten Science*, 293 SCIENCE 2028 (2001); Pamela Samuelson, *DRM {And, Or, Vs.} the Law*, 46 COMM. ACM 4 (2003), available at [http://www.ischool.berkeley.edu/~pam/papers/acm\\_v46\\_p41.pdf](http://www.ischool.berkeley.edu/~pam/papers/acm_v46_p41.pdf).

125. Elec. Frontier Found., *The Customer Is Always Wrong: A User's Guide to DRM in Online Music* (2006), available at <http://www.eff.org/IP/DRM/guide/>.

implicated (e.g., the protection of the public interest limitations on the otherwise exclusive rights in intellectual property protection such as disclosure in the context of patents and preservation of the fair use doctrine in the context of copyright). However, even if the market is failing, it is not the actual information technology standard that is at issue, but rather the operation of copyright law (or the enforcement of that law). The applicable law in this case is the Digital Millennium Copyright Act (DMCA). The DMCA amended the Copyright Act barring circumvention of digital rights management protecting copyrighted works.<sup>126</sup> The DMCA also authorizes the Librarian of Congress to periodically review the impact on fair use of the anti-circumvention provisions of the DMCA, and “exempt certain classes of works from the prohibition against circumvention of technological measures that control[s] access to copyrighted works.”<sup>127</sup> Proceedings have taken place in 2000, 2003 and again in 2006.<sup>128</sup> Although in early years, the Copyright Office determined that no revision to the law was necessary, in 2006, the Registrar of Copyrights exempted persons making non-infringing uses of six classes of copyrighted works from the circumvention prohibition.<sup>129</sup> Thus, the government is addressing the issue of preserving fair use without requiring alteration of information technology standards. There may be an argument about whether the statutory approach of exemptions is a correct one (some may argue that all works should be exempted), but this is a statute regulating behavior, not technology standards. Copyright law is, as it is often said, a perpetual balancing between the public interest in protecting the rights of the creator and the public interest in the use of a work.

As to the competing commercial interests, the presumption should be that the government should not intervene merely to skew the competitive playing field.<sup>130</sup> In this case, the market is young and the participants, copyright owners and the competing information technology companies are only beginning to develop business models. As I have described, this is a circumstance that argues against the need for government intervention.<sup>131</sup>

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126. 17 U.S.C. § 1201(a)(1)(A) (2000).

127. U.S. COPYRIGHT OFFICE, RULEMAKING ON EXEMPTIONS FROM PROHIBITION ON CIRCUMVENTION OF TECHNOLOGICAL MEASURES THAT CONTROL ACCESS TO COPYRIGHTED WORKS (2006), <http://www.copyright.gov/1201/index.html>. See also 17 U.S.C. § 1201(a)(1)(C) (2000).

128. U.S. COPYRIGHT OFFICE, *supra* note 127.

129. *Id.*

130. Of course, if there are anticompetitive behaviors, such can be addressed by antitrust law.

131. See *supra* notes 93-95 and accompanying text (discussing France’s recent legislative efforts to mandate interoperable entertainment digital rights management). Interoperability among digital audio players has been at issue since the market success of the proprietary Apple AAC file format and their Fairplay DRM. See also, *Hearing Before the Subcomm. on Courts, The Internet, and Intellectual Prop. of the H. Comm. on the Judiciary*, 109th Cong. (2005) (statement of Raymond Gifford, President, The Progress & Freedom Foundation) (“Furthermore, these markets usually trend toward interoperability, as that is

As to the consumer issues, there are important market questions regarding the delta between commercial offerings and consumer expectation, and these questions are not an issue of the setting of an information technology standard. In other words, the standard will implement the access rules that the copyright holder or content distributor imposes. It is worth noting that where an industry uses a technology that “goes too far” to the detriment of a public interest in protecting consumers, or for that matter, too far in regard to consumer expectation, the public outcry and press reaction tend to quell the adverse actions and even litigation may ensue. Recently, Sony BMG incorporated First4Internet XCP copy protection into CDs and DVDs, which install without a user’s permission on a user’s PC as a rootkit, creating security vulnerabilities. Consumer advocates and the Department of Homeland Security sought legislation to prohibit this technology and the Electronic Frontier Foundation brought a class action suit against Sony/BMG (relying on current law protecting computers), obtaining a settlement in January 2006.<sup>132</sup>

Finally, in some cases, there may be an important public interest objective in helping a nascent industry develop. The most obvious example is the early evolution of the Internet. Although there has been much debate, and there are a few exceptions, the government has been hesitant to regulate the Internet for all the reasons regarding government failure aforementioned. In the few instances in which the government has regulated the Internet, there have been problems fitting the solution to the problem. Although these are not examples of “standards” per se, one can look to the examples of the CAN SPAM Act and efforts to protect children from pornography, the Communications Decency Act (CDA) and the Children’s Online Privacy Protection Act (COPPA) for a mismatch of regulatory approach to the problem at hand.<sup>133</sup>

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usually where consumer preference directs them. By contrast, government mandated interoperability sacrifices the dynamic competition for the standard for competition within the standard.”); *Id.* (statement of William E. Pence, Ph.D., Chief Technology Officer, Napster) (stating

[m]arketplace forces will continue to drive innovation in the DRM arena with attendant consumer benefits, new ways to enjoy digital music at a variety of different price points, while also gradually ‘solving’ the interoperability problem . . . . Napster believes that allowing the iPod to work with multiple service offerings would benefit consumers . . . . I do not see government intervention as the solution, as it would stifle competition and innovation that will benefit consumers and copyright owners at a very early stage of the market’s development . . . . It does not seem prudent for government to pick a winner in the continuing . . . marketplace battle between Apple’s FairPlay DRM and its competitors.)

132. See *In re Sony BMG CD Technologies Litigation*, No. 1:05-CV-09575-NRB, (S.D.N.Y. Nov. 21, 2005). The Final Order was signed on May 22, 2006. See also Sony BMG CD Technologies Settlement, [www.sonybmgcdtechsettlement.com](http://www.sonybmgcdtechsettlement.com) (last visited Apr. 2, 2007); Electronic Frontier Foundation, Sony BMG Litigation Info, <http://www.eff.org/IP/DRM/Sony-BMG/> (last visited on Apr. 2, 2007).

133. The Controlling the Assault of Non-Solicited Pornography and Marketing Act of 2003 (CAN SPAM Act) requires commercial e-mail to be identified as advertisements, bans

Each house of France's parliament would argue that they are encouraging growth and competition in a nascent online music industry with their proposed DRM law.<sup>134</sup> The market can certainly be described as nascent. Although Apple is clearly the current market leader, it leads in a small part of the *potential* market, which is growing rapidly.<sup>135</sup> There is significant consumer interest in online music,<sup>136</sup> and there are many major companies focusing significant investment to compete with Apple, including Sony, Creative, Dell, Microsoft, Panasonic, Phillips, Toshiba, Samsung, Sandisk, and others. Indeed, in this case, where there are several viable competing technologies in the marketplace (i.e., Microsoft's Windows Media Player format, RealPlayer's format, and, of course, MP3), it has been argued that a government mandate may have the effect of foreclosing competition. As I have noted, some have observed that rather than leveling the playing field, such a law could tilt the

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misleading header and subject line information, and gives consumers the right to ask e-mailers to stop spamming them in an effort to halt spam. 15 U.S.C. §§ 7701-7713 (2003). However, American legislation can only accomplish but so much, given that spammers can simply move their operations off shore and the FTC has no legal mechanism to bring actions against spammers located abroad. The Children's Online Privacy Protection Act of 1998 (COPPA) prohibits website operators from collecting personal information from children under thirteen years of age without the verifiable consent of the parent. 15 U.S.C. §§ 6501-6506 (1998). However, among other things, privacy advocates argue that the FTC has yet to clarify what constitutes "actual knowledge" that minors are using a website. See EPIC Complaint and Request for Injunction, Investigation and for Other Relief, *In re Amazon.com, Inc.* (filed Apr. 23, 2003), available at <http://www.epic.org/privacy/amazon/coppacomplaint.html>; Comments of Electronic Privacy Information Center, Center For Digital Democracy, Kathryn C. Montgomery, National Institute on Media and the Family, Consumer Action, Privacy Rights Clearinghouse, Consumer Federation of America, and Robert Ellis Smith of Privacy Journal, *In re COPPA Rule Review 2005*, (filed June 27, 2005), available at <http://www.ftc.gov/os/comments/COPPARulereview/516296-00014.pdf>; see also FTC decision to retain the Children's Online Privacy Protection Rule without modification (Mar. 15, 2006), available at <http://www.ftc.gov/os/2006/03/P054505COPPARuleRetention.pdf>. The Communications Decency Act (CDA) imposed broadcast-style content regulations on Internet content, prohibiting posting of "indecent" or "patently offensive" materials in a public forum on the Internet. Pub. L No. 104-104, §§ 501-509, 551-552, 561, 110 Stat. 56, 133-43 (1996), *invalidated by* *Reno v. ACLU*, 521 U.S. 844 (1997). This would have included the texts of classic fiction such as the "Ulysses" and other materials that, although offensive to some, enjoy the full protection of the First Amendment if published in a newspaper, magazine, or a book, or in the public square. The CDA was struck down by the Supreme Court in *Reno v. ACLU*, 521 U.S. 844 (1997).

134. *Supra* notes 91-95 and accompanying text.

135. Some might even argue the sector has crossed the threshold of "nascent." In.Stat, a leading Internet research firm, reports that online sales of digital music constituted nearly five percent of the total worldwide music market in 2005, representing \$41.5 billion in sales, which is up from zero percent in 2003. Press Release, In.Stat, The Online Music Market: Downloaded Music Will Outpace Physical Media Bought Online in 2007 (Mar. 2006), available at <http://www.instat.com/catalog/Ccatalogue.asp?id=212#IN0602972CM>. In.Stat expects that download revenues will exceed revenues from physical products purchased online by 2007. *Id.*

136. *Id.*

field toward the current market leader, Apple, growing its market share and creating a disincentive for others to compete. The essence of the situation is that a sector is nascent and it is questionable at best whether the market has failed let alone whether the public interest (that of consumer's choice of online music vendors and devices) rises to the level of warranting government intervention.

#### V. THE TEST (PART TWO): SIGNIFICANT AND SUBSTANTIAL MARKET FAILURE

In the context of information technology standards, and for the purposes of identifying the government's role in regard to setting such a standard, I define market failure as circumstances where an information technology standard essential to meet a critical public interest objective, or relevant to an important public interest objective, has not developed in the market in a reasonable time frame and, thus, has proven a barrier to government action to address the identified public interest objective.<sup>137</sup> Market failures may occur for various reasons, such as: underinvestment by the private sector to develop and deploy the appropriate standards; a lack of proposed standards or conflicting standards such that no single standard has emerged to meet the critical or important public interest objective; systemic inefficiencies that result from competitive efforts to develop standards that function to impair the development of the standard (i.e., competing companies or standards-setting organizations develop conflicting standards to meet the same need causing increased market expenditure on the development of the standard or market uncertainties that cause consumer confusion); or intractable discord between industries or participants in the standards-setting process (i.e., the standard-setting process has apparently irrevocably broken down). In this last case, there must be such a high level of discord between participants that the system fails to deliver standards to meet the essential or important public interest objective in a reasonable time frame.<sup>138</sup> Under any of these circumstances, the government

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137. To assess what a reasonable time frame is, the government would consider the urgency or criticality of the need for a standard and to what extent, if any, the pace of market behavior is operating to the detriment of the public. Consider for example the possibility of a standard that is established as a result of widespread user adoption, i.e. a de facto standard. Such may take considerable time to emerge in the marketplace, but the timing is often coincidental to the market need as its establishment is precipitated by the scale and scope of market need.

138. Indeed, there may be other market behaviors that operate to the detriment of the public, such as collusion among a few in the standards-setting process, market allocation, boycotts of a particular company or standard, the problems of "hold up" or that of "submarine patents." But, there are other legal theories and remedies to address these market failures, such as laws applying to intellectual property protection in copyright or patents, contracts or antitrust. The government should consider these means in the appropriate circumstances, before intervening in the standards-setting process in a manner of "selecting" the standard.

Take, for example, the *Rambus* case, in which Rambus, while participating in a



may be asked to intervene by stakeholders or may, as a stakeholder, independently consider intervening.

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standards-setting effort within the Electronic Industries Association-established Joint Electron Devices Engineering Council (JEDEC), failed to disclose patents. *Rambus v. Infineon Techs. AG*, 164 F. Supp. 2d 763, 764 (E.D. Va., 2001), *rev'd in part*, 318 F.3d 1081 (2003). Subsequent to the development of the standard, Rambus sought royalties on the patents from companies that implemented the standard. The FTC unsuccessfully brought an administrative action against them. In concurrent litigation, Rambus was held not liable for allegedly misleading JEDEC's standards-setting activity. However, the Virginia District Court on remand found that Rambus was guilty of evidence spoliation, which, in part, provided the basis for a bench ruling that Rambus could not enforce its patents on a theory of "dirty hands." In 2004, the District Court found that Rambus had spoliated evidence, warranting the piercing of Rambus' attorney-client and work-product privileges. This permitted the subsequent discovery in the federal civil case. *Rambus, Inc. v. Infineon Techs. AG*, 222 F.R.D. 280 (E.D. Va. 2004). In February 2005, in a bench trial, the court found that Rambus was liable for "unclean hands," which would estop Rambus from pursuing its patent claims. *See Samsung Elecs. Co. v. Rambus, Inc.*, 398 F.Supp. 2d 470, 473 (E.D. Va. 2005). *See also Rambus, Inc. v. Infineon Techs. AG*, 222 F.R.D. 280, 282 (E.D. Va. 2004). There is no record of the bench trial to which the *Samsung* case refers. After this ruling, Rambus and Infineon settled out of court before the court finally ruled in the matter. In May 2005, the FTC re-opened the record upon discovering that Rambus's attorneys had likely tampered with evidence. The full Commission is hearing the matter and is considering the new evidence. *In re Rambus, Inc.*, FTC Docket No. 9302 (2004), *available at* <http://www.ftc.gov/os/adpro/d9302/index.htm> Although the case is ongoing, the facts have thrown into question how a standards-setting organization can enforce its intellectual property rights policy and whether courts can resort to equity as an appropriate remedy..

Another example can be found in the FTC Consent Order in *Dell Computer Co.*, FTC Docket No. C-3658 (May 20, 1996) (Commissioner Azcuenaga dissenting), where Dell was alleged to have intentionally failed to disclose claimed intellectual property to VESA during the standards-setting process. The Consent Order required Dell to refrain from enforcing its patents. *Id.* Were such a circumstance to become endemic, it might be appropriate for government to intervene. *See*, *The Vital Role of Standard-Setting Organizations and the Necessity of Good Faith and Fair Play Among Participants, The Future of Standards-Setting 2004 Symposium Paper*, *available at* [http://www.standardsconference.org/docs/WhitePaper\\_1-14-05.pdf](http://www.standardsconference.org/docs/WhitePaper_1-14-05.pdf); Deborah Platt Majoras, Chairman, Fed. Trade Comm'n, Remarks, For Standardization And The Law: Developing The Golden Mean For Global Trade (Sept. 23, 2005), *available at* <http://www.ftc.gov/speeches/majoras/050923stanford.pdf>.

But mitigating factors that lead to self-correction may prevail. Indeed, even where there is fear of potential market power abuse, as has been expressed in the context of standards setting (in regard to certain companies, or particular development schemes, such as proprietary as compared to open source), "most networks consist of several manufactures supplying complementary products that must interconnect in order for the network to function efficiently." David Balto, Assistant Dir., Office of Policy and Evaluation, Bureau of Competition, Fed. Trade Comm'n, Remarks at the Cutting Edge Antitrust Law Seminars International (Feb. 17, 2000), *available at* <http://www.ftc.gov/speeches/other/standardsetting.htm>.

Further, such a risk is substantially eliminated when the standards-setting process enters formal stages and transparency, consensus, good faith, and fair play work to preclude unfair advantage by any single participant. Although this view may appear idealistic, the risks of assault on a standards-setting proceeding are most notably that of the imposition of a "submarine patent" or of patent royalty "hold up" risks, which are concerns as to behavior but are not attributable to the size of the perpetrator.

In a case that falls within the first category, the standard is essential to meet a critical public interest objective; the government should certainly take all necessary measures to remedy the failure as rapidly as possible. That said, as previously noted, the government's strong preference for voluntary consensus standards has led the government to be reluctant to set a mandate where the market has not decided, and thus the test described herein for "gray area" cases may well be appropriate.

As to "gray area" cases, given the well-articulated reluctance of the government to intervene in the market to set standards as a general matter, it is appropriate to set a high bar for failure before the government should intervene, that of *significant and substantial market failure*. A significant and substantial market failure would be where the market failure has proved to be a barrier to the government's ability to address the important public interest objective. Even where there is a significant and substantial market failure, one must consider a number of *mitigating factors*. The first may be posed as a question: if given a reasonable period of time without government intervention, will the market rectify the failure? With regard to the *reasonableness* of the time frame in which a standard may emerge in the market, the examination must consider whether the magnitude of the need corresponds with the availability of the standard. Typically, the market sorts out technical standards well in advance of the time where the majority of users needs to make a technology choice. By this time, the standard reaches wider market acceptance, it is generally well understood, and the methods of interoperability are mature enough to be relied upon.

An example in the standards-setting context of where government appropriately delayed action to allow the market to work can be found in the evolution of consortia. This was a question of the viability and legitimacy of this particular approach to standards setting in general, rather than the development of an individual standard, but the correlation will become apparent, as this debate could have taken place as to any single consortium-developed standard. At the advent of consortia, some critics were concerned that standards set by consortia harmed the standards-setting process because, it was argued, consortia did not adhere to the due process guidelines of formal standards development organizations such as those relating to transparency and inclusiveness. Therefore, the argument went, standards set by consortia were not truly voluntary and consensus based, i.e., not valid. These criticisms were brought to the government's attention.<sup>139</sup> But the government did not intervene and only a few years later it became apparent that the use of consortia to develop standards has revealed itself in many cases to be a better allocation of resources than circumstances where individual companies compete to develop a standard or the market endures a lengthy formal standards-setting process. The consortium significantly reduces both redundancy in the creative process

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139. Standards-Setting Hearing, *supra* note 15, at 19.

(similar tasks being undertaken by different people at different companies) and provides a forum for more efficient consensus building. Even where a proposed standard is developed at a single company, the process of creating a consortium or acquiring consortium approval is an exercise in building consensus, and providing efficiencies otherwise unavailable. In fact, many consortia take on the characteristics and processes of traditional, formal standards-development organizations.<sup>140</sup>

Although there may be concern that single-company, or small-consortium developed standards create a risk to the overall standard-setting scheme, it would be premature to conclude that the government should intervene into a particular standard-setting merely because a single company or a small consortium is proposing the standard. In fact, reviewing the history of standards, one sees many standards developed by a single (even dominant) company or small groups of companies working together.<sup>141</sup> There would have to be much more substantive grounds for government intervention.

Another mitigating factor that the government must evaluate in determining the significance of an apparent market failure is the cohesiveness of the stakeholders, i.e., the degree to which there are existing avenues of interchange, agreement or dispute resolution, such as customary channels for negotiation, forums such as trade associations, cross-industry working groups and so on. The greater the cohesiveness, the less likely government intervention is warranted even where there is a market failure. Keep in mind the enumeration of the vast number of forums for standard-setting, channels of communication between stakeholders, and constant reinvigoration of the development of standards through new forums such as consortia. For example, the entertainment industry and computer industries have been somewhat at odds over business models for, and intellectual property protection in, distribution of the entertainment industry's products using the computer industry's (and consumer electronics) products as the means of distribution. There are numerous avenues for discussion, including private negotiations regarding the terms for distribution, through ad-hoc organizations such as the Content Protection Technology Working Group (CPTWG), and in that case

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140. Although consortia are formed for a wide range of reasons, some of which are purely strategic in regard to competitors, as a market-accepted tactical approach and not presumptively deleterious to the market, they may even enhance competition.

141. Leading examples include Adobe's PDF, Hewlett Packard's PCL, IBM's VGA, Microsoft's open XML file formats, Intel's x86 architecture, and Hayes' Standard AT Command Set. As I have described in detail in Part III.B.1, during the process of revising OMB Circular A-119 to conform with the NTTAA, comments were received seeking clarification as to whether a standard developed by a private-sector business or consortium qualify as a "voluntary," "consensus" standard. OMB made this clarification, stating "It has not been the intent of the Circular to create the basis for discrimination among standards developed in the private sector, whether consensus-based or, alternatively, industry-based or company-based." OMB Circular A-119, *supra* note 23.

more narrowly, the 5C companies (a consortium) that, for example, developed the “encoding rules” to insert into specific “bits” left open for the “broadcast flag” by ATSC (a formal, ANSI-accredited standards developing organization) in its DTV standard, trade associations (e.g., Recording Industry Association of America (“RIAA”), Motion Picture Association of America (“MPAA”), Information Technology Association of America (“ITAA”), Business Software Alliance (“BSA”), Consumer Electronics Association (“CEA”), National Association of Broadcasters (“NAB”) and others), issue- or technology-specific consortia, and so on. Similarly, Internet-related companies, non-profit public interest groups, and standards organizations that are organized to address Internet-specific standards (i.e., W3C, IEEE, IETF, ITU-T, INCITS, etc.) provide still more possible avenues for greater cohesiveness. So too is the case with computer and software architecture and consumer electronics. These are sophisticated, evolved businesses with numerous means to resolve differences and conclude standards setting even in a dynamic, relatively young marketplace of convergence (CEA, IEEE, ITU, ICITS, etc.).

To conclude, there must be a significant and substantial market failure before the government should consider intervening, and even where such a failure exists, the government should consider several mitigating factors before acting.

#### VI. THE TEST (PART THREE): GOVERNMENT INTERVENTION MUST BE REASONABLY TAILORED

Where the government concludes that intervention in the standards-setting process is warranted, *it should reasonably tailor its intervention to rectify the identified market failure and to achieve the particular public interest objective.* The government should limit the scope of intervention and define objectives in acting to address a critical or important public interest objective. In order to assure the most narrowly tailored government intervention, where government elects to intervene, it should be able to clearly articulate: (a) the specifics of the important public interest objective in the establishment of a particular information technology standard; (b) the purpose and scope of the government intervention; and (c) identifiable objectives for government intervention to achieve.

Because the government is substantially predisposed not to intervene and the risk of government failure is of substantial concern, *the government should, where it determines it must, proceed incrementally in its intervention,* respectful of the guiding premises that, first, the information technology market is generally well equipped to develop standards, second, government prefers market-developed information technology standards to government mandates, and, third, the risk of government failure is significant. By incremental intervention, I mean that which initially produces minimal non-market behavior, and with each step, imposes greater degree of intervention. With this in mind, the first step in intervention should be to encourage market activity;

government should first encourage the market to undertake and develop the needed standards. Typically, the government uses incentives such as taxation incentives or government funding through grants or loans to encourage market behavior and the same could be true in regard to the development of information technology standards. In the event of disputes between stakeholders that delay standards to the extent of a market failure, the government could facilitate something akin to mediation to mitigate the need for more direct government intervention.

As a first step prior to direct intervention, and to potentially obviate the need for the government to even entertain the question of directly intervening in the setting of a standard, the government and the private sector should endeavor to strengthen non-governmental public interest representation in the particular standards setting. Government and industry share a responsibility to assure that non-governmental public interest representatives are, or become adequately informed and fully engaged through funding, education and technical assistance where necessary.

By public interest representation, I mean entities that are known to be credible advocates representing the views of the general public (or segments thereof) on issues of public concern and that are accountable to the public for their advocacy. They may represent consumers or consumer sectors such as the elderly as represented by the American Association of Retired Persons (AARP), or have constituencies such as patients in the healthcare arena or the disabled in areas such as accessibility or healthcare. The key factors are that they credibly and genuinely represent the public interest, are informed, meaningfully involved and are accountable.<sup>142</sup>

There are three categories of interested parties represented in the standards-setting process representing diverse opinions: industry (often many companies or trade associations with differing interests); government, as both a customer for standards and as a regulator of industries that use standards, and non-governmental public interest groups (e.g., consumer advocacy organizations). Each set of interested parties have a seat at the standards-development table, but depending on the importance of the standard to each, the credibility and appropriateness of the participation, and other factors, differing weight is given each depending on the circumstances.

Involvement of public interest representatives in these circumstances adds to the diversity of stakeholders and gives greater assurance that the public interest will be served without the direct intervention of government. It is to the

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142. In the context of information technologies, there are many flavors of “public interest” representatives, many of which actually represent industry sectors or even individual companies and have neither accountability to the public nor genuine credibility at stake in the public eye. I do not mean to imply that these enterprises should be excluded from a standards-setting process, as they may well be legitimate stakeholders. However, they do not fulfill the role of a true “public interest” representative, as organizations such as the Consumer’s Federation of America, National Consumers League, AARP or the Disabled American Veterans would, and their viewpoint should be given appropriate consideration.

benefit of industry, government and the public to have such representation to inform the standards-setting process and integrate into the process greater consideration of public interest matters. Further, such representation will be valuable in the event government elects to intervene, representatives participating in the process can inform government decisions, and support or refute with transparency positions taken by the government. As it is described by ANSI in the United States Standards Strategy:

The representation of consumer interests in the U.S. standards system is essential to ensure that the individual's needs are being considered and addressed. Today's consumers are concerned about such issues as product compatibility; quality of products and services; ease of use and accessibility . . . . With its emphasis on . . . openness, and transparency, the U.S. standards system provides a valuable forum for the consumer voice to be heard. . . .

- *Standards developers* should identify, encourage and support appropriate consumer representation on their committees . . . .
- *Industry* should use consumer research as a basis for standardization initiatives and decisions.
- *Government* should strengthen its consumer-related programs and initiate standards information and participation programs as appropriate.
- *ANSI* should work with consumer organizations to educate them about standardization and encourage and support their participation in standards development.<sup>143</sup>

Beyond this first step, a government response might include taking the role of broker or mediator, or assigning such a role to a neutral third party, providing a setting for dispute resolution or the establishment of an informal or formal forum to assist the private sector in developing the needed standard. For example, to mitigate a government mandate and the associated risk of government failure, NIST or the FCC can function as a convener, drawing all appropriate interested parties together.<sup>144</sup> As Carl Cargill testified

NIST has a unique opportunity . . . the ability to call on its own right a meeting of people engaged in standardization . . . and because they are neutral, that is, they don't have their own technical agenda to push, it is phenomenally helpful . . . . It can be a source of information, a source of knowledge about what is going on [in an area of standards-setting].<sup>145</sup>

ANSI has performed this role ably, as has the FCC. The FCC has provided opportunities for consensus building and brokering resolutions in standard-setting where telecommunications standards are at issue. For example, in its proceeding regarding set-top boxes for cable systems, the FCC has on several occasions deferred its deadline for eliminating integrated set-top boxes,<sup>146</sup> the

143. USSS, *supra* note 39, at 10 (footnote omitted).

144. Notably, to some extent ANSI standards planning panels serve this function as well, and being a private-sector enterprise, should be considered as a possible and less government-intrusive alternative avenue.

145. Standards-Setting Hearing, *supra* note 15, at 48 (statement of Mr. Carl Cargill, Director of Standards, Sun Microsystems).

146. The initial deadline for phasing out the integrated set-top box was set for Jan. 1,

latest one, until July 1, 2007, to afford the industry more time to develop a downloadable security solution. The FCC concluded that downloadable security was likely to produce more competitive and interoperable digital devices, which would consequently foster the DTV transition. The Order, however, also imposed reporting requirements on the cable industry in order to ensure that negotiations for development of technical standards and licensing agreements were not unnecessarily delayed.<sup>147</sup>

Similarly, the FCC has also adopted performance requirements and permitted various technical methods to fulfill those requirements. In the “Broadcast Flag” proceeding, the Commission concluded that, absent some content protection mechanism, the potential threat of mass indiscriminate redistribution would deter content owners from making high-value digital content available through broadcasting outlets. To help curb this threat, the Commission adopted the ATSC flag-based system, which signals DTV receiving devices to limit redistribution of the broadcasted content.<sup>148</sup> It is key to understand that the FCC, however, did not prescribe a specific content protection or recording technology that equipment manufacturers must use in producing flag-compliant devices. Rather, the Commission set forth an interim process by which a manufacturer could certify to the FCC that their technology is compliant in giving effect to the ATSC flag, giving life to competing technologies to meet the flag requirements.<sup>149</sup> Even though the Commission acknowledged that it was not mandating a single federal standard, it stated that it would review the standards for licensing terms and compliance.<sup>150</sup> The FCC

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2005, but it has been deferred several times by the FCC, and the current deadline is July 1, 2007. *See In re Implementation of Section 304 of the Telecommunications Act of 1996*, 20 F.C.C.R. 6794 (Mar. 17, 2005). The FCC sought to phase out navigation devices for cable consumers that performed both conditional access functions and other functions in a single integrated device. The goal was to foster competition in the navigational devices market, by enabling unaffiliated manufacturers, retailers, and other vendors to commercially market host devices while allowing cable operators and other video programming providers to retain control over their system security.

147. *Id.* at 6814-6815, ¶ 39. *See also supra* note 14 (discussing the successes and failures in the navigational devices standards setting process). This situation also exemplifies the risks associated with government intervention.

148. *In re Digital Broadcast Content Protection*, 18 F.C.C.R. 23,550 (Nov. 4, 2003), *rev. ’d in part & vacated in part*, 406 F.3d 689 (D.C. Cir. 2005).

149. That is, the device would recognize the broadcast flag, which instructs the device as to what the device may do with the protected content, whether the content may be distributed freely, distributed to an unlimited number of other devices (but only those that recognize the flag), copied only once to another compliant device, or never copied. *Id.* at 23,575 ¶ 53.

150. *In re Digital Output Protection Technology and Recording Method Certifications*, 19 F.C.C.R. 15,876, 15,916 ¶¶ 90-91 (Aug. 12, 2004). Although the D.C. Circuit ultimately struck down the FCC’s broadcast flag requirements, the Commission’s expectation that approved content protection technologies be licensed on a “reasonable and non-discriminatory basis” is still instructive in terms of how the FCC addresses the issue of mandatory technical standards. *See Am. Library Ass’n v. FCC*, 406 F.3d 689 (D.C. Cir. 2005).

has fostered the development of standards in the private sector in many other situations, at times adopting those standards as a federal standard<sup>151</sup> and at other times simply providing approval for compliance with an established industry standard, as in the broadcast flag instance or the cable TV plug-and-play context described above.

As a second step in intervention, the government can use its leverage as a *potential* market participant and *potential* regulator to influence the marketplace. The government is very effective at manipulating market behavior by threatening to undertake regulation, or, as a major market participant, by driving commercial decisions (particularly by government vendors). This step is descriptive of typical situations in which stakeholders seek to put pressure on competing stakeholders by urging Congress or the executive branch to pursue a change in the law to meet the advocate's parochial needs. And indeed, this is common enough behavior. However, the government should only take this step where it is in the broader public interest to do so, and doing so can be and should be accomplished without "taking sides." The goal for the government should be to encourage, cajole, and incite the market to resolve differences impairing the development of a standard.

Even where the government is participating in the market primarily to influence the market, it should do so as a *rational consumer*. The government's decision to participate in the market must be in the broader public interest and part of that analysis must be a determination of the best business case for the government. The government should undertake the traditional cost-benefit analysis of acquisition of a product or service by the government and consider factors such as suitability of the product for the purpose intended, interoperability, reliability, security, functionality and usability, and total cost of ownership (acquisition, training, and conversion costs, and service costs over the life of the product). For example it is not in the best public interest for the government to commit to purchase a non-existent product, or products that are not market-tested and mature (unless, of course, it is supporting research and development). In its *Roadmap for an Open ICT Ecosystem*, the Harvard Berkman Center recommends that policymakers and stakeholders in information and communications technology platforms

[c]onsider a hierarchy of standards with priority given to mature, widely used, open standards. Where open standards do not exist, favor industry-driven, consensus-oriented standards with as many of the elements of an open standard as possible (see Section I). This will help balance the use

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151. See, e.g., *In re Digital Audio Broadcast Systems and Their Impact on the Terrestrial Radio Broadcast Service*, 17 F.C.C.R. 19,990, 20,002 ¶ 34 (Oct. 11, 2002). In this proceeding, the FCC sought to encourage the development of digital broadcasting by AM and FM radio broadcasters. To that end, the FCC selected iBiquity's in-band, on-channel (IBOC) transmission standard. The IBOC standard was supported by most of the largest broadcast group owners, as well as the CEA and the NAB. See also *In re Advanced Television Systems and Their Impact upon the Existing Television Broadcast Services*, 7 F.C.C.R. 3340, 3358 ¶ 69 (May 8, 1992).



of open standards with the dynamics of the market and emerging technologies.<sup>152</sup>

In support of the 1994 Department of Defense Memo reforming the Defense Department standards acquisition to implement the Department's transition to open systems, the Department of Defense Open Systems Joint Task Force guidance provided that,

Overall, you should select the standard that provides the best business case, whether it's de facto or de jure, and that provides your program the best chance for success over the life of the program. . . . Selecting a standard that is too immature may not satisfy functional/performance requirements.<sup>153</sup>

So although there is a willingness to consider immature or untried technologies, there seems to be a widely held preference for more mature and time-tested technologies and standards.

As I have noted, governments have recognized the challenges of converting official records from a paper-based system to that of digital storage and retrieval. Many in both the public and private sectors have sought to address this issue. One solution has become very controversial through the actions of the Commonwealth of Massachusetts and other states as well as national governments outside the United States. In the case of Massachusetts, the Commonwealth has developed a policy to require the OpenDocument file format (recently ratified by OASIS and approved by ISO and IEC), as well as Adobe's PDF (portable document format),<sup>154</sup> as the standard formats for all office documents in certain state agencies as of January 1, 2007.<sup>155</sup>

The policy acknowledges that most documents generated by the government are in Microsoft Word, Lotus Notes, and WordPerfect proprietary formats.<sup>156</sup> Among the policy goals the government is seeking is to shift from these formats to the use of open standard formats for government documents, to gain efficiencies in data management, and to avoid vendor lock-in.<sup>157</sup> Although there are many issues surrounding the development of this policy, one question the government must ask specifically regarding the choice of a format, a central question in the development of the policy, is whether the required format has matured adequately to meet the specific requirements that Massachusetts sets

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152. BERKMAN CTR. FOR INTERNET AND SOC'Y AT HARVARD LAW SCH., ROADMAP FOR OPEN ICT ECOSYSTEMS 24, *available at* <http://cyber.law.harvard.edu/epolicy/roadmap.pdf>.

153. DOSJTF FAQ, *supra* note 121.

154. It is more than simply rhetorically ironic that Adobe refused to license the PDF format to Microsoft for inclusion in Microsoft's Office applications to the same extent it is licensed to other application vendors. Depending on the specifics of this situation, it may place into question whether the PDF format is truly an open standard, available to all qualified potential users on RAND terms.

155. See Massachusetts Enterprise Technical Reference Model, Version 3.5, at 18 (Sept. 21, 2005), *available at* [http://www.mass.gov/Aitd/docs/policies\\_standards/etrm3dot5/etrmv3dot5informationdomain.pdf](http://www.mass.gov/Aitd/docs/policies_standards/etrm3dot5/etrmv3dot5informationdomain.pdf).

156. *Id.*

157. *Id.*

out, particularly the public interest in long-term accessibility to government documents. Are there software manufacturers that will maintain applications in the marketplace that will read documents created by government employees generations earlier, and is it reasonable to expect that those products will be in widespread popular use? Is this the best decision the government can make in regard to meeting the important public interest need to assure government documents are available to the public in perpetuity or is this, as author Stephen Breyer put it, a mismatch between an identified problem and its proposed government solution?<sup>158</sup>

As a final consideration in the context of government as market participant, the government should not incur extraordinary costs to the government or the public uncommensurate with the benefit bestowed upon the general public good. In sum, the government can and should consider using its market power and position as regulator to encourage market behavior, but in doing so, the government must act in the context of the general public good.

As a third step in intervention, the government could consider intervening by imposing a mandatory information technology standard, but doing so through a transparent, neutral process. Failing to cajole the market to meet the important government interest, regulatory steps could be taken to mandate a standard to accomplish interoperability. But the government should do so still with an eye to minimal intervention, allowing for market flexibility, and with attention to mitigating the risk of government, or non-market, failure.

A government mandate should set out requirements to achieve interoperability, i.e., *performance standards*, as opposed to specifying a particular *implementation* of an interoperability requirement (some would call this a “design” requirement). Thus, the law would not describe the specific technical means to achieve interoperability, but would have an objective means to assure that the mandated objective (“performance”) of interoperability is met. Federal government mandates such as e-911, the Emergency Alert System, and the broadcast flag take this approach. And as is the case of the FCC approach to the broadcast flag, the law should establish a neutral process to determine whether a particular implementation satisfies the objective.

The mandate should also be sufficiently flexible to incorporate efficient means to renew or revise the standard, once established, to assure improvement and compatibility as technology evolves.<sup>159</sup> Generally, “performance”

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158. BREYER, *supra* note 76. This is an immense issue for the information technology sectors, governments and all record-dependent industries. Imagine a banking industry where customer records do not survive a deceased customer, or an architect or aircraft designer whose documentation disappears before the final product of their work. Much was learned from a 2200-year-old map carved into panels of wood recently found in China. *See Over 2,200-Year-old Map Discovered in N/W China*, PEOPLE'S DAILY, Apr. 30, 2002, available at [http://english.people.com.cn/200204/30/eng20020430\\_95013.shtml](http://english.people.com.cn/200204/30/eng20020430_95013.shtml). It would be a shame if the very technology that enables the storage of vast volumes of data is the ultimate cause of the disappearance of “information age” historical records.

159. Government-imposed design standards are likely to create the greatest

standards yield the best implementations through marketplace competition.<sup>160</sup> For example, where the public interest objective in healthcare records is to ensure universal accessibility by healthcare providers and patients alike, it may be in the public interest that electronic medical records be maintained in a manner that allows for data exchange and access among all authorized healthcare providers and that the records be readily accessible in an electronic format to the patient. It may be appropriate for the government to mandate interoperability so that health care records can be exchanged in this manner. However, to specifically mandate that all records be maintained in a particular digital file format, preempting the market development of standards, may not be.<sup>161</sup>

There are circumstances wherein a government mandate of a specific implementation would be appropriate. These would be circumstances where a standard that is developed and adopted through voluntary, market-driven means needs a government “blessing” to provide for an enforcement mechanism. For example, once industry standards were set for high definition television, it was in the public interest that all televisions sold in the U.S. conform to those standards precisely, lest a consumer purchase a high-definition television without being certain that she will be able to receive and display high-definition channels broadcast in her locale or purchase a video camera with certainty that it will be compatible with other television equipment in her home. Therefore, it is incumbent on the FCC to incorporate into law requirements that all television equipment sold in the United States conform to specific standards.

Even in such circumstances, the government must still act cautiously to avoid ratifying or “blessing” a standard without corresponding ability for the standard to be updated, revised, or otherwise improved upon. In its *DTV Tuner Order*, the FCC demonstrated its willingness to update standards incorporated into its rules to reflect recent marketplace developments:

We also acknowledge the likelihood that there will be further improvements made to the DTV standards over time and indeed, encourage ATSC and other interested parties to continue their work and efforts in these areas. In this regard, we reaffirm our intention to give significant weight to proposed changes that reflect the kind of broad industry consensus developed through ATSC’s standards-making procedures. While it will be necessary to conduct rule making activity to incorporate such changes in the rules, we nonetheless will endeavor to pursue such rule making as quickly as possible, either through our periodic review of the DTV transition or through separate proceedings as

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opportunity for “government failure,” as they are hard to revise quickly, a necessary feature of standards deployed into the rapidly changing information technology landscape.

160. See Charles Wolf, Jr., *A Theory of Nonmarket Failure: Framework for Implementation Analysis*, 22 J.L. & ECON. 107, 112-32 (1979) (discussing the variety of ways in which nonmarket interventions raise costs that overwhelm the benefits sought).

161. This is another situation where it may well be that the market develops standards for data exchange that subsequently must be ratified (i.e., mandated) by government to provide for an enforcement mechanism.

may be appropriate.<sup>162</sup>

As I have described, in the cable TV plug-and-play context, the FCC, in the interest of encouraging competition and innovation, put CableLabs, a consortium created by the cable industry, in charge of making initial determinations regarding the use of new output or content protection technologies.<sup>163</sup> In fact, after significant controversy and additional FCC action, many sectors are represented in the CableLabs process<sup>164</sup> and the FCC reserved a greater role for the Commission, creating a process for FCC review “. . . when disputes arise. Any interested party, including but not limited to consumer electronics manufacturers, content providers, information technology companies or consumers, may appeal an initial decision by CableLabs to the Commission. CableLabs shall bear the burden of proof that its initial determination, whether an approval or disapproval, was justified.”<sup>165</sup>

The FCC's effort to balance government intervention with marketplace innovation is also evident in the case of the FCC orders addressing the “broadcast flag” content protection technology. The “broadcast flag,” a concept approved by the FCC in 2003, is itself a product of marketplace efforts. The initial development of what became the “ATSC flag system occurred in the Broadcast Protection Discussion Subgroup (‘BPDG’) under the auspices of the Copy Protection Technical Working Group (‘CPTWG’),” and “[f]rom November 2001 to June 2002, more than 80 representatives from the consumer electronics, information technology, motion picture, cable and broadcast industries took part in the BPDG discussions.”<sup>166</sup> Rather than ratifying a specific design standard that was developed in BPDG (the proposed “5C standard” flag), the FCC adopted a performance standard that required devices follow the content-protection rules described by the “flag” on digital content.<sup>167</sup> Corresponding to the development of new products or the entry of new technologies or companies into the marketplace, the FCC periodically approves proprietary technologies that meet the performance requirements of respecting the broadcast flag coding.<sup>168</sup>

The government must reasonably tailor its intervention to address the

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162. *In re* Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television, 17 F.C.C.R. 15,978, 16001 ¶¶ 50, 51 (Aug. 9, 2002).

163. *See supra* notes 84-85 and accompanying text.

164. *See also supra* note 14 (discussing the successes and failures in the navigational devices standards setting process).

165. *In re* Implementation of Section 304 of the Telecommunications Act of 1996, 18 F.C.C.R. 20,885, 20,919-20,920 ¶ 79 (2003).

166. *In re* Digital Broadcast Content Protection, 18 F.C.C.R. 23,550, 23,556 ¶ 12 (2003) (citing FINAL REPORT OF THE CO-CHAIRS OF THE BROADCAST PROTECTION DISCUSSION SUBGROUP TO THE COPY PROTECTION TECHNICAL WORKING GROUP (BPDG FINAL REPORT) 4 (2002)), *rev'd in part & vacated in part*, 406 F.3d 689 (D.C. Cir. 2005).

167. *See In re* Digital Broadcast Content Protection, 18 F.C.C.R. 23,550, 23,574-76, ¶¶ 50-57 (Nov. 4, 2003).

168. *See id.*; *In re* Digital Output Protection Technology and Recording Method Certifications, 19 F.C.C.R. 15,876 ¶¶ 90-91 (Aug. 12, 2004).

market failure and to meet the public interest objective. What constitutes reasonable is something that must be established on a case-by-case basis. However, an incremental and flexible approach as described above will minimize the degree of intervention and give government the ability to first work within the context of the market before overriding the market with a government mandate. In such cases where the government is acting in its capacity as market participant to encourage market behavior, it should do so as a rational participant, examining the business case in support of its market decisions and giving consideration to addressing both the specific public interest at issue and the general public interest responsibilities of the government. Government and industry should act in the first instance to assure adequate public-interest representation within the standards-setting process to potentially obviate the need for direct government intervention.

#### VII. THE TEST (PART FOUR): MITIGATE THE RISK OF “GOVERNMENT FAILURE”

Even taking an approach of incremental intervention, at each step, the government must consider the potential negative implications of government intervention. Thus, as a final element of the test, in any case where the government is considering intervening into standard-setting, the government must balance the benefit of the intervention against the risk of harm to the public interest and the marketplace should it chose to intervene. In intervening, it must do so in a manner to mitigate and minimize the risk of such harm. The “incremental intervention” approach will minimize the opportunity for harm while maximizing the opportunity for the market to work. Any government intervention must be taken with a close eye on encouraging the market, and failing that, emulating a working marketplace, rather than deviating excessively from the norms of the market.<sup>169</sup> As I have noted, government failure is a risk

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169. For example, government should consider the intellectual property rights policies of standards-setting organizations and incorporate such policies into any intervention. *See, e.g.,* AM. NAT’L STANDARDS INST., ANSI ESSENTIAL REQUIREMENTS: DUE PROCESS REQUIREMENTS FOR AMERICAN NATIONAL STANDARDS 9 § 3.1.1 (2006), *available at* <http://publicaa.ansi.org/sites/apdl/Documents/Standards%20Activities/American%20National%20Standards/Procedures,%20Guides,%20and%20Forms/ER0106.doc> (stating that essential patent holders may indicate that a license will be made available to implementers either on a compensation-free basis or “under reasonable terms and conditions that are demonstrably free of any unfair discrimination”); ECMA, CODE OF CONDUCT IN PATENT MATTERS, § 1.2, *available at* <http://www.ecma-international.org/memento/codeofconduct.htm> (“A written statement from the patentee is required, according to which he is prepared to grant licenses on a reasonable, non-discriminatory basis.”); ETSI INTELLECTUAL PROP. RIGHTS POLICY, 2, *available at* [http://www.etsi.org/legal/documents/ETSI\\_IPRPolicy.pdf](http://www.etsi.org/legal/documents/ETSI_IPRPolicy.pdf) (stating that holders of essential IPR must be “prepared to grant irrevocable licenses on fair, reasonable and non-discriminatory terms and conditions under such IPR”); IEEE-SA STANDARDS BD. BYLAWS, *available at* <http://standards.ieee.org/guides/bylaws/sect6-7.html#6>

(IEEE standards may include the known use of essential patents and patent applications provided the IEEE receives assurance from the patent holder or

whenever government intervenes in the market, but especially where there are highly technical, interrelated markets, such as in the case of standards setting. Before intervention, the government should examine the potential risk of non-market failure and proceed accordingly.

Should it choose to intervene, the government should mirror market behavior as closely as possible. Intervention should follow, to the greatest extent possible, the norms and guidelines of formal standards-setting organizations. There are many variations on standards-setting processes, even a substantial ongoing evolution. But even in this state of flux, fundamental norms are fairly well-defined, the benefits of working within the traditional processes and organizations are well-defined, and risks of working outside those processes and organizations are well-defined. To generalize briefly,

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applicant with respect to patents whose infringement is, or in the case of patent applications, potential future infringement the applicant asserts will be, unavoidable in a compliant implementation of either mandatory or optional portions of the standard [essential patents] . . . . This assurance shall be either (a) A general disclaimer to the effect that the patentee will not enforce any of its present or future patent(s) whose use would be required to implement either mandatory or optional portions of the proposed IEEE standard against any person or entity complying with the standard; or (b) A statement that a license for such implementation will be made available without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination. This assurance is irrevocable once submitted and accepted . . . .);

INTELLECTUAL PROP. RIGHTS IN IETF TECH., § 6.5, *available at* <http://www.ietf.org/rfc/rfc3979.txt?number=3979>

([A])ll persons will be able to obtain the right to implement, use, distribute and exercise other rights with respect to an Implementing Technology a) under a royalty-free and otherwise reasonable and non-discriminatory license, or b) under a license that contains reasonable and non-discriminatory terms and conditions, including a reasonable royalty or other payment, or c) without the need to obtain a license from the IPR holder.);

ISO/IEC DIRECTIVES, PART 1, § 2.14.1(b), *available at* <http://www.iec.ch/tiss/iec/Directives-Part1-Ed5.pdf>

(If the proposal is accepted on technical grounds, the originator shall ask any holder of such identified patent rights for a statement that the holder would be willing to negotiate worldwide licenses under his rights with applicants throughout the world on reasonable and non-discriminatory terms and conditions. Such negotiations are left to the parties concerned and are performed outside ISO and/or IEC.);

INT'L TELECOMM. UNION, COMMON PATENT POLICY FOR ITS-T/ITU-R/ISO/IEC, § 2.2, *available at* <http://www.itu.int/ITU-T/dbase/patent/patent-policy.html> (“The patent holder is willing to negotiate licenses with other parties on a non-discriminatory basis on reasonable terms and conditions. Such negotiations are left to the parties concerned and are performed outside the ITU-T/ITU-R/ISO/IEC.”); OPEN MOBILE ALLIANCE, LICENSING DECLARATION 1, *available at*

[http://www.openmobilealliance.org/docs/Member\\_IPRGuidelines\\_v53006.pdf](http://www.openmobilealliance.org/docs/Member_IPRGuidelines_v53006.pdf) (“Upon disclosure of an Essential IPR, the Open Mobile Alliance shall ask the relevant Member to give a declaration that it will license such essential IPR in accordance with the Application Form (i.e. on fair, reasonable and non-discriminatory terms).”).

standards-setting organizations adhere to the norms of transparency, openness (participation by all stakeholders), impartiality, rough consensus, voting or another means to identify consensus, a dispute resolution mechanism, avoidance of overlapping or conflicting standards, due process so all views are considered, provision of technical assistance to stakeholders that may not have adequate technical expertise, parties acting in good faith, and fair play. Government action should employ these same principles and processes to the greatest extent possible.

#### VIII. CONCLUSION

There should be reluctance on the part of government to intervene in the setting of information technology standards (and particularly to mandate a standard that has not been developed and/or widely adopted by the marketplace) because (1) the relevant industries are sophisticated in regard to standards-setting and have many well-developed types of standards, and forums in which to develop standards; (2) the U.S. government has a strong preference for market-developed information technology standards and promotes this preference as a matter of both domestic law and policy and foreign trade policy; (3) international trade agreements limit the degree to which participating governments can mandate standards; and (4) in contrast to the sophistication of the marketplace, the government is rarely as informed, sophisticated in its understanding of the market, or nimble enough to respond to market conditions. Therefore, the risk of government failure is significant, and indeed greatest where the market is young and dynamic, as is the case with regard to the current market affected by information technology standards.

Should the government consider intervening, a substantial analysis should be undertaken. First, the government must determine the category that best characterizes the circumstances at hand. Clear cases for intervention are those in which there is a government responsibility to meet a critical public interest objective and the standard is essential for the government to meet that objective. "Gray area" cases are those in which the information technology standard is relevant to an important public interest objective. Finally, there are some cases that clearly do not present circumstances for government intervention. As to determining whether to intervene, clear cases warrant government intervention if such is needed to address the critical public interest. However, even in the circumstances described herein as a "clear case," the U.S. government, in compliance with federal law and policy would typically adopt a market-developed standard. Given this fact, further analysis, as described for "gray area" cases, may be warranted. In a "gray area" case, there must be a significant and substantial market failure before the government should intervene in the market to meet the important public interest objective. "Significant and substantial" means the market failure has to be proved a barrier to government action to address the important public interest objective.

Before intervening, the government should consider mitigating factors, such as whether the market has had a reasonable time to develop the standard and whether stakeholders have adequate avenues for interchange, i.e., adequate forums to act in the specific situation. To minimize the need for direct government intervention in the first instance, government and industry should support credible, informed and engaged non-governmental public interest (i.e., consumer-oriented) representation. This could include financial, technical and organizational support.

Where a government decides to intervene, the intervention must be reasonably tailored to rectify the market's failure to develop a standard that would address the important public interest objective. In the interest of limiting intervention to the degree necessary, the government should intervene using incremental steps. The first step should be to encourage market behavior through incentives. As a second step, the government can use its leverage as a major market participant and potential regulator to influence market behavior; however, government should behave as a rational consumer, balancing the public interest at issue against the general public good. The government should consider at each stage of intervention how best to mitigate the risk of harm of "non-market" or "government failure." Finally, where government does intervene, intervention should reflect the market norms to the greatest extent possible.

In my examination of this topic, there have been very few circumstances that qualify as a potential significant and substantial market failure in the development of a new standard where the standard would be essential to the government's ability to meet its obligation to address a critical public interest objective, or where the standard would be relevant to an important public interest objective. Given the well-established premises I have outlined, there will be very few information technology standards-setting situations that will justify government intervention. Even under circumstances where there is a critical or important public interest objective at stake, once the government examines the role of the particular standard to that public interest objective, and the market behavior regarding the setting of the standard, the government will likely conclude that the circumstances do not call for government intervention. Even so, in light of the growth of the economic and social significance of standards, there will be many opportunities for government to consider its role in this context. But like the bazaar, government's role is typically to police the pickpockets and thieves, and not intervene in the transactions between merchant and customer.



## APPENDIX



