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Re-Examining Public and Private Roles under the NTTAA

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Prepared in Response to
NIST Federal Register Notice RFI

Effectiveness of Federal Agency Participation in
Standardization in Select Technology Sectors

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Comments in Response to NIST RFI:[1]

Effectiveness of Federal Agency Participation in Standardization in Select Technology Sectors

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Summary: With the passage of the National Technology Transfer and Advancement Act (NTTAA) in 1995, Congress institutionalized the "bottom up" standards development process championed by the private sector in the U.S.[3] The NTTAA directed government agencies to abandon the practice of developing "government unique" standards, to utilize private sector standards wherever practicable, and to participate in private sector standards development. This approach has served the country well, but today new forces, including globalization and increasing reliance on the Internet, present challenges that the private sector is ill-equipped to address without additional support from government. If urgent standards-dependent policy goals are to be achieved, government and industry will need to work together to rebalance the roles of the public and private sectors to capitalize on the unique capabilities of each. In the comments that follow, I first review certain historical factors that will need to be addressed if policy goals are to be achieved, and then offer recommendations on how current and future standards-dependent policy goals may be achieved through more effective interaction among the agencies, and between the public and private sectors.

Introduction: For more than 100 years, the United States has been the exemplar of the "bottom up" model of standards development. Under this methodology, society relies on the private sector to identify standards-related needs and opportunities in most sectors, and to develop responsive specifications. Government, for its part, retains ultimate control over domains such as health, safety, and environmental protection, but preferentially uses private sector standards in procurement, and also references private sector standards into law when appropriate (e.g., as building codes).[4]

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[1] A precursor version of these comments can be found in Updegrove, Andrew, Re-Examining Public and Private Roles Under the NTTAA, *Standards Today*, Vol. IX, No. 4 (November-December 2010), *at* http://www.consortiuminfo.org/bulletins/nov10.php#feature

[2] A summary of the author's relevant experience is included at the end of these comments to provide context.

[3] National Technology Transfer and Advancement Act of 1995, 15 U.S.C. § 3701 (1995), available at http://ftp.resource.org/gpo.gov/laws/104/publ113.104.txt All online resources cited in these comments were last accessed on March 6, 2011.

[4] As of 2008, the Federal agencies had referenced over 9,000 private sector standards into law. (Twelfth Annual Report on Federal Agency Use of Voluntary Consensus Standards and Conformity Assessment (2008)). Elsewhere in the world, a "top down" model is more common, with national, regional and other governments playing a greater leadership role. For a comparison of the U.S. model

This approach was codified with the passage of the NTTAA, through which Congress sought to substantially terminate the prior agency practice of creating "government-unique standards" for procurement purposes. Henceforth, government agencies would be required to use "voluntary consensus standards" (VCSs) and other private sector specifications wherever practical, and to participate in the development of these standards as well. In 1998, Office of Management and Budget Circular A-119 was amended to provide additional guidance to the Federal agencies on complying with the NTTAA.[5]

The annual compliance reports to Congress mandated by Section 9 of OMB A-119 demonstrate that the agencies have faithfully complied with the wishes of Congress.[6] These reports detail the decommissioning of thousands of government unique standards, and the adoption of even more specifications developed and maintained by private sector standards development organizations (SDOs) accredited by ANSI, the traditional global standards organizations (ISO, IEC and ITU), trade and industry associations, and by the hundreds of global industry consortia that have sprung up over the last thirty years in the ICT sectors.[7]

For the first time in 2008, no government agency reported that it had found it necessary to create a new, government unique standard in preference to an available VCS, although 634 new VCSs had been adopted into use – a startling 80% increase from 2007. Indeed, NIST reported that only 45 "government unique standards in lieu of VCSs" (as compared to government unique standards lacking private sector alternatives) remained in use among the 26 reporting agencies.[8]

OMB A-119 also requires the Federal agencies to report on the participation of agency personnel in private sector standards organizations. For 2008, NIST reported that federal agency personnel participated in a record number (534) of SDOs and other standard setting organizations (collectively, "SSOs") – a 7.4% increase from the prior year, although the total number of personnel participating dropped from an all time high in 2007 of 3,374 to 2,935. In short, the pendulum of public-private leadership in standards development has swung strongly in the direction of the private sector.

In the last decade, however, a variety of changes have occurred in the standards landscape that were not contemplated at the time the NTTAA was enacted.

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and the much more centrally controlled approach followed in China, see, Updegrove, Andrew, Top Down or Bottom Up? A Tale of Two Standards Systems, *Standards Today*, Vol. IV, No. 4 (April 2005), at http://www.consortiuminfo.org/bulletins/apr05.php#trends.

[5] OMB Circular A-119 Revised, Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities (rev. Feb. 10, 1998), available at http://www.whitehouse.gov/omb/rewrite/circulars/a119/a119.html

[6] NIST's Annual Report on Federal Agency Use of Voluntary Consensus Standards and Conformity Assessment can be found *at:*
https://standards.gov/NTTAA/agency/index.cfm?fuseaction=NTTAAReports.main

[7] A categorized list maintained by the author of over 700 SSOs in the ICT industries, with links to the organizations, can be found at: http://www.consortiuminfo.org/links/

[8] Some agencies, most notably the Department of Defense, still utilize large numbers of government unique standards that lack private sector alternatives. 2008 Annual Report, ibid., footnote 3 at p. 5.

Domestically, important policy goals such as the deployment of a SmartGrid and the conversion of the health care system to the use of Electronic Health Records (EHRs) have been identified. But these initiatives can only be achieved through crash programs of standards development and deployment that the private sector is not capable of mounting without strong government support. Internationally, our two largest rivals for global trade – the European Union and China – are each deploying sophisticated "top down" standards strategies to provide advantages to their domestic industries, both home and abroad, that U.S. strategies and programs do not.[9]

In the comments below, I will: review the ways in which standards-related infrastructure and policy needs have evolved in the United States since the passage of the NTTAA; provide examples of instances in which agencies have found the existing private sector standards development infrastructure to be insufficient to meet policy maker goals; and provide recommendations on how the agencies can more efficiently coordinate among themselves, while more productively coordinating themselves while participating in, supporting and catalyzing the standards development process in furtherance of the national interest.

Unintended Consequences of the NTTAA: Clearly, the Federal agencies have been faithful in carrying out the directives handed down by Congress in the NTTAA. But has this, on balance, been a good thing?

On the positive side, costs of procurement have presumably dropped significantly as a result of the agencies purchasing more off the shelf, as compared to custom, products from a wider and more competitive range of vendors. Often these products have been more state of the art, as private sector standard setting leads rather than follows markets in areas such as ICT. Part of the annual reporting process under the NTTAA is to include "success stories" describing goals achieved and savings made through participating in SSOs and using VCSs, and examples of these savings and efficiencies are offered in each report.

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[9] For example, on February 25, 2011 it was reported in Peoples Daily Online, a news channel authorized by the Chinese government, that:

> China has announced its ambition at the National Standardization Conference held on Feb.24 to take the lead in high-tech international standards. China's Standardization Administration (SAC) will launch the promotion and applications of some national technologies standards within key countries and regions.

> The technologies standards to be marketed cover the domains of electronic information, communications, high-speed rail, advanced equipment manufacture, international economy and technology cooperation, international engineering and construction and so forth….

Recognizing the great power that China's burgeoning domestic marketplace can provide in the area of standards adoption, SAC Administrator Ji Zhengkun was quoted as saying, "Meanwhile, we will fully use the huge market of our country in order to add up to the competitive advantages on the global stage." Peoples Daily Online, *at*: http://english.people.com.cn/90001/90776/90881/7300644.html

But the implementation of the NTTAA has also institutionalized the primary role of the agencies as customers rather than as developers of standards. Moreover, participation has been on an agency by agency basis, meaning that there is little coordination among them in deciding which SSOs to support. Further, OMB A-119 errs on the side of minimizing the impact and influence of the agencies on the SSOs in which they participate. For example, the Q&As that make up the Circular include the following:

> 7. What Is The Policy For Federal Participation In Voluntary Consensus Standards Bodies? . . .
>
> b. What are the general principles that apply to agency support?
>
> Agency support provided to a voluntary consensus standards activity must be limited to that which clearly furthers agency and departmental missions, authorities, priorities, and is consistent with budget resources. Agency support must not be contingent upon the outcome of the standards activity. Normally, the total amount of federal support should be no greater than that of other participants in that activity, except when it is in the direct and predominant interest of the Government to develop or revise a standard, and its timely development or revision appears unlikely in the absence of such support.

While Section 7 goes on to describe various types of support, such as meeting hosting, underwriting of travel costs, and even direct financial support, the overall tenor is that government representatives should play a passive, as compared to an active, role in setting the strategy, objectives, budgets or other directions of SSOs.[10]

Not surprisingly, with the exception of islands of expertise within select departments (e.g., NIST personnel, some international trade experts, and so on), knowledge regarding standards among policy makers is uncommon. Rare indeed is the policy maker that can converse knowledgeably about the role of standards in international trade or the furtherance of other national objectives. Within agencies, knowledge tends to be granular and domain specific, making it more difficult for an expert in (for example) information technology standards to efficiently relate to someone with deep expertise in an area where many dynamics of standards development are meaningfully different (e.g., agriculture).

Thus, while "top down" nations (like China) and regions (like the European Union) were developing increasing sophistication in the creation and use of standards to pursue policy objectives, the United States was further institutionalizing a sort of self-imposed standards isolationism at the policy level.

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[10] One result is that agency representatives rarely stand for election to the boards of directors of SSOs. When they do, they often abstain from voting.

More recently, the importance of standards to the national interest has greatly increased. An incomplete sampling of the areas of rapid evolution would include the following:

- A drive towards globalization supported across successive administrations, and the reality that national standards and conformance testing requirements continue to be used to create trade barriers;

- The transition of the American economy from traditional manufacturing to the development and sale of high technology products and the provision of services on a global basis through the use of ICT;

- The impact of the Internet and the Web, and the resulting reliance of almost every aspect of commerce, government and society upon networked systems;

- The proliferation of standards-dependent policy goals, such as the deployment of the SmartGrid and EHRs and a desire to transition to Web-based "open government;"

- The potential to drive down agency costs through agreement on common ICT frameworks and architectures;

- Increasingly credible cybersecurity threats from terrorists, foreign nations, and criminals.

One might well then conclude that the NTTAA set government on a course that was ill-timed in light of the future that waited just over the horizon. Instead of directing government to enter into the sort of public-private partnership that would ensure the ability of the private sector and government to work rapidly together to tackle complex challenges of national importance as they arose, it encouraged government experts to passively join the private sector only in individual, domain specific "silos" of activity and expertise.[11]

Tentative steps toward a new standards development infrastructure: One consequence of Congress's decision to leave standard setting to the private sector is the non-existence of the sort of development platform needed to rapidly deliver the cross-sectoral standards solutions required to deliver on important policy goals, such as the SmartGrid and EHRs. Another is a diminished knowledge base, at the enterprise level, to rely upon while driving the agencies towards more efficient and cost-effective common architectural objectives, and delivering on citizen-focused promises, such as transitioning to open, Web-based government.

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[11] I dedicated a recent issue of Standards Today to identifying, and recommending solutions to close, what I referred to as "The Standards Sophistication Gap." See the March – April 2010 issue *at:* http://www.consortiuminfo.org/bulletins/mar10.php

Ideally, Congress would be working to address these shortcomings in a holistic way in order to revamp the public-private standards development process, and set it on a new course that would be better calculated to meet the needs of today and tomorrow. Unfortunately, no such initiative is on the legislative agenda.[12]

Absent new legislation, the that may therefore be feasible is incremental change from within, making use of the inherent powers of the agencies involved and those post-NTTAA mechanisms that have been put in place to shore up the ability of the agencies to operate most efficiently in the areas of ICT.[13]

Unfortunately, the ability of such mechanisms to fill the gap has been mixed at best. For example, the Interagency Committee on Standards Policy (ICOSP), chartered on October 26, 2000 in the final days of the Clinton Administration, was created with the purpose of enabling, "effective participation by the Federal Government in domestic and international standards and conformity assessment activities and to promote the adherence to uniform policies by Federal agencies in the development and use of standards and in conformity assessment activities." The ICOSP was authorized to undertake an array of functions, including gathering and analyzing standards related data and making recommendations to the Secretary of Commerce to:

> (a) strengthen coordination of standards-related and conformity assessment-related policies and activities among the Federal agencies;

> (b) improve the efficiency within the Federal Government of standardization efforts with the U.S. private sector, as well as with regional and international organizations, both private and governmental; . . .

> (e) promote the use of internationally acceptable standards and related activities with a view to increasing trade and economic integration and development; . . .

Intriguingly, the formation of ICOSP might have signaled the beginning of a more adventurous approach to standards development in the U.S., given that its brief Purpose section refers to:

> . . . recommendations presented in the National Research Council's
> report "Standards, Conformity Assessment, and Trade into the 21st

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[12] As will be further discussed below, an existing bill that would have made incremental progress by redefining the agency coordinating role of NIST was finally enacted with those provisions removed. See the America COMPETES Reauthorization Act of 2010, *at:* http://thomas.loc.gov/cgi-bin/query/z?c111:H.R.5116:

[13] Numerous additional initiatives could be mentioned beyond those described below, such as the Federal CIO Council, which, "…is the principal forum for improving practices in the design, modernization, use, sharing, and performance of Federal Government agency information resources," and renders inter-agency IT-related recommendations. See, http://www.cio.gov/ A detailed review of the extensive and rapidly evolving IT management structure of the U.S. Federal government is beyond the scope of these comments.

Century" (National Academy Press, 1995) call for the Committee to intensify its efforts to identify the broad roles and appropriate interactions of agencies in exercising the Government's authority.

Those recommendations were in some respects quite radical, including the following:

Current efforts by the U.S. government to leverage the strengths of the private U.S. standards development system, as outlined in the Office of Management and Budget (OMB) Circular A-119, ''Federal Participation in the Development and Use of Voluntary Standards," are inadequate. Effective, long-term public–private cooperation in developing and using standards requires a clear division of responsibilities and effective information transfer between government and industry. Improved institutional mechanisms are needed to effect lasting change.

- **RECOMMENDATION 3:** Congress should enact legislation replacing OMB Circular A-119 with a statutory mandate for NIST as the lead U.S. agency for ensuring federal use of standards developed by private, consensus organizations to meet regulatory and procurement needs.

- **RECOMMENDATION 4:** The director of NIST should initiate formal negotiations toward a memorandum of understanding (MOU) between NIST and the American National Standards Institute (ANSI). The MOU should outline modes of cooperation and division of responsibility between (1) ANSI, as the organizer and accreditor of the U.S. voluntary consensus standards system and the U.S. representative to international, non-treaty standard-setting organizations and (2) NIST, as the coordinator of federal use of consensus standards and recognizing authority for federal use of private conformity assessment services. NIST should not be precluded from negotiating MOUs with other national standards organizations.

In addition, all federal regulatory and procurement agencies should become dues-paying members of ANSI. Dues will support government's fair share of ANSI's infrastructure expenses.

However, this activist vision was not acted upon by the administration that followed. Today, a review of the minimalist ICOSP Web site indicates that it has no active working groups and meets just three to four times a year for only two hours at a time. Only a single set of minutes have been posted for 2010 (for a meeting held on September 23).[14]

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[14] ICSP minutes can be accessed here: http://standards.gov/icsp/query/minutes.cfm Its Web site is here: http://standards.gov/icsp/query/

The current administration appears to be attempting to pick up where the Clinton administration left off. Rather than seek to reanimate ICOSP, however, on March 24, 2010 it announced the creation of a new interagency working group, this time as a Subcommittee on Standards (SoS) within the National Science and Technology Council Committee on Technology, operating under the joint oversight of NIST and OMB's Office of Information and Regulatory Affairs.

And in fact the current administration had good reason to reengage on the topic of public-private standards development, given its dependency on standards to accomplish a number of its signature policies. In its first year, the Obama administration found it necessary to tackle these dependencies on the fly, convening workshops, and even standards summits at which the President hosted industry leaders at the White House. Naturally enough, it enlisted NIST to play a leadership role. Among other significant "top down" actions, NIST formed a SmartGrid Interoperability Panel to develop a consensus around the architecture and profiles of standards needed to make the SmartGrid feasible.[15]

Despite these ambitious initiatives, the charter of the SoS takes a measured rather than an ambitious approach, beginning by citing, "Government's commitment to the use of voluntary, consensus-based standards developed by private sector organizations to carry out its policy objectives" under NTTAA and OMB A-119, although it then acknowledges that the framework created by these enablers:

> . . .does not address how to best engage government agencies on standards policy issues, articulate the U.S. model of public-private cooperation in standard setting to domestic and international audiences, and develop increased awareness within the Federal government of best practice in addressing-standards policy issues.

The functions permitted to the SoS that follow are in some respects reminiscent of those offered to ICOSP, but also go further in emphasis as well as scope, acknowledging that standards can play a role in the pursuit of policy goals:

➢ The Subcommittee will address the importance of standard setting and implementation in connection to effective governance and agency operations and will empower officials within each relevant agency to play a leadership role in identifying and enhancing the quality and effectiveness of that agency's standards related engagement.

➢ The Subcommittee will facilitate a strong, coordinated effort across Federal agencies to clarify how standards can best be used to achieve procurement needs and regulatory policy and guidance goals, and enable technology development and innovation.

➢ Working with appropriate Federal agencies and established interagency groups, the Subcommittee will support U.S. standards

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[15] The home page for the Smart Grid Interoperability Panel is here: http://www.sgipweb.org/

policy, as embodied in the NTTAA and OMB A-119, elaborating the benefits of this approach and informing audiences, including the international community as to how and why the U.S. approaches standard setting in a voluntary, consensus-based manner.

> The Subcommittee will identify those areas where standards policy issues may arise while addressing national priorities and determine how U.S. government leadership can elevate an awareness of best practices in addressing such standards policy issues. In so doing, however, it will not seek to disturb the commitment to diversity of standard setting approaches.

While more aggressive in its language, the charter of the SoS does not signal an intention to test the limits of the NTTAA, nor to encroach on the prerogatives of the private sector. To the contrary, the third bullet above provides positive reassurance to the private sector, adopting the missionary tone of the United States Standards Strategy in espousing the "bottom up" U.S. approach for foreign emulation.[16] The last sentence of the final bullet is of interest for a different reason, acknowledging that the range of organizations within the SSO community, and the approaches taken by them, has grown more diverse.

Should President Obama and Congress be urging NIST to be more forceful in its approach? I believe the answer to this question should be yes. It is important that NIST and the SoS each act decisively and quickly to execute on the complete range of tasks, and exercise the full scope of the authority, assigned to them. The challenges that already confront us do not allow for further false starts.

Recommendations for creating a more productive public-private partnership: It is hardly to be assumed that the SmartGrid, EHRs and cyber security will be the last dramatically cross-sectoral challenges that the United States will face. Rather, they can be assumed to be typical of additional challenges that lie ahead. Consequently, and by definition, the methods of public-private engagement that will be needed in the future will not be found in past practices involving collaboration between government and SSOs in sector specific standards development. From this perspective, the narrow scope of the RFI fails to solicit advice on the types of more far reaching reforms that might be of greatest benefit in the years ahead.

That said, there are a variety of directly responsive suggestions, consistent with the NTTAA, that can be offered that would provide dramatically and immediately augment the effectiveness of the public-private standards development process, the fulfillment of policy goals, and the efficiency of the agencies themselves.

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[16] The United States Standards Strategy was developed by ANSI with the input of all categories of stakeholders. The latest version was created in 2005 (the author was part of the revision committee) and was recently reviewed and lightly updated to maintain relevance. The revised text acknowledges the importance of addressing cross-sectoral, as well as sector-specific, standards goals.

1. Focus on what only government can do. One of the greatest weaknesses of the existing standards infrastructure is the lack of mechanics for cross-sectoral engagement. While the great majority of SSOs maintain from a few to many liaison relationships with other SSOs, these ties tend to be limited to relations with peer organizations in the same domain. Typically, they are memorialized in short memoranda of understanding that contemplate no more than permitting representatives of each organization to attend specific working groups of the other where their interests overlap.

The major cross-sectoral meeting place is provided by ANSI, which maintains a variety of committees (including a National Policy Committee) and includes c. 200 SDOs in its membership.[17] To date, however, ANSI has been unable to attract significant numbers of consortia into its activities and membership, in part because almost all such organizations are global rather than national, and do not wish to be too closely identified with the United States. But in the case of all but one of the RFI technology focus areas (Radioactivity Detectors and Radiation Monitors), consortia play a major role.

The government therefore needed to be innovative in its efforts to catalyze the rapid development of standards for the SmartGrid and EHRs. It did so in part by "baiting" the hook with multi-billion dollar funding commitments to support the resulting networks, providing strong motivation for vendors, integrators and service providers to participate in their rapid realization. The response has been dramatic, and the progress rapid, all things considered.

Prior to these initiatives, individual agencies have engaged with individual SSOs to facilitate the development of specific standards. Such efforts have been productive, and are likely to form the core of the examples that the RFI harvests from the field. But actions such as these only influence which standards are created, rather than enable solutions that the private sector would not have been capable of providing through lack of coordination and motivation.

The Federal government can, and should, therefore incorporate the following activities into its future plans:

➢ **Optimize and catalyze:** The bottom up standards development methodology has served U.S. interests well for more than a century. The agencies, as well as Federal policy makers, should therefore seek to optimize the public-private partnership rather than restructure it. At the same time, those areas in which the government is uniquely equipped to motivate action should be recognized and consciously added to government planning.

➢ **Identify:** The current standards development process is primarily vendor driven, and vendors focus on specific needs realistically achievable in the

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[17] The author is a member of the Board of Directors of ANSI. However, all characterizations, opinions and recommendations in this article relating to ANSI are the author's alone, and do not in any way seek to represent any position, plan or intention of that organization.

short term at reasonable expense. Private industry is therefore not likely to identify or seek to launch initiatives that require the coordination and collaboration of many SSOs across multiple sectors. Federal policy makers and agency personnel should therefore be charged with identifying areas of policy and procurement need where solutions are unlikely to be independently developed by SSOs.

> ***Educate:*** The bottom up process has encouraged legislators and their staff to take the timely development of essential standards for granted. At the same time, many in the private sector have come to view with suspicion any effort by government to become more engaged in standards development. Any effort to energize and optimize the public-private partnership will therefore require efforts to be directed at educating policy makers on the potential for broader use of standards to achieve policy goals, and to reassure business leaders that such involvement will not slow or dilute the development of standards of strategic importance to individual vendors. NIST should partner with ANSI to design programs, conduct workshops, and publicize use cases of successful interaction, such as the Smart Grid Interoperability Panel.

2. Funding: The largest IT vendors, like IBM, direct thousands of their engineers and other staff to participate in the activities of more than 300 SSOs. Hundreds of other companies participate in anywhere from a few to scores of SSOs. The combined cost is enormous. For a variety of reasons, however, corporate managers often find it easier to budget staff time than to persuade their superiors to approve SSO dues expenditures at the magnitude that would underwrite significant budgets for SSOs.

The result is that while U.S. corporations spend many billions of in-kind dollars on participating in standards development, the combined budgets of the many hundreds of consortia active in the United States today would be significantly less than $1 billion, given that the great majority of these organizations have annual budgets of less than $1 million. Adding in the standards-related line items of all U.S. SDOs (many of which are also trade associations) would be unlikely to double this amount.   The result is that while the in-kind investment of the private sector is enormous, most SSOs are constantly constrained in what they can accomplish by meager budgets. Very modest expenditures by government could therefore enable activities that otherwise would never be undertaken.

Immediate actions which individual agencies could take to dramatic effect would include the following:

> ***Dues:*** Public economic support for standards development is astonishingly low, despite the enormous impact of standards on the national economy. Notwithstanding the decision of Congress to refer the development of standards to the private sector, government agencies (and state and local government bodies) do not typically even pay the same dues to participate in SSOs as do private sector entities. Under a typical dues structure for most

consortia, for example, a government member might pay only $500 - $1,000 to enjoy the same privileges that a corporate member might be required to purchase for $20 - $30,000 per year. At minimum, Federal government agencies should voluntarily pay the same dues as their private counterparts for the same privileges.

➢ **Direct funding:** Federal agencies continue to direct-fund certain activities within SSOs, and particularly consortia. Hopefully, responses to the RFI will highlight many examples where such economic intervention has proven to be fruitful. Given the small budgets of many SSOs, grants of as little as $50,000 can have great impact, and funding in the $1 million to $2 million can make possible ambitious test bed and other important projects that would be entirely beyond the reach of most SSOs otherwise. The provision of direct funding should therefore be highlighted as an appropriate and useful tool for agencies. Identifying as little as $10 million per year per agency as an appropriate reserve for funding relevant standards projects could have an enormous impact on the strategic output of SSOs. Ensuring that such funds can be accessed under streamlined procedures (such as "Other Transaction Agreements") would be essential, given the limited management and legal budget resources of many SSOs.

➢ **Support of core SSOs:** There are a limited number of SSOs that serve as domain centers of excellence in standards areas of core importance to the national interest. Examples include the World Wide Web Consortium (W3C), OpenGIS Consortium, the Organization for the Advancement of Structured Information Standards (OASIS) and others. Providing one-time grants in the $10 million range to each of these organizations to establish reserve funds would enable such organizations to upgrade their infrastructures, stabilize their budgets, undertake projects otherwise unfundable, and commit to multi-year initiatives that might not otherwise be prudent.

➢ **Pay for SDO standards:** Traditional standards developers often underwrite much, or even most, of their activities through the sale of standards. When governments reference standards into law, an expectation can naturally arise that access to such standards should be free. SDOs that are dependent on income from the sale of standards therefore live in fear that courts may someday rule that standards referenced into law would thereby enter into the public domain.[18] Governments should recognize the very substantial avoided public cost of private sector standards development and offer grants to SDOs willing to make their referenced standards available to the public for free.

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[18] This fear is not unwarranted. In 2003, in a case called *Southern Building Code Congress International v. Veeck*, the U.S. Court of Appeals for the Fifth Circuit considered whether a Texas building code that referenced a standard rendered that standard subject to free distribution, and concluded that it did. The holding captured the immediate attention of the SDO community nationwide, despite the fact that it was binding only in the Fifth Circuit.

➢ ***Create an "evergreen" fund:*** A variety of programs that can serve SSO goals require up front investment. Examples include the creation of reference software implementing standards, and developing test suites. Unless individual members are willing to underwrite such projects, they usually go undone, even though subsequent licensing fees may be more than enough to recover the initial investment. The creation of a loan fund of modest proportions (e.g., $15 million) could provide loans in the $100,000 to $500,000 range that would be repaid, with interest, out of subsequently derived revenues.

➢ ***Increase personnel involvement***: As already indicated, SSO members provide tremendous in-kind leverage on SSO budgets. Many standards efforts, and especially those with urgent time frames, can require hundreds, and even thousands, of person-hours. Only a small percentage of private sector companies, however, can dedicate full time personnel to such projects. Increasing the level of direct participation by agency personnel in standards activities can therefore have a significant impact on meeting government standards needs. Increasing the level of coordination among agencies could, at least theoretically, also facilitate a more even distribution of agency personnel across SSOs engaged in projects of interest to multiple agencies.

3. Reengineer the role of government: The Federal agencies have played an isolated and subsidiary role to the private sector for too long. A truly productive public-private partnership requires government to operate at peak performance. Clearly stated, the government needs to improve its standards game if it wants U.S. interests to win, particularly in international trade.

The easy part is to improve the traditional, "one on one" approach of one agency working with one SSO to achieve one objective. While the continuation of such collaboration is essential, great rewards will also be found by providing the initiative, motivation and leadership that the private sector is not equipped to supply in the case of more complex, cross-sectoral standards development initiatives. Rising to this opportunity logically requires the following steps:

➢ ***Authorize:*** NIST's mandate needs to be strengthened to authorize it to identify areas where action is needed and bring them to the attention of policy makers, to play a more aggressive coordinating function among the agencies, and to engage more proactively with the private sector. H.R. 5116, in the version first introduced, would have provided for much of this. Unfortunately, the operative language was stripped out of the compromise Senate version that was finally approved by the House late last year as the America COMPETES Reauthorization Act of 2010. The administration should

urge legislators to take appropriate action to appropriately empower and direct NIST in this year's session.[19]

> ➤ ***Systematize:*** The current SmartGrid and EHR efforts provide examples that should be carefully examined (e.g., through the current RFI) to determine what has worked well and what has not. The results should be analyzed and used to develop roadmaps, best practice guides and success metrics for use in launching similar efforts in the future.

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[19] For an expansion of this recommendation, see my Testimony Before the U.S. House of Representatives Committee on Science and Technology Subcommittee on Technology and Innovation, delivered March 23, 2010, *at:* http://science.house.gov/Publications/Testimony.aspx?TID=15391, and available as text *at:* http://www.consortiuminfo.org/bulletins/mar10.php#policy The relevant powers deleted from H.R. 5116 read as follows:

> (14) to promote collaboration among Federal departments and agencies and private sector stakeholders in the development and implementation of standards and conformity assessment frameworks to address specific Federal Government policy goals; and

> (15) to convene Federal departments and agencies, as appropriate, to—

> (A) coordinate and determine Federal Government positions on specific policy issues related to the development of international technical standards and conformity assessment-related activities; and

> (B) coordinate Federal department and agency engagement in the development of international technical standards and conformity assessment-related activities.

The first of these two new functions accurately describes the role that NIST is currently playing under separate Congressional authority with respect to the SmartGrid. By institutionalizing this role within the NIST Act itself, Congress would not only permit the administration to call upon NIST more quickly as future needs arise, but would also encourage NIST to invest in the creation of the type of human and other resources, and accumulate the type of experience, needed to support those requests as they arise.

H.R. 5116 would also have required NIST to compile and deliver a new annual report to Congress, identifying:

> (1) current and anticipated international standards and conformity assessment-related issues that have the potential to impact the competitiveness and innovation capabilities of the United States;

> (2) any action being taken by the Federal Government to address these issues and the Federal agency taking that action; and

> (3) any action that the Director is taking or will take to ensure effective Federal Government engagement on technical standards and conformity assessment-related issues, as appropriate, where the Federal Government is not effectively engaged.

Of greatest interest for current purposes is subsection (1), which would have allowed NIST to not only coordinate activities as requested by the administration, but to independently bring issues to the attention of Congress that NIST believes may impact national competitiveness.

➢ ***Institutionalize:*** Looking outward, the catalytic role of government in facilitating cross-sectoral and other complex standards-dependent goals should be built into NIST's budget and role, and recognized by policy makers as a key competence to be called upon as needed. Looking inward, the existence of the SoS should be made permanent, and its activities should be supported in a manner adequate to meaningfully increase coordination among the agencies.

➢ ***Partner with ANSI:*** A strong public-private partnership requires efficiency on both sides. Historically, government has never taken full advantage of the existence of ANSI, despite its role as the accreditor of SDOs in the U.S., the recognized representative of American interests in international standard setting, and the singular venue within which the full spectrum of U.S. SDOs engage. One result is that almost none of the hundreds of consortia that dominate in IT, and to a lesser extent CT, have seen a reason to engage broadly with ANSI.[20]

The relationship between NIST and ANSI should therefore be strengthened and formalized in order to provide a more effective bridge between the public and private standards development communities. ANSI should also be designated as the presumptive partner to take at least the first steps in launching future initiatives similar to the SmartGrid. One immediate result would be to bolster ANSI's efforts to draw consortia into mutually beneficial discussions with the U.S. SDO community. An added benefit from strengthening and empowering this already existing relationship would be to enable policy makers and agency personnel to more rapidly and reliably investigate, formulate, and execute on standards related priorities.

4. Procurement: The enormous purchasing power of government can be used as a "softer" exercise of power than the imposition of regulations. Simply by announcing its intention to require that certain types of goods and services conform to specific standards (e.g., relating to energy efficiency), government can create a market large enough to attract vendors to invest in developing such products for general purchase. Procurement policies can preserve citizen rights as well as serve economic goals. One already recognized example involves eGovernment accessibility for those with physical disabilities: citizens should not lose hard-won civil rights when governments choose to move from physical to virtual dissemination of information. Nor should interaction with government require citizens to use the proprietary products of specific vendors. Standards provide the means to preserve these freedoms and achieve these goals.[21]

5. Augmenting infrastructure: The ever increasing importance of ICT in general and the Internet in particular has exposed several weaknesses in the existing standards development infrastructure. One is the burgeoning number of

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[20] A notable exception can be found in several of the domain-specific panels organized by ANSI.
[21] For more on the importance of protecting what I call "Civil ICT Rights," *see:* IT Policy and Open Government, *Standards Today*, Vol. VIII, No. 2 (February – March 2009), *at:* http://www.consortiuminfo.org/bulletins/feb09.php

"necessary claims" under patents that are infringed by the implementation of standards in these areas. The ability to learn of the existence of such claims in timely fashion, to determine whether the owners of such claims are willing to license them on "reasonable and non-discriminatory" (RAND) terms, and the ability to rely on those commitments over time is therefore of prime importance.

At the same time, the proliferation of SSOs, many of which initially or over time overlap in their activities, results in sometimes needless duplication of efforts. Additional complications arise when patents are acquired by companies that license, rather than implement, those patents. Each of these issues can best be addressed through modest facilitative action by government.

> ***Create a Standards Clearinghouse:*** Despite the importance of standards development to the national interest there is a surprising dearth of easily accessible primary information and metadata. ANSI provides a variety of information at its Web site, and NIST has recently launched an excellent site called Standards.gov, but other logical resources simply do not exist. Indeed, the only comprehensive list of ICT standards organizations in the world is maintained not by any public or not-profit entity, but by this author.[22] Similarly, perhaps the largest index of free, online scholarly work on standards has been compiled by the author and is publicly available at the same site.[23] Most surprisingly, despite the fact that there are now hundreds of XML-based standards that make it easy to exchange information of every nature, from sports scores to advertising copy to mathematical equations, there is no XML standard to describe standards – and therefore no easy way to discover and analyze standards in existence, and more importantly, in the process of development.[24] Developing such an XML language would present no special challenges, and creating a database of global standards would only require training and directing staff to input standards already in existence from easily accessed sources. Once created, individual SSOs could update the database online with minimum effort, and anyone could access the database to determine the availability of existing standards and the status of work under development. Policy and academic researchers would gain an invaluable resource as well.[25]

The benefits that would flow from such a resource would include the opportunity for SSOs to learn whether duplicative efforts were already in process before launching new working groups, and the ability to form collaborative relationships more easily. The same database could become a

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[22] See the ConsortiumInfo.org Standard Setting Organizations and Standards List *at:* http://www.consortiuminfo.org/links/
[23] See the Standards MetaLibrary *at:* http://www.consortiuminfo.org/metalibrary/
[24] There are several large (but still partial) lists of adopted standards available, but not all are easily searchable. Of greatest relevance is the NSSN online, searchable database developed and maintained by ANSI, which can be found at: http://www.nssn.org/about.aspx
[25] Links to the standards indices of hundreds of listed SSOs are provided at the ConsortiumInfo.org Standards Organizations and Standards List. A great deal of additional information for each organization (e.g., date of formation, number of members, range of dues charged, and much more) is available on CD to researchers on request.

single point of exposure and access for standards posted for public comment before adoption, allowing any stakeholder to periodically visit the site and search by category for work in process that might be of interest. SSOs would likely find that their ability to recruit new members would be augmented as well, due to the increased visibility of their efforts and the opportunity to announce the launch of new working groups to a far broader audience.

Government agencies could also post areas of interest at such a clearinghouse, enabling SSOs to become immediately aware of opportunities to work more closely with interested agencies, either individually or by combining resources with other relevant SSOs. Where an agency intended to provide grant funding in an area within the competence of multiple SSOs, those organizations could compete for the ability to perform the work, making it easier for an agency to find the most appropriate and efficient venue to host the project. Similarly, SSOs could post funding needs for possible underwriting by agencies or by corporations not already recruited as members.

➢ **Necessary claims registry:** A current concern in the standards community relates to the sale of patents that include necessary claims that are already subject to standards-related licensing commitments. A third party that buys such a patent without knowledge of the licensing commitment made by the seller may understandably take the position that it should not be bound by the same obligation. Instructing the Patent and Trademark Office to accept evidence of standards-related licensing commitments that would be recorded with the affected patent would ensure that assignees of patents could not claim ignorance of obligations that run with a patent, just as an easement filed at a registry of deeds is incorporated into the deed that a buyer receives.

6. Legislation: While the suggestions above can generally be implemented without additional statutory authority, a limited number of legislative efforts could provide meaningful assistance to the efficiency and potential for standard setting in the United States:

➢ **Amend OMB A-119:** The direction of this core directive should be adjusted to harmonize with the more interactive public-private relationship described above, and to remove any ambiguity relating to whether consortium-developed standards should be given equal priority with SDO-created standards.

➢ **Empower NIST:** As noted above, the expanded role for NIST originally contemplated by H.R. Bill 5116 should have been confirmed. The administration should ask Congress to introduce new legislation to similar effect, and in the meantime should instruct NIST to act to the greatest extent possible in a manner consistent with the legislative intent expressed in H.R. 5116 and the recommendations above.

➢ ***Amend the NCRPA:*** First enacted as the National Cooperative Research Act in 1984, and subsequently amended to cover production as well (the "P" in the acronym), this Act provides a limited safe harbor under the antitrust laws for collaborative activities. The Act provides that the members of any cooperative venture that files under the Act within 90 days of its date of formation would be exempt from liability for treble damages and liability for plaintiff attorney fees, to the extent that the claims against it relate to activities within the scope of the Act. Arguably, various activities conducted by SSOs might be so exempt. Standards development activities were specifically included within the NCRPA under an amendment enacted in 2004, but rather incredibly the amendment provided that only the SSO, and not any of its members, would receive such protection.[26] Given that the risk profile of SSOs is incredibly low (most do not have enough assets to provide an attractive target for a plaintiff, and any allegedly anticompetitive acts would be far more likely to be carried out by members rather than staff), this legislative action provided little return on the time invested in its promulgation. Congress would do well to extend the protection of the amendment to SSO members as well, thereby reducing the risks associated with innocent missteps in the course of collaboration in standards initiatives of importance to the Federal agencies and policy makers.

In closing: It is likely that the suggestions offered above extend beyond what the SoS hopes to receive in response to its RFI. It is not, however, likely that the implementation of even all of these recommendations taken together would be sufficient to address the standards-related needs that policy makers will face in the future. Nor would they bring the United States close to parity with the highly effective public-private partnerships of the European Union and China, each of which tightly integrates standards development and uptake into its strategies for achieving domestic and international policy goals.

Perhaps the greatest challenge ahead is for the private sector to acknowledge that continuing to relegate the Federal government to the subordinate role that it has historically played will be neither in the national interest, nor ultimately in the best interests of the private sector itself. As the suggestions above should make clear, there are many ways in which the public and private sectors can work together more productively and synergistically without threatening the independence of vendors or imperiling the continued functioning of the bottom up process.

These are challenges, however, rather than insurmountable barriers. If we are indeed to "Win the Future," as President Obama has said we must, then we must do what is necessary now rather than later. Hopefully, the issuance of the current RFI will lead to the type of optimization of the unique, U.S. public-private standards partnership that is necessary to place the future within our grasp.

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[26] For a detailed analysis of this amendment, *see:* Updegrove, Andrew, What Does 1086 Mean to Consortia? ConsortiumInfo.org, Consortium Standards Bulletin, Vol. III, No. 6 (June 2004), 8-12, *at:* http://www.consortiuminfo.org/bulletins/jun04.php#update

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Andrew Updegrove is a co-founder and partner of the Boston law firm of Gesmer Updegrove LLP. Since 1988 he has served as legal counsel to over 100 standards development organizations and open source foundations, most of which he has helped structure and launch. He has been retained by many of the largest technology companies in the world to assist them in forming such organizations.

He has also written and spoken extensively on the topics of consortia, standard setting and open source software, has given testimony to the United States Department of Justice, Federal Trade Commission, and Congressional and State legislative committees on the same topics, and has filed "friend of the court" briefs on a pro bono basis with the Federal Circuit Court, Supreme Court, and Federal Trade Commission in support of standards development in leading standards-related litigation. In 2002, he launched ConsortiumInfo.org, a website intended to be the most detailed and comprehensive resource on the Internet on the topics of consortia and standard setting, as well as Standards Today, a bi-monthly eJournal of news, ideas and analysis in the standard setting and open source areas with over 7,000 government, academic and industry subscribers around the world. In 2005, he launched the Standards Blog. ConsortiumInfo.org serves over 10 million page views annually.

He has been a member of the United States Standards Strategy revision committee, and received the President's Award for Journalism from the American National Standards Institute (ANSI) in 2005. His current and past Board service includes the Boards of Directors of ANSI, the Linux Foundation and the Free Standards Group and the Boards of Advisors of HL7 and Open Source for America. He also serves as a Fellow of the OpenForum Academy, a European think tank focusing on open standards and open source software issues. He is a graduate of Yale University and the Cornell University Law School.

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