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To: RFI@nist.gov

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ADDITIONAL NAMES TBD

Re: Standardization feedback for Sub-Committee on Standards

I. Introduction

Historically, IBM has joined with the majority of industries that support and espouse the private-sector-led, consensus-based, voluntary standard setting system(s) of the United States. With the charter of ANSI and the government's light hand in standard setting activities, current industry and government practices have worked more or less satisfactorily to foster innovation and keep US companies globally competitive. However, in view of shifting technological and global developments, we believe there are situations where a modified path with an increased role for government could prove fruitful. Recent experiences have substantiated these beliefs; yet other experiences provide insight into what should be avoided by government participation in standards.

First, an understanding of the changing landscape sheds light on why and where government should be involved.

Technology is increasingly infused into the systems and processes that make the world work. No one government agency or non-government enterprise is completely responsible for any one of these systems or processes, like healthcare, electrical grid, cyber-security, etc. And there is no single “system” for each of these, rather there are “systems of systems”. Standards become paramount to ensure the interoperability within and among existing and future systems of systems.

Given the impact of technology and its nearly ubiquitous acceptance by institutions and governments around the world as providing improved services and quality of life, it is not surprising that the “foundation” and “interoperability-enabler” of technology, the standards, have come to the attention of governments. Many are making technical, economic and policy decisions around standards with an eye toward the global marketplace.

Accordingly, decisions made today by any government can affect the long-term global competitiveness of nations and industry, as well as the critical delivery of goods and services, the system of systems, needed for the health and well being of all.

IBM urges the US Government to learn from recent experiences and engage in more truly open, consultative, transparent public-private collaborations with industry in standard setting activities. Further, any action that the US Government takes should consider in advance how it will be viewed outside its borders and have appropriate plans in place to ensure proper articulation of such actions.

Specifically, we recommend that government:

A. Initiate public-private coordination and arbitration efforts to address particular industry gaps and government needs

Where there are systems-of-systems and where the interoperability among them is complex, there may be a need for government to initiate a "meta-organization" that can coordinate and arbitrate across the multiple standard setting organizations (SSO) that will need to be involved. To be successful though, any such meta-organization or government led standard coordination activity must have governance procedures that are clearly written, fair and fully-transparent. Voting, governance, membership, IP rights, legal protection and development processes are serious issues that need to be clearly stated from the onset and managed so that concerns are resolved in an appropriate, timely and transparent way.

For example, in the smart grid space, NIST's establishment of the public-private consortium Smart Grid Interoperability Panel (SGIP) effectively addressed coordination issues between SSOs in the area of smart grid interoperability standards. One of the key successful characteristics of the SGIP is its transparent private-sector governance via a cross-sector governing board and member representation, which helps to assure participation and acceptance ("buy-in") by the private sector. This type of public-private partnership enables NIST to participate in the process, providing input regarding national goals and requirements and assuring its mission of coordination can be fulfilled, while not being prescriptive.

B. Work within existing standard setting communities whenever possible

As mentioned in the Smart Grid example above, establishing a government coordinator such as George Arnold, as National Coordinator for Smart Grid Interoperability, is a good use of government expenditure and involvement in the standards process. Government involvement should not be in developing the details, but in identifying direction, useable standards and architectures where cross-sectoral standards solutions are required and acceleration is important. The government should not, on the other hand, create ad-hoc standards groups. For example, the NIST cloud standards groups should not be managed directly by NIST but rather be seeded in existing standards setting organizations (SSO) and be allowed to evolve from existing standards.

C. Serve as equal and vendor-neutral participants in existing standard setting activities

The government has facilitated valuable technical collaboration and expertise where it is needed without the encumbrances that come with garnering vendor supplied talent. Government participation can bring technical expertise that is not attached to any particular vendor, platform, approach or technology. For example, in Integrating the Healthcare Enterprise (IHE), NIST involvement has helped to avoid and resolve conflict and improve the standard. However, in some security related standards activities, the government's role has been detrimentally less-

collaborative and less-neutral. Government participation should count as one vote among contributors. It's in an environment of equals where true standardization thrives. Care is also needed to ensure the government's role is appropriately perceived as not one of control, especially by those outside the US, but as an active member of an industry-led standard setting organization.

D. Invest in tools and activities to advance implementation of standards and greater interoperability

The following examples demonstrate successful investments: I.) The Veterans Administration (VA) invested in the creation of a software tool for use by implementers of the CDA (Clinical Document Architecture) standard. This tool was created in a transparent process managed by an organization that consists of government and private sector members both US and international. II.) The Social Security Administration (SSA) funded the development of an interoperability profile within the IHE standards profiling organization. Instead of adopting a solution that was geared only for SSA needs, by involving an independent and international standards profiling organization SSA has helped to solve a need felt by the global healthcare community, and has solved its own needs as well.

E. Clearly articulate and promote the US government policy on standard setting activities and standard usage

SGIP and other entities are using the term “SSO” to include formal standards groups and less formal forums and consortia. Some of the major standards efforts relating to the internet have been developed by forums and consortia, such as W3C, OASIS, and Open Group, which follow sound standards practices and often provide progressive approaches to IP issues. IBM supports the recognition by governments of such consortia and forums. We encourage other governments to recognize and participate in these SSOs rather than have government-run, country specific standardization activities.
Accordingly, a review of OMB Circular A119 may be appropriate to properly recognize vital consortia and forums and qualify them as “open, voluntary standards.” Furthermore, establishing a procurement policy that calls for interoperability based on open standards for software interoperability, similar to the European Union EIF paper[1], would help the US to remain the leader in advancing open, voluntary, industry-led standards. This would be a big boost to innovation and competitiveness.

The above recommendations are further illustrated in case studies found below in section III.

[1]http://ec.europa.eu/isa/strategy/index_en.htm

II. Standard Setting Activities and Value of Participation

IBM is pleased to be active in numerous industry-led, collaborative, open and transparent, standard-setting processes where governments can and do participate.

We work with industry partners, academics, individual entrepreneurs and governments to develop open standards and conduct interoperability testing. For decades, we have been participating in hundreds of standards bodies and working groups from the Automotive Industry Action Group (AIAG) and Association for Cooperative Operations and Research and Development (ACORD) to the Organization for the Advancement of Structured Information Standards (OASIS), the Open Group (TOG) and the World Wide Web Consortium (W3C). IBM has also helped to establish the Open SOA community, GridWise Alliance and the Health Level 7 (HL7) standard setting organization. In addition, IBM is a founding member of the Open Group Trusted Technology Forum (OTTF) which provides an open environment for vendor and government members to provide best practices to identify trusted providers and products in a global supply chain.

These organizations – and other formal, and less-formal, collaborations – produce open standards for software interoperability[2] that represent the best thinking of many creative minds and that are truly global in scope.

IBM gains value from its participation and determines its involvement based on this value.

We recognize that in today's globalized economy, products can be made anywhere, work can take place where the best skills are located, and ideas can move instantly around the world via the network. Increasingly, competitive advantages lie in ideas. Globalization is forcing companies who want to stay at the head of the pack to innovate in how they do business at every level of the enterprise. Collaboration is now required to tackle some of the biggest problems – single companies simply cannot afford to solve them alone.

This holds true for standards setting – we must work collaboratively to succeed. For example, in software where everyone benefits from commonality, open standards help avoid duplicative R&D – which the government and other customers fund – and the possible cost of compliance with multiple formats. This leads to investment in more substantive innovation.
Further, our customers in IT and other industries, governments included, live in heterogeneous environments. They want interoperability and solutions that connect with their partners and customers. Accordingly, most major companies and many governments are making procurement decisions with explicit requirements that the ICT goods and services from a variety of vendors

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[2] IBM defines open standards as specifications that are well-documented through publication and have been accepted by either formal standards bodies or, increasingly, through a collaborative process involving interested players. Once published, these specifications are available for implementation without restriction. Moreover, interested parties can license or otherwise obtain authorization under a patent from standards body members that is needed to implement the standard or, at least, interested parties are made aware of such necessary patents. The acid test for an open standard is whether or not it actually permits substitutability and choice among independent, multi-vendor implementations on different technology platforms with acceptable levels of functionality. Diversity of competing applications that support the standard also indicates its openness and ensures choice for procurers and longevity for users. For example, open standards for software, like HTTP, HTML, TCP/IP, XML, ODF, SQL and UNIX, are evolved collaboratively in a well defined, open and transparent process under the auspices of standard bodies, generally not-for-profit organizations such as W3C, OASIS, TOG and IETF.

work together. They do not wish to be locked into a specific vendor and subjected to the priorities and schedules of that vendor.

In short, IBM invests our people and time in the development of open standards because they are the keys to meeting business needs, to fostering innovation and to enabling interoperability in heterogeneous environments – the systems of systems in which we all live. We urge government to consider the examples and recommendations below for guidance on where and how they should invest their time and resources in standard setting activities.

III. Federal Government Involvement in Standard Setting Process – IBM Case Studies

IBM shares the following case studies to help guide government policy for the most effective use of time and resources. These case studies often suggest government roles that support more than one of our recommendations. Further, nearly all the studies demonstrate the need for and the value of open standards and the open standard setting approach. When the government, as detailed below, supports open participation, transparency, vendor-neutrality, good governance and fair licensing practices, all gain from great innovations, cost savings and truly interoperable solutions.

A. Public-Private Coordination and Arbitration

1. Good governance and government neutrality yields effective harmonization across multiple SSO effort – NIST SGIP case study

In fulfilling its mission to coordinate the development of smart grid interoperability standards, NIST has helped establish the SGIP, a significant public-private partnership that currently has over 600 member organizations and almost 2000 participating individuals. NIST defined 22 stakeholder categories within the structure of the SGIP, and established a governing board with representatives for each of those stakeholder categories. In addition, to assure that an organization of this complexity could ramp up and become effective in short order, NIST contracted an administrator to provide logistical and administrative oversight.

There are several key characteristics that NIST has addressed in forming the SGIP, which represents a model that should be repeatable for other domains of public-private partnership standards collaboration:

1. The involvement of a broad community of stake-holders in the governance of the activity to assure participation in the process and acceptance of the results.
2. The need for a transparent and inclusive process.
3. The need for a living process that continues to improve.

One of the primary benefits of the SGIP is that it is not affiliated with any single organization or stakeholder community – it provides a venue that can be used to address technical and non-technical collaboration and harmonization issues across multiple SSOs. It can also quickly define requirements and even create initial draft documents that can help speed initiation and development of new standards where needed.

Finally, by creating certain permanent committees and working groups within the SGIP (e.g., the Architecture Committee and the Cyber-Security Working Group to name two), and by defining a process life-cycle that includes these permanent groups, there is a level of formal review and feedback in the internal SGIP processes that help assure technical consistency and quality in what the organization provides to the SSOs it is working with.

Much of what has been created in the SGIP's process life-cycles, and in its general structure, is easily applied to other areas of standardization. For example, the Priority Action Plan (PAP) process has been effective in several instances in rapidly addressing tactical issues of harmonization or coordination across multiple SSOs. Also, the concept of a Catalog of Standards, which is still under development, is likely to be another effective mechanism that can be carried to other domains.

The SGIP is just over one year old, and is still rapidly evolving and maturing, but it has already had a positive impact in the smart grid interoperability standards space. The investment by NIST in creating and supporting the SGIP has been valuable, and it is important to identify a sustainable model to ensure the SGIP continues to be effective. Over time this may need to evolve into a shared public-private investment, but it will probably always benefit from having some level of investment from the government through NIST.

2. Good coordination and governance enable standards selection for use cases – HITSP case study

As a federally sponsored organization, Healthcare Information Technology Standards (HITSP) was very effective at getting communities of interest together to look at the challenges of healthcare use cases and build implementation guides to enable the use case of interest. This community building capability of HITSP was enabled by an open, transparent, well documented process. We support the HITSP model of governance as an effective method for building communities of interest and enabling standards selection for use cases of interest.

Where HITSP became less effective was in two aspects: a) excessive, needlessly complicated documentation b) too much breadth in too short a time. Unfortunately, these problems resulted in a lot of documentation only a small portion of which was truly useful. We encourage the creation of focused groups that allow enough time to understand the use case at significant depth and creation of a standards based solution with a full understanding of the tradeoffs and values.

3**. Ensure governance models are open, transparent and fair – Direct Project case study**

The Direct Project was an innovative approach to standards setting but was significantly challenged by the lack of written governance. The Direct Project is an initiative of the Office of the National Coordinator (ONC) to solve a specific healthcare interoperability problem. Although a sense of governance existed, especially in the minds of the leaders, since there was no written governance it was often unclear how or when decisions would be made. Because of this the leadership has a unfair advantage, as they are the final arbitrators and frequent modifiers of the unwritten governance. Decision making was chaotic, sometimes being forced too early, then delayed, then forced again in an extremely short time frame, e.g. 3 working day turnaround of significant, direction setting proposals.

The Direct Project also created a new aspect to standards setting process, and that is the request for a Statement of Commitment. Early on these statements required a commitment to implement with no financial compensation. In a market based environment this type of commitment is inappropriate at best, and at worst encourages distortion and misrepresentation by vendors who feel pressure to make commitments that potentially could be contrary to market pressures. With experience the requirement of commitments became more reasonable in nature, but are still unnecessary and a cause of concern for companies like IBM. IBM takes its public commitments very seriously and it is a matter of integrity that commitments are made with care, are deliberate and are something IBM can definitely stand behind. Asking for a commitment on a relatively vague project, where the commitment being made is necessarily vague given the necessarily vague project description is a very uncomfortable situation for a company of integrity like IBM. This environment encourages participants to say what needs to be said without any consequences for failure to follow through on the commitment statement.

Whenever possible government agencies should work within existing standards and open source communities where established and stable governance exists. When creating new, federally funded entities for standards selection and harmonization it is critical to have written governance

and processes and to take any questions of voting, governance, membership and process very seriously so questions are resolved in an appropriate, timely and transparent way. Models for good governance can be found within existing standards and open source communities. Furthermore, we request that participation within federally funded standards selecting entities be open and transparent and not include the requirement for a statement of commitment unless an RFP or similar process makes the commitment specific and verifiable.

B. Work Within Existing, Transparent and Open Communities

1. Use existing organizations to create profiles – CDC case study

The Centers for Disease Control and Prevention (CDC) is becoming a more significant voice in standards and standards development. Initially they contracted with private organizations to address their public health use cases in standards organizations. This resulted in limited focus and adoption.

Their more recent approach has been to engage and sponsor existing public health member organizations as well as creation of open membership Public Health Information Network Communities of Practice for creating a ground up approach to public health members defining their needs and driving use cases. Engaging with HL7 and IHE to create profiles is still often the work of contract hired experts but the new approach ensures the community wants and supports the resulting profiles and will increase adoption.

However, Public health agencies, like the CDC, have created profiles outside these standard organizations, such as the Association of Public Health Laboratories, and we would encourage that work to be re-directed to organizations like HL7 and IHE for the standards expertise and review these organizations provide. Further, we recommend that the CDC continues its work with open communities and increase engagement with existing standards efforts.

2. Lock-in Limits Innovation – FHA CONNECT case study

The Federal Health Architecture (FHA) is a federally funded and mandated organization designed to provide federal partners with a platform to communicate through the Nationwide Health Information Network program. FHA contracted with Harris Corp. to develop the FHA CONNECT platform which is used by federal health agencies as well as available as open source code for private purposes. Our concerns with the approach taken with the development of FHA CONNECT are that this work was not done within the auspices of a transparent and established open community. As a result, the platform is built on a vendor specific application environment and creates an inappropriate advantage to the vendor chosen as the application environment. This advantage translates to federal agency contracts which require a particular vendor platform as well as private use of FHA CONNECT, all of which depends on a single vendor platform. This leads to additional costs and less choice for government. Further, this locks the government into this vendor-specific solution and could inhibit innovation in this space and adaptability to future technologies.

We urge future federal support of open standards and an open, transparent development environment to ensure any resulting application be vendor neutral to encourage fair competition in the Health IT marketplace.

3. Share requirements early to enhance adoption – NIST 800-137 case study

NIST should provide more transparency into their standards development process. This includes transparency into the standards decision making process. In many cases, industry has no

visibility into the decisions that led to a NIST specification. For example, industry relies heavily on NIST 800 series but has very little input into their structure. Further, the US Government dictates the direction of crypto algorithms and practices. The introduction of NIST 800-137 caught the industry by surprise and would have been more rapidly adopted had a more effective mechanism for sharing been established. IBM recognizes the need for government to take some leadership on key security standards but urges US Government and NIST to foster early collaboration and consistent sharing to facilitate greater industry adoption.

C. Government Investment

1. Investment in tooling fosters adoption of HL7 CDA – VA case study

The VA participated in an open and international healthcare standards development organization (HL7), contributing to the development of an open standard for clinical documents (CDA). To foster adoption and simplify use of the standard, the VA invested in the creation of a software tool for use by implementers of the standard. The VA approach to this investment was to create an open source project, using a transparent process managed by an organization, Open Health Tools, that consists of government and private sector members both US and international. The VA provided project management and developers for the project, as did private industry. The licensing model selected for the project was one proven to be effective for industry – Eclipse Public License (EPL). VA rightly insisted on the use of open infrastructure standards in the development of the software tool (UML - Unified Modeling Language from Object Management Group-OMG), open standards implemented by many vendors. VA tested the software developed in the project with several vendor products and open source projects that support UML, to make sure the resulting software was not proprietary, not giving any one vendor an advantage.

While the VA Open Health Tools project is an excellent model for federal standards involvement we have noticed that there is a lack of knowledge and understanding of this project across the VA. Without agency wide recognition and adoption these projects risk having little impact on the areas they are designed to solve. We encourage the Office of the National Coordinator to ensure that where involvement in standards development is adopted that work be more visible across the federal agencies.

2. Investment in interoperability profiles solved a global healthcare need – SSA case study

The SSA had a real and pressing need for access to information about healthcare providers. As part of an IBM contract, SSA funded the development of an interoperability profile within the IHE standards profiling organization. This support by a federal agency for a critical piece of standards work is an excellent example of influence by a federal agency. Instead of adopting a solution that was geared only for SSA needs, by involving an independent and international standards profiling organization SSA has helped to solve a need felt by the global healthcare community, and has solved its own needs as well.

D. Serve As Equal and Vendor-Neutral Participants in Existing Standard Setting Activities

1. Neutrality to contribute where needed – IHE case study

Integrating the Healthcare Enterprise (IHE) is a standards profiling organization consisting of primarily voluntary contributions from many sources. NIST has contributed significantly to IHE in providing technical standards expertise and testing capabilities. A key advantage to NIST involvement demonstrated by its work in IHE is the neutrality that a non-vendor organization can bring. Rather than being attached to any particular platform, approach or technology, NIST has

demonstrated an ability to be neutral in that respect and supply technical expertise where it is needed without the encumbrances that come with vendor supplied talent. In particular, NIST has developed an independent suite of testing vehicles that are extremely useful in verifying interoperable communication.

2. Technical-neutrality eases industry adoption – NIST 800-57 case study

The NIST 800-57 recommendation provides general guidance and best practices for the management of cryptographic keying material. Overall, this publication has proved to be quite useful to various projects and teams within IBM. We've used the publication to help guide what algorithms we concentrate efforts to support, what types of key management solutions we will deliver, and also to have a background from which to present our solutions to customers. The document is impartial to different technologies and vendors, and provides the industry a basis to work from in providing value-added solutions.

3. Ensure the development and management of specifications are open, transparent and fair – SCAP case study

Security Content Automation Protocol (SCAP) is a synthesis of interoperable specifications that report and enforce security and configuration against a policy definition. SCAP was developed by MITRE, adopted by NIST and funded and supported by NSA.

IBM believes development and control of SCAP has not taken place in an open, transparent and inclusive process. A core technology specification such as this should have vendors as key core members to facilitate collaboration and adoption. In addition, with MITRE owning the IP rights, management of the specification is not inclusive and results in an unreasonable rate and pace of change. As a result, vendor collaboration is limited and consensus on the structure and implementation of SCAP is affected.

Another consequence of the process followed is an increase in complexity of the SCAP languages (XCCDF, OVAL, OCIL, CPE, etc) which has affected its usage (it's not adopted outside of the US Government). As an example, a recent specification that was received from the government took several iterations with NIST before passing XML validation.

In short, development of innovative technology thrives in open, inclusive and transparent environments, and IBM would not only like to ensure future standards-like development be done within formal standards bodies, but as the government seeks to formalize SCAP, IBM urges the government to consider a formal standards body such as the Distributed Management Task Force (DMTF) , which clearly focuses on systems management standards.

IV. Standard Setting Issues – IPR and Foreign Regulations

A. With respect to intellectual property, what approaches have you experienced or found most appropriate for handling patents and/or other types of intellectual property rights that are necessary to implement a standard?

1. Smart Grid

The SGIP has formed an IPR working group which is tasked with addressing potential IP issues relating to these standards. IBM supports this effort which is aimed at anticipating issues that might impact standards involved in this public-private collaboration. Providing a catalog of standards (COS) with inquiries to be answered for each standard considered for Smart Grid (or other government-supported standards constellations) can help avoid IP issues later.

2. Royalty-Free Licensing and Nonasserts

In some technologies, such as software-to-software interoperability in the world wide web, SSO participants have agreed to forego royalties so that external interfaces [between different companies products] are available.[3] IBM (and others) have published various patent pledges and nonasserts in specified fields to facilitate standards implementation.[4] In addition, standards specifications should be managed by impartial 3rd parties and freely available for public consumption. The decision to follow an Royalty-Free (RF) model must take into account various factors, including patent holder concerns. Various stakeholder interests must be assessed in considering an RF model.

3. Availability of Injunction for Infringing Necessary Claim Subject to a Licensing Assurance

If/when can a patent holder, who has made a license commitment to an SSO, seek an injunction or enhanced damages notwithstanding the commitment? This issue is complicated and has arisen in several cases recently in the US and in Europe [Contrast "Orange Book" Case in German Supreme Court and Philips v Kattenen before the Dutch Court.] Specifically, a patent holder can offer a license but an implementer may not accept the terms, the parties disputing whether the terms and conditions are "reasonable" and/or "nondiscriminatory" (as SSOs often prescribe in their rules or policy). In such instances, the patent holder has an interest in not losing bargaining leverage when an implementer refuses a reasonable license. On the other hand, implementers have an interest in not being enjoined before any license or a reasonable license has been offered – where the implementer has relied on the license assurance.[5] Guidance on this matter (in an SSO Policy) would be useful to patent holders, implementers, and users of standards.

4. Standard as public interest factor in assessing injunction

One factor for a court to consider in awarding an injunction (under the US Supreme Court Case of eBay v MercExchange)[6] is "public interest." An SSO Policy expressing the mutual understanding that open standards are a "public interest" consideration in reviewing injunctive relief could be helpful.[7] Such provisions could also inform courts with respect to injunctive

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[3] See OASIS IPR Policy http://www.oasis-open.org/who/intellectualproperty.php

[4] For example, see http://www.infoq.com/news/2007/07/ibmpledge

[5] As an analog, in various European countries, a patent holder may agree to forego injunction and agrees to grant reasonable licenses in return for certain benefits. The LOR differs from the standards situation, however, in that such patent holders voluntarily decide on LOR for each patent and receive other benefits.

[6] 547 U.S. 388 (2006)

[7] We are not aware of any SSO including such a provision at this time.

proceedings concerning standards whose policies do not feature such a provision.

B. How does the need for access to intellectual property rights by Federal agencies factor into the use or development of standards? To what extent, if any, has the development, adoption or use of a standard, by Federal agencies in this technology sector been affected by holders of intellectual property? How have such circumstances been addressed?

1. ATSC

A digital TV standard (ATSC) was strongly supported by the Federal Communications Commission. After the ATSC standard was approved, several patent holders sought royalties alleged by some implementers to exceed RAND. A petition was submitted with the Federal Trade Commission, asking what the role of government is in helping ensure access to standards mandated, supported, or promoted by an agency. Opponents of the petition argue that the licensing of necessary patents is between patent holder and prospective licensee, and government should not intervene. Given the importance of standards in the five identified fields, this topic is timely. Some of the measures outlined below in Section D may be helpful.

C. Are there particular obstacles that either prevent intellectual property owners from obtaining reasonable returns or cause intellectual property owners to make IP available on terms resulting in unreasonable returns when their IP is included in the standard?

1. Ownership of inventions made with government funds

To encourage innovator participation in developing technology, especially for cross-sectoral standards involving multiple agencies, it would be helpful to provide clear and uniform procedures by which developers can take ownership to government-funded inventions (under Bayh-Dole or similar provisions). In Smart Grid, Federal Energy Regulatory Commission (FERC) may provide funds to develop standardized technology. Simple guidelines for private partners to avoid loss of rights would also be helpful.[8] An automatic waiver of government ownership rights, where the contractor is subject to a RAND commitment to license necessary patent claims to others, might be helpful with regard to standards incorporated into the five identified fields. This RAND commitment should apply to entities operating government laboratories or facilities, entities funded under research or development contracts, and entities otherwise receiving exclusive rights under government-funded inventions.

2. Scope of RF licenses to government and contractors for government-funded inventions

Under federal regulations, contractors can take title to "subject inventions", but such ownership is conditioned on an RF license to the government and those acting on its behalf for governmental purposes. To provide certainty to government-funded developers who may seek royalties for inventions they develop (and may partially fund) in the context of standards in the five fields, it would be helpful to specify when RF license rights apply. Whether or when "implementers and users" are engaged in a government purpose (entitled to RF licensing under federal regulations) can affect the interests of technology developers who acquire patents. For example, suppose the government funds a contractor's patented invention claiming an interface for accessing a government healthcare database according to a standard. Would an individual not employed by the government use the interface royalty-free? Would the individual's use be for governmental purposes? Or would the contractor be allowed to seek a RAND royalty, as the IP Policy for the standard would otherwise allow? It is appreciated that the "governmental purposes" definition is context dependent – certainty would be especially helpful in the key standards areas.

[8] http://wraltechwire.com/business/tech_wire/opinion/story/2338358/

3. Government employee inventions

Patent claims made by government employees or that are otherwise owned by the government, and that are necessary to implement a government-supported standard, should be licensed royalty-free and under other terms and conditions that are reasonable and nondiscriminatory. The government interest in commercializing its employees developments and providing exclusive rights under government-made patents to achieve that goal, should be of lesser concern when a patent is needed for a standard. Alternatively, if RF is not adopted, measures should be taken to preclude government-employee inventions from being asserted to enjoin implementation of a standard in any of the five fields.[9]

4. Access to copy government-supported standards documents

It is recognized that some SSOs rely on the sale of copyrighted standards specification documents to sustain operation. The government may consider funding an SSO so that it could provide copies of the specification at no charge without jeopardizing its finances. Factors the government might consider in determining whether to subsidize free copies of the specification include whether the government:

- requires through law or regulation the use of the standard
- provides funding for development of the standard
- is a member (including manager) of the SSO
- provides requirements for the standard
- provides researchers or other technical support for the standard
- relates procurement decisions to the standard and/or
- encourages use of the standard through public statements

D. What strategies have been effective in mitigating risks, if any, associated with hold-up or buyers' cartels?[10]

BACKGROUND: Patent holdup can arise when a non-participant holds a necessary patent claim(s) or when a standards body (SSO) participant, pursuant to SSO Policy, opts out, revises, or revokes a licensing commitment. If such necessary patents are asserted after a standard has been included in implementer products and has been widely adopted by the industry, the standard can be disrupted. Numerous SSOs are adopting measures to address third party patent circumstances[11] and to limit effects of participant assertions of necessary claims. The challenge in addressing patent holdup is in balancing party interests – recognizing the value of having innovators invest in and contribute technology to the standard effort, and recognizing the importance of implementers having reasonable access to necessary patented technology**.** SSOs, for their part, have one interest in standards not being discontinued merely because a patent claim is identified - - where a claim may not be "necessary" or may have enforcement issues (such as ownership, validity, implied license, or other issues and have another interest in not spending time and resources as a referee of legal disputes. It is often noted that there is no "one size fits all" policy to cover all standards (where different technologies and stakeholder interests

[9]While we are not aware of the government asserting patents in a standards context, a statement to this effect with regard to the five identified fields might be helpful.

[10]This section mainly covers potential "holdup" by SSO participants. Third party holdup may be difficult to address by SSOs. One approach involves patent pools which can involve benefits and risks to patent holders.

[11]http://www.ecma-international.org/memento/codeofconduct.htm

apply), however IBM believes the following practices would be beneficial to the public-private efforts in standards involving the five identified fields.

1. Disclosure and license assurances

Those participating in the development of a government-supported standard should promptly disclose patents with claims they believe are necessary to implement such standard. Participants should also state whether they will offer RAND licenses for such claims.[12] It would also be helpful for patent, licensing, and policy information to be readily accessible by the public. Moreover, IP disputes and issues of which the SSO is aware, that arise during and after standards development, should be posted [on the SSO website, for example] for access by standards developers and prospective implementers. Such transparency can provide useful information before parties become locked into a standard.

2. Early opt-out

If an SSO allows a participant in the standard development to opt out (or not agree to license) necessary claims on a RAND basis, the opt-out should be made within a set period during the standards development. For example, within a fixed time after inclusion of the invention in a portion of a distributed draft specification. If that portion is included in an approved standard, the opt-out would apply.[13] This allows the SSO to consider and/or design around the identified patent. While SSOs typically do not require members to conduct patent searches, it seems fair to require identification by an SSO participant before excluding a patent from an SSO's general RAND license commitment. For government supported standards, an identification of SSO Policy provisions addressing this point would be helpful.

3. Licensing commitment applies to employer and corporate family

Some SSOs allow individuals to join as members. If the individual is employed, the employer generally owns patent rights and the individual's commitment may be hollow. The individual might direct the standard to technology that is patented, but is not subject to a license commitment from its employer. Employees should state early on that they represent and bind their employers. Similarly, there may be a concern that one corporate family member owns necessary patents, while another corporate family member (parent, subsidiary or affiliate) makes license commitments applicable only to itself. Committing employers and corporate families can avoid later patent issues.

4. Transfers of patents that include necessary claims

Many SSOs are addressing if/how transferees of necessary patent claims are bound by prior patent holder commitments to an SSO. A number of instances have arisen in this context in the US and Europe.[14] A number of instances have occurred in which the transferee of a patent containing necessary patent claims has raised questions concerning prior owner licensing assurances. Certainty on this issue would be helpful.

5. Patents transferred in bankruptcy

To help address situations where committed patents are transferred in a bankruptcy sale, an IP Policy should include a provision that 11 USCode 365(n) shall apply to commitments and

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[12]Some SSOs only require disclosure of patent while others provide only that participants commit to license RAND. While standards developed under such policies may be considered for incorporation, greater transparency may be beneficial in avoiding future IP issues. Where a participant commits to licensing royalty free under RAND terms and conditions, the need for disclosing patents is substantially reduced.

[13]If the portion is not included in the final specification, the claim would not be a necessary claim.

[14]For example, FTC Matter regarding N-Data. In Europe, IPCOM (Bosch).

licenses made by a (prior) patent holder[15] regardless of country of bankruptcy. Section 365(n) protects licensee interests.

6. Licensing commitment subject to reciprocity and/or defensive suspension

While licensing commitments must have certainty so that implementers can plan products, the commitment ought to be conditioned on the licensee reciprocating. Suspending or withholding the commitment/license should reflect reasonable stakeholder interests. For example, the withholding of a license (and the availability of injunction and other remedies) may be affected by various factors, such as whether the patent holder first asserted an infringement claim against the implementer or whether the patent holder communicated a license offer to the implementer before the implementer brought its action or whether the implementer had a period during which to drop its action before the suspension or withholding of license rights took effect.

7. Licensing commitments made should continue after participant withdraws

Based on a "snapshot" of the latest specification received by the participant from the SSO, the participant commitment should continue with respect to all current and future necessary patent claims of the participant. In this way, patent holders do not commit to specifications they do not work on but commit to those they did participate in. Implementers can rely on commitments made prior to participant withdrawal.

8. Patent value based on invention contribution

The royalty base and royalty rate should reflect the economic value of what the inventor actually contributed to the art (or the standard). To the extent feasible, the royalty should consider the availability of alternatives during the standard's development.

9. Incorporation by reference

If technology or standards needed to implement the subject standard are incorporated by reference, provisions as to how implementers are to access "necessary" patents from those sources can help avoid future problems.

10. Copyrighted materials in standards

For standards involving software, code may be included in the specification. The SSO should have rights necessary to authorize implementers to use copyrighted material in the standards and in reference implementations (e.g. working embodiments contributed to the SSO). SSO copyrights are necessary to ensure against unauthorized derivatives works that can fork a standard.

11. Limiting participant remedies over time

Late disclosure and assertion of necessary patents after a technology is widely adopted and "locked in" by the industry can provide standardization benefits and leverage to the patent holder beyond the value of the invention itself. To promote prompt disclosure by participants, the availability of remedies may be tied to disclosure timing. Availability of attorneys fees, costs, enhanced damages, and injunction may depend on when a necessary claim is disclosed by a participant. For example, if a participant's claim is identified before a standard is approved, all remedies are available. However, a year after a standard is finally approved, enhanced damages may be unavailable and three years after approval, injunction may not be available.[16]

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[15] But see In re Qimonda AG Bankr. Litig., 433 B.R. 547; 2010 US Dist. LEXIS 66926 (EDVa 2010) for issues that may arise if the main insolvency proceeding is outside the US.

[16] We are not aware of any SSO including such a provision – which would be controversial.

E. Foreign regulations role in standards adoption and use

1. The European Interoperability Framework (EIF)

EIF reflects the influence of government procurement on standards. The EU in the EIF recognizes the importance of open standards and competition in government networks and software products. The EIF has recognized the importance of access to data (such as to documents) in the future. Goals of EIF include ensuring communication from business to government, citizen to government, and interagency. The goals inform the standards that apply to government-used standards. EIF version 1 expressed a preference for royalty-free "open standards" while EIF version 2 discusses availability of both proprietary and open source solutions in "open standards" that are favored for procurement. State and federal governments should consider the importance of ensuring that open source software products can be implemented in developed open standards.

2. China

China has announced a procurement preference for "indigenous innovation" technology. Five years ago, China sought to promulgate a "homegrown" wireless WAPI standard (in place of an international standard) that would largely exclude non-Chinese developers and manufacturers. Such preferences have been opposed on various fronts. The same is true for China's Multi-level Protection Scheme (MLPS) mandate that deems what products, systems and information security the end-user must put in place based on what type of information is being handled. MLPS requires that core information security technology must be Chinese-made for Level 3 and above systems. US IP Policy should continue to promote global openness.

China has also sought to discount royalties for patents necessary to implement standards to levels below a reasonable rate. Specifically, China's Standardization Administration of China (SAC) proposed regulations promoting compulsory licensing (for national standards) and licensing royalty free or at rates below normal commercial rates. These regulations have been shelved following considerable comment. This experience underscores that SSO IP Policies and the licensing terms applicable to necessary patents should reflect a proper balance between promoting innovation in the standard's field and innovator participation in standard development on the one hand, and making government-supported standards reasonably available to interested implementers and users (including the government) on the other.

V. Conclusion

IBM believes there are roles for government in the development of standards, and based on the given needs of an industry or for cross-sectoral collaboration, government can contribute and in turn support the national economy as well as the global competitiveness of US industry. Government acting as convenor for Smart Grid solves a leadership gap to enable the growth of this sector by bringing together manufacturers, consumers, energy providers and regulators to develop interoperable standards. Government participating in SSOs as an equal contributor along side industry can not only move standards forward with requirements and comments, but can also help keep government informed, which in turn can drive national and global policy. Government also investing resources in the open development of tools to further standards can help by sharing across industry as well as government agencies. In addition, where government can provide a framework to promote clarity and predictability of IPR in standards, this can enable effective participation and adoption of standards.

IBM believes that cooperation between the public and private sectors is increasingly important to the development of standards and would welcome the opportunity to provide additional information as needed.