CONFERENCE SUMMARY AND ANALYSIS

STIMULATING VS. STIFLING:

STANDARDIZATION'S ROLE IN INNOVATION

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STIMULATING VS. STIFLING:
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EXECUTIVE SUMMARY

Economists and policy efforts often cite innovation as a key to economic growth. With the rising competition in global trade and online commerce, many countries have made spurring innovation a priority. But are these countries strangling innovation without knowing it? Significant investments are made in education and research. Tax benefits and intellectual property incentives are given to companies. Yet, the mechanism that most effectively enables innovation is often completely ignored by policy makers—*standardization*. Many governments are inclined to leave this powerful mechanism completely to the mercy of market forces, crossing their fingers that the best standardization systems will emerge. In doing so, are they creating an economic disadvantage for their nations' industries and companies?

Not all governments are entrusting standardization to market forces alone. For example:

- China has made standardization strategy one of its top priorities. As it becomes more influential in the standardization system, China may move from the world's main manufacturer to its top innovator. The change will be most evident on tags that evolve from "Made in China" to "Created in China."
- Brazil is investing heavily in standardization as a way to create a more equitable world market in which to compete.
- The European Commission leverages standardization to stimulate innovation and encourage voluntarily compliance with government guidelines and regulations.
- India looks to standardization to create opportunities for its increasingly educated population.
- The World Trade Organization, a form of international governance, recognizes that standardization is used to create significant market advantages.

A nation's standardization system and strategy should not only foster innovation but should ensure that it capitalizes on innovation for economic and social gain. To accomplish this,

business and government must work together. This work must occur directly between the policy makers and the businesses on which national economic growth relies. Through these discussions, standardization can be strengthened so that it fulfills its true potential to:

- Drive technical advancement and accessibility
- Create job growth
- Increase knowledge
- Advance innovation

To facilitate this cooperation so that standardization can be strengthened as a platform for innovation, a *Standards Edge* conference was held in March 2007. Hosted and co-sponsored by Georgetown University. Other sponsors were JEDEC, Sun Microsystems, and the Bolin Group.

The conference participants and speakers came from the ICT industry, government, academia, and the legal community. Many have been directly involved in affecting change in policies and approaches to standardization. Though the opinions were as diverse as the participants, there were several areas of agreement. These included:

- The nature of innovation has changed. Given the amount of information available and the accelerated rate of technological advancement, collaboration is critical. However, as the number and diversity of contributors expand because they have been enabled by technological advances, the system becomes more complex. Handling this complexity and meeting stakeholder needs is one of the supreme challenges standardization has today.

- Coordination is essential on many levels. Some called for greater coordination at the government level. Even within a single country, collaboration and even communication among government divisions can be challenging. Many countries that have a more centralized model are more effective at generating cohesive government action and policy towards standardization. However, there were certainly those in the audience who did not consider this a positive trade-off for private industry rights. Other speakers described the coordinative efforts taking place on an international scale through efforts associated with the UN, WIPO, and others. Developing nations, in particular, are gaining greater influence through these efforts though it remains to be seen whether they will ultimately be able to revise the standardization system to better meet their requirements. Most participants agreed, however, that a government's action—or lack thereof—can strangle or strengthen innovation through its policies on standardization, antitrust, and intellectual property. Therefore, the subject is worthy of continued discussion and perhaps even concerted efforts to supply recommendations on government policy towards standardization.

- Others called for more coordination across the standardization infrastructure. They suggested ways for Standards Setting Organizations (SSOs) to work together more effectively in a standardization value chain. In this type of scenario, SSOs would be responsible for ensuring that different standards activities were better tracked and coordinated. While no one advocated completely eliminating competition among SSOs, there were those who believed that the current level of fragmentation is undermining consumer and industry confidence in the system.

- Finally, many looked to standardization stakeholders to form a more united view to present to government. Though this task would be challenging, it is likely essential if standardization is to serve as a primary platform for innovation. Standardizers will have to put into practice the very principles of standardization—working together towards an acceptable agreement that will generate greater benefits for all. Just as in individual standardization efforts where competitors must work together to reach compromises that will advance technology and grow the market, they must put aside at least some of their differences to strengthen the platform on which they all rely. Only then can they present valid recommendations to standards setting organizations, to their industries, and to policy makers that will be effective in moving standardization forward.

Above all, there was a call for standardization to regain the respect it has lost in recent years. Concerted efforts are needed to inform the public and government about not only its value but how to leverage standardization for benefit. Educational opportunities on standardization are scarce and few universities approach it as a formal discipline. Though there are some exemplary leaders in this area, government and industry need to work with academia to provide the funding and requirements for standardization professionals.

Finally, battles that fragment the standardization system need to either be resolved or, better yet, moved past by inventing new standardization and business models. This is especially true in the area of intellectual property where battles over licensing conditions, fees, and IP disclosure are fierce. The convergence of IP and standardization, or rather the question of how to handle it, is gaining wide publicity. This is undermining confidence in the very system that is supposed to guarantee interoperability, support, and advancement. Because of this, large ICT customers may be feeling enough overwhelmed by the debate to ignore standards completely. Since they are betting their businesses on their ICT infrastructure, it is understandable that they may hesitate to rely on a system that exhibits too much infighting.

The *Standards Edge* conference and books, international forums, and other events that bring together standardization stakeholders provide an opportunity to discuss the challenges and reach agreements. Like standardization itself, creating a positive momentum for change is often a slow process. At stake are corporate profits and public good, private interests and societal welfare. Although the decisions are not easy and the collaborative task is daunting, participants in standardization should be skilled in reaching the necessary agreements. In the end, it is the skill and willingness of private industry, standardization setting organizations, and governmental policy makers to reach agreements that will determine whether we will move forward through innovative solutions or stifle advancements by focusing on the wrong issues. It is these entities that must find the equilibrium that protects private interests and public rights. In the meantime, standardization as an innovation platform hangs in the balance.

STIMULATING VS. STIFLING: STANDARDIZATION'S ROLE IN INNOVATION

CONFERENCE SUMMARY AND ANALYSIS

INTRODUCTION

Innovation is the key to wealth, to a more educated workforce, to a healthier, happier society. The word connotes visions of the easy life in which robots perform our housework and technology eliminates drudgery from our lives. The majority of experts agree that innovation is essential to economic growth and there are few companies who don't espouse the word

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"innovate" somewhere in their marketing materials. Most everyone supports this concept. We fall short, however, when we try to define it and when we try to determine the best way to achieve it. Defining and mapping out a plan to achieve innovation is about as nebulous a task as attempting to do it for a term such as "happiness." Defining and achieving these concepts are uniquely individual and situational.

Despite this challenge, we spend a good deal of time trying to stimulate innovation. Companies invest heavily in Research and Development (R&D). When warranted, organizations work together in an effort to invent and distribute more rapidly than they could on their own. Governments also strive to encourage innovation. They make significant investments in education and research. Companies receive tax benefits and intellectual property incentives for research and development. Yet, the mechanism that most effectively enables innovation is often ignored by policy makers—*standardization*. Many governments tend to leave this

powerful mechanism completely at the mercy of market forces, crossing their fingers that the best standardization systems will emerge. In doing so, are they creating an economic disadvantage for their nations' industries and companies?

To answer this question and examine just what innovation is and how to encourage it, a conference was held at Georgetown University in March 2007. The conference looked at how standardization, when planned and executed correctly, can foster and help leverage innovation. Leaders from industry, academia, government, and the law joined together to discuss:

- **Standardization as a shifting foundation for innovation**
- **Government action as a stimulus (or inhibitor) of innovation**
- **Leveraging innovation through standardization**
- **Policies for national prosperity**

The co-sponsors were as diverse as the audience and speakers. Sponsors included:

- Georgetown University
- JEDEC
- Sun Microsystems
- The Bolin Group

The emphasis of the conference was on standardization output versus the more traditional focus on standardization processes. Successful output can be defined as innovation, technological advancement, broad consumer choices, and, often, affordable pricing. In the end, it is about the products or services that emerge and the benefits that they bring. Most consumers and even many corporate ICT customers cannot define the word *standardization* as we use it in the ICT arena. Try to go into the details of the 802.11 wireless standards and how these standards came about and their eyes will glaze over. However, if you explain that standardization enables them to use their laptops and PDAs to connect at Starbucks, or the airport, or their home, you suddenly have their attention. Who can blame them? When most of us go to buy a car, we don't care about the standards that help make the car run and we certainly don't want to hear the details on how those standards were created. We only want to know if the car will run and deliver on the features and performance advertised.

THE NEW NATURE OF INNOVATION

Innovation was once thought of as a top-secret affair—something sequestered inside corporate walls or quietly nurtured inside ivory towers. Releasing an idea before patenting and productization was simply bad business. Inventors were clustered within one building or campus and ideas usually moved from conception to fruition within a single entity. Today, this closed strategy—whether within a company or a nation—creates a competitive disadvantage. Innovation and its requirements have changed since this model was optimal. Those that grasp this have a supreme advantage in both local and global economies. They understand how to foster and leverage innovation to sustain leadership in the world's economic and political environment.

Surprisingly, the United States is lagging in appreciation of this change in the nature and use of innovation. As a country that is identified with innovation throughout the world, the US does not have a pressing requirement to alter the way it perceives or approaches it. Meanwhile, countries such as China and India are making it a national priority and, as a result, their competitiveness in the world market is rising. Just as importantly, they are capitalizing on their innovations to create jobs, improve productivity, increase competitive advantage, and attract foreign investments. To lead in the global economy, countries—and companies—need to understand the new nature of innovation and how that can best be used for economical and political advantage.

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Essential to innovation leadership is the ability to create environments that enable both collaboration and competition. Once thought of as mutually exclusive, the two are now symbiotic. Collaboration allows competition at a higher level, while the threat of new competition encourages companies to collaborate to more quickly meet market needs. This principle applies not only to companies, but also to nations. With the right balance, collaboration and competition can ensure a continuous cycle of innovation.

Standardization can enable this balance. In doing so, it can provide the means to benefit from powerful technology advancements by increasing innovation, interoperability, reliability, and longer term solution viability and support. To achieve this, it must provide a stable yet flexible platform that can meet market and societal needs. Standardization needs to be stable enough to allow companies to invest in product development and support and let consumers feel

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confident that their technology purchases will not become obsolete within a matter of months. As technology has undergone rapid changes, standardization has struggled to keep pace. Consequently, it has evolved from a stable,

somewhat inflexible, platform to one that is dynamically shifting in response to market needs. How has this shift affected innovation and what can be done to harness this flexibility to more proactively meet the needs of ICT stakeholders?

STANDARDIZATION: A SHIFTING FOUNDATION

Standardization can serve as a powerful innovation platform because it taps into one of the fundamental components of that platform: collaboration. However, simply joining in on a cooperative effort does not spur creativity. In fact, collaboration run amuck can actually stifle innovation. This can occur when there is so much emphasis on consensus that the resulting solution is ineffectual and irrelevant. With the right process and environment for the situation, standardization can bring people together in a way that encourages them to share ideas and work towards an agreed upon solution.

Faster Technological Advancement

Congressman David Wu stated that, "Speed and globalization of the innovation process causes us to re-examine standards." The increasing pace of technological advancement has put more pressure on the standardization infrastructure. Time frames for standards development that were once acceptable have started to lag behind actual product development. Previously, it was not unheard of that standards development could take ten years and that worked for the market. Technological change was slower and so was market adoption of new solutions. When technological change began to pull ahead of standardization, however, interoperability

suffered. Backwards compatibility to a standard is expensive and unnecessary if you are the dominant market player. Other ICT vendors might attempt to collectively attract the market to adopt their compliant products by implementing to a standard, but this could be a risky gamble if switching costs were high or the market was devoted to a specific solution or vendor.

Competing Standardization Options

As a result of these changes, the standardization infrastructure evolved to offer ICT vendors more choices for creating a standard. Consortia provided a faster means for completing and adopting a standard along with the ability to choose who would participate in the process. Some feel that consensus suffered as a result, but consortia have produced such successes as http, html, and the 802.11 wireless standards, which have had significant market relevance and uptake. Traditional organizations, also known as Standards Development Organizations or SDOs, eventually responded with some "fast track" processes of their own in order to become more competitive in the time-to-market debate.

Both models have their strengths and, of course, their weaknesses. Consortia may contribute more to innovation because they have higher connectivity, according to Linda Garcia, Director of the Communication, Culture and Technology Program, Georgetown University. Garcia recently completed a study that examined the impact of SSO structure on innovation and information access. The study found that consortia structure is more favorable for these goals. First, because consortia are highly cohesive but loosely coupled, they are better at bridging structural holes. Thus, they have access to a greater diversity of clusters, which provides them with more information. Second, over 40% of consortia were found to have a higher degree of centrality than the mean. The higher the centrality score, the more ties they had in a network. According to the theory, the more an organization is able to act as a broker and the more centrality they have, the more likely they are to have access to information and to be able to innovate. Consortia proved to have a higher degree of "brokerage"—the amount of times the actor served as a gatekeeper for disseminating information between groups. Thus, in Garcia's study, the structures offered by consortia were more likely to encourage innovation.

In addition, there is a perception that consortia have a faster time–to–market record. With increasing competition and technological advancement, many ICT vendors are rushing to get the first-mover advantage, or at least be in the first group releasing a new product. Since consortia are structured to approve and enable implementation of a standard rapidly, many vendors turn to this SSO option when they feel that timing is crucial to their success.

Consortia can help to create a level playing field and are useful mechanisms for standardization. Given their speed and often more concentrated focus, they can be effective at disrupting the market or pushing it forward when it seems to have stagnated.

Consortia face stiff competition, even among themselves. According to Deepak Kamlani, President and CEO, Global Inventures, consortia have approximately three years to become relevant. At that point, if members are disenfranchised, they tend to create new consortia rather than try to revise the current organizations. Therefore, they have incentive to create market relevant standards quickly. As with all organizations, however, consortia can suffer from "Macbeth Syndrome" when princes want to be kings. It is normal for a group of people working together to start expanding their goals.

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Sometimes known as "scope creep," ambitions can become so high and broad that nothing is accomplished. In the meantime, the group continues to consume valuable resources that generate little rewards for their employers. This can also diminish the time-to-market advantage promoted by many consortia. As the focus broadens, reaching original goals can become more tenuous.

As battles between the two main standardization options ensued, ICT organizations became savvier about how they approached standardization. They found that it was more strategic to participate in several SSOs (even if they had competing activities) to both gain influence over the outcome and ensure that the right standard was backed. SSOs prospered until the Internet boom became a crash and they were forced to compete for the diminishing budgets of prospective members.

Fragmentation

As competition increased, fragmentation began to occur. While the standardization infrastructure offered much needed flexibility to ICT vendors, it also produced a plethora of so-called solutions, most of which were not interoperable or especially well thought out. The

The steady platform that standardization had provided shifted and has yet to find a stable ground.

steady platform that standardization had provided shifted and has yet to find a stable ground. Basing products on standardization has become akin to building a city on a major fault line. You never know who will end up with the ocean front property and who will lose their investments all together. As Don

Deutsch, Vice President of Standards Strategy and Architecture at Oracle, stated, doing standards rarely yields sustainable competitive advantage in the software industry because multiple standards are adopted. Markets become confused and adoption suffers. Since standards succeed only if they are widely accepted, vendors take a risk on whether they will earn a return on their standardization investments.

IP Shakes Up the Platform Further

Brian Kahin, Visiting Professor at University of Michigan, explained that previously standardization had not been part of the innovation process. Today, it must coexist with other innovation infrastructures such as patenting and publicly funded research. The convergence of intellectual property (IP) and standards is a major driver of competition among SSOs. The

hottest issues of the day are whether IP should be included in standards (admittedly this is hard to avoid), how it should be licensed (royalty free vs. RAND), and when the IP and terms and conditions should be disclosed early in the process. The contention around

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these issues is driving fragmentation as ICT vendors can now shop around for the SSO that offers the most favorable patent policies (and other conditions such as processes, membership limitations, etc.). In general, large IP holders prefer RAND while those with small IP holdings prefer royalty free. As with standardization itself, this assumption is not always stable. A large IP holder will offer less restrictive licensing, and possibly waive royalty fees, if it anticipates a

large market reward. Similarly, a small IP holder will demand large royalties if their revenues are mainly generated by patent exploitation. Along with many other speakers, Tom Robertson, General Manager, Interoperability & Standards at Microsoft pointed out that a company's preference for an SSO's patent policy depends on its business model. The easiest way to predict a company's preference is to ask, "How does it make its money?"

The issues that drive venue shopping and increase risk go far beyond the RAND vs. Royalty Free debate. Brian Kahin explained that ex ante discussions, good faith participation (*Rambus*), third-party ambush (*Microsoft v. Alcatel*), and royalty stacking all add to the risks now encountered in standardization. Some can be resolved within SSOs such as whether to allow ex ante discussions.

Ex ante has become a large point of contention among standardizers. There are organizations, such as Oracle and Sun Microsystems that prefer ex ante. From their viewpoints, the ability to discuss terms and conditions up front minimizes risk. Those that support ex ante discussions in standardization believe it simply makes good business sense to choose which technologies to include in a standard with all the facts in hand. These might include functionality, viability, costs, and licensing conditions.

The FTC believes that ex ante discussions can be pro-competitive, Suzanne Michel, Deputy Assistant Director for Policy and Coordination at the Federal Trade Commission explained. Her statement echoed earlier statements by Chairman Majoras communicated via video at The Standards Edge: Golden Mean conference.[1] While the assumption in the past has been that ex ante could lead to antitrust allegations, the FTC has stated that it will employ a rule of reason in which pro-competitive benefits are weighed against any anti-competitive impact.[2] It, however, does not provide a guarantee that all ex ante discussions will be deemed pro-competitive.

As with much that surrounds standardization these days, the line between acceptable and non-acceptable is nebulous. In the United States, SSOs wanting to implement ex ante have the option of submitting a Business Review Letter (BRL) to the Department of Justice (DOJ). Ray Alderman, Executive Director of VITA, recently completed this process for VITA. This SSO,

which is both ANSI and IEC accredited, began having problems with patents in standards approximately ten years ago. Alderman has partially addressed this issue by fighting patent validity and proving prior art. This has been especially effective when patent claims have come from non-members who are not subject to VITA's policies. Of course, this solution involves extensive legal fees as well as staff resources. When ex ante began to appear as a viable solution, Alderman approached the DOJ for advice. VITA's ex ante policy requires that all patents and patent application relevant to the essential elements of a document be disclosed. Once royalty fees are declared, a vendor can lower them but never raise them. To avoid a buyers and sellers cartel, members are prohibited from discussing terms and conditions in a VITA standards meeting. Thus far, the DOJ has approved VITA's Business Review Letter and

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it has been submitted to ANSI. VITA has become the first SSO to successfully implement ex ante. Alderman related the story of Willie Sutton, a notorious bank robber in the 1930, as an illustration of why patents and standards have become such a contentious issue. When asked why he robbed banks, Sutton replied, "That's where the money is." The same answer can be applied to standardization. Some companies unjustly exploit patents in standards because it is easy money. Until it becomes more difficult to reap these easy rewards, there will always be those companies (sometimes known as Patent Trolls) who lie in wait for their patents to appear in a standard, especially if the standards creators are unaware that the IP is patented until the standard has been widely implemented.

Not all speakers, however, were in favor of ex ante. Tom Robertson, General Manager, Interoperability & Standards at Microsoft, stated that while interoperability is a market necessity, it must be addressed in a way that preserves the incentive to innovate. He argued that standards setting policies should be focused on creating dynamic efficiencies. These efforts must respect innovation rewards so that there are continuing incentives to innovate, take risks, and build competing products. According to some speakers, ex ante may promote static efficiencies by driving technology prices down and discouraging innovation. Thus, it could

create innovation "dead zones" that detrimentally impact technological advancement and consumers.

While licensing and disclosure terms are significant, resolving these difficulties will not completely stabilize or improve the standardization platform. Even when all members of a standardization activity finally come to agreement, the process is dependent on good faith participation. If a company secretly patents technology that will likely appear in a standard, and perhaps even encourages inclusion of that IP without divulging its intentions, it can then exploit that IP once the standard is implemented. As in the *Rambus* case, this can result in significant business disruption, licensing fees, and legal battles. Further, rules developed by SSOs do not currently apply to non-participants. Thus, some companies may consider it more strategic, and profitable, to disclose their IP only after a standard has had wide implementation. It's sort of like letting a large group of people build houses on your land without saying anything. You wait until they have significantly invested in the project and are reliant upon the infrastructure before divulging your ownership of the land—and your licensing fees. In this situation, buyers are in weak position to bargain and exorbitant prices can sometimes be obtained. Finally, royalty

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stacking can occur. In this case, a standard may contain so much IP that resulting implementations could have higher royalty fees than the selling price of the product. DVDs for example, have approximately $60.00 in royalty fees and it is estimated that a simple mouse contains over thirty patents. If royalty fees are estimated to exceed the price consumers are willing to pay, there is little incentive to standardize. Thus, interoperability suffers as ICT vendors turn to less risky forms of collaboration.

Jamie Love, Director of Knowledge Ecology International, asked if the exceptions to patent rights could be broadened. He reasoned that there needs to be a better way to address patent quality since the patent system is supposed to serve society. As a solution, Love suggested introducing a cost-benefit analysis into the patent debate similar to that currently performed for

health and safety regulations. Essentially, he asked whether the benefits of patents in software (and by relation in standards) outweigh the costs.

Government's role as a consumer and regulator could be used to help resolve the conflict between patents and standardization. Love suggested that procurement guidelines for "Essential Software" could be revised. CPAP[3] would identify software and interfaces essential for ensuring access to knowledge on a regular basis. Members seeking to promote competition and access to essential software would have the availability of best practice guidelines published by CPAP. In regards to government procurement policies on software licensing and open interfaces, CPAP recommends:

- Obligations for software source code to be released to the public within a fixed period of time
- Use of standards-compliant file formats for data storage
- Obligations to license interface information on a non-discriminatory basis
- Measures to remedy excessive pricing of products with significant market power
- Application of essential facilities and tying doctrines, with particular emphasis on obligations to un-bundle software components that are potentially

These recommendations were not enthusiastically received by all of the audience. In particular, some of the software vendors argued against mandatory source code release. One of these vendors pointed out that there is a difference between open knowledge and open implementation. It was suggested that if source code release was going to become mandatory for software companies, then hardware companies such as Intel should be subject to the same requirements. The passionate arguments brought out by Love's recommendation illustrate how unstable the foundation for standardization has become, particularly in regards to intellectual property rights.

Though standardization is a shifting platform, it can serve as a powerful foundation for innovation. Some shifting is positive as it allows standardization the flexibility required to accommodate a wide range of market needs. There, are, however, actions that can be taken and stakeholders that could be involved to help strengthen this foundation if approached correctly.

To help achieve this, conference speakers discussed the role that governments should play. As major consumers, trade negotiators, public protectors, and procurers, government may be in the perfect position to help standardization reach its potential as a powerful innovation platform.

ROLE OF GOVERNMENT

Governments strive to encourage innovation. Promoting innovation is like advocating world peace, there are very few who will argue (or vote) against it. Innovation can add to a nation's intellect, drive business opportunities, grow profits, and generate jobs. All of these can increase the tax revenues necessary to stimulate more innovation and provide social services. These measures, of course, can also garner much-coveted votes. So, innovation can indirectly serve as the stimulus behind a sort of virtuous circle that generates votes or popular support for government representatives within this circle.

Many governments, including that of the US, have mechanisms for stimulating innovation. Significant investments are made in education and research. Tax benefits and intellectual property incentives are given to companies for research and development. Education benchmarks are set, which purportedly increase the knowledge that can lead to inventiveness down the road. Yet, the mechanism that most powerfully and effectively enables innovation is often ignored by governments—*standardization*. Many governments are inclined to leave standardization completely alone, abandoning it to the mercy of market forces, just hoping that the best standardization systems will emerge. The question is while they are doing this, are they creating an economic disadvantage for their nations' industries and companies?

A government's policy, its procurement practices, and its role in protecting public good greatly impact its approach to standardization.

A government's policy, its procurement practices, and its role in protecting public good greatly impact its approach to standardization. The US government, for example, acts mainly as a consumer in the standardization arena. Though it does make policies intended to encourage standardization and innovation, it is reluctant to become overly involved in the process. Instead, it reflects the general US bias that the market knows what is best. Therefore, even if fragmentation is occurring in standardization, the US government tends to let the market find its own solutions and relies on consumers to influence those choices through their purchasing power. In Europe, however, the majority tend to be more trusting of governments than they are of corporations. Thus, the European Commission has taken a larger role in standardization. The recent decisions on ex ante are indicative of the two approaches. The US and the EU have both declared that ex ante discussions in standardization can be pro-competitive. Europe tends to treat standardization as more of a public good while the US views it more as a private good.

A recent Standards Edge conference in Beijing reveals that the Chinese government places a high value on standardization and is taking a strategic and collaborative approach to its participation.

Of course, it is no longer just Europe and the US that are determining the course of standardization. A recent *Standards Edge* conference in Beijing revealed that the Chinese government places a high value on standardization and is taking a strategic and collaborative approach to its participation. China is unlike other countries. Others are encumbered with perhaps out-dated standardization policies, or at least forced to revise now irrelevant strategies and thus have to move the status quo. China has had the benefit of creating its standardization strategy from scratch. Just as some developing countries are leaping ahead of Westerners in technology implementation because they are not encumbered with outdated infrastructures, the Chinese may have an advantage in implementing a new strategy from the ground up.

It is often more cost effective and strategic for these large consumers to ensure that their needs are met when the standard is being created rather than try to refine the resulting implementations.

Government as Consumer

Participants at the conference examined the role that government is, and should be, playing in standardization. Opinions were varied. They ranged from those who believe that government should take a strong role in "fixing" the standardization system to those that advocated a more hands off approach. One of the less-disputed roles was government as consumer. As a major procurer of information and communications technology, it has a vested interest and the purchasing power to promote existing standards. By participating in standardization organizations, it can also ensure that its requirements are built into a given standard. Other large ICT purchasers such as Deere and General Motors take a similar approach. It is often more cost effective and strategic for these large consumers to ensure that their needs are met when the standard is being created rather than try to refine the resulting implementations. Don Deutsch explained that the US government has decreased its participation in standardization. This is unfortunate. As a large consumer, government has the opportunity to both represent itself and act as a surrogate for other consumers who would benefit from this activity.

Government as Market Manipulator

Standards have garnered the attention of many government officials, especially those whose districts have influential businesses that compete in the global market. It is possible to create domestic or regional advantage through government regulations and procurement practices. For example, a government can specify that all products sold within its borders must meet a specific standard, which just happens to have been created in that country. It can take that a step further by ensuring that access to that standard is available to foreigners only through domestic companies. Thus this ensures that their national companies garner a share of the profits. Or, it can act in a more exclusionary manner by mandating a domestic standard and refusing access to that standard to any foreign companies. These different policies might only impact government procurement, or they could be expanded to affect any imports to be sold in their local markets. Clearly, any of these actions can give significant advantages to domestic industries.

Though there are many agreements that attempt to dismantle government-induced barriers to trade, some speakers explained that they did not go far enough. Many are first generation agreements and thus have not been adequately defined. Article 17 of the GATT, for example, states that state trading enterprises are not supposed to discriminate when buying or selling goods. However, the ambiguity of its guidelines is similar to that of RAND. Everyone understands that RAND means reasonable and non-discriminatory but there is no agreement on the concrete definitions of those terms. Instead, it is defined on a situational basis, which can allow the discriminatory behavior and high pricing the policies sought to eliminate. Trade-Related Aspects of Intellectual Property Rights (TRIPS) and the Technical Barriers to Trade (TBT) Agreement are examples of other agreements that seek to address protectionism and favoritism in trade but do not go far enough to effectively prevent these practices.

Government as Infrastructure Provider

Mike Quear, Staff Director, for the Subcommittee on Technology & Innovation of the US House of Representatives, explained that government's role in standardization has been traditionally limited to safety and procurement. This worked for industry and for government. However, around 1995, industry concerns changed. At that point, the focus changed to maintaining a US competitive edge in international trade. Because standardization can drive innovation, it is one mechanism that can help to create such a national (or regional) edge. Although using standardization to exclude products from other countries (except for those involving health or safety issues) is a violation of the WTO's TBT Agreement, a strong national standardization system and strategy can boost the ability of its industries to compete in the international arena. Standardization provides government with a way to build a strong foundation or infrastructure that facilitates collaboration and inventiveness. This is similar to providing an interstate highway system, rail, or air infrastructure to facilitate transport of goods. Government doesn't specify what, when, or at what price goods should be transported. It simply provides the necessary infrastructure on which businesses can operate. Approached correctly, government can use standardization to provide the same sort of infrastructure for innovation.

Government as IP Manager

As Brian Kahin explained, government does not micromanage or direct IP in the marketplace. It does, however, manage the awarding of patents, thus it acts as a "judge" of what does and does not constitute innovation. Government therefore has great influence over the role of intellectual property rights in the market. Despite this influence, direct government management of intellectual property was not advocated by the majority of the speakers. Some believed that just as government cannot manage intellectual property, it cannot manage real property. Others predicted that, if government managed intellectual property, there would be numerous technology mandates, compulsory licenses, and earmarks to vote upon. These speakers suggested that government assume the role of a trustee, or public caretaker, in which it facilitates transparency and open disclosure of IP early in the process.

...direct government management of intellectual property was not advocated by the majority of the speakers.

Government can provide the environment and infrastructure that either stimulate or stifle innovation, collaboration, and standardization. One of the most obvious ways it can have an impact is through its patent award system. Many of the speakers suggested that governments should examine the way they awards patents and work to better align IP award criteria with today's technology and market needs. Patent office workers have little time to examine each application and have outdated criteria for awarding a patent. As a result, there has been a proliferation of patents. Far from rewarding innovation, the resulting confusion has actually stifled innovation as inventors and collaborators are constantly under threat of IP infringement suits.

The US government, as an IP owner, had policies that inhibited technology sharing in the 1970s. During this time, according to Mike Remington of Drinker, Biddle & Reath, 90% of inventions never saw the light of day. The Bayh-Dole Act, which was implemented in 1980 and then amended in 1984, changed this trend by allowing contractors, grantees, and other to derive patents from federally funded research. The US government has implemented other acts

to encourage technology transfer and collaboration. The National Technology Transfer and Advancement Act is meant to ensure that standards meet private and public needs. OMB Circular 119 requires that formal standards be used in government procurement and that those standards be transparent, open, balanced, impartial, and consensus-driven. So, though government does not directly manage IP, it does grant patents and other intellectual property rights, and specifies frameworks or guidelines in which they can be used. Some say the government goes too far, others not far enough in balancing public and private rights in regards to intellectual property and standardization.

Despite government action and reassurances, its efforts may have little impact if it does not protect companies from private lawsuits. For example, as discussed previously, ex ante has been deemed as having pro-competitive benefits by the US FTC. Yet, most SSOs are still reluctant to implement ex ante. Though they can be reasonably assured of government approval, especially if they get a DOJ Business Review Letter, government support of ex ante

Despite government action and reassurances, its efforts may have little impact if it does not protect companies from private lawsuits.

does not protect against private lawsuits. Thus, a company could be liable for millions of dollars in awards even while government is condoning that organization's efforts. This represents the conflict that must be balanced between public good and private interest. Though ex ante has been deemed beneficial for the public, its use is stifled by private action (or at least the threat of that action).Unless government takes a stronger stance in this area or enough precedent is set by SSOs that are willing to forge the way, such as VITA, ex ante will not be widely adopted.

Similarly, this poorly defined boundary between public and private good, between government-approved actions and private market realities can be seen in the *Rambus* case. Suzanne Michel discussed the final ruling on this case. Rambus was surreptitiously patenting intellectual property that it knew would be included in a JEDEC standard. The FTC concluded that Rambus understood its obligation to disclose but chose not to take this action. Therefore, the company acted deceptively. While this might logically be taken as government enforcement of good faith agreements, Michel cautioned the audience not to generalize. In the

end, the ruling on Rambus only applies to the JEDEC environment. It cannot be used to determine what types of policies and processes other SSOs should implement.

Government Weighs In

One of the least contentious roles of government, at least in the US, is that of measurement. The National Institute of Standardization and Technology provides the standards for weights and measures. As the Director of NIST Technology Services, Belinda Collins stated, NIST allows nanoscience to be turned into nanotechonology. The organization participates in numerous standardization activities and has captured information on interoperability in such areas as the automobile industry. Congressman David Wu described NIST as a vital part of the US national standardization policy. His goal is to increase the funding for NIST's standardization efforts to help address issues such as interoperability and security.

It is somewhat ironic that the very mechanism, intellectual property rights, that was originally designed to stimulate innovation may now be stifling it.

This can be a cost saving measure in areas such as healthcare technology standardization. In the US, the government funds approximately 40% of healthcare costs. With better standardization and increased interoperability, these costs could be driven down significantly. Mike Quear also called for adequate funding for NIST so that it can fulfill its mission and stated that this should be the first priority of the House Science Committee.

STIMULATING INNOVATION

It is somewhat ironic that the very mechanism, intellectual property rights, that was originally designed to stimulate innovation may now be stifling it. Too many patent awards obtained too easily are leading to a proliferation of damaging infringement lawsuits. When, numerous patents are contained within a technology, it raises the price point above what the market will bear. In addition, there are ideas receiving patents that are limiting our very actions. Patenting business processes, such as Amazon's one-click idea, have been under contention for awhile. Recently, surgeons came under threat for using "patented techniques" in surgery. Soon, will we

be limited in the dance steps we can take or have to pay a royalty for the manner in which we walk? Innovation absolutely needs to be rewarded. Although many people do innovate or take other positive actions just for the sheer sense of accomplishment or helping others, it is unlikely that these will prove motivating enough to encourage the huge investments needed today in research and development. But direct monetary rewards in the form of licensing fees and "do-good, feel-good" feelings are not our only two choices.

With some creative thinking, it is possible to generate rewards that break from traditional business models while allowing technology to be more accessible to those with limited budgets. The music industry serves as the perfect example. For years, the debate was over whether music, particularly individual songs, should be available for download. The music industry spent significant resources fighting companies who broke away from their traditional business model. Business and the legal system focused only on anachronistic arguments—the music industry could not make money unless it could reap funds directly from its copyrights in the form of CDs, tapes, etc. Those that used technology to break this model were sued and eventually forced to shut down. Finally, Apple came up with a model that worked. Through some creative thinking, it used technology to provide consumers with the flexibility they demanded while satisfying the revenue requirements of the music industry. In fact, at the current price per song download, it is likely that the music industry is reaping more rewards because it saves on CD manufacturing costs.

Perhaps the ICT industry can adopt a similar approach. Instead of engaging in all-consuming battles over RAND vs. Royalty Free, open vs. closed, compulsory vs. voluntary; perhaps the industry should pause, take a look up at what the market truly wants (or will want), and figure out new ways to satisfy those needs. It might be helpful if they turned to the very technology they are creating to help solve those needs.

Too often, we become consumed in battles that prove irrelevant in the long run. In standardization, years were spent arguing over which was best: traditional standards development organizations (SDOs) or consortia. Today, there is more acceptance of both models and general agreement that each offer benefits. It is not a specific model, but having a

choice between models, that is advantageous to the industry. In truth, the choice is not limited to two models. There are dozens of organizations that offer hybrid standardization mechanisms designed to meet the unique needs of their participants. Perhaps this debate was a prerequisite for the creation of new models and, more importantly a chance for new attitudes to emerge. But one can't help but wonder if even better solutions might have emerged, possibly even more quickly, if the focus had been on market needs rather than on defending one's territory.

The speakers at this *Standards Edge* conference were asked to not only identify the problems, but also to suggest ways that standardization and government policy can help to stimulate innovation. These suggestions fell into three categories: coordination, more cohesive representation and respect.

Coordination

The need for coordination across different entities was discussed. Though speakers identified many different problems, most agreed that more coordination among standardization stakeholders is needed.

Government

Audrey Winter is Deputy Assistant U.S. Trade Representative for China Affairs, Office of the U.S. Trade Representative (USTR). She explained that there needs to be more coordination among government entities. Because departments and organizations are involved in different aspects of standardization, it is difficult to create, much less support, a cohesive governmental approach. The USTR, for example, deals with standardization in trade agreements and guidelines. The FTC impacts standardization and antitrust policies. Other departments approach standardization from a public protection standpoint. They are all subject to lobbying and must attempt to sort out the often opposing views of their constituents.

This is similar to many corporations where it is not unusual to witness two employees from the same organization supporting competing standards. When this occurs in government, of course, the lack of coordination has wider implications. While this once mainly affected

domestic matters, today a government's approach to standardization can impact its ability to effectively compete in the international marketplace.

Many who spoke or participated from US government organizations expressed the theory that government needs to "stay out of the way." While government has to be involved at some level, their belief was that market forces will be better at resolving problems in standardization than government. There are, of course, ways that government can get involved. Congressman David Wu, for example, wants to double NIST's funding. As discussed earlier, FTC Chairman, Deborah Platt Majoras has stated that ex ante discussions in standardization can be pro-competitive. Thus, the agency has removed an obstacle to implementing this practice. Treasury Secretary Henry Paulson has initiated conversations with China on behalf of US President Bush and PRC President Hu. These conversations look at government intervention in the marketplace. Standardization and how it should be used is one area that has come up repeatedly in discussions.

Mike Quear outlined several steps needed to strengthen the ability of standardization to stimulate innovation. Initially, there should be an assessment of the problems in standardization and their potential impact. The relationship between ANSI and other standardization organizations, particularly in the US, needs to be examined. Finally, the US

China embodies a cohesive national approach to standardization that can strongly influence how this mechanism will evolve.

government needs to take a more coordinated approach to standardization. However, government first needs to define its priorities, a task that is difficult in the face of competing industry and public welfare interests. Both Mike Quear and Congressman Wu suggested that hearings should be held to answer some of these questions. This is an important step. It was not so long ago that standardization was essentially a non-issue for most of government. Should the US continue its ad hoc, respond as needed approach or, like its counterparts in other countries, take on a more proactive approach to strengthening and leveraging standardization to stimulate innovation? Finally, which US government agency should take on the coordination role for standardization?

Other countries do not take such a disjointed approach. China embodies a cohesive national approach to standardization that can strongly influence how this mechanism will evolve. It has invested considerable resources in understanding how different nations approach standardization and the resulting rewards gained using each approach. China understands how standardization works and is developing a centralized standardization strategy and implementation plan designed to boost its competitiveness in the international marketplace. Coupled with its rapidly growing consumer base, the country will soon be well-positioned to refine the standardization system to better meet its needs and those of the other BRIC countries.

Europe exemplifies a regionally consolidated approach to standardization. Its hierarchical standardization infrastructure is easy to understand and it is the seat of international standardization efforts. European Union procurement guidelines actively call for the use of European standards and the region encourages adherence to specific standards as a means to prove regulatory compliance.

If coordination within a single government is difficult; extending that effort to governments worldwide seems a daunting task. Yet, there are forums and processes in place to help with that goal. Perhaps even more importantly, there are new types of collaborative forums being developed that strive to meet the needs of the growing diversity of ICT stakeholders. This is especially helpful to developing economies who must contend with processes and infrastructures that were designed to meet the needs of G8 countries. In fact, developing economies are starting to get involved in digital governance and to influence international standardization in more unified ways.

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The United Nations Internet Governance Forum (IGF) is one example of how countries are coming together to build a better system. This forum discusses Internet-related public policy issues and provides recommendations geared towards improving the system. Within this forum, there are several "Dynamic Coalitions." These smaller groups focus on specific issues.

Of key interest in the IGF is the Dynamic Coalition on Open Standards (DCOS), which helps to provide governments with the information necessary to help maintain the open architecture of the Internet and World Wide Web.[4] Numerous countries have come together to create the Development Agenda, which focuses on making changes in areas such as IP management, technological assistance, and technology transfer. Recently adopted by the members of the World Intellectual Property Organization (WIPO), it is hoped that the Agenda will help to meet the international intellectual property needs of developing countries. Currently, international intellectual property management practices and policies tend to favor countries who own large amounts of IP. This makes it difficult for less economically advantaged countries to participate in the global market as innovation and even technological dissemination are too cost prohibitive. By changing the way IP is approached, developing economies may be better positioned to contribute to technological advancements, especially in customizing current technologies for their specific cultural and infrastructure needs.

The Access to Knowledge (A2K) Treaty[5] is another area that exemplifies coordination across borders. Part of this treaty outlines proposed disclosure obligations for patents in standards setting organizations. While two versions have been published, one for Royalty Free and one for RAND, the essential and unique part of this treaty is that it places the burden of patent disclosure on the holders, regardless of whether or not they participate in the standards committee. To achieve this, standards would have to be open for review early in the process and patent holders would need to monitor standardization activities so that they could disclose in a timely manner. Governments would need to amend their policies to ensure that if a patent is not disclosed, it cannot be enforced. As a WIPO treaty, adherence to these measures would be voluntary, however if A2K is adopted by the WTO, compliance for all members would be mandatory.

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Despite these collaborative efforts, it is difficult for a government to represent its citizens and industries unless it clearly understands its mandates. This has been particularly challenging for

the US government, whose representatives are subject to extensive lobbying. As discussed previously, an industry's or a company's preference for how standardization and IP in standardization should be managed depends greatly on its current market position and how much IP it owns. With little agreement among industries, it is no wonder that unified and collaborative action among governments is suffering. Thus, for coordination to be enabled at the governmental level, it needs to be first achieved at the industry level.

Standards Setting Organizations

Coordination among standards setting organizations would go far towards strengthening the system and discouraging fragmentation. This is difficult as it asks SSOs to modify their current business models which foster competition between these organizations. It was not suggested that all competition between SSOs be eliminated. Some speakers stated that heightened competition among SSOs is ultimately beneficial for consumers as it can provide them with more choices. These speakers strongly advocated letting the market decide. Other speakers, however, argued that intense SSO competition can instead limit consumer choices. Consumers generally choose implementations (the resulting products or services based on a standard) rather than the standard itself. A proliferation of competing standards can have several negative impacts. First, this does not give ICT vendors a strong base to develop to. Therefore, fewer vendors are likely to productize the standard and, when they do, their products may be sold at higher prices due to decreased volume. Second, competing standards can diminish a network effect. A look at the cell phone industry can best illustrate this. The more people use cell phones, the more benefits consumers attain because they can communicate with more people. This results in a greater volume of users and tends to drive down access costs. Finally, the larger user base incentivizes other vendors to develop complementary features (e.g., Internet access, calendar synchronization, cameras, instant messaging), which expands the ecosystem. However, the cost and availability of accessing the cellular infrastructure is directly related to the individual carrier. While, consumers do experience some network effect in the cellular world, it could be greater if vendors worldwide would agree on a single standard rather than requiring consumers to either choose among the standards or purchase phones that will accommodate the most popular standards (e.g., 3G, W-CDMA, CDMA).

Deepak Kamlani suggested that standards setting organizations identify the components of the standards value chain and implement a framework that minimizes redundancy. Roles within this value chain should be established based on current strengths. One speaker described standards development organizations (SDOs) as proficient at defining standards roadmaps,

identifying gaps, creating best practices, and formalizing consortia specifications. Consortia, on the other hand, might be viewed as experts on creating specifications, building ecosystems, driving interoperability, and enabling certification.. Others at different *Standards Edge* conferences have suggested that a mega-consortia might be created to help coordinate and map standardization activities. Finally, forums could be added to the standardization system with the goal of coordinating standards around a specific industry or solution set. These forums would not actually create standards, but rather combine existing standards into comprehensive solutions and identify gaps that SSOs need to address.

These suggestions will not, of course, eliminate all standards competition or fragmentation. However, correctly implemented, they may help to minimize that fragmentation and generate more return on investment for ICT vendors. Eliminating standardization competition all together would likely require a worldwide mandate by governments in which SSOs could apply to develop specific standards with one applicant being chosen per activity. No one is suggesting that standardization be controlled to this level. Even if there was support, this solution would likely prove more complex than the original problem. The discussions, however, do help to generate innovative ideas and agreements that may strengthen standardization's ability to contribute to innovation.

Representation

Government representatives at this *Standards Edge* conference and throughout various discussions have repeatedly called for the ICT industry to develop a unified voice. It cannot sufficiently respond to industry's call for a stronger standardization system unless it

understands what that system would look like and how the industry would like government involved. How can it provide fair representation in the domestic and international standardization arenas when it cannot decipher what its citizens and businesses desire? While most US government representatives are hesitant to become involved in the daily processes of standardization organizations, the government can enact policies that encourage standardization as industry defines it.

Several speakers, including Susy Struble of Sun Microsystems, called for the industry to work together to present agreed upon recommendations to the US government. To accomplish this, problems and goals would need to be identified along with prospective solutions. The ICT industry should provide concrete examples of how technology policy and standardization have impacted other industries. Most importantly, the role of government in achieving these goals should be explicitly stated. Since these decisions impact everyone's lives, not just business models, some speakers explained that recommendations need to take into account the full impact on society.

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Joe Bhatia, president of ANSI, said that ANSI's IP committee is working on developing a unified industry position. The difficulty with this effort is that not all ICT vendors support ANSI. As occurs now with forum shopping when vendors want to standardize a specific set of technology, different ICT companies will be drawn to efforts to create a unified voice that best reflects their needs and requirements. In other words, vendors will be more likely to participate in efforts in which they are likely to have a large influence. Thus, although there are efforts to create a cohesive ICT industry voice underway, they are not currently generating the agreements that have enough diverse support to provide clear guidance to government.

Of course, building a better standardization infrastructure is not just about industry needs. It is ultimately supposed to benefit all stakeholders, particularly consumers. Consumers are notoriously absent from standards meetings, unless you count companies or governments that

are large purchasers of ICT products. Even in these cases, their participation is limited to directly relevant forums and they have limited influence as consumers. It is not reasonable to expect individual consumers to participate in standardization activities. The cost and time demands are too prohibitive. But it is logical for consumer organizations to participate more fully in standardization. To do this effectively, they need to be able to move beyond their basic role of educating consumers on both the value and processes of standardization. Currently, this is where the majority of their standardization resources are spent. If government or SSOs would take on this role, perhaps the knowledge level—and more importantly the interest—of consumers in regards to standardization could be raised to a level that enables influential participation in standardization.

If industry continues to fail in this endeavor, it may be up to government to provide a neutral infrastructure where agreement on standardization can be obtained and consumers can be heard. The first steps could involve the hearings recommended by Mike Quear and Congressman David Wu. These could help government to understand the top issues that impact standardization's ability to generate innovation and interoperability and the diverse opinions

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around these issues. Once the government gains this understanding, it could then host working forums that address the top priorities and clearly identify what is needed from the government. This type of plan should generate better representation of all ICT stakeholders than the current system which relies on lobbying. Currently, both access to money and connections are the main determinants for influencing the way our government approaches standardization. Since technology is changing these dynamics, it may not only be fairer but more strategic for government to broaden this access on a more equitable basis. After all, representatives never know who will hold the majority of funds—and political influence—in the future.

Thus, while government is asking for a more coordinated stakeholder voice in standardization, it may be the only one in the position to facilitate the creation of it. It's not too late for industry

or SSOs to take on this role. They just need to find a way to come to enough agreement to choose a venue, a forum, and a focus.

Respect

Brian Kahin identified lack of respect as one of the main problems in standardization. This has been exacerbated by the conflict between patents and standardization. It is likely that respect and trust will continue to diminish as there continue to be arguments within the industry and expensive infringement lawsuits gain greater press coverage. This has a negative effect in two areas. First, consumers and large ICT customers will either lose faith in the standardization system and its promises or simply ignore it all together. Either way, standards adoption will suffer. Second, ICT vendors will seek other means for ensuring interoperability and market adoption of their technologies. This may be achieved through joint development agreements (JDAs) or other bilateral or small group ventures. These types of agreements tend to squeeze smaller technology vendors out of the market as they don't have the IP holdings necessary to negotiate mutually beneficial cross licensing deals.

Brain Kahin identified lack of respect as one of the main problems in standardization.

Industry vendors expressed this concern both at the Georgetown conference and at previous *Standards Edge* events. Some explained that because of extensive fragmentation, standardization no longer has a good return on investment. This inhibits market adoption of a standard. This sentiment was also echoed by some CIOs and CTOs of large ICT customers and by those that work closely with them. In many cases, standardization seems to have become too confusing to hold much value for their organizations. These executives are trying to make accurate ICT decisions in short timeframes while minimizing risks. If the standards produced are too confusing or conflicting to sort out, it is safer to go with an established, larger ICT vendor to satisfy most of their technology needs.

Standards for Those that Impact Standards?

Kahin explained that IP traditionally trumps standardization. Perhaps the solution is to create standards for patent rights. Rather than just sinking more funding into the patenting system, would it be possible to develop standards for patent quality? These standards could go beyond the basic criteria used by the patent office today so that they could address specific issues inherent in attempting to patent software and business methods.

It was also suggested that we might need standards for the legal community involved in patenting? Would it be reasonable to require adherence to a certain "code of ethics" when working patent issues? Could the legal community develop standards for IP applications and enforcement that might help to alleviate the conflict between IP and standards?

Finally, perhaps it would be beneficial to establish standards for standardizers. Could there, for example, be an established set of criteria for becoming an SSO? The requirements could be voluntary but compliance might bring certain benefits such as tax breaks or other government incentives. Standardizers themselves could also become certified. Much like lawyers, doctors,

Could there…be an established set of criteria for becoming an SSO?

architects, plumbers, etc., it may be beneficial for those participating in standardization to meet a certain set of professional criteria. Hopefully these criteria would not only require a certain level of understanding about the standardization infrastructure but also ensure that there is adherence to a specific code of ethics. Further, certified standardizers could be expected to complete courses on essential skills such as collaboration, facilitation and perhaps even topics such as when and how to disclose IP. Again, compliance could be voluntary. Perhaps this type of certification would both raise industry requirements for the standardization professionals and participants that they hire and, in turn, stimulate both formal and informal education opportunities on all aspects of standardization. All of this would go a long way to regaining respect for standardization and SSOs.

Standardization Education

Education and establishing a professional discipline are another way to gain respect. Currently, there are only a handful of educational efforts worldwide that focus on standardization, especially at the university level. Engineering courses may incorporate a few standards into their curriculum. Building contractors certainly receive instruction on standards. However, those who will make the future business, policy, and legal decisions on standardization rarely receive academic instruction on the subject. Toshi Kurokawa, CSK Fellow of CSK Holdings Corporation and Affiliate Fellow for NISTEP, described efforts in Japan. It highly values standardization and is examining how it can establish a grass roots educational system that is important for standards. Japan currently has more than ten universities that offer curriculum on standardization. Korea leads standardization education efforts with the largest, centralized program involving more than sixty universities. Six universities in Europe offer standardization instruction, while the US has just three. One of these, Georgetown University actually has graduates of its Communication, Culture, and Technology (CCT) program who are pursing standardization as a profession. John Hill, Chief Standards Strategy Officer for Sun Microsystems, described the importance of standardization for both domestic competitiveness and innovation. Hill and Kurokawa, along with over forty other researchers, government representatives, and industry professionals, have started the International Committee for Education about Standardization (ICES)[6] This organization is developing a common worldwide curriculum about standardization.

Regardless of the final solutions, confidence in the standardization process (and in the IP system) needs to be restored. As infighting increases and gains more publicity, trust in the system will certainly wane. The standardization system is supposed to guarantee a certain level of interoperability and consumer choice. This is the reason why the government, at least in the US, allows standardization to occur. Much like ex ante, standardization can have pro-competitive benefits even though collaboration on this level might have previously generated anti-trust allegations. Standardization is a privilege for private industry and a necessity for

Standardization is a privilege for private industry and a necessity for consumers.

consumers. It can be a highly effective mechanism for balancing private industry needs with public good. But, a system cannot be effective if it does not have respect. This, above all else, should be the goal of those who govern, enable, and participate in standardization.

Consistency in the Courts

Finally, there needs to be more consistency among the US courts. Currently, according to Kahin, the US Appellate courts overturn approximately 30% of district court rulings concerning patents. This can escalate business and legal costs caused by patent infringement cases. In addition, the problem of "patent ambush" needs to be addressed. While there is substantial discussion over how to manage and disclose IP for participants in a standards effort, there is little policy to address these issues for patent holders who don't participate. Therefore, it becomes cheaper to avoid participation then to assume the obligation of disclosure. In addition, it widens the opportunity to exploit patents once the standard is widely implemented. Similar to what Jamie Love suggested, perhaps the answer is to require patent holders to identify their IP in a proposed standard rather than placing the burden on the standardizers.

While there is substantial discussion over how to manage and disclose IP for participants in a standards effort, there is little policy to address these issues for patent holders who don't participate.

CONCLUSION

VHS or Betamax? Open Look or Motif? These historic standards battles can illustrate valuable lessons for the industry. Students can analyze their actions, study the industry conditions, and try to glean which backers had the best strategy. These standards, however, have all been replaced by different and more advanced technologies.

Similar circumstances can be seen when studying the competing railroad companies in the US during the 1800s. Only when routes and times were standardized did they start to truly thrive. However, their industry infighting shortly after became insignificant when compared to the emerging threat of interstate highways and the trucking system.

Recently, we have seen many debates. Netflix or Blockbuster (mail delivery vs. in-store access to movies)? Napster or the music industry (online distribution vs. in store access, soft goods or hard; new models of leveraging copyrights vs. traditional models)? Boutique book sellers or large book sellers such as Barnes and Noble (locally owned stores vs. "big box" stores)? Many of these arguments, too, are now irrelevant. With online distribution becoming cheaper and more widespread and a few innovative businesses proving the efficacy of developing new models (e.g., Ebay, Amazon, Apple's iTunes), the arguments are no longer applicable. Movie distribution is turning to online capabilities and so is music. Technology has been adapted to handle respect of copyrights, and there is even more fierce competition to sell products and services now that individuals have access to inexpensive online storefronts.

All of these examples represent intensive debates that have demanded the time of businesses and consumers alike. Significant resources have been invested in "winning" these battles. The stakes have been considered high and everyone from industry to consumers to government have been involved. Yes, some of the winners reaped extensive financial rewards, others gained market power. Consumers might have benefited from some of the issues that were brought out in the debates though they might have benefited more from more innovation and less argument.

What would have happened if these debates had not occurred or at least had not been so all consuming? What would the impact have been if industry had focused resources on innovative solutions that better met market needs? Though it is difficult to determine what "might have been," it is often instructive to apply these lessons to future actions.

Suppose the current battles between royalty free and RAND were set aside. Could we then come up with solutions that meet the needs of both sides of the debate through new ways to reward innovation? Is it possible to get past our current, all consuming arguments in standardization and focus efforts and resources on finding new solutions and models? Could we apply a similar approach to the now tired debate between Standards Development Organizations (traditional organizations known as SDOs) vs. consortia? Intensive arguments over the virtues and drawbacks of both have occurred over the last twenty years. As a result, confidence in the standardization system as a whole has been undermined. Of course, many have morphed the models to better meet market needs so some benefits did occur. But what could have happened if less energy had been put into the battle and more into strengthening standardization to address the problems that consortia emerged to resolve? What benefits would result if we erased the lines between these types of organizations and simply viewed them all as components of the standardization system? The same question could be asked about other debates around standardization: when and if to disclose patents, the definition of RAND, the needs of developing countries vs. those of the G8. Could we in fact generate solutions that better meet everyone's needs if we set aside these debates for awhile or at least reframed the questions?

...the stakeholders involved in standardization must put aside their battle gear, step over traditional boundaries, and cooperate to create stronger standardization models and processes.

The strength of standardization lies in its ability to generate collaboration. This collaboration should not occur just because it is considered to be good public relations but because it can bring widespread benefits to stakeholders. At the top of that list is innovation. Today,

information is too extensive and technological advancements are occurring too rapidly for a single entity to handle or manage. Working together and generating agreements that will actually benefit the market and move technology forward are critical to stimulating innovation. To accomplish this, the stakeholders involved in standardization must put aside their battle gear, step over traditional boundaries, and cooperate to create stronger standardization models and processes. It is only by thinking innovatively, after all, that we can solve the current problems facing innovation's most powerful platform, *standardization*.

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The Standards Edge series, developed and published by The Bolin Group, is designed to tackle the latest technological and standards issues and their impact on business. The books contain a compilation of articles from experts worldwide in standardization, government, industry, the legal profession, and academia. The series serves as a valuable resource to:

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The Bolin Group is a strategic consulting firm specializing in standardization, strategic planning and implementation, research and analysis, and communications. As the premier provider in standardization consultation, The Bolin Group provides services in standardization portfolio management, research and analysis, communications strategy design and implementation, and training curriculum development. By emphasizing a business approach to standardization, The Bolin Group provides each client with the unique package of strategies, implementation plans, and communication methodologies to position their organization in the complex world of standardization.

The Bolin Group is the creator and editor of The Standards Edge™ series. This series has become one of the most comprehensive resources on critical standards issues in the current environment and now serves as a significant guide to ICT industry leaders, academics, and government representatives worldwide. The Bolin Group is currently at work on additional books in The Standards Edge series, which will examine separate strategic standardization issues. For further information, please visit: **http://www.thebolingroup.com.**

ENDNOTES

[1] The Standards Edge: Golden Mean was held in conjunction with Stanford Law School and Sun Microsystems in September 2005.

[2] U.S. Department of Justice & Federal Trade Commission, Antitrust and Intellectual Property Rights, "Promoting Innovation and Competition," **www.usdoj.gov/atr/public/hearings/ip/222655.pdf** and **www.ftc.gov/reports/index.shtm.**

[3] CPAP: Country Programme Action Plan is a common integrated programming document for the UN Country Team, which elaborates on the Country Programming Document (CPD). It serves as the annual operational plan for the country programs of the United Nations Development Programme (UNDP); UNDP, Staff Administrative Services, "UNDP for Beginners, A Beginners Guide to the United Nations Development Program," 2nd. ed., **www.sas.undp.org/documents/UNDP_for_beginners.pdf**.

[4] Internet Governance Forum, Dynamic Coalition of Open Standards (DCOS), "Mission and Members," **www.igf-dcos.org.**

[5] Access to Knowledge Treaty, **www.access2knowledge.org**.

[6] International Committee for Education about Standardization (ICES), **www.standards-education.org/**.