Effectiveness of Federal Agency Participation in Standardization in Select Technology Sectors for National Science and Technology Council's Sub-Committee on Standardization

Layer 7 Technologies Response to the Public RFI

Layer 7 Technologies

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Introduction

NIST has issued a public RFI asking for perspectives on "the effectiveness of Federal agencies' participation in the development and implementation of standards and conformity assessment activities and programs". This paper briefly outlines Layer 7's perspective on the challenges NIST faces and some of the opportunities that the agency should take advantage of.

Layer 7 Technologies is a leading supplier of technology for securing and managing Web services, deployed both on-premise and in the cloud. The company is a supplier to a broad range of US Federal Government projects. This paper focuses exclusively on the standards and technology associated with Layer 7's area of expertise around Internet technologies, in particular cloud computing and web services.

Relevance

There is a natural wax and wane in the influence a standards body commands within any community. Nowhere is this more evident than with Internet technologies. This sector moves extremely fast; it benefits tremendously from standardization, yet often resists formal specification. Until recently, NIST has been perceived as having virtually no relevancy to the vendors, research groups, and individuals making up this community. However, due to recent valuable contributions by NIST, this perception has begun to change. This change has created an opportunity for NIST to assume a leadership role in the community.

At present, OASIS (http://www.oasis-open.org) is the standards organization with the greatest influence and productivity in the Internet standards space. This organization gained an upper hand in the last dozen years by defining key Web and Web services standards, including SAML and WS-Security. It absorbed early work by UN/CEFACT in ebXML (which was visionary but not successful), as well as the Web Services Interoperability Organization (WS-I). OASIS is now moving into basic cloud identity standardization in an effort to retain its commanding position. However, with the current loss of momentum behind the Web services stack (WS-*), many perceive OASIS as being on a downward slide toward less relevancy around emerging technologies.

The W3C (http://www.w3.org/) is responsible for core Web standards and has done an admirable job in building and maintaining a foundation that is able to effectively evolve with technological improvements. It lost the power struggle at the turn of the century aound Web services standards, but has managed to keep focused on evolving the very important basic Web standards such as HTML. This demonstrates, however, the difficulty this organization has moving outside of its basic sphere of influence (although one might argue that this is probably this organization's greatest strength as well). The W3C's

continued emphasis on semantic Web technology is academically interesting but thus far has had little real impact on web usage patterns. The unfortunate side effect of these efforts is to foster a community perception of distraction in uncertain futures and to further diminish the potential future influence of the W3C.

The IETF (http://www.ietf.org/) remains relevant only for RFCs, which have been and will remain to be an important central authority for basic low-level Internet technologies. Many RFCs continue to be produced, but few that are arguably relevant. IETF did define the very important XML security suite in the late 1990s (XML encryption, canonicalization, and signing), but since then have moved back down the stack.

NIST has traditionally had little influence around Internet technologies. The organization has been involved in some fringe standards such as VRML; this showed promise in the late 1990s, but is no longer relevant. The great exception to this is NIST's recent contribution to the definition of cloud computing, which has been welcomed by the community at large and is referenced extensively. Although by no means a standard, the definition addressed a very important need for more formalized clarification of an emerging term. It should be noted that this work was a collaborative effort by NIST and independent consultants who were very familiar with the emerging cloud technologies.

NIST must look hard at its success with its definition for cloud computing and use this as a model for future collaboration with the Internet community.

Brand

Branding is tremendously important to standards. A standards organization with a strong brand conveys authority, and its work products are much more likely to see widespread vendor adoption. NIST's brand has both great strengths and great weaknesses in the Internet community. It is important for NIST to continue to build on the brand strengths to be relevant in the future.

Governmental standards authorities command a natural respect. The ebXML standard was initiated by UN/CEFACT, and during the term of these standards' development participants often emphasized that they were working on a UN project, which suggested a global scope with a humanitarian angle. This played well in the Internet community.

NIST has a storied history in the US and can command similar respect, but only if it simultaneously de-emphasizes pejorative views of all governments being slow moving and bureaucratic. The Internet community, despite its forward-looking stance, does connect with certain institutions with long history. The US Patent office is an excellent example. Although most patents are company-initiated to protect its own interests, individuals very often desire the association with the continuum of invention that the USPTO represents. NIST can potentially leverage similar inclinations.

The NIST brand also conveys vendor—and to some extent political—neutrality. This is critically important in today's standards world, where large-vendor buy-out of an organization (through board seats, sponsorship of events, or simply stacking individual standards working groups) is perceived as a significant problem.

Strategies

There is at present a void in standards leadership in the Internet community. OASIS power is on a downward trend, and there are no smaller up-and-coming organizations that appear to be in a position to challenge this. The Internet community is also still in somewhat of an standards hangover from the exuberance of the WS-* era of the last decade. Vendors made tremendous investment in standards during this time, only to see interest in the standards fade as new technologies took off. This could be a great opportunity for NIST to show leadership.

Cloud computing is the area NIST should focus on, building on its success with the cloud computing definition. This also coincides very well with national interests, as articulated by Vivek Kundra, CIO of the United States, in this emerging technology sector. Cloud is an area desperate for standards leadership, and NIST can fill this void.

NIST should leverage public-private partnerships to become relevant quickly in this area. Most Internet standards are a result of a small number of vendors promoting a new idea. NIST can become the neutral third party that legitimizes the efforts and brands them effectively. This has been the to success OASIS's success, along with an effective governance model that is democratic and does not allow for too much domination by large and powerful vendors.

To accomplish this, NIST should build a framework for fast-tracking standards that leverages community participation. NIST must create an organizational structure that works against the widespread industry perception that government involvement slows down process. NIST should be about brand, lightweight-but-effective project management structure, and publication. It should not be about sector expertise.

The emphasis must be on agile standards that interoperate, not overarching grand schemes to solve vast problems. A reference implementation should always accompany a standard, as well as interoperability compliance tests. NIST should not define the standards; however, it should govern the process that allows the community to create standards where it believes formalized definition should exist. NIST's great contribution would be in effective management that emphasizes the agile processes that, at its best, the Internet community already employs.

About Layer 7 Technologies

With offices in Washington, DC and Vancouver, British Columbia, Canada; Layer 7 Technologies helps enterprises accomplish secure and cost-effective business integration using XML and Web services. Layer 7 Technologies' SecureSpan™ Solution is the first technology that addresses security and governance across a Web services integration without expensive and inflexible programming. With the SecureSpan™ Solution, customers realize lowered integration costs, increased security reliability, and the ability to future-proof their Web services investments. Contact Layer 7 Technologies or visit www.layer7tech.com for more information.

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