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FEATURE STORY

THE ROLE OF WEB SERVICES STANDARDS BODIES: IN THEIR OWN WORDS

Andrew Updegrove

Abstract: Much has been made by the press in the last month over the contribution of BPEL by Microsoft and IBM to OASIS rather than W3C. Representatives of OASIS and W3C, as well as the Web Services Interoperability Organization, respond to questions which allow each organization to present its view of its own role, and the role of other bodies, in the setting and support of web services standards.

I. Introduction: There is an old saw that goes something like this: "Having a standard for a given job is good - that's why people come up with so many of them." Sadly, there is some basis for truth in this satirical observation. In a perfect world, the commercial lions would lie down with the lambs, and there would be a single, robust, elegant and universally adopted standard for every IT need.

Back here in the real world, however, there is a rough and tumble marketplace in which vendors let down their commercial guards (just a bit) to collectively set standards with end-users and other interested parties enabling new product niches within which the same vendors will then aggressively compete. At times, competing standards efforts are launched, and when that happens, the universal adoption of a final standard is often delayed.

But as often also happens, a new standard can relate to an emerging technology that sometimes fails to realize its originally claimed potential. For example, while it appears that both the Bluetooth and the Wifi standards will be broadly implemented, other early contenders (such as HomeRF) have fallen by the wayside. Sometimes, starting several horses from the gate proves to be a useful and prudent strategy.

The advent of web services provides an especially interesting opportunity to view the standard setting process in action, given the enormous commercial consequences of success, the number of capable organizations bodies available to participate in the creation of the essential standards, and the large number of standards which are necessary to fully achieve the web services vision.

Recently, there has been a flurry of articles written about whether the W3C, instead of OASIS, should have been invited to continue the development of the BPEL4WS 1.1 specification. Is this a case of the press blowing a situation out of proportion, or the first indication of a real problem? And if the situation does deserve attention, how do the organizations involved plan to work together to ensure a result that is beneficial to all?

To find out, we went directly to the organizations involved.

II. Survey Methodology: For this article, we posed a series of questions to some of the most active players in the web services standards arena: two standard setting bodies (W3C and OASIS) and the Web Services Interoperability Organization (WS-I), which is supporting the evolution of web services in a different and interesting way (see the following article: [New Wine - Old Bottles: WS-I Brings a New Dimension to the Art Of Making Standards Succeed](#)).

The questions posed were intended to give each organization the opportunity to present its position within the overall standard setting effort, and to share its thoughts about past accomplishments and future challenges. Each organization was presented with the same questions. Some respondents declined to answer a given question. While some answers were redacted to eliminate repetition and to manage length, the actual text included below is otherwise reproduced verbatim.

We also interviewed representatives of OpenGIS Consortium in order to access the educated opinions of an independent source on the same questions. Their observations are reflected as well.

The respondents for the organizations were:

OASIS: Patrick Gannon (President and CEO) and Karl Best (Vice President)

Open GIS Consortium: David Schell (President and CEO) and Carl Reed (Executive Director of Specifications Programs)

W3C: C.M. Sperberg-McQueen (Architecture Domain Lead and co-author of XML 1.0)

WS-I: Andy Astor, Board Member and Vice President, Enterprise Web Services, webMethods)

III. Questions and Answers:

The Addendum of this article includes additional technical information.

CSB: How many web services projects are underway at your organization right now?

OASIS: The answer depends on how broadly you define Web services. OASIS has 57 technical committees as of today, and most of them relate to Web services in one way or another.

W3C: W3C has Five Working Groups/Task Forces with the words "Web Services" in them, and at least another 5 which have produced the foundation for all other WS Work, no matter which organization you look at, or which prefix they use for their specifications. They are providing the normative references for dozens of efforts in vertical and upper layer horizontal efforts.

Homepage for W3C's WS Activity: [W3C's WS Activity Statement](#):

WS-I: WS-I is not a standards organization like W3C, Oasis or IETF. WS-I is not creating standards. WS-I sits downstream from standards bodies to provide companion guidelines, conventions, and best practices to promote interoperable implementations.

CSB: What are those projects?

OASIS: OASIS is responsible for UDDI, one of the four pieces defined by WS-I in their "basic WS profile" (XML, SOAP, WSDL, and UDDI). OASIS also hosts a large body of work that goes beyond the foundational specifications, work that makes Web services practical. The OASIS UN/CEFACT ebXML standards are complex Web services. Developed before the term 'WS' was coined, ebXML delivers the functional requirements of Web services for business critical applications. Four OASIS technical committees are devoted to ebXML: And certainly, without security, Web services would be of little use. OASIS Open Standards such as SAML, XACML, and specifications in progress, such as WS-Security, and foundational security standards, such as PKI, all have a place in the big picture of Web services. (See the Technical Addendum for additional information)

W3C: Over 19 Technical Specifications are under development at W3C within its WS-named Working Groups and task forces. Another 10 W3C Recommendations serve as the foundations for all of the WS work in all organizations, including XML, XML Schema, XML Signature, and XML Encryption. A detailed list is at the bottom of this article. (See the Technical Addendum for additional information)

CSB: Which project do you think is most interesting or important, and why?

OASIS: All are interesting and important. ebXML is global and comprehensive, UDDI is foundational and widely recognized, WS-Security is essential, WSBPEL is the most recent and is generating quite a lot of interest.

W3C: The most important spec - perhaps for all organizations interested in Web Services - is the spec being produced by W3C's XML Protocol Working Group - SOAP 1.2. SOAP is the most central spec around which all Web Services activity centers - can you imagine a single WS article where it isn't mentioned? - and more or less defines WS. SOAP 1.2 is the first solid, standardized version of SOAP, with full support for W3C Recommendations, support for multiple protocols (not just HTTP), and over 400 issues resolved. That said, WSDL is frequently mentioned as a core WS specification. WSDL 1.2, the first standardized version, will likely go to Last Call later this year.

CSB: Other organizations are also very active in Web services standards definition and development. Please name those organizations that you think are important to the evolution of Web services, and why.

OASIS: Certainly, the W3C plays a major role in defining foundational standards, such as XML and Web Services Architecture.

W3C: W3C's process places emphasis on liaisons - in fact, all W3C WGs are required to establish liaisons with all identified relevant groups. And all W3C Members review all proposed work before any technical resources are assigned. As a result, our 410+ organizational Members - which include OASIS - are aware of all potential and new work, and can say what is in scope, and who we need to coordinate with. The full W3C liaison list is at: <http://www.w3.org/2001/11/StdLiaison>

When the topic comes to Web Services, we set up liaisons at a technical level with whatever organization the vendors choose as the destination for their initial specs. As a result, W3C WGs work with many TCs in OASIS, and with individuals involved in the non-standard, profile work in WS-I. In the past, we have also had connections with groups such as OMG (for XML Protocol/SOAP 1.2 work).

WS-I: W3C, OASIS and IETF are all actively participating in the creation of standards for Web services. WS-I works in cooperation with these organizations to create resource and guidance to ensure interoperability of these standards.

CSB: Please explain how the goals of your organization relate to the goals of these other organizations.

OASIS: OASIS and W3C maintain a good working relationship -- one that's longstanding. We continue our commitment to working together to coordinate the development of the broad spectrum of Web services specifications as much as possible.

W3C: W3C's goal is to build an open, extensible technical foundation for the Web. Web Services is one part of this foundation. We strive to make W3C specifications interoperable with each other and with relevant foundational specifications from other bodies, such as IETF and ISO.

We work for universal access by eliminating barriers to access based on hardware, software, network infrastructure, native language, culture, geographical location, or physical or mental ability; all of our specifications are reviewed by our Internationalization Activity and by our Web Accessibility Initiative to ensure that they meet this goal as far as possible. In order to ensure that Web technology scales, W3C stresses decentralization and evolvability of technology. In order to ensure that the technology works well for all, W3C stresses consensus-based development, from the initial review of proposals for W3C work, through the development of working drafts, to the final decision on making a specification a Recommendation.

We have a long history of good coordination with IETF and other SDOs, based primarily on cooperation at the technical level. In some cases, liaison is made more difficult by differences in overall goals of the

organizations or by differences in intellectual property policy: the W3C is firmly committed to ensuring that Web technology, like the foundational technologies of the Internet, are available for royalty-free implementation by any interested party.

WS-I: We bring the work of multiple standards development organizations together for the purpose of providing clarity and conformance around Web services. In addition, this implementers' forum seeks to provide implementation guidance to customers. In this way WS-I acts as a standards integrator, a role that is beyond the scope of any single standards organization.

CSB: *Do you think that the various involved consortia are working well together, or is there a level of inefficiency, competition or overlap that should be resolved?*

OASIS: The involved consortia organizations are generally working well together, sharing information and trying to coordinate events. The consortia organizations are also encouraging our respective members (who work on the respective technical specifications) to coordinate their TC/WG activities with technical liaisons whenever possible.

W3C: There is certainly some inefficiency introduced by having work in related fields taking place in different organizations; it's not clear that such inefficiencies can be avoided. In the Web Services space, the difficulty seems to be particularly acute. At W3C, WGs are required to liaise with any external group identified as relevant. Since many of the same people participate in these groups, there are natural opportunities for liaison, but it does mean extra work for the individuals involved. Since liaison at the technical level is essential to make the best of the current fragmented situation, W3C is committed to doing our best to encourage such liaison.

WS-I: WS-I's mission is crisply – even narrowly – defined, and is fundamentally different from the standards bodies discussed above. As a result, no coordination difficulties are apparent.

CSB: *Do you think the marketplace has totally bought in to the use of Web services? If there is still work to be done in this regard, what sectors "get it" the most and what sectors still need to be worked on the most?*

OASIS: The Internet software industry has certainly embraced the use of Web services, however, I don't think we'll see widespread pick-up from the end user companies and large industries until interoperable solutions are available that implement a full range of Web services infrastructure specifications that have been approved through open standards consortia processes like those at W3C and OASIS.

W3C: The fragmentation of the standardization landscape is clearly slowing the adoption of Web Services technology. Customers will buy in only when they feel they can trust the results, and can implement the technology on a non-proprietary basis without fear of vendor lock-in.

W3C hears a growing level of concern from companies for which Web Services could potentially offer a solution to their application to application communications, both within their company and between their company and other entities. There is uncertainty regarding the number of organizations developing WS specs, and how this might affect the coherence, interoperability and quality of the specs. There is uncertainty regarding the licensing structure of specifications not developed under a clear patent policy like that at W3C. Press regarding (non-existent) battles between organizations, divergence of approaches and disagreements between WS vendors, the large number of WS specs (many of which have not been submitted to any standards body), etc., also contribute to uncertainty. The vendor and standards community has its work cut out for it to build confidence in the customer community.

WS-I: The marketplace has certainly embraced Web services. Nearly all enterprises of significant size (and many smaller ones as well) have begun developing Web service-based applications and/or integrations. Indeed, hundreds of Web services projects that are in production have been described in the literature. Having said that, Web services are still a young technology. The current state of Web services standards address only basic interoperability. As of today, deeper technical requirements still have to be written in a proprietary manner. As a result, most companies are using Web services today to expose

"lighter-weight" services. As standards mature, as the market's experience deepens, Web services will become more common for more mission-critical processing.

It is difficult to generalize, but leading industries in the Web services arena include financial services, travel, government and manufacturing.

CSB: What are the key challenges (technical, business adoption or other) that need to be addressed in order to achieve pervasive use of web services?

OASIS: Web services cannot be deployed without open standards. The role of OASIS is to ensure key Web services standards are developed the right way--through an open process, with the widest possible representation, in coordination with related specifications, at a speed that meets the needs of the market.

W3C: The market needs:

A clear, vendor-neutral architecture to which customers can refer. The architecture needs to be able to evolve over time.

A coherent suite of high-quality, interoperable specifications.

Clear IPR terms providing for royalty-free implementation of the specifications, without burdensome licensing provisions.

A migration path which from the use of current proprietary specs to the use of non-proprietary specs is developed within standards bodies.

CSB: Anything else we should know?

W3C: The way work is done, and the goals of organizations, vary widely, even in the area of Web Services. It's W3C's belief that the success of Web Services rests in its first name - Web. Not one or two vendors' views of it, but what has brought us here in the first place: elegant simple protocols, supporting a decentralized model that all can build upon. After 9 years of developing Web Standards, W3C has a track record of successful completion and adoption of web technology work among what are often competitive entities. We've seen in other tech/Web sectors what happens when the marketing outruns the technical results, and it's our Members' goal not to see a replay of that in WS.

IV. Other Views

In a recent interview with Computerworld, W3C Director Tim Berners-Lee observed that standards groups are "very different places." But does the same observation apply to standards? In other words: are some web services standards "different" from other standards in a way that indicates one organization rather than another should develop and control them? And if so, which ones?

David Schell, the founder, president and standards visionary of OpenGIS Consortium, thinks that some web services standards indeed are different. He endorses the view that those who set foundational standards involving the Web should take the public interest into account, whether that organization is a consortium or an accredited organization that follows the formal ANSI process. In fact, in his view, the W3C has a process which is more open than would be required by ANSI to obtain accreditation. He particularly approves of W3C's public comment processes and (now) codified IPR policy which makes it extremely unlikely that a royalty-bearing specification will be adopted.

At the same time, Carl Reed, OpenGIS' Executive Director of Specifications Programs, notes that not all web services standards require the W3C approach. He summarizes the starting positions of W3C and OASIS as follows:

W3C Vision: The World Wide Web Consortium was created to lead the World Wide Web to its full potential by developing common protocols that promote its evolution and ensure its interoperability. Its long-term goals for the Web are:

- **Universal Access:** To make the Web accessible to all by promoting technologies that take into account the vast differences in culture, languages, education, ability, material resources, access devices, and physical limitations of users on all continents;
- **Semantic Web:** To develop a software environment that permits each user to make the best use of the resources available on the Web;
- **Web of Trust:** To guide the Web's development with careful consideration for the novel legal, commercial, and social issues raised by this technology.
- **W3C and Web Services:** W3C works on defining the architecture as well as the core technologies for Web services. The goal of its Web Services Activity is to design a set of technologies fitting in the Web architecture in order to bring the development of web services to its full potential. The goal of the Web Services Architecture Working Group is to identify the building blocks and how they interact with each other.

OASIS Vision: OASIS is a not-for-profit, global consortium that drives the development, convergence and adoption of e-business standards. Members themselves set the OASIS technical agenda, using a lightweight, open process expressly designed to promote industry consensus and unite disparate efforts. OASIS produces worldwide standards for security, Web services, XML conformance, business transactions, electronic publishing, topic maps and interoperability within and between marketplaces.

A bit on BPEL: Web Services Business Process Execution Language TC

The purpose of the Web Services Business Process Execution Language TC is to continue work on the business process language published in the Business Process Execution Language for Web Services (BPEL4WS) specification in August 2002.

As you can see, OASIS is about the development, convergence and adoption of e-business standards. They primarily use specifications and tools developed by the W3C. The W3C vision is to lead the World Wide Web to its full potential by developing common protocols that promote its evolution and ensure its interoperability.

With this as a starting point, Reed analyzes the situation as follows:

W3C is not necessarily the place for all Web Services work. The W3C has traditionally worked in the area of core tools/standards for building applications on the Web, maintaining and enhancing the infrastructure of the Web (e.g., XML, HTML, SVG and SOAP). OASIS and the OGC, on the other hand, use the standards/tools developed by the W3C membership (and vendor provided implementations) as a foundation on which to build domain specific standards. The OGC deals with things geospatial. The OASIS tends to deal with things business (process, value chains, business content encoding, etc). The one possible area of overlap contention is UDDI, which should probably "belong" to the W3C process.

Given the respective histories and areas of expertise of the various standards organizations, OASIS is most probably the correct home for BPEL. One (especially the press) can read all kinds of insidious things into this move (IBM/Microsoft are trying to undermine W3C etc) but at the end of the day, W3C does not really deal with solving domain specific interoperability issues. They are developing cross cutting standards that others can build on. It is similar to the fact that the W3C builds upon the infrastructure provided by the hundreds of standards that are the Internet (and which are "owned" by the IETF).

At the end of the day, of course, there may be no "best" place for every standard. And while there may in a given case be a standard setting body that might commonly be acknowledged to be most appropriate, all will not necessarily be lost if a given effort begins elsewhere. Ultimately, the standards development process is organic, dynamic, and elastic enough that if a standard is important, then the industry will direct its attention towards nurturing that standard wherever the seed may fall.

Disclosure: The author of this article is counsel to OASIS.

***Comments and questions about this article may be sent to the author at
updegrove@consortiuminfo.org***

V. Technical Addendum

OASIS

Additional Web Services standards projects:

OASIS Web Services Business Process Execution Language (WSBPEL) TC
OASIS Web Services Distributed Management (WSDM) TC
OASIS Web Services for Remote Portlets (WSRP) TC
OASIS Web Services For Interactive Applications (WSIA) TC
OASIS Web Services for Reliable Messaging (WSRM) TC
OASIS Web Services Security (WS-Security) TC
OASIS ebXML Messaging Services TC
OASIS ebXML Collaboration Protocol Profile and Agreement TC
OASIS ebXML Registry TC
OASIS ebXML Implementation, Interoperability and Conformance TC

W3C

The WGs and Task Forces at a glance:

(1) XML Protocol Working Group

Start date: 2000-09

www.w3.org/2000/xp/Group

All work on SOAP 1.2 happens here.

(2) Web Services Architecture Working Group

Start date: 2002-01

www.w3.org/2002/ws/arch/

This group identifies the overall architecture, identifies missing pieces, and determines whether new work is needed or existing work (inside or outside of W3C) meets needs.

(3) Web Services Description Working Group.

Start date: 2002-01

www.w3.org/2002/ws/desc/

This group is at work on the standardized version of WSDL - WSDL 1.2.

(4) Web Services Choreography Working Group.

Start date: 2003-01

www.w3.org/2002/ws/chor/

Outside of the W3C WS Activity, there is the W3C Internationalization WS Taskforce, which looks at internationalization issues and how they impact WS applications and infrastructure.
www.w3.org/International/ws/

The W3C XML Signature, XML Encryption and XML Key Management Services Activities have provided the foundation for all security-based work in WS and beyond. XML Signature and XML Encryption have completed their work, and the resulting W3C Recommendations now serve as the basis for many other specs, including the WS-Security Specification first produced by IBM and MS and now being worked on further in OASIS.

The W3C XML Activity has four Working Groups relevant to Web Services: the XML Core Working Group maintains the XML, XML Namespaces, and XML Information Set specifications which define the basis for most Web Services work. The XML Schema Working Group defined the XML Schema language, which defines a standard way to associate conventional datatypes with XML elements and attributes, and which introduces some standard object-oriented concepts into the XML context. The XML Query and XSL Working Groups are working collaboratively on XPath 2.0, which will add type awareness to a core component of many XML applications. XPath 2.0 will be, more or less, the intersection of XQuery 1.0, a statically typed query and manipulation language which can be used for querying XML document

collections and producing results in XML form, and XSLT 2.0, which will be a further development of XSLT 1.0, which is already one of the most widely used and most successful language for XML-based processing.