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THE RISE OF THE METASTANDARD CONSORTIUM

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Abstract: *Most standard setting organizations rightly focus on limited subject matter areas. Historically, there has been no need for sophisticated standard suites, and hence no infrastructure evolved to efficiently create them. But in a modern, networked world, accomplishing a given set of business tasks may require the use of a set of tightly coordinated standards from many different standards organizations. As a result, a new type of organization has evolved to address this situation by assembling standards suites, rather then setting the standards themselves. This article explores the reasons why such organizations are necessary, and describes three of the first such entities to be formed.*

Introduction: The creation of standards has historically been a discrete exercise. A given standard typically related to a single object (e.g., the luminosity of a light bulb, in the case of a performance standard), or at most two objects (e.g., the light bulb and its socket, in the case of an interoperability standard). Standards of a given type (e.g., not only sockets, but electrical plugs, cords, conduits, and connection boxes as well) could be created within a single organization of like-minded individuals that had little need to interface with the standards bodies of other trades.

In the early days of information technology (IT) and communications technology (CT), this was still largely the case. Computer connector specifications could be formed by technical committees within the International Electrotechnical Commission (IEC) that were concerned only with connectors, and radio frequency specification by other technical committees formed within the International Telecommunications Union (ITU). Even with the rise and proliferation of consortia, the situation did not markedly change. Computer connectors might now be specified within a consortium (the PCI Computer Manufacturers Group, or PICMG), but the need for PICMG to maintain working relationships with other standard setting organizations in order for each to do their respective jobs was still limited.

With the increasing complexity of IT and CT, and the convergence of both (ITC), however, this is no longer the case. The advent of the Internet and the Web creates the capability, and therefore the desire, to connect everything with everything. The historical challenge (daunting enough) of achieving interoperability with a network maintained by a single owner has been replaced by the urgent goal of enabling a useful degree of interoperability between the networks, and indeed the individual computers, owned by everyone on earth.

While the standards-based architecture of the Internet and the Web has already achieved this goal at the raw connection level, it does not allow a myriad of tasks to be performed without the use of additional standards, some of which are in existence, and many of which are not. Facilitating the creation, coordination and utilization of standards to enable the easy performance of such tasks is one of the challenges with which industry is currently preoccupied.

Unfortunately, the existing standard setting infrastructure was not created to facilitate this task. IT and CT standards of the type that now need to be assembled to perform a specific task are likely to be set by a variety of standard setting organizations (SSOs), some of which are likely to be consortia and others accredited standards development organizations (SDOs). Equally likely, some of these same

organizations may view each other as competitors. Many will not historically have had any reason to work together. And if they have cooperated in the past, these efforts may not have involved actual joint development projects.

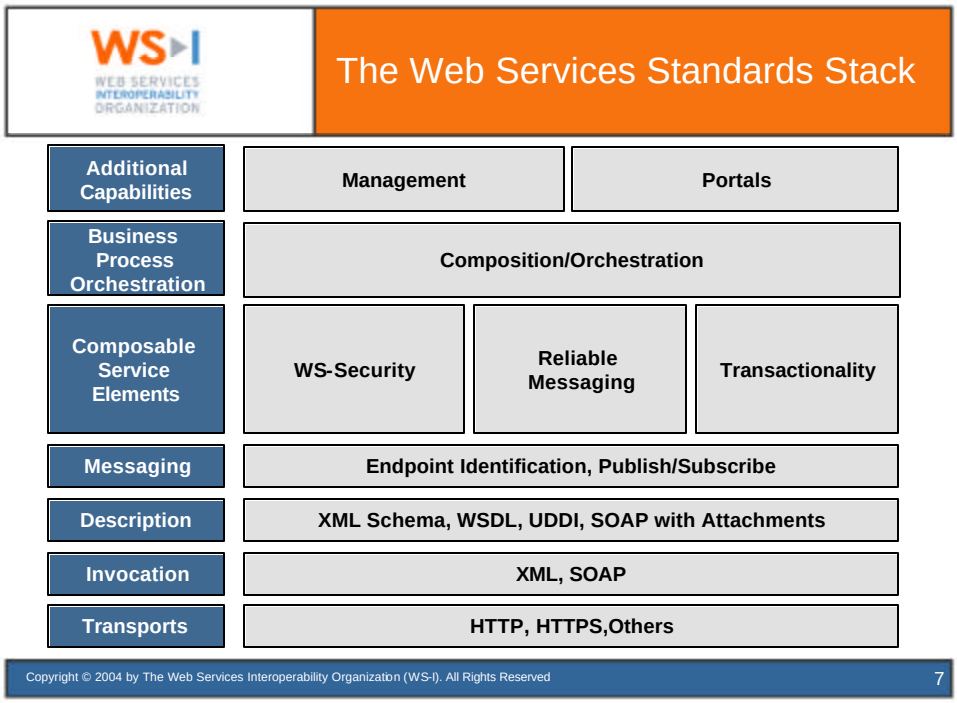
In short, the right tools do the job are not at hand. So how is the job to get done?

A new type of consortium: In an interesting display of innovation, a new type of collaborative effort has been conceived to address this need. This process recognizes the need to assemble and promote a suite of standards to enable the performance of a set of cross-platform tasks, but does not itself create the standards that comprise the suite. Instead, it assembles "roadmaps" or "profiles" of standards that have already been created by existing SSOs, and then identifies them to the industry for implementation as a package in order to do something that could not otherwise easily be done – or done at all.

The new type of organization formed to engage in such a process might best be called a "MetaStandard Consortium," because its output is, in a manner of speaking, still a standard of sorts: a standard made up of standards.

To understand how a MetaStandard Consortium achieves its goals, we will examine three examples: In order of their formation, they are: the Web Services Interoperability Organization (WS-I), Mobile Imaging and Printing Consortium (MIPC) and Network Centric Operations Industry Consortium (NCOIC). [1]

Web Services Interoperability Organization: WS-I was formed to allow a new type of Web-based computing to emerge called "Web Services." Under the Web services model, existing applications become "services" that may be called upon in an interoperable environment involving disparate operating systems. Achieving this goal requires a variety of standards and protocols that had already been developed by consortia such as the W3C, IETF and OASIS prior to the formation of WS-I, as well as the development of many more new specifications specifically tailored to make Web services possible. The WS-I "Web services standards stack" contains seventeen horizontally and vertically arranged modules of standards.



[1] MIPC and NCOIC are clients of the author and his law firm, as is OASIS, one of the key consortia setting the Web services standards discussed below. For reasons of confidentiality, all information contained in this article relating to these three organizations is based on information available at the public pages of their respective websites.

Historically, there would have been three ways to accomplish this task: work within each organization to create the standards that seemed to be most appropriate to be created within that consortium; work within one of the organizations to "build out" all of the missing standards; or start a new organization to do the job. Each of these approaches, however, had shortcomings.

Working within three organizations to achieve a goal that had not been endorsed by any of the organization under a common plan would not be likely to result in a timely, coordinated suite of standards. Working within a single consortium, on the other hand, would not only threaten the other two, but would also not take advantage of the strength of each available organization. Finally, starting a new consortium would have antagonized all three groups, while increasing the likelihood that competing standards would be produced to accomplish some elements of at least some of the same tasks.

While WS-I prefers to refer to itself as an "integrator" that sits "downstream" from the standard setting process, its role has in fact been far more active. Where gaps in the stack exist, the founding members of WS-I have moved aggressively to fill them, by creating them in prototype form and then shopping each one to the organization it deems to be most appropriate to take it to final, consensus-based adoption.

In the more than three years since the launch of WS-I in February of 2002, a veritable blizzard of specifications have been created by the so-called "Men In Black" (Microsoft, IBM and BEA Systems) that have most aggressively committed to the achievement of the WS-I mission. A varying group of additional companies participated in the creation of many of the individual specifications, and each specification was offered to (and, to date, accepted by) an existing consortium, most frequently W3C or OASIS.

In order to jump-start the hoped-for industry-wide adoption of Web services, WS-I has also assumed an active promotional role, and created a variety of tools for implementers to use, including (besides standards profiles) guidelines and conventions for facilitating interoperability, sample applications (use cases, usage scenarios, sample code, and more), testing tools, and white papers. The concept has proven to be attractive: within fifteen months of its formation by nine companies, WS-I membership grew to 170.

In effect, the founders of WS-I conceived a supporting layer of structure both upstream as well as downstream of the actual standard setting organizations rather than seeking to coordinate the creation of the standards from inside the organizations themselves (of which they were already members). These layers permitted the core standard structure needed (in the eyes of the Men In Black) to be built out in record time, and with a coherency not otherwise obtainable.

At the same time, the members of WS-I bestowed upon themselves – and in particular upon the Men In Black -- an unprecedented level of control that they would not otherwise have enjoyed.

Mobile Imaging and Printing Consortium: The goal of MIPC is both prosaic and challenging: facilitating the printing of pictures taken by "mobile terminals," and particularly cell phones. And while that goal may seem ordinary, the economic value of encouraging such behavior for mobile terminal and printer vendors, as well as telecom carriers, is enormous, with some 1.4 billion mobile phones in use worldwide – a number that continues to grow rapidly.

The expected volume of mobile device image printing was predicted by *InfoTrend* to be five billion pictures in 2004, increasing to *37.2 billion* printed images in 2008, driven by the availability of increasing image capture resolution at decreasing cost, and the fact that 85% of all wireless phones sold in 2004 were expected to incorporate cameras. Future phones are expected to offer zoom lenses, intelligent applications and other enhancements.

While almost all of the basic pieces in the technology chain exist (camera; wireless delivery; software; printer), none of these elements was specifically designed to work effortlessly with the other elements to produce the desired result. Similarly, no single SSO exists that is concerned with more than a piece of the chain that begins with capturing an image with one device, and printing it with another. Thus, while the goal to be achieved is quite specific (printing pictures) rather than systemic (enabling generic interoperability, as with WS-I), the challenges are similar.

In order to solve the problem, Canon, Epson and HP founded MIPC in 2004. Other companies (e.g., Brother, Kodak, Lexmark, Motorola, NEC, Nokia, Samsung, etc.) came on board thereafter. The target acquisition devices were defined as "Mobile Terminals," a term that includes camera phones and PDAs with full telephone capabilities, but excludes laptops (however enabled) and PDAs unable to make long distance connections.

Like WS-I, the output of MIPC is a set of standards (referred to by MIPC as a "Guideline") accompanied by recommendations intended to facilitate interoperability. The target audience for the Guidelines is the developer community, which will hopefully follow the Guidelines in order to enable the "use cases" that the Guidelines are intended to facilitate.

The Guidelines take advantage of multiple existing technical approaches, rather than mandating a single approach. For example, there are three different described methods to connect and print, each using a pair of already existing, deployed standards that were deemed to be most appropriate: Bluetooth using BPP, USB using PictBridge, and memory cards using DPOFA.

Like WS-I, MIPC's activities are promotional as well as technical, in order to encourage wide usage of the Guidelines by developers. To further encourage uptake, MIPC also stages "Plugfests" at regular intervals around the world, at which printer and mobile terminal vendors can test the interoperability of their devices and address any issues that may be discovered.

Network Centric Operations Industry Consortium: The ambitions of NCOIC dwarf even those of WS-I. While (like WS-I) the technical goals that NCOIC are generic, they are (like MIPC) specific to a given objective: making the United States Defense Department's vision of the military of the future possible. Or, as stated at the NCOIC website, to help "accelerate the achievement of increased levels of interoperability in a network centric environment within, and amongst, all levels of government of the United States and its allies involved in Joint, Interagency and Multinational operations."

At the macro level, this envisions an enormous, interoperable network accessed by hundreds of thousands of simultaneous users. At the micro level, it would mean that the data from a single battlefield sensor would be immediately known, and available to, all those on the network who have appropriate access rights, from the Humvee driver approaching the same sensor, to the Chairman of the Joint Chiefs of Staff thousands of miles away. The name given to this vision is "Network Centric Operations" (NCO), and the architectural challenges that must be addressed to achieve it are considerable.

The NCOIC was formed in August of 2004 by 28 companies, including many of the largest defense contractors in the United States (e.g., Boeing, General Dynamics, Lockheed Martin, Northrup Grumman, and Raytheon), as well as a broad range of the largest hardware and software companies (e.g., Cisco, EMC, HP, IBM, Oracle and Sun).

The planned deliverables of NCOIC fall into several categories:

- An analysis of "pertinent government agency architectures, capability needs and mandated open standards" to identify what is working, what isn't, and how the situation can be improved.

- An evaluation of NCO architectural work already in process, involving initiatives such as GIG (Global Information Grid), NCOW (Net-Centric Operations and Warfare Reference Model), ForceNet (a Navy initiative focusing on the acquisition, sharing and usage of information superiority to "generate transformational combat effectiveness"), and LandWarNet (the Army's portion of the GIG), among others.

- Developing and defining an NCO Reference Model.

- Assisting government agencies in developing a "secure information management overarching architectural framework/reference model"; identifying appropriate open standards and how they are currently being used; assessing available interoperability techniques in the NCO context; supporting "reusable long-term solution models that can be scaled and/or replicated, rapidly and

cost effectively, for every enterprise"; and identifying the "widest possible community of open standards-based product types" that can be used to rapidly achieve a conversion to NCO.

- Developing standards to fill gaps through NCOIC Technical Working Groups.

- Promoting increased awareness, adoption and use of identified open standards and accelerate the move towards NCO.

The schedule for completing these deliverables is ambitious, and multi-day, face-to-face meetings are held at frequent intervals. Not surprisingly, the NCOIC expects more from its members than do most consortia that actually set standards as their primary focus. The highest level of NCOIC membership bears not only a dues obligation of $150,000 per year, but the requirement of providing the services of multiple "full time equivalent" (FTE) employees as well. The next level of membership costs $75,000, and also entails an FTC equivalent. A third tier of membership, with reduced privileges and commitments, is available to corporations for dues ranging from $3,000 to $25,000 (depending on member revenues) and to Academic and non-profit members for only $1,000.

Conclusions: MetaStandard consortia provide a highly targeted solution to the inability of the current standard setting infrastructure to meet the highly complex challenges of a modern, networked world. At the same time, however, the need to form such an organization necessarily results in delay in meeting market needs, as well as increased cost for those that must form and participate in them.

The rise of this new type of organization mirrors the evolution of the standard setting consortium some twenty years ago, which also resulted from the perceived inadequacy of the existing infrastructure to meet the standard setting needs of the information technology industry in a pre-networked world. Now, with the advent of the Internet and the Web, the consortium infrastructure itself is proving to be insufficient to meet the needs of those that initially created it.

The recognition that SSOs, like their corporate members, can become trapped in technology "stove pipes" is an important one, and the creativity demonstrated by those that have developed the concept of a MetaStandard Consortium to address that issue is to be commended. Experimentation will doubtless continue, with each organization taking somewhat different approaches as "best practices" evolve, either generally or for particular types of circumstances. Creating guidelines and profiles of standards that already exist (as do MIPC and NCOIC) is pragmatic and sufficient where the standards building blocks already exist, while conceiving and then farming out specifications (as have the core members of WS-I) may be necessary where goals are set before standards efforts have been begun elsewhere.

At the same time, the need to develop and deploy this new type of organization highlights the fact that the technology world has changed, but the infrastructure that creates its standards has not. There is today, due to convergence and the ability of the Internet to link everything to everything, a need for greater collaboration among those that set standards.

While creating more MetaStandard Consortia will help to address this problem on an interim basis, by definition the technique does so on a situational rather than a systemic basis: for every situation where a group of companies takes the initiative to form a MetaStandard consortium, there will be others that will be addressed in a less holistic fashion through a network of liaison relationships.

We think that the rise of the MetaStandard consortium is only a first step in the evolutionary changes that will be needed to fulfill the promises of a networked world. Unless more attention is paid to not only the promise that the future holds, but the limitations that the existing standard setting infrastructure is bound by, our enjoyment of those promises will be delayed.

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For further background, see:

The May 2003 issue of the CSB was dedicated to the creation of Web services standards, and disagreements at the time over who should be setting them. See:

Who Should Set the Standards for Web Services?
www.consortiuminfo.org/bulletins/may03.php#editorial

The Role of Web Services Standards Bodies: In Their Own Words (Interview with WS-I, W3C and OASIS): www.consortiuminfo.org/bulletins/may03.php#featured

New Wine - Old Bottles: WS-I Brings a New Dimension to the Art of Making Standards Succeed:
www.consortiuminfo.org/bulletins/may03.php#trends

MIPC Developer FAQ: www.mobileprinting.org/developers/faq

NCOIC FAQ: www.ncoic.org/htm_about/about_faqs.htm