

The Value of Standards

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INTRODUCTION

When trying to understand the value of standards, you must gain an understanding of standards and the process by which a standard is developed. Standards, while valuable for those who use and implement them, are also in a state of conflict. Even though conflicts, in general, are not good, the conflict found within standards development assists in the definition of the value of the standards. This conflict exists between traditional standards developers, whose process is rigidly defined and slow, and the consortia or coalitions that make use of flexible development processes that result in the standards being made available much faster.

On first glance and from a traditional perspective, you might say that the standards development organizations are the good guys and that consortia are the bad guys. When you look at it from the perspective of the industry or from the user who needs to be able to implement a system that satisfies numerous needs in a complex information technology architecture, you might say that the consortia are the good guys and the standards development organizations are the bad guys.

This chapter will explore the area of standards development by first establishing some common ground for what standards are, some of the benefits they have for manufacturers, producers and users and then will look at the basic process by which standards are developed regardless of whether by traditional developers or consortia. It will conclude with some challenges that will be faced by either type of organization as they move into the future. This will leave the ultimate determination of which standards developer is best to you.

WHAT ARE STANDARDS?

So, what exactly is a *standard*? Webster's dictionary defines a standard as something established for use as a rule or basis of comparison in measuring or judging capacity, quantity, content, extent, value, quality, etc. It further states that a standard applies to some measure, principle, model, etc. with which things of the same class are compared in order to determine their quantity, value, quality, etc.

The Oxford Dictionary of Current English defines a standard as an object, quality, or measure serving as a basis, example, or principle by which others are judged. The International Organization for Standardization (ISO) defines standards as documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics, to ensure that materials, products, processes and services are fit for their purpose.

Similarly, a specification according to Webster's dictionary is a detailed description of the parts of a whole or a statement or enumeration of particulars, as to actual or required size, quality, performance, terms, etc. According to the Oxford Dictionary of Current English, a specification is detail of the design and materials etc. of work done or to be done. Regardless of which definition is used, a standard or specification defines something and all parties involved have agreed to what it defines.

The four basic types of standards include design criteria, dimensional standards, specifications, and test or quality methods. If you were to review a listing of all available standards, you would find that the majority of the standards titles could be classified into one of these four categories.

You can also look at the available standards as formal or de jure standards, industry standards, de facto or market driven or organizational standards. The de jure standards are developed by accredited standards organizations where the standards are developed using rigid procedures. A coalition or consortia of industry leaders who have identified a need in the industry that must be addressed develop industry standards and specifications.

Standards that are considered de facto or market driven are those that have received wide acceptance by the industry. For example, PDF, Portable Document Format, and TIFF, Tagged Image File Format, introduced by Adobe and Aldus, respectively, have become the accepted standard for transmitting documents in non-editable, non-revisable format. This happened not because one organization decided to start sending documents in PDF or TIFF format but because numerous organizations began to use it for this purpose.

While the de jure, industry standards and de facto standards have a far-reaching impact on industry, organizational standards are much more confined to the organization that has identified them for use in their enterprise. An example of an organizational standard might be the standard that your company has for how your logo is to be used, a style guide for formatting letters or drafting business reports or a policy mandating the use of XML schemas. Regardless of the type of standard, standards reflect where the industry is going not where it has been. Therefore it is important that organizations participate in developing standards to stay on the forefront of technology both from a product development standpoint and that of a technology user.

Whether standards are developed using a formal process or not, most all standards development is based on the very important concepts of openness and consensus. Traditional standards development adds due process to this. Openness means that anyone who is interested and may be directly or materially affected by the potential standard must be allowed to participate in the development process. By being open, standards involvement protects the interests of a manufacturer or producer while protecting the user's investment.

This also means that there should not be any constraints such as fees or organizational membership requirements for participation. An additional facet of openness is providing timely and adequate notification of actions to be taken with regard to the standard being developed or maintained as well as notification of meetings so that participants can attend and be well prepared for the discussions. Due process means that any person or organization with a direct and material interest has a right to participate in the development of standards and express their point of view. This allows for equity and fair play in the process. Consensus means that the representatives of the directly and materially affected interest categories have reached substantial agreement. This signifies the concurrence of more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution.

Consortia, to some degree, embrace the concepts of openness and consensus that are key concepts of the traditional process while remaining market driven. However, they may not make use of due process or maintain a balance between interest categories that ensure industry acceptance of the standard.

Within the United States, there is an additional quality for standards development, that of being voluntary. This means that individuals and companies that participate in the development of standards do so on a voluntary basis. In other words, there is no governmental mandate that a company or individual must help develop a given standard. Likewise, there is no such mandate that a company or individual must use the standards that are developed. Unfortunately, this voluntary nature may not be so in other countries and can potentially impede the implementation of standards.

In the last few years, the conflict between the importance of traditional standards and the work produced by consortia has heightened. Nowhere is this more apparent than in the technology area. New technology is constantly being developed and more rapidly than ever before. Enhancements to existing technology are being introduced daily. Many believe the importance of formal standards is waning because it takes so long to produce a standard and that frequently the standard is made available just as interest in the technology is declining. Software can be developed and available for purchase in less than eighteen months while the development cycle for traditional standards may be measured in years. This is due largely to the fact that traditional standards attempt to take into consideration the views and opinions of all the parties who might be affected by the standard once it is published.

Consortia standards development efforts were initiated to address the market needs especially that of timeliness of standards developed. Here groups of interested, highly concerned people assemble based on an identified problem. Through their discussions, a stan-

dard or specification is developed that addresses the problem. They either continue on a related problem or disband.

Standards, regardless of who develops them or how, must guide the emergence of new technology. They must reflect the technology to come not the technology that is already in place.

PARTICIPATION IN STANDARDS EFFORTS

In order to participate in standards development efforts, you do not have to be a scientist or professor. However, the more knowledgeable of technology and business processes, as well as, the business and strategy of the company or organization being represented, the more value you bring to the effort. Much of the development process is communications based. Therefore, possessing excellent oral and written communication skills is a requirement. In this way you will be able to express a concept orally and write the detailed specifics for the standard.

Writing skills are very important in standards work. Not everyone can be in attendance at all meetings where the standard being implemented is discussed. Members of the team drafting the standard have the benefit of having participated in the discussions so they have an added understanding that, if not conveyed in written text, can be a problem to those implementing the standard. To be of value, the standard must be exactly worded, very detailed and specific.

The ability to influence and negotiate, to ensure a particular issue is addressed or a concept is accepted, is also important. Not everyone on the team will share in a specific point of view. However, they can and must come to a common ground of understanding in order to develop the standard, which is where the skills of influence and negotiation come into play.

Standards work can be used as an opportunity to build or use leadership skills through taking on a specific role in the committee. The basic committee roles are chair, editor and representative / participant. Each role is equally important to the outcome of the committee but each has differing responsibilities and/or requirements that must be fulfilled. Depending on the organization, these roles may have different titles but the basic concept is the same.

STANDARDS ORGANIZATIONS

There are several types of organizations that develop standards. Two basic types of standards development organizations exist, accredited standards development organizations or coalitions and consortia. Industry groups are another type of standards organization. These organizations are important to developers because they educate the industry and promote the use of standards, but do not actually develop standards.

An accredited standards organization develops standards according to a rigid set of established procedures. These procedures ensure

that the principles of openness and due process have been followed in the approval procedure and that consensus of those directly or materially affected by the standards has been achieved. In the United States, the American National Standards Institute (ANSI) is the central body responsible for the identification of a single, consistent set of voluntary standards.

Similar organizations exist in other countries, for example, British Standards Institute (BSI) for the United Kingdom, Deutsches Institut für Normung (DIN) for Germany, Japanese Industrial Standards Committee (JISC) for Japan and others.

Virtually every country has a standards organization that protects national interests at the international level. Each of these organizations accredits other standards development organizations to develop standards on their behalf such as the American Petroleum Institute (API), AIIM International (AIIM), or Society of Automotive Engineers (SAE).

Traditional international standards are developed by ISO, International Organization for Standardization. ISO is a non-governmental organization established to promote the development of standardization and related activities in the world with a view to facilitating the international exchange of goods and services, and to developing cooperation in the spheres of intellectual, scientific, technological and economic activity. ISO's work results in international agreements, which are published as International Standards. Each of the national standards organizations listed above, as well as many others, are members of ISO.

In the mid-1990s, consortia and coalitions began to address technology's increasing need to produce standards in a timely manner. Groups like the Workflow Management Coalition (WfMC), the Object Management Group (OMG), DMA (Document Management Alliance), ODMA (Open Document Management API), and the W3C (World Wide Web Consortium) came into being. These organizations were assembled to develop standards to satisfy a very specific need in the industry. Their efforts were international rather than nationally focused with participants from many countries.

The following are some of the coalitions and consortia, which while formed to address other issues, are working in the workflow or business process arena.

- **Workflow Management Coalition (WfMC)**
The Workflow Management Coalition (www.wfmc.org) is an international organization of workflow vendors, users, analysts and university/research groups. The coalition's mission is to promote and develop the use of workflow through the establishment of standards for software terminology, interoperability and connectivity between workflow products.
- **World Wide Web Consortium (W3C)**
Developing common protocols that promote the evolution and ensure the interoperability of the World Wide Web is what the W3C

(www.w3c.org) was created to do. In the area of standardization, the W3C produces specifications that they call "Recommendations" that describe the building blocks of the Web.

- **Object Management Group (OMG)**
The OMG (www.omg.org) was formed to create a component-based software marketplace by hastening the introduction of standardized object software. The organization's charter includes the establishment of industry guidelines and detailed object management specifications to provide a common framework for application development. Conformance to these specifications makes it possible to develop a heterogeneous computing environment across all major hardware platforms and operating systems.
- **Organization for the Advancement of Structured Information Standards (OASIS)**
OASIS (www.oasis-open.org) is an international consortium that creates interoperable industry specifications based on public standards such as XML and SGML, as well as others that are related to structured information processing.
- **Internet Engineering Task Force (IETF)**
The IETF (www.ietf.org) is a large, open, international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet.
- **RosettaNet**
RosettaNet (www.rosettanet.org) is a consortium of leading information technology, electronic commerce, semiconductor manufacturers and solution provider companies working to create, implement and provide open e-business process standards.
- **Business Process Management Initiative (BPMI.org)**
BPMI (www.bpmi.org) is an organization that empowers business processes that span multiple applications and business partners, behind the firewall and over the Internet. Its initiative was established to promote and develop the use of business process management through the establishment of standards for process design, deployment, execution, maintenance, and optimization. This organization develops open specifications, assists IT vendors for marketing their implementations and supports businesses for using business process management technologies.

In addition to these organizations that develop standards, there are the industry groups that exist solely to promote standards and educate the industry on the technology and standards. Two of these types of organizations that promote and support the standards development efforts are WARIA and the Business Internet Consortium.

- **Workflow And Reengineering International Association (WARIA)**
The charter of the Workflow and Reengineering International Association (www.waria.com) is to identify and clarify issues that are common to users of workflow, electronic commerce and those who are in the process of reengineering their organizations. The

association facilitates opportunities to discuss and share experiences freely while promoting the standards efforts of related organizations such as WfMC and BPML.

- **Business Internet Consortium**

(www.businessinternetconsortium.org)

The Business Internet Consortium is an open industry group comprising leading e-business technology providers and end users. The mission of the Consortium is to accelerate the transition to e-business. To achieve this mission, the Consortium serves as an open forum for the exchange of ideas, provide architectural direction and recommend standards and best practices.

While most of these groups continue to be in existence today, some, like DMA and ODMA, have determined that the goals they set out to accomplish when they were created were met and have disbanded. When a consortium disbands, it provides new challenges to the industry. Specifically, these challenges deal with the availability and maintenance of the standards work created by the disbanded organization. In some cases, these challenges can be overcome through the use of Open Source where the standards work is placed into public domain. Some disbanded organizations have placed their specifications into open source with the hope that the standards will continue to live and evolve while making them very accessible to those who need them the most, the product developers.

PROCESS

When looking at the various standards organizations, whether they are de jure or coalition or consortium standards organizations, there are many similarities that can be found in the process by which they develop the standards. Standards efforts usually begin with a project proposal that identifies the scope of the work, potential participants in the effort and an assessment of the market relevance of the work. The market relevance is important in determining whether work on the project should take place. If the proposed standard cannot be viewed as being of value once completed, there is no need to expend resources to create it. Additionally, the degree of market relevance will dictate the speed that the standard is developed.

The standards and specifications produced by any standards organization will contain two types of information, normative text or the 'shall' and 'should' or requirements of the document and informative text. Technical committees are formed typically to oversee the development effort while assisting in the specification of the requirements for the standard. Working groups primarily develop the standard based on the requirements specified.

Differences in the process can be found with regard to the review process specifically, the length of time to allow for the voting process. In most de jure processes, a minimum of 30 days to six weeks is specified in the organization's procedures for the voting period to approve standards. Whereas in coalitions and consortia, most voting is done at

meetings as the items are being identified to be included in the standard or specification. If the vote is not taken at the meeting, then a minimum number of days are designated to conduct an e-mail ballot.

In both cases, a meeting attendance requirement has been established for a member to be allowed to vote. Even among the coalitions and consortia, the number of meetings that are mandatory prior to being able to vote varies from two to three meetings whereas with traditional standards it is one meeting. Once you are a voting member of a committee, in either *de jure*, coalition or consortia standards development, you *must* stay active. This is only natural, because joining a committee but not attending meetings, not voting on documents and not contributing to the documents or discussions will not help your group establish a solid, stable standard.

The traditional standards process is benefiting from consortias' efforts specifically in placing emphasis on market relevance and shortened development cycle times for standards efforts. There is greater emphasis being placed on the statement of market relevance when a new standard initiative is started. In fact, many existing standards are being reviewed and maintained or withdrawn on the basis of market relevance. The traditional standards developers are exploring implementing new techniques and processes that shorten the time to develop a standard without sacrificing the quality and the basic objectives of openness, due process and consensus.

Through the use of the latest technology, additional timesavings have been realized in the development and approval process. More standards committees are holding Internet-based meetings or using chat room capabilities to continue their work between face-to-face meetings. Discussion boards are becoming a more valuable tool to promote the exchange of ideas. Collaborative authoring tools and templates are removing some of the formatting challenges when it comes to drafting a standard. Electronic balloting systems are becoming more widely used in the review and approval of standards resulting in a significantly shorter approval cycle.

Just as we have observed traditional standards development programs changing, we have also seen a tightening of consortia processes with more consortia producing procedures that they use to develop standards and specifications. Another element common to both traditional standards organizations and consortia is accountability where audits of the process are conducted to ensure the standards are being developed in accordance with established procedures.

While standards development in the United States is considered voluntary and is not under the specific control of the United States Government, that is not the case in some other countries. The American National Standards Institute (ANSI) is unique among national standards organizations in that the Federal government does not fund it. The United States has published OMB Circular A-119, Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities from the

Office of Management and Budget (OMB) that establishes policies on Federal use and development of voluntary consensus standard and on conformity assessment activities.

This directive authorizes the National Institute of Standards and Technology (NIST) to coordinate the conformity assessment activities of the Federal government agencies and establishes reporting requirements for participating in standards activities. OMB Circular A-119 directs United States agencies to use voluntary standards in lieu of government-developed standards except where they may be inconsistent with the law or it may be impractical to implement the standards. Through the implementation of this policy the US Government is eliminating the cost of developing its own standards, decreasing the cost of goods procured and the burden of complying with agency regulations as well as promoting and providing opportunities for standards to be established to serve national needs.

FUTURE

As we look to the future in standards development efforts, industry need will continue to drive standards, not only what standards to develop but also how quickly they get developed. The standards process will continue to increase the use of available technologies such as collaborative authoring tools, Internet-based meetings, chat rooms, discussion boards, and others.

In order to remain a viable standards developer, all of these technologies and more will need to be deployed. Gone are the days of using surface mail to distribute documents to meeting participants. In some respects, e-mail and listservs have served their usefulness and may not any longer fit. Real-time collaboration is the only way to satisfy the need. Technology used for electronic balloting and reviewing drafts for approval and drafting and editing tools such as electronic templates will become more readily available to streamline the development process.

In keeping with the theme of reducing cycle times, we will see standards efforts run more like businesses. We will begin to see more strategic planning occurring. Standards projects will be managed strictly by project plans, milestones and due dates to ensure they are brought to market in a timely manner. We will also see more organizations use standards as a strategic management tool to meet their objectives.

XML will become more widely used in standards development. Not only will standards be XML-enabled, meaning that they will contain XML coding as part of the specification, but they will be published using XML. The very nature of XML lends itself to standards documents with its capability to allow various views of the document to be defined. This will allow standards developers to provide all versions of the final approved standard to the industry making it easier for software or hardware developers to maintain products developed using an older version of a standard.

The issue of conformance has been one that standards developers have been addressing but possibly not very vigorously. In the future this will change, with greater emphasis being placed on conforming to standards. In the United States, OMB Circular A-119, discussed above, deals with the issue of conformity and will help to lead the industry into ensuring that their products conform to the standards.

Coordination of standardization efforts will be more important so that history does not have to repeat itself. The Electronic Industries Alliance united companies/manufacturers to support the time division multiple access (TDMA) standard. However, there were some dissident companies that decided to support an informal consortia standard called code division multiple access (CDMA) instead. To further complicate the issue, the Europeans took to the global system for mobile (GSM) communication that resulted in incompatible mobile phone digital formats. This means that your mobile phone will not work in Europe if it works in the United States or vice versa. We need to see standards being accepted and adopted without divergent efforts being initiated.

One of the keys to acceptance and adoption of standards is education. The industry needs to fully understand not only the standard but also the technology. Standards organizations must and will need to adopt the role of educator. They must realize that they are the ones directing the industry. They must also promote their standards work to governments to achieve the adoption and penetration levels to be successful.

CONCLUSION

Standards are needed to allow for interoperability, interchange; global marketing; and compatibility. They promote the rapid development of technology and allow the technology to be upgraded easily and economically.

The future is hard to predict just as it is difficult to determine whether a standard developed by a traditional standards developer or a consortium is better than the other. Given that both the traditional standards developers and consortia bring unique qualities and benefits to the standardization table, they can and will continue to co-exist for some time to come.

We need both consortia and traditionally developed standards to exist and further the development of the technology and push for a higher quality of standards. However, both will need to be flexible to meet the needs of the industry. Both the traditional and consortia standards organizations need you to help them to not only develop the standards but to use them.

Standards are and will remain to be important and to have value to product developers and users alike. They will continue to be a vital part of business and technology as we move forward further into an e-business world. Who and how they are developed is inconsequential; that they are developed is all that matters.

