

Reducing the Costs of Standards Activities



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Overview

The costs of standards work can be significant, with possible totals in the millions of dollars for a single standard. Costs include such things as the standards organization infrastructure, organizational membership dues, and travel for meetings, but the most significant cost is that of the people doing the work of developing the specification. Some amount of cost savings can be realized by streamlining the development and approval process, and costs can be spread by increasing the number of participants. With the most significant costs coming from the time and effort of the participants, however, the greatest amount of savings can come from making the development process more efficient. This is done with a combination of process changes and provision of infrastructure that makes the best use of volunteers' time.

Introduction

The benefits of standards to the marketplace and to society as a whole have been much written about and are generally well understood. Less understood is the true cost of standards – what it costs to develop and approve a standard, and especially who pays those costs.

To the casual observer of or participant in standards activities the “cost of standards” may be the price one pays to purchase a document copy of the completed work. This is indeed one business model used in the standards world, used by many of the international, accredited, or *de jure* standards organizations. Revenue from the sale of standards document can account for half of the organization's revenues, as is the case with ISO¹. With this model the user or implementer of the standard bears some of the cost of the standards development as revenue from the sale of the standard goes to provide infrastructure and staff support for the standards development effort.

But these sales revenues go to the standards organization and not to the developers, and wouldn't normally be large enough to offset any significant portion of the work. Whether the standards organization sells the standards or not the greatest burden of costs is borne by the participants in the standards development and approval activity, as we shall see below.

Participants in the standards development process pay for such costs as

- dues for membership in the standards organization, supplementing the organization's revenues from the sales of standards, and funding the infrastructure and staff support for the activity;
- the time cost of participation (i.e. the salaries and other employment costs of the people who are doing the work of developing, reviewing, and approving the specification); and
- travel and other costs for meetings for standards participants.

¹ Roy Rada, “Consensus versus Speed” in *Information Technology Standards and Standardization: A Global Perspective*, ed. Kai Jakobs, 2000, Idea Group Publishing.

These costs of participation must obviously be offset by expected benefits to the participant; they would otherwise not participate. For some individual participants standards work presents a personally rewarding intellectual or technical challenge. Users may also participate out of a desire to improve the product choices or technical solutions available to them. But for a for-profit company the main motive for participation is an increase in revenue. These “investors” in the standards process will expect a return on their investment. This return may be in the form of

- market creation/expansion
- sale of implementations/products;
- royalties and licensing fees;
- consulting to and co-development with other companies; or
- indirectly through increased industry leadership/reputation.²

Not only will these investors want to minimize their costs, but they will also want a speedy return on their investment; they will prefer to have the standard completed sooner rather than later, giving them the ability to begin collecting revenues and avoid missing market opportunities.³

An additional benefit of controlling costs will be the encouragement of SME and user participation in the standards process, thus broadening the input perspectives and widening the areas of adoption of the completed work. Given high costs of participation the most active participants in many standards organizations will be from large enterprise companies.

So what are the costs of standards work? How much does it cost to develop and approve a standard? And, looking at the standards process from a business perspective, how can the costs to the participants be reduced, and time to market shortened?

How Much do Standards Cost?

How much do standards⁴ cost to develop? There is no one number, given the wide range in size, scope, and the levels of technical complexity of various standards. As desirable as an accurate number would be, it is difficult even to generalize, but perhaps an example or two can help frame the answer and provide a means for determining the true cost of any particular project.

The cost of a standard depends, of course, on a number of variables including the size and complexity of the work, the availability of existing work upon which the standard can be based, the number and quality of resources available to contribute to developing the solution, etc. There

² See also Spring and Weiss, “Financing the Standards Development Process”, in *Standards Policy for Information Infrastructure*, ed. Kahin and Abbate, MIT Press, 1995, p. 304

³ Carl Cargill, *Information Technology Standardization: Theory, Process, and Organizations*, Digital Press 1989, p. 27

⁴ Strictly speaking, a “specification” is the document that describes a technical solution or process, and a “standard” is that same specification once it has successfully completed the approval process. The two terms are often used interchangeably in casual conversation.

is no “one size fits all” price. A published estimate put the cost of developing one of the Ethernet standards at \$10 million⁵. But that’s just one example, and was a fairly complex specification. Obviously some standards will cost less – but some may cost more.

To help understand what the costs could be, let’s examine the individual costs that go into developing and approving a standard, including

- membership dues or participation fees paid by participants to the standards organization;
- costs associated with the salaries and support for technical resources (people) involved in developing the work;
- travel costs for attending face to face committee meetings;
- infrastructure costs such as email lists, web pages, telephone conference calls; and
- clerical and administrative costs of the standards organization, including for the administration and oversight of the technical process, conducting of public reviews and organizational ballots, and publication of the completed work.

Almost all of these costs are borne either directly or indirectly by the participants in the standards activity. The first three items are paid directly by the participants, and while the last two come from the standards organization they are provided in return for the payment of dues paid by the organization’s membership.

As an example of what it could cost to develop a particular standard, let’s consider a hypothetical standards activity consisting of 20 engineers employed by eight different companies, with each of the companies paying \$15k in membership dues to the standards organization. To be fair we should take into account that each of these companies is participating in – let’s say three – other technical activities within the organization.

$$\$15,000 \times 8 \times .25 = \$30,000$$

Let’s also assume that these 20 engineers are working for three years to develop a specification, and are each devoting an average of 20% of their time to the project. We’ll assume further that the fully burdened personnel cost of an engineer, including salary, benefits, office space and equipment, etc. is \$150,000/year. This gives us the following cost for technical resources for the development project:

$$\$150,000 \times 20 \times 3 \times .2 = \$1,800,000$$

(You should notice right away that membership dues is a relatively minor cost of participating in standards work, compared to the cost of participation.)

⁵ Spring and Weiss (1994) quoted in Petri Mahonen “The Standardization Process in IT – Too Slow or Too Fast?” in *Information Technology Standards and Standardization: A Global Perspective*, ed. Kai Jakobs, 2000, Idea Group Publishing.

Additionally, the committee developing the standard meets face to face four times a year. We'll estimate the travel costs at \$2000 per person per meeting, and throw in an extra \$2000 for meeting space and food. The time cost for the participants will be assumed to be included in the figure above.

$$((20 \times \$2000) + \$2000) \times 4 \times 3 = \$504,000$$

As noted above, the infrastructure and clerical/administrative costs provided by the standards organization are paid through membership dues, which have already been counted.

The total cost for developing our hypothetical standard is

$$\$30,000 + \$1,800,000 + \$504,000 = \$2,334,000$$

That's just for the development effort, the first phase of the work. The second phase would include the costs associated with the approval of the work including public and member reviews and voting. This could add a cumulative hundreds or possibly thousands of hours of additional work by technical people, increasing the costs even further. There is also the administrative processing and preparation for publication, though as this is done by the standards organization's staff these costs are covered by the membership dues or participation fees already included.

You should scale these numbers up or down, of course, based on the size and complexity of the specification being developed, or known factors such as the number of participants and amount of time, etc. For example, the ebXML family of standards, now ISO 15000, was developed through a joint initiative of two organizations (OASIS and UN/CEFACT) over a two-year initial time period (1999 to 2001), with over 600 participants in six working groups⁶. The cost of this project was in the tens of millions of dollars by the time of its initial ISO approval in 2004, and to date the specifications continue to be developed and maintained by the two organizations.

An additional cost, but one that is not so easy to estimate much less quantify, is the opportunity cost of not doing something else. On the company level, this could be as simple as having an engineer from a company working on an industry standards effort rather than on the company's own R&D efforts. This could be usually be avoided by hiring a replacement for the engineer – that is, if that individual engineer is replaceable. On a larger scale, the cost of the standards organization working on standard A rather than standard B, and the gamble that A will be more beneficial to the industry than B, is beyond the scope of this paper.

How to Reduce Costs

Each of the costs listed above (dues, people, and meetings) have the potential for reduction. Given that the most significant costs above (the people working on the project) are tied to time, it would make sense that decreasing the amount of time required to develop and approve a standard

⁶ Author's personal participation.

would cut the costs of the work as a whole. The adage of “time is money” is as true in the standards world as elsewhere. Speeding up the standards process also has the benefit of decreasing the time to market, thus taking advantage of market opportunities, and speeding the ROI, which are big concerns for the investor developers. (So for the sake of citing two adages in one paragraph, we’ll add “killing two birds with one stone.”) Further, reducing costs will encourage broader participation by SMEs, academics, users, and individuals without corporate expense accounts.

So, where can we cut time – and thus costs? The steps in creating a standard can be broken down into two phases: development and approval. While there may be some chronological overlap between the two they are still distinct activities.

- The *development process* includes such activities as requirements gathering, scope definition, problem analysis, analysis of existing solutions, initial design, considering and integrating contributions of existing work, solving technical problems, writing of the specification, resolution of review comments, developing examples or sample implementations, developing conformance criteria, etc. All of this is intended to prepare a specification document that is ready for approval as a standard.
- The *approval process* includes voting at the committee or working group level to approve the committee’s charter, approval of the specification at certain stages, sending the specification out for review, clerical/administrative processing, approval at the organizational level, and final publication.

Development of a technical work takes time; that’s all there is to it. It takes time to develop a solution to a difficult technical problem, as well as to solve and come to a consensus on political issues and codify a solution that meets the needs and demands of a variety of participants. But this process can be made more efficient by removing obstacles, streamlining the organization’s technical process, and providing a proper infrastructure.

A More Efficient Approval Process

We should understand, of course, that while the engineers’ time in the example above does not include time for the approval process, they are still “on the job” and waiting for approval, at the ready to respond to comments or to make corrections until final approval is granted. The sooner the approval can occur the sooner they can get on to working on other projects including updates to the specification. And the sooner the standard is approved the sooner it can be put to use generating revenue for the companies who participated in its development.

The steps for approval within a standards organization are defined and regulated by the organization’s technical process document. The number of steps required and the amount of time required by each of those steps all contribute to the overall time required for approval. The time required for creation of a new work activity, specification review cycles, and approval review and balloting can all add a significant amount of time.

Perhaps the biggest time delay is with review and approval. Some organizations will approve standards only at plenary meetings, which may be held only once or twice a year. This automatically adds several months, or possibly even a year, to the length of time required for approval. Perhaps such a practice was necessary when face-to-face meetings were the norm and before electronic communications became so prevalent as they are today, but any organization continuing this practice should examine their process and decide if it is really necessary, or whether balloting could be done electronically.

Allowing time for the review of proposals for new activities, drafts of the specification, and completed work is a good thing. But how much time should be allotted for them? Is six months, for example, really required to review a proposal for a new activity or a draft specification? Human nature is to put things off, so most of the review work is probably taking place during the last few weeks of the allotted period anyway. Certainly provision must be made for other work obligations including business travel and for holidays and vacations, but the organization should be realistic about the amount of time that is really required and not add any unnecessary delays.

There can be a downside to streamlining the process too much, however. Dispensing with *all* of the review and approval cycles would certainly speed things up, but would be detrimental to the quality of the work. A 30-day review may not be sufficient for a lengthy technical document. There is a tradeoff between speed and thoroughness, speed and accuracy, etc. A rushed process can result in the approval of sloppy work, allow errors in the specification document, or prevent all viewpoints from being heard or considered. The organization can lose the opportunity to gain consensus on the specification, and cutting the number or length of review cycles or the number of levels of approval can result in the process being less open.

So while the organization should consider ways to tighten up the approval process to speed the final result, these should be carefully considered with an eye towards retaining the openness of the process and a continued focus on achieving consensus and the quality of the specification. And ultimately, as the approval process is not the most technical resource-intensive part of the entire standards cycle, the organization may wish to look first at improving the efficiency of the development process.

A More Efficient Development Process

As we've seen above, the people working on the development of the standard comprise the greatest cost of the standard, so obviously this is the area where the greatest cost savings could be made. On the assumption that the development of any new technology requires some amount of technical input, cutting the number of people actually contributing to the project won't necessarily speed it up. So the best way to approach this is make a more efficient use of these peoples' time and effort.

Prior Planning

The organization's technical process document usually defines how the technical committee or working group does its work, or this may be left to the group itself to make up as it goes.

Whether defined or not, certain best practices will help make the most efficient use of the volunteer technical resources within the committee.

In order to avoid restarting or having to change directions mid project, the committee participants should begin their work by defining use cases, problem statements, and requirements before starting development of the specification. Existing related or overlapping work should be identified, and a plan for reference, reuse, and/or avoiding duplication created. The committee's scope and deliverables should be defined. All of these items will provide a roadmap for the committee's work, contribute to the efficiency of the work, and contribute to the later adoption of the specification as the committee avoids the "solution looking for a problem" syndrome.

Areas of Competence

In any committee or working group there will always be some, usually small, number of technical experts who do most of the work and are most actively contributing to the development of the specification. There will be a much larger number of people who are only interested in providing input or comment, or simply watching the progress of the work.

To promote efficiency, make the best use of respective talents and competencies, and above all to prevent people from getting in each others' way, the standards organization may wish to consider structuring the technical committee such that various aspects of the work are assigned to various subcommittees. Subcommittees could be created for the technical specification itself, for implementation guidelines, creating proof of concept implementations, certification tests, interoperability tests, education, promotional activities, etc. Subcommittees would all report back to the parent committee, where all participants can review each of the subcommittees' work, but participants would concentrate on their areas of competence.

Coordination

The standards organization should establish a coordination committee that tracks the scope and status of the work of each of the various technical committees or work groups. The coordination committee should also be aware of the activities of other related standards organizations, and may be responsible for establishing informal relationships, formal liaisons, or joint activities. Internal and external coordination of the organization's technical activities will discourage duplication and to promote reuse of technical work products.

Patent Policy

Finally, it is important that the committee members know from the beginning what licensing restrictions may exist in their area of work. This will help avoid having to start over or change directions, or discovering at the end of the project that the work they have developed is already covered by a patent for which they will have to obtain a license. The standards organization should consider adopting and properly enforcing an *ex ante* patent policy where essential patents that read on the specification must be declared by all participants early in the development process.

A More Efficient Infrastructure

To complement the various changes that can be made to streamline the development and approval processes, the standards organization should also strongly consider the significant time savings that can come from modernizing the infrastructure used by the participants in the development of the specification.

The use of a modern infrastructure, including electronic collaborative tools, will do much to make efficient use of committee participants' and organizational staff's time. Rather than devoting valuable technical resources to performing clerical or administrative tasks, electronic tools can be used to handle such mundane tasks while allowing the individual members of the committee to each do what they do best. (Do technical experts join a committee because they want to do clerical work?)

Email is now being widely used within standards organizations, and most organizations are now also conducting at least some of their meetings via telephone conference rather than face to face. This use of such technologies has made discussions and consensus building more efficient, and allowed a much broader range and larger number of participants.

An organization could go too far, though, by prohibiting face to face meetings simply for the sake of cost savings; such meetings can be very valuable and productive in the discovery and consensus building process. A balance should be struck between the benefits of both types of meetings (face to face and electronic), as well as the costs of benefits of participation.

Less controversial would be the provision of tools that reduce the administrative burden and increase the efficiencies of commenting and editing. Such tools have not been to date so fully adopted by standards organizations. The standards organization should provide tools to assist with the administrative functions within committees and workgroups such as calendaring, keeping meeting minutes, tracking action items and meeting attendance, and administering committee ballots; these functions are usually performed by the committee chair and secretary. Functionality such as collaborative editing, bug/comment tracking, document management and version control will greatly contribute to the speed and accuracy of the committee's editing work.

These tools will make the work of the committee much more efficient. The organization owes it to its members to help them make the best use of their volunteer time during the development of the specification.⁷

The standards organization can increase the efficiencies of its own internal operations by taking advantage of tools for organizational management. The management of membership records, and especially the integration of these records into the technical committee roster, will allow real-time management of the committee activities including determination of participation and voting eligibility. Calls for participation and review, organizational ballots, and IP declarations and

⁷ Additional benefits from providing infrastructure to committees are discussed in Wehnert, "Ready – Set – Slow", in *Information Technology Standards and Standardization Research*, ed. Kai Jacobs, Idea Group Publishing, 2006, p. 144.

contributions can all be tracked and managed using electronic tools, thus increasing accuracy and efficiencies and saving finite organizational resources. It is not unheard of for even a medium size organization to save one or more full time staff headcount through the use of such tools.

The infrastructure, clerical, publishing, and secretariat services provided by the organization to its members are all financial costs that are included in membership dues; making these operations more efficient will not only provide efficiencies to participants but also benefit members by keeping dues costs in check.

In addition to time savings and increased efficiencies, the use of modern collaborative tools provide beneficial functionality that would otherwise not be available to the organization. Record keeping for long-term archiving greatly increases the accountability of the organization to its members and the industry; related proofs of openness, balance, and due process, and audits of the technical approval process by accrediting organizations are facilitated.

Spreading the Costs

Finally, in addition to reducing costs of standards development by streamlining the process and providing a efficient infrastructure, the standards organization and its members should consider ways to spread the costs of standards development over a greater number of participants. While this won't reduce the overall cost (and may in fact increase it), the costs won't be as great a burden for any one particular member.

Increasing the organization's membership could be accomplished by such activities as

- letting the public know what activities are being pursued by the organization, and the status of those projects;
- proactively seeking new members – and a broader scope of members – to participate in the activities;
- making it easier to join the organization, both from a perspective of process as well as membership dues levels; and
- keeping the costs of participation down by balancing face to face meetings with electronic discussions.

Summary

The cost of developing standards is comprised of a variety of factors, but come mostly from the time (and thus salaries) of the participants; all of these costs are borne by the organization's members through membership dues and by providing their employees' time and effort to work on the project.

| Cost | Borne by | Reduced by |
|---|--|---|
| Participation (time and salaries) | Participants | Streamline the development and approval processes using advance planning, division into areas of competence, coordination, and <i>ex ante</i> patent declarations. Make effective use of volunteers' time through the provision of collaborative tools. |
| Travel/meeting space | Participants | Reduce the number of face to face meetings by providing collaboration tools for committee |
| Secretariat, administrative, infrastructure, etc. | The standards organization, which is in turn is funded mostly by participants. | Provide administrative tools for organizational staff |

Standards organizations can benefit their members by reducing the costs of standards development and approval. This is done by streamlining the technical process, and more especially by providing a modern technical infrastructure in the form of integrated collaborative tools such as email, collaborative editing tools, document versioning and management, archiving, bug tracking, calendars and action item lists, integrated membership and committee rosters, and electronic balloting. Such tools make the best use of both organizational staff time as well as the volunteer technical resources that are working on the specification.

| Development/Approval Process Step | Made more efficient by |
|--|--|
| Formation of committee; chartering of work | A specific and detailed charter defines what is in and out of scope, focusing the work of the committee. |
| Requirements gathering, defining use cases, search for existing work | Requirements define the problem to be solved, avoiding scope creep. Identification of existing work prevents "reinventing the wheel" and avoids IP problems. |
| Development of specification | Use of collaborative tools such as email, collaborative editing, document versioning, etc. |
| Review of specification | A streamlined process for reviews allowing sufficient but not excessive time. Use of tools such as email announcements, web pages for distribution of the specification and the collection of comments, and comment tracking/mgmt tools. |
| Committee approval of specification | Use of tools such as email announcements, rosters for determining voting eligibility, and electronic balloting. |
| Organization review and approval of specification | A streamlined process for reviews allowing sufficient but not excessive time. Use of tools such as email announcements, rosters for determining voting eligibility, and electronic balloting. |
| Publication and Implementation | Developers providing sample implementations, guidelines, conformance tests, etc. |

The end result of these improvements to the development/approval process, and the provision of modern collaborative tools to the committee by the standards organization will be more efficient use of participants' time, which leads to reduced costs and quicker time to market for the specification, both of which lead to an improved ROI to the "investor" developers of the standard.

Additional Resources

Various online resources are available which provide additional information for organizational management considering these issues. The web sites at www.kavi.com and at www.consortiuminfo.org both contain excellent information.

Kavi Corporation, the industry leader in tools and infrastructure for standards setting organizations and industry consortia, also offers Strategic Best Practices Consulting for organizations seeking to improve their policies and processes in the areas of organizational structure, membership policies, technical process, adoption activities, etc.

About the Author

Karl F. Best is Director of Strategic Consulting at Kavi Corporation where he advises standards organizations and industry consortia on organizational policies, technical process, and other best practices. Karl has been a participant in and administrator of various international standards activities for over fifteen years. He has organized and spoken at numerous industry conferences and events related to standards activities.