

Shaping IT Through Participation in Standards Setting - A Practicable Alternative for Users?

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Abstract

The paper presents and discusses some findings from a survey of multi-national corporate e-mail users. After a brief description of the methodology used is followed by a discussion of users' opinions regarding active participation in the standards setting process, as revealed by the survey. Relations between the different stakeholders of the process are identified, and the specific differences between large users and SMEs are discussed, as is the issue of why, how, where, and when to participate. Finally, in order to make sure that standards actually meet the user community's diverse requirements, a new standards setting process is proposed.

1 INTRODUCTION AND MOTIVATION

For some decades now Information Technology (IT) has been at the heart of virtually every organisation. More recently, electronic communication services started playing an extremely crucial role. This holds particularly for electronic mail (e-mail), which provides a fast, efficient and function-rich alternative to letter, facsimile, and telephone, and which establishes the technical basis for a number of mail-enabled applications, including particularly EDI (Electronic Data Interchange). Over the last ten or so years three crucial trends in the business world resulted in the need for global, non-ambiguous and adequate standards for communication services. These trends reflect the general development of increased globalisation of and collaboration between businesses, i.e. integration, internationalisation, and cooperation.

One of the major developments in the IT sector reflecting these trends was the move from proprietary communication systems - almost exclusively employed until the early eighties - towards 'open' systems - ie. TCP/IP or OSI-based communication networks. However, this represented only the first step towards globally homogeneous, useful and usable communication services. Today, major issues include interoperability between these two communication worlds, full implementation of the respective standards, and, particularly, integration of high-level communication services into existing IT-infrastructure. On the other hand, international standardisation bodies such as ISO and ITU have been struggling to keep in touch with the fast developments primarily triggered by the market. New procedures (e.g. ISO's Fast Track) have been adopted, and new bodies have been founded (such as ETSI, the European Telecommunications Standards Institute) in an attempt to deliver standards specifications in a timely fashion.

From the users' point of view, employing standards-based systems and services represents one way of achieving seamless integration of different components (a

'user' is any organisation employing IT systems, as opposed to those producing or selling them). Using homogeneous proprietary systems, or maybe outsourcing IT functions, may well be considered alternative options. Ultimately, each user has to establish the actual needs and requirements, and decide which path to follow. This paper aims at providing some arguments in favour of the 'standards' path.

The findings presented are based on a survey of corporate users of electronic messaging systems. This survey was part of a larger project aiming to establish the benefits and problems of (increased) user participation in standardisation.

The remainder of the paper is organised as follows: a brief outline of the survey methodology is given in chapter two. The need for voluntary standards, especially in the field of communication systems, as well as what would be likely to happen without them, will be stressed in chapter three. Subsequently, issues surrounding the participation of users in the standards setting process will be discussed in chapter three. Finally, in conclusion, a proposal for a new standardisation process, which takes into account the issues identified thus far, will be outlined.

2 METHODOLOGY - A VERY BRIEF OUTLINE

The survey was done through both questionnaires and open-ended face-to-face interviews. The questionnaire used in both cases comprised four; the topics addressed included: general expectations on, and experiences with electronic messaging services; introduction strategies; end-user related issues; envisaged or planned future developments; functional shortcomings of the systems used, if any, and how they were overcome; and attitudes towards participation in standards committees.

The sampling frame comprised large, internationally operating members of the (European) Electronic Messaging Association (E)EMA. It was assumed that large companies are more likely to be interested in messaging-related issues, as they have an urgent need of seamless global information interchange than e.g. companies operating only within a local environment. It was also felt that membership in these organisations expresses a higher than average degree of interest in the subject. The individual prospective interviewees were senior members of IT departments, and almost all of them were responsible for the respective corporate e-mail system.

The nature of the information sought had a major impact on the design of the questionnaire. For example, the ordering of questions was not that much an issue. Whilst obviously a certain logical structure was necessary (e.g. to avoid switching back and forth between subjects), it did not really matter whether or not questions were answered in the same order they were put. Moreover, the fact that no statistical analysis had to be done rendered subsequent coding unnecessary. Rather, the underlying guiding principle of the questionnaire was to convey as little bias as possible, as it was felt that unanticipated answers were most likely to occur. Taken together, these characteristics suggested the use of open-ended questions.

Twenty questionnaires were returned, representing a response rate of 4%. In addition, thirteen interviews were conducted. Yet, the survey did not aim at yielding statistically significant data, as the nature of the information sought is hardly quantifiable and does not really lend itself to statistical analysis. Therefore, the comparably small sample was considered not too terribly disastrous.

3 USER PARTICIPATION IN STANDARDISATION

Discussions of the issues surrounding the problem of user participation in standards setting have long been high on the agenda of both, researchers and the standards setting bodies themselves. There is a general agreement that user participation is a *sine qua non* for a standardisation activity to be successful, particularly in the field of information technology (see e.g. (ETSI Directorate, 1992), (Hanrahan, 1995), (International Organization for Standardization, 1996)). In fact, to increase user participation is often considered as the panacea for all problems. However, very limited numbers of user representatives can be observed in almost all major international standards organisations. Looking at the list of ITU-T members, for example, is quite sobering in this respect. Within ETSI, the grand total of user group members is seven.

3.1 The Users' View

This section reports the outcome of a survey of large, globally operating users of electronic messaging systems on their perception regarding the usefulness of participation in standards setting, and their respective approaches. Thirty companies were represented in the survey.

At a very general level, three different types of user companies may be identified with respect to participation in standardisation activities:

- Non participants: They form the largest group by far. The reasons for not participating in standardisation typically run along the lines of "*No real benefits*" and "*We are tooooooo busy for the most part*", showing that being active in standardisation is considered not worth the effort.
- Selective participants: Two (comparably small) companies reported activities in sectors they consider as being vital to their core business. However, both acted on behalf of their respective constituencies, thus representing larger market segments, similar to e.g. a trade association. In both cases, standardisation on EDI has been recognised as being critical for the respective business domains, especially as companies in both sectors typically need to communicate with an extremely broad range of business partners and clients. Also in both sectors, there is no single influential entity that could lead a standardisation process. Thus, it seems that a sufficiently urgent need for established standards may well push even smaller companies into the standardisation process.
- Genuinely interested participants: Only one respondent has been active in different standardisation bodies because of identified corporate needs and requirements. In contrast to the companies discussed above these activities were primarily in more general infrastructure related areas (as opposed to specific, business-critical applications such as EDI). It should be noted, though, that this company is a very large and pro-active user indeed, with a track record in IT standards development. Size and global operations, however, do not seem to be sufficiently strong motivators in their own rights.

On the whole, the responses suggest even less interest on the users' side to participate in standards setting than could be anticipated from earlier analyses (Jakobs et al, 1996). Interviewees typically commented that their companies do not see any

business benefits in such activities and are therefore not prepared to spend considerable amounts of money on them. Standardisation is perceived as being too slow and too expensive, with a poor return on investment. Moreover, it is felt that it does not deliver. This view is not really surprising: the lengthy processes often yields specifications which cannot be directly implemented and which, if and when implemented, give no guarantee of interoperability. Accordingly, many firms in the case study simply buy their hard- and software off-the-shelf; they would naturally look to providers and vendors to come up with solutions if problems arise. A typical approach may be summarised as: *“organization is not interested in standards issues, since we purchase software from Microsoft or Microsoft compatible. Thus we are happy to let Microsoft set the standard.”*

This response hints at a distinct ‘not-our-business’ attitude, which could be observed for a number of companies. They do not care how their system is installed, and whether or not any standards-based components are employed at all, as long as the provided functionality and connectivity are deemed sufficient. In particular, depending on just one supplier does not seem to be an issue, despite the well-known potential problems inherent to such a ‘lock-in’ (Williams, 1997). Some companies, though, had identified shortcomings they felt had to be addressed. However, they would not look at standards committees, but try and solve the problems internally.

Most of those users who go to standardisation meetings do so for knowledge gathering. It is likely that this motivation will yield committee members that can be best characterised as ‘observers’ (Spring et al, 1995). Only two interviewees reported a ‘real’ motivation on the side of their companies to participate, i.e. *“To make sure that our business are met.”* Unless users feel their core business interests are at stake, they will hardly spend money on standardisation.

For one company standards committees appear to serve mainly as a platform for pre-development cooperation with vendors - in addition to the motivations given above. That is to say, this company has shifted the contacts with potential vendors, at least in part, from bilateral talks into the standards setting process. This is indeed a pretty clever approach: if products have to be redesigned to meet their needs anyway, why not shift part of the work into the earliest possible stage of product development - standardisation. Moreover, they kill two birds with one stone by making sure that their requirements are considered from the very beginning, whilst at the same time having the vendors’ staff on the committees work towards the company’s goals.

A drawback of applying this approach more widely lies in the fact that only very large and influential users with sufficient purchasing power and a known reputation as being technically sophisticated will be in a position to pursue it. Another potential problem will occur if several such companies, yet with different needs and requirements, follow this approach. Yet, at the same time problems for other, smaller and maybe technically less sophisticated companies would grow, as their specific environments and needs are not necessarily identical with, or even similar to, those of the larger companies. Issues like e.g. scaling and, especially, implementation related problems are crucial for large companies running and maintaining their own communication infrastructures, but will be of little interest to SMEs.

3.2 Relations Between Stakeholders

An analysis of the relations between the different stakeholders in the standards setting process (partly based on evidence from a survey of standards committee members, see

(Jakobs, 1997)) reveals that user ‘participation’ is almost exclusively through a ‘filter’ of vendors and service providers (see Figure 1).

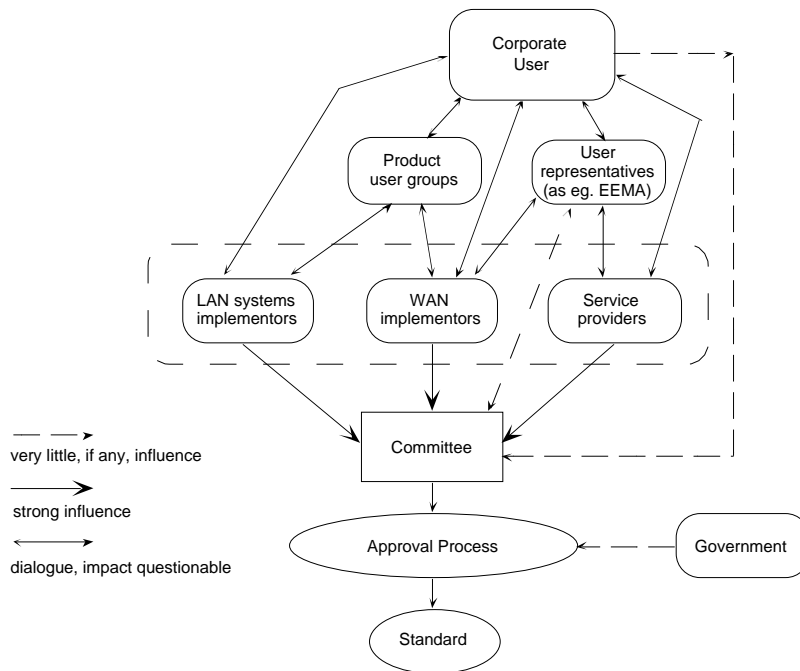


Figure 1: Relations Between Stakeholders in the Standardisation Process (Jakobs, 1998)

This filter, or barrier, between standardisation and users may be supposed to not only absorb at least some of the requirements identified by users, but also to make users consider ad-hoc solutions provided by service providers or vendors. This may(!) well be acceptable if any modifications of an implementation solve the problems in a standard-compliant way. Otherwise, the newly gained functionality may well cause incompatibilities with other implementations of the same standard. In addition, this strategy will easily lead the user into a dependence upon a particular vendor or provider, thus creating a situation standards were supposed to help overcome in the first place.

If users participate at all in standards setting, they will primarily try and push their specific requirements. While typically wishing to have standards-based systems, users at the same time also want to have solutions which are adaptable as much as possible to their specific needs. Thus, clashes are pre-programmed not only between single vendors, but also between vendors and users and, ultimately, between users due to the different needs. Not least in an attempt to circumvent these clashes, and to accommodate their customers, vendors tend to incorporate enhancements into their products to meet actual demand. Similarly, every now and then users tend to design

their own standards, which then eventually compete with their official counterparts. This happened for example in the case of EDI, where the official standard was preceded by, and has to compete with, several sector standards. Ultimately, such activities are likely to undermine the general idea of compatibility standards.

3.3 Large Users and SMEs

A distinction has to be made between large user corporations and smaller ones - SMEs - as they differ considerably in terms of IT and communication requirements, available resources and knowledge. Indeed, it has frequently been observed that SMEs do not normally participate in standardisation, a fact typically attributed to a lack of resources. It follows that measures have to be taken to enable smaller companies to contribute to the process as well. This is all the more important since SMEs are a major cornerstone of employment, and of increasing economical importance in the future (Organization for Economic Co-operation and Development, 1995).

At least in some cases leading edge users, strategically employing state-of-the-art technology to support advanced applications and organisational structures are likely to have clear requirements for additions to existing services, or altogether new ones. They may therefore decide to carry these requirements into the standards setting process. To have a realistic chance of success, however, their efforts should be backed by sufficient resources. That is to say, if leading edge users at the same time happen to be sufficiently large (i.e., for example, Boeing or General Motors) they may well be successful in pushing their requirements through. In contrast to that, one would expect that possibly less sophisticated, and particularly less prosperous organisations will tend to consider involvement in standardisation being just not worth the effort. They will either try to get by on what they have got, to talk to their service providers and/or vendors in order to get 'customised' solutions (with all the risks and problems associated with this approach), or to solve the problems internally by integrating 'home-made' enhancements (with largely the same problems as customised solutions). Moreover, to actively get involved in the standards setting process will probably be regarded as being far too expensive and time consuming for SMEs. What's more, the eventual outcome of such involvement lies too far in the future, and is far too uncertain, as to be of any perceived real benefit.

Major differences between large organisations and SMEs can also be identified regarding adoption and usage of information technology. For instance, the former tend to go for systems based on 'official' standards (those produced by ITU and ISO) if and when available, whereas most of the latter opt for readily available off-the-shelf systems and services, which need to be cheap and easy to install, maintain and use. With respect to e-mail, for instance, this means that SMEs are most likely to use Internet-based services (if there is a sufficiently strong incentive to use that kind of technology at all, that is), or proprietary systems if compelled to do so by e.g. a major business partner. The non-use of services such as X.400 and X.500 by SMEs is largely due to the fact that insufficient knowledge and resources are believed to be available to employ these systems, which are perceived as being extremely complicated to deal with. This is a rather worrying indication that 'official' standards, and consequently the products implementing them, actually fail in adequately addressing the needs of major market segments for simplicity and usability. In fact, this perception, which is quite typical no matter whether or not it is actually justified, may be considered as a major impediment to a more successful uptake of standard-

based systems. With SMEs being a large base of potential customers, it exemplifies an urgent need for simpler standards.

Funding - or rather the lack of it - is another aspect which is of particular importance to the user community. In fact, it is one of the most prominent explanations for users' abstention from standardisation. Active involvement in standardisation not only demands regular participation in meetings; additional time for preparation is also required. A standards worker will not be available to his/her employer for a considerable length of time if the engagement is taken seriously, thus incurring major expenses. Various suggestions have been made if and how funding should be provided to attract more users. Views differ widely in this respect; some claim that no special funding needs to be made available to users because they are already adequately represented on the committees, whereas others argue that additional funding should be made available by interested parties (e.g. governments), especially to enable and promote participation of smaller users.

3.4 Why, What, How, Where, and When

A number of questions directly related to the issue of user participation in standardisation need to be considered. First, why participate at all? After all, such commitment implies major expenses on the part of the user, with a very uncertain return on investment. Yet, users need to recognise that they are the ultimate sponsors of standardisation (the costs of which are included in product prices). Indeed, as customers they have a tremendous hold over the industry (a fact of which they are not necessarily aware). This holds especially in telecommunications, where the benefits to be gained from network externalities will either rapidly attract more and more users, or where their absence will throw a standard into obscurity. Moreover, users will suffer most from inadequate standards. Likewise, they will benefit from well-designed standards addressing real needs; for one, they stand to gain major benefits from backward-compatible standards, which offer a degree of protection against obsolescence. To actually reap these potential benefits, however, direct user participation in the process is essential.

What could users contribute? Two prominent areas may be identified, the most obvious one being their needs and requirements. User requirements are rarely, if ever, specified in a way that renders further discussions, refinements and elaborations in the committees dispensable. Moreover, users do not see standards as a means in itself; rather, they need systems that work smoothly in networked environments, that can easily be interconnected and are interoperable across both, network and organisational boundaries. Their choices will therefore be pragmatic, and standards are only one way to achieve these goals, albeit a very obvious one. This needs to be accepted by standards bodies if they want to produce standards which stand a chance of survival in the market place. As a consequence, these bodies must realise that only business users can provide this crucial input. Taking these thoughts one step further, users need to ensure that not only their compatibility needs be addressed, but also their overall 'computing' needs, i.e. those requirements that originate from their organisational and strategic environments.

The second area is somewhat similar. Users will go through a learning process when employing services. At some stage, therefore, they will be able to contribute their experiences gained from real-life day-to-day work to the process (Foray, 1995). These experiences will eventually bring users in a position to work on the technical

committees, and make contributions well beyond pure requirements compilations (Naemura, 1995). At this point, however, opinions vary. Whilst some subscribe to the view that users are well able to contribute to the technical work, others maintain that the technical nuts and bolts should be left to the vendors (Alexander, 1995).

Having accepted the notion that contribution to standardisation is in the users' own interest, the next issue to be considered is 'how to participate'. Whereas the 'why' has been addressed at length in the literature, this question remains somewhat less touched. In general, though, there seems to be consensus that especially large users, i.e. those with an urgent need for standardised systems or services should participate directly in the technical work. However, especially for smaller companies there are obvious barriers to this form of participation, largely rooted in the lack of sufficient financial resources and knowledgeable personnel. A solution might be that smaller users participate through trade associations or 'user coalitions', they have to organise themselves so they can play an appropriate role in the process.

The standards setting process comprises a variety of different types of organisations, commonly and collectively referred to as 'standards setting bodies'. These include official voluntary organisations such as ITU and ISO, organisations dedicated to the specification of functional standards as well as industry consortia like X/Open or the Object Management Group (OMG). Thus, 'Where to participate?' is another question to be addressed. In most cases 'the standardisation process' is considered something akin to an atomic entity, which cannot be subdivided any further. In particular, rarely is a distinction being made between organisations producing base standards and those in charge of functional standards. However, it is not entirely clear where participation is most beneficial for users. Participation in profile development would be the option of choice if interoperability of implementations were to be assured. On the other hand, there is little point in specifying a profile for a base standard that itself does not meet the requirements.

Finally, when should users participate? This problem is closely related to the question of what users can contribute to standardisation. The two genuine user domains, requirements and operating experience, seem to suggest that the crucial periods of user contributions are prior to, or at a very early stage of, a standards activity (requirements), and either following field trials - which may or may not be part of the process - or after the project has finished and products are available on the market. Whilst these suggestions appear to be straightforward, they will need additional discussion, and most likely some major changes to the standards setting process as such (see chapter 4 below).

4 IN CONCLUSION - A NEW STANDARDISATION PROCESS

From the business process point of view, standardisation is an extremely simple procedure: a perceived need is identified somehow within (or possibly outside) a standards setting body; if a specified number of members subscribe to this view and offer support and commitment a work group or committee is established to provide a technical solution to the problem in question. All standards setting bodies have well-defined rules in place to guide committees from milestone to milestone until eventually the proposal is ready for voting, which is again governed by a set of precisely defined procedures. However, little is available in terms of guidelines for the management of the actual work in the committees, and no policies exist within neither

ISO or ITU or the IETF how to prevent a committee from being dominated by an interested party or group. In an era of multinational companies ISO's 'one country, one vote' balloting approach, for example, seems ill suited; it should not be too difficult for a sufficiently interested multinational to dominate balloting through company representatives on the single national committees, or through 'proxies', who exist in the form of standards consultants.

Moreover, nothing is being done to establish whether or not the perceived need actually justifies the effort. Given that the costs associated with OSI, for example, have been estimated at over \$4 billion (Ferné, 1995) standards setting bodies would seem to be well advised to produce a business case prior to the technical work. A major task, therefore, would be to sell the planned activity to those who would actually have to carry most of the financial burden, and who may be expected to be most interested in the final product, including particularly vendors and users. It is them who need to be convinced of the benefits to be gained from the proposed standard setting activity, and that it is in their best interest to participate and commit resources to it. Issues to be addressed here include requirements compilation and verification, ability to meet these requirements, identification of resources required, expected stability of the standard, likelihood of meeting a window of opportunity, establishment of appropriate liaisons, etc.

To come up with a meaningful set of requirements, however, implies that users know from the outset to what use the proposed new standard will be put within their respective organisation. Whilst this will be next to impossible in most cases, at the very least it implies that corporate strategists need to be involved at least during the stage of requirements elicitation, in addition to the engineers who typically populate standards committee. Likewise, users from different types of companies (including particularly SMEs, as opposed to large organisations), and from different backgrounds have to contribute. Only if users can be assured that their requirements will establish the basis of the proposed standard can their commitment to eventually purchase products based on this standard be secured. In parallel, commitment from vendors to actually implement the standard needs to be obtained. If these prerequisites can be met it will also imply that the need for functional standards and profiles vanishes, which in turn speeds up the overall process, thus reducing the time to market.

Following these 'preliminary' activities, the standards development can commence. Based on the requirements compiled, a technical group develops a draft specification, which is returned to the user representatives for review and, eventually, approval. Ideally, the engineers drafting the specifications would come from both sides, vendors and users, as this would help to keep the specifications in line with the requirements available. There may be several iterations of this sequence, with the proviso that a balance is maintained between evaluation and development. Eventually, the first version of the final specification can be released for implementation.

During the following deployment phase, operational experiences will be gained within a variety of user environments. Eventually, the accumulated experience will be sufficient to identify shortcomings of the specification. The resulting additional requirements identified will serve as input to a second cycle, during which the specification will be enhanced accordingly. Prior to this stage, the specification will be 'frozen', i.e. no changes may be made. Reassessments could be done on a regular basis, thus making standards development more reliable, and easing the task of systems planning for the user community. They would ensure the start of new

specification activities if and when sufficiently strong new requirements emerge. It follows that the user community must have the right to demand the specification of a new version of a standard.

Summarising the characteristics of the proposed model of a standards setting process, it can be noted that a viability analysis preceding the actual technical work should not only make standardisation more efficient, but should also reduce the number of standards, making life easier for both users and vendors. The feedback and monitor mechanisms for users will significantly contribute to standards that meet actual requirements. The price to pay is primarily constituted by the longer overall process. Thus, the time allocated for the technical specification of a standard should be minimised, to enable timely first implementations.

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