

# User Participation in Standards Setting -- The Panacea?

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### Abstract

*Voluntary standardisation bodies regularly issue calls for increased user participation in their work groups. This paper challenges such calls. It suggests that users are not normally in a position to provide meaningful requirements for a new IT service from the outset, simply because of a lack of necessary experience. Second, the paper argues that an unconditional 'call for users', even if it were answered, would probably be counter-productive, in that a simple increase of the number of users on the committees would not necessarily increase the number of user representatives, but of company delegates. This is explained by drawing upon evidence from innovation theory, and survey results compiled through a number of interviews with representatives of both large companies and standards setting organisations. The case of electronic mail is used to illustrate the arguments.*

## **1 INTRODUCTION AND MOTIVATION**

Standardisation processes adopted by the 'official' bodies (e.g. ITU and ISO) are facing an increasing amount of criticism. Typically, these bodies are reproached with operating far too slowly, and thus with not being able to cope with the pace of technological progress, especially in the field of information technology.

As a consequence, a large number of more informally operating industry consortia and fora have been established in recent years, and are about to take on some of the tasks that used to be within the official bodies' domain. Having seen the writing on the wall, and in an attempt to recover some of the lost ground, the official standardisation bodies are trying to improve their standing, for instance by streamlining their procedures, by opening up the process to specifications generated by some external entity (e.g. a company or a consortium), and by establishing liaisons with other specification-producing organisations. In particular, they have regularly been issuing calls for increased user participation in standardisation. In most cases this was an unconditional call, motivated by the

perceived high risk of a standard's failure in the open market if no users were involved in its development. This perception is pretty much in line with the commonly held belief, frequently echoed by standards theorists, that increased user participation is the panacea to many problems ITU and ISO are facing. Yet, in the light of the results of a recently conducted survey, and drawing upon lessons that can be learned from the literature on technical innovations, this claim appears to be in need of critical review.

Regarding the former we will link the corporate 'introduction strategy' typically to be observed in the case of e-mail (as a sample high-level communication service) to users' inability to contribute to standardisation from the outset. Regarding the latter we will argue that user participation at all costs does not achieve very much; in fact, it may rather be counter-productive due to the environment-specific requirements that each single user is likely to contribute.

Throughout the remainder of the paper we will address some general questions relating to user participation in the standards setting process. The typical introduction strategy of corporate e-mail systems will subsequently be discussed, as well as the consequences of the context-specific nature of requirements. The schedules of standards development and corporate system deployment will be compared and the mismatches identified.

## **2 USER PARTICIPATION: WHY, WHAT, HOW, WHERE, WHEN?**

Users may find that they stand to benefit from employing standards-based IT systems in several ways, apart from the obvious advantages that come with agreed-upon international standards and norms in a business environment increasingly characterised by the need to integrate, internationalise and cooperate.

Crucial questions directly related to the issue of user participation in standardisation which need to be addressed include: why, what, how, where, and when to participate? 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 will suffer most from inadequate standards, which will leave them struggling with incompatibilities [Foray 1995]. On the other hand, they will reap major benefits from well-designed standards addressing real needs.

What could users contribute? Two areas may easily be identified, the most obvious one being their needs and requirements. Standards setting bodies must realise that only business users can provide this crucial input [Alexander 1995]. Users themselves need to ensure that not only their compatibility needs are addressed, but also their overall 'computing' needs [Cargill 95], 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 (if the process caters for such contributions, that is) [Salter 1993].

The next issue to be considered is 'how to participate'. In general, there seems to be consensus that large users, especially those with an urgent need for standardised systems or services should participate directly in the technical work (see e.g. [Salter 1996]). In fact, some do. However, especially for smaller companies, there are obvious barriers to this form of participation which are largely rooted in the lack of sufficient financial resources and knowledgeable personnel. Naemura [1995] suggests that smaller users should participate through trade associations. A similar suggestion to overcome these barriers is the formation of 'user coalitions' [Foray 1995], i.e. users have to organise themselves so they can play an appropriate role in the process [OECD 1996].

A variety of different types of organisations, commonly and collectively referred to as 'Standards Development Organisations (SDOs)', are active in the standardisation arena. These include official voluntary organisations such as ITU and ISO, organisations dedicated to the specification of functional standards and profiles like EWOS<sup>1</sup>, as well as industry consortia like X/Open or the Object Management Group (OMG). Thus, 'Where to participate?' is another question to be addressed. Yet, in most cases 'the standardisation process' is viewed in the literature at as something akin to an atomic entity, which cannot be subdivided any further (as e.g. in [Dankbaar and Tulder 1992] and [Cowan 1992]). Participation in profile development, for example, 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 does not meet the requirements in the first place.

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 (experience; see also [Morell and Stewart 1996], where field trials are seen as an integral part of the standardisation process). Whilst these suggestions appear to be straightforward, they require some additional discussion, which will be postponed until the final chapter.

### **3 CORPORATE IT SYSTEMS**

#### **3.1 Introduction and Implementation Strategy**

This section summarise some findings and conclusions from a case study of the introduction, implementation, and subsequent deployment of corporate electronic mail systems. It may be assumed that similar developments can be observed for other distributed corporate IT systems. The study focused on large,

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<sup>1</sup> The European Workshop for Open Systems, now part of the Information Society Standardization System (ISSS).

internationally operating companies (for a more detailed description see [Jakobs et al. 1996]).

For distributed IT systems, such as electronic messaging services, two kinds of barriers to successful implementation may be particularly important. The one most commonly recognised is at the technical level of interoperability, where differences between various proprietary solutions or different generations of technology may mean that systems cannot interoperate, or that some functions cannot be shared. However, another, potentially more significant barrier in terms of the cost and effort needed to overcome it arises from the commitment of end users to their own locally-chosen systems. This after all may represent a substantial investment made by large numbers of people in learning how to use a system and to apply its functionality to their working activities. It may result, for example, in a reluctance on the part of end users to comply with the imposition of organisation-wide, standardised services.

Overall, the results of our study suggest that large, international enterprises do not normally make top-down, strategic decisions about communication services from the very beginning. Two thirds of the study companies saw a combined bottom-up adoption and top-down development strategy, which comprised four distinct phases, 'Introduction', 'Interconnection', 'Interoperation', and 'Integration'. However, today only very few companies have actually reached the integration phase. Typically, the following course of events could be observed.

During the initial 'Introduction' phase a group of employees obtained a messaging tool, either to fulfil a specific work requirement, or bundled in with other software. The new service soon became popular. Slowly, mainly by word of mouth, information about benefits provided spread throughout the department. The number of users increased steadily, though still within the department or site, rather than at the organisational level. However, at the same time very similar developments took place at many sites, resulting in an extremely heterogeneous environment.

Eventually, the number of problems caused by this heterogeneity reached a threshold. Users now recognised the need for an 'Interconnection' of the single systems as they experienced major incompatibility problems. In some cases, there were more than ten different mail systems in use at the same time. The degradation of organisation-wide communication quality was severe and often costly for the company and frustrating for the users. Attempts to institute a top-down development strategy began: a central entity took over and tried to integrate the different services with management backing.

Many of the case study organisations are currently pursuing the third phase - 'Interoperation'. This is a continuation of the top-down development strategy, and is characterised by the introduction of a (more or less) uniform local e-mail environment, interconnected through a messaging backbone which also offers access to the outside mail world. Completion of this step means that a (more or less) homogeneous service will be available for most users, and that the number of different gateways will be minimised.

Finally, the 'Integration' phase, hardly reached in full by any of the companies studied, will be characterised by the recognition of the strategic value of electronic messaging. Most notably, this implies the integration of the corporate e-mail system into business processes.

### **3.2 The Issue of Context-Specific Requirements**

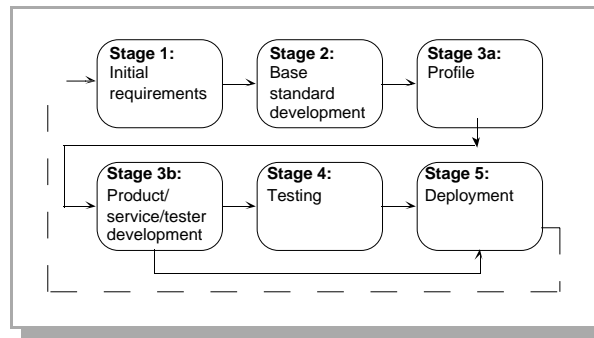
For each company, technologies that relate to its core business and its core competence will naturally attract most interest, particularly if they hold the prospect of a quantifiable return on investment. Here, long-standing, time-honoured traditions characterise the environment, and technical systems as well as production and business processes designed to optimally meet the demands of their specific environment. Accordingly, this is where very specific requirements emerge, which companies may want to bring into the standardisation process. Unfortunately, there is a huge variety of business sectors, organisational forms and business philosophies, the many intra- and inter-organisational interdependencies, and all the differences that come with varying company sizes, not to mention regional or national differences in culture and legislation. It is therefore most unlikely that many coherent 'cross-environment' requirements will ever be identified by a large number of users (except for very generic ones, such as e.g. faster', 'cheaper', 'more reliable').

The study revealed that only a very small group of those WG members who come from user companies actually see themselves as user representatives. Rather, they see themselves as representing their respective employers. It may be concluded that they will accordingly represent a very specific set of requirements. Thus, even if the popular call for more user participation were answered this would not improve the current situation. Quite the contrary: a user attempting to promote his requirements in a standards committee is likely to face resistance from fellow users with very different needs. It follows that actual 'user representation' cannot be achieved through an increased number of representatives from user companies alone.

## **4 THE TIMEFRAMES**

### **4.1 The Standards Life Cycle**

Developing a standard is a multi-stage process, which comprises more than just producing the specification of a base standard, the one activity typically associated with 'standards setting'. Rather, subsequent tasks like profiling, product development and testing have to be considered as well, as has the final deployment. Moreover, user requirements need to be elicited prior to the actual start of the process. A rough sketch of the resulting overall standards life cycle, which covers all related efforts, is depicted in Figure 1. Similar cycle stages have been identified by other organisations as well [Cargill 1995]. It should also be noted that no formal mechanisms exist to verify that the resulting base standards are actually based on real user requirements. We will come back to this issue later.



**Figure 1: The stages of the standards life cycle**  
(adopted from [Reilly 1994])

Producing the base standard is roughly equivalent to stage two, plus possibly a small part of stage one in the above model. Thus, actually developing and writing the base standard accounts for only a small part of the overall development cycle (to some degree the dashed line represents wishful thinking, as no formal mechanisms are in place to provide a means to feed requirements resulting from service deployment experiences back into the process). Roughly at least another four years must be added to cover the other phases.

## 4.2 The Deployment

The time frame of corporate system development outlined above is an important aspect with respect to user involvement in standardisation projects. Only following the interoperation phase, i.e. once the ad-hoc technical problems have been solved, and e-mail has been recognised - and employed - as a strategic tool, and has been integrated into business critical processes, may meaningful, additional requirements be expected to emerge. Unfortunately, according to the case studies, this stage is typically reached after about eight years at the earliest - if at all [Jakobs et al. 1997].

Serious, centrally led exploitation of e-mail started at about the time when the first X.400 implementations appeared on the market. During the preceding standardisation process users were not in a position to contribute much to a requirements compilation. This was despite the fact that they had considerable working experience with e-mail systems. The point here is that these experiences were confined to the use of e-mail within its originally envisaged environment, i.e. as an interpersonal communication system. However, additional requirements only emerge if the system is used outside this environment. In the case of e-mail, this is only going to happen once a company has reached the 'Interoperability' phase. Thus, even if there were a formal mechanism enabling users to provide feedback to the standards setting process, it would only be now that they could start contributing new requirements (if at all), as there still is little experience regarding sophisticated applications' requirements going beyond the limits of today's e-mail systems (as e.g. X.400). We need to realise that in this case the timeframes of corporate system implementation on the one hand, and standards development on the other, simply did not match. It must be assumed that similar situations are likely to occur again.

## 5 CONCLUSIONS

'Users and standardisation' appears to be a rather tricky and complicated relationship. Yet, a standard critically depends on users' participation during its development process, as first-hand information on real-world requirements is essential for it to stand a chance of survival in the market place.

The first problem that can be identified relates to the type of input required from the user community, specifically the non-technical issues that need to be addressed during the design of a useful specification, and the resulting need to bring user managers and strategists to the standards groups (as opposed to engineers, who would know about the technical nuts and bolts, but cannot normally contribute organisational or business process related needs). A major obstacle here is rooted in a communication problem, and in the different perceptions of technology that are frequently held by engineers on the one hand, and managers on the other (see e.g. [Orlikowski and Gash 1994]). To overcome potential communication problems these different perceptions need to be aligned. This requires learning by all sides; engineers need to gain some understanding of the necessary organisational and managerial considerations, and managers need to get an understanding of at least the technical basics.

The implementation of a corporate IT system is far from being a simple and straightforward exercise. Rather, in many cases it starts as a highly distributed process, which only at some later stage becomes largely centrally organised and managed. In the case of e-mail it typically took five to ten years before central IT departments took over, which in most cases happened in the late eighties to early nineties. Since then, only a few of the organisations represented in the case studies have managed to harmonise their system to the planned degree and to actually integrate e-mail into their business processes (if they intended to do so at all, that is). Yet, new requirements emerge primarily when a service is exploited outside its originally anticipated application context [Jakobs 1998]. For instance, only now (after many years of usage) are even the pioneering companies in the study in a position to identify functional deficiencies of their e-mail systems.

One possible alternative considered at this stage - and actually realised by some of these organisations - is to carry the requirements into the standards setting process. It should be noted that this is only happening more than ten years after e-mail was first been introduced in the companies concerned. Obviously, therefore, the 'conventional' role of users in standards setting (i.e. to contribute requirements during the early stages of the process) needs to be reconsidered. Meaningful requirements do not come out of the blue, but are rooted in sound experience. We must conclude, therefore, that initially standards cannot realistically be based on real user requirements simply because such requirements will not normally be available at this time.

User requirements are context-specific; companies from different sectors, of different sizes and different degrees of technical sophistication, and from different cultural backgrounds are likely to develop very heterogeneous needs and requirements. Moreover, we have seen that user representatives see themselves primarily as company representatives. Against this background there

appears to be a need for a mechanism to align the different, context-specific user requirements prior to and, particularly, during the process. That is, the only realistic way to achieve meaningful user representation in the process at all would be through a 'user coalition', i.e. a forum for users where the requirements could be specified, aligned, and subsequently fed into the standardisation process. This would yield the additional benefit of allowing small companies - which typically have requirements very different from those of the big companies - to be represented as well; for them, the costs associated with participation in standards setting are normally prohibitive. Otherwise, there is a real danger that increasing the number of 'user representatives' would primarily mean 'turf wars' not only between different vendors and service providers, but also between users.

To cater for these conclusions, the standards process would need a major overhaul, not necessarily in terms of speed, as the popular claim has it, but primarily in terms of formal channels to enable user input, both prior to, and following the development (as well as implementation and deployment), of systems based on an initial version of a standard. A potential solution might be a quick first implementation based on the - probably very generic - requirements available from the outset, and a limited number of subsequent rounds of refinement, based on real-world requirements obtained through practical use. A channel to enable such user feedback would thus be a crucial enhancement of the current process. It has to be particularly stressed that - contrary to commonly held beliefs - increasing speed will not necessarily be the overriding issue here. Rather, responsiveness to user needs has to be dramatically improved. It should be noted, though, that this does not necessarily hold for all technologies. Development of standards for infrastructure technologies such as, for example, ATM, are likely to benefit from a speedy process.

To summarise: we have found that, while users are desperately needed for a standards setting process to be really successful, it has to be ensured that only aligned user requirements will be fed into the process, and that mechanisms are provided to enable continuous input of requirements that emerge from real-world experiences. At least in IT, therefore, standardisation processes will have to undergo major changes if they do not want to run the risk of becoming obsolete.

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