Networked Organisations – Research into Standards and Standardisation

NO-REST: An FP6 IST Project

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1   Background

Systems supporting e-commerce do not emerge in a vacuum, but are intimately linked with a wide range of existing systems. Their purpose is to ensure effective interoperability between systems that are developed and operated in different arenas of control (in different organisations or in businesses and the home). This means that the issue of technical interoperability becomes accentuated. However, in addition to this there are issues of organisational interoperability, of interoperability of the business semantics and process models. In order to achieve this, one needs to ensure that the way that information is handled at all ends is compatible with the nature of the co-operation. The interpretation and handling of the information transferred through, stored and manipulated by these systems needs to be effectively co-ordinated. This adds another layer of complexity as, again, there is no central authority to enforce such co-ordination. Standards play an important role in this situation, for example, as templates for business processes or in providing mechanism for translation. There may, however, also be severe side-effects of standardisation since it can be expected that inter-organisational technologies exhibit strong network externalities which may lead to unwanted lock-in to particular business models.

The project NO-REST focuses on the study of the evolution of standards, and their implementation, in a dynamic environment, and on the mutual influences between them. To this end, NO-REST will look at the application of standards, and will analyse how standards, and their implementations, are subject to change incurred by the environment within which they are implemented. Moreover, the origin of standards (i.e., SDOs, consortia, etc.) will be analysed with respect to the impact this origin may have on a standard's market success. The environment within which a standard will be implemented has many facets, some of which may change over time. These include, for example, the IT environment, business models and processes, as well as relations with customers, suppliers, and business partners, etc. The implementation of a standard needs to be adaptable to changes in such an environment. As a result, the original implementation will likewise change over time, and may well become incompatible to the original standard. This effect may be observed in many different local environments, potentially yielding a number of incompatible implementations of a standard. NO-REST will analyse this development, and will devise an analytical framework for a causal model of such changes. This, in turn, will help understand the nature of these changes and will allow for the formulation of adequate counter-measures or – even better – for the derivation of conclusions for developing standards in the future and possible mechanisms to feed back these changes continuously into dynamic standards building.

Once the dynamic elements in the life cycle of a standard have been understood, the project will develop a methodology for an integrated impact assessment of a standard. This will be based upon, and integrate, the insights gained thus far. This will enable an assessment of the likely impact a given standard may have in an e-business / e-government environment.

2 Project Tasks - A Brief Outline

Based on the above background and the objectives of the project, the conceptual structure of the project assumes the existence of a market place for standards and standardisation processes. Accordingly, the project will focus on both the supply side and the demand side of standards for networked organisations, and on their interaction, which causes the dynamics of standards. Consequently, the following three aspects of standards and standardisation will be investigated by NO-REST.

2.1 Demand for and Supply of Standards

These two aspects were originally supposed to be looked at separately. However, it soon turned out that, for many considerations, this dichotomy is artificial in standards setting. This is not least due to the fact that the same stakeholders who have identified a demand for standards will also be involved in its supply, by participating in, or possibly even initiating, a standards development process.

Looking at the origins of standards, the institutional setting and the internal mechanisms of the different standards setting bodies (SSBs, including SDOs, consortia, industry fora) have been analysed, as well as various other characteristics which may have an impact on the uptake and performance of a standard in the market place. Since we observe an increasing competition between the different suppliers of standards products and related services, not least caused by the need to cope with the 'dynamics' of standards and the progress in IT infrastructure technologies, new organisations evolved and former traditional 'business' and organisational models are substituted by new – often Internet-based – models. For example, by now even national SDOs have introduced remote access to standardisation processes.

The analysis includes also the adaptability of SSBs in the sense of how well the individual organisations cope with, and possibly influence, changes of the environment within which they have to function. Also, aspects such as the 'credibility' of a standards-setting organisation in a specific technical domain will be analysed.

To complement the above, the project will also analyse the impact of the environment within which networking organisations are integrated. Derived from their objectives, including business models, and the relevant framework conditions, we will derive their demand for standards. Work will also include a study if, and how, the business model of the implementing organisation has an impact on an implemented standard.

2.2 The dynamics of standards

The various factors that impact the emergence and the implementation of a standard are being identified and analysed. These activities also integrate the work described above and the outcome of a critical review of the existing relevant literature.

Moreover, the gradual modification of (the implementation of) a standard through its adaptation to a specific environment has been examined, as well as the resulting feedback to the standardisation organisations and possible further generations of the former standard (if any). Taken together, these research results will yield a good understanding of the dynamics of standards, i.e. how their implementations change over time due to external influences. The new model about the dynamics of standards reminds of the discharge of the linear model of innovation by non-linear models taking into account various feedback loops. Appropriate measures for preserving the compatibility and interoperability of the various different implementations will be devised.

2.3   Impact assessment

The above three working steps provide the basis for the development of a dynamic model of standardisation and standards. Although in the dynamic evolution of standards we have already considered the impacts on the standardisation process itself, the objective here is to assess the impact of (the implementations of) standards and their dynamics on both private and public networking organisations at the micro-level, and their comprehensive impact on the systems or macro-level. In a first step, the relevant impact dimensions have been identified. In a second step, we are designing assessment tools for both ex-post and ex-ante impact assessments. Finally, we will select appropriate examples to perform an impact assessment in practice. The feasibility, methods, and results of this impact assessments will be evaluated. Based on these experiences, final guidelines for tools for an impact assessment will be proposed and distributed among the relevant stakeholders in standardisation processes.

3   A Preliminary Sample Finding

As project work is still under way, and the final outcome will not be available for another couple of months, this chapter will only present one preliminary finding.

Perceived Relation Between a Standard's Source and It's Success in the Market

Standards emerge from very different sources, ranging from sufficiently powerful individual companies to voluntary global standards developing organisations. Each of these entities has its own rules and bylaws, works in a specific environment, attracts a certain group of stakeholders, and can be described by a unique set of attribute types and values (which has been done).

It could be hypothesised that stakeholders select a specific SSB for (some of) their future standardisation activities based on best matches between an SSBs characteristics and their own business models, strategies, and/or technical needs. Likewise, it could be assumed that a stakeholder's selection of a specific standard (out of a set of competing ones) will be based on similarly objective criteria (such as, for instance, functionality, technical fit, performance, etc).

On the other hand, one could also suspect that other, less tangible reasons may also play a role in such selection processes. Fore example, aspects like individual preferences and prejudices of working group members, reputations of a technology's source, technologies that are considered 'hot', even media hype, may have considerable impact. One typical example here is the common wisdom that the outcome of the formal SDOs' process is of 'higher value' than the outcome of an industry consortium (recently, the number of those who subscribe to the opposed view has been increasing, though).

Accordingly, the impact of an SSB's perceived 'credibility', or reputation, on the success of its products in the market has been studied. That is, the more 'intangible' factors that may have an impact in the process of selecting either a platform for standards setting, or a standard for implementation, have been analysed.

A set of hypotheses on the intangible factors that may play a role in the selection of an SSB or a standard has been developed, partly based on a review of the relevant literature. These hypotheses have been translated into a questionnaire which served as the basis for a survey (analysis of which is still ongoing). In some respect, the outcome of this survey is at odds with some elements of 'common wisdom'.

So far, it would appear that companies who need to either implement or set standards are not that much interested in issues like 'consortium vs SDO'. In fact, it seems that this distinction is hardly valid any more. This conclusion is further re-enforced by the fact that several respondents mixed up formal SDOs and consortia. This is understandable if one considers that the rules and regulations of several (of the long established) consortia (such as, e.g., OASIS or W3C) can hardly be distinguished from those adopted by many SDOs. Likewise, within e.g. ETSI, a company's number of votes depends on the membership fee it is paying, an aspect typically associated with consortia.

Rather, considerable importance is assigned to the processes adopted by an SSB. Here, IPR aspects seem to play the most important role. More generally, an SSB's characteristics need to be compatible with a company's strategy and its business model. Accordingly, preferences will frequently depend on the characteristics of the individual case; there's hardly any general 'SSB of choice' (with the possible exception of 'specialist' SSBs, which are – at least temporarily – the sole occupants of a market segment (e.g., the ATM Forum)). Obviously, SDOs enjoy a competitive advantage in cases where regulatory requirements call for 'formal' standards. However, given the above, this increasingly artificial distinction may need to be revisited.

Finally, the important role the individual can play in the process has been highlighted by many. Whilst difficult to evaluate, it may be worthwhile – and indeed inevitable – to integrate this aspect into any future evaluations of an SSB and its processes. Thus far, the outcome of the study also re-enforces the analysis on the links that exist between stakeholders, business models, standards, and SSBs.