

Paradoxes in LET standardisation – towards an improved process

Tore HOEL

Oslo and Akershus University College of Applied Sciences
tore.hoel@hioa.no

Abstract: This paper is motivated by paradoxes and frustrations in the practice of learning technology standardisation. Case studies and participatory observations suggest that stakeholder engagement is key to an improved process. As industry involvement is hard to achieve in a fragmented market, the author suggests that government interests should step up their engagement to speed up the development cycle of idea formation, specification and implementation.

Keywords: standardisation management, anticipatory standards, standards implementation

1. Introduction

This paper is driven by paradoxes in standardisation of emergent technologies in the field of Learning, Education and Training (LET). As a reflective practitioner (Schön 1983) in this field frustrations over the standardisation process could (and should) be used to drive proposals for improvements. A series of recent events have made this author question whether we need a better understanding of the role of standardisation within this community, synthesised in a way that could clarify the roles of stakeholders and actors in this field.

Frustrations often translate to dilemmas or – to bring the conversation to a more interpersonal level – paradoxes. The literature on standardisation shows that paradoxes are part and parcel of this practice (Cargill, 1989; Cargill & Bolin, 2007); therefore, let us introduce the paradoxical events that spurred this paper:

First paradox: **Open consensus processes should be closed.** April 2013, CEN WS/LT 53rd meeting concluded one of its most successful projects and, at the same time, was reprimanded for its working methods that led up to this success. *Motivation:* Openness might harm the business model of formal standardisation – the sale of standards as documents.

Second paradox: **Even if there is no market, formal standardisation insists on selling documents, undermining the business of standardisation for a community of experts that contribute for free, but are not able to utilize their own work without paying.** April 2013, CEN WS/LT project experts learnt they could not work under an open contributor licence.

Third paradox: **Ideally, the (commercial) market should lead standardisation. However, these actors see no need to engage.** April 2013, CEN Technical Committee 353 had its biannual meeting. No active or future standardisation projects were reported. There is no clear understanding of who is driving the market: SMEs and tool developers, the big vendors, publishers, school authorities, ministries, universities? None of these see their core business depending on new LET standards.

The effects of these paradoxical and frustrating events are obvious: We experience lack of understanding of the potential of standardisation; new work is hard to initiate; implementers are focussing on wrong standards; recruitment to technical work is not good and partly from the “wrong” stakeholders; and last but not least, there is a danger of fragmentation of standards efforts and organisations.

Frustrations, and cynic musings about paradoxes do not change the world – careful analysis and design do. Therefore, this paper kicks off a first round of analysis of the state-of-affairs in LET standardisation as a reflection-on-own-practice study. The question driving this research is what organisation and process model of standardisation is right for technology and practice development and innovation in LET. The paper gives first a brief literature review that shows that LET standardisation is not a well-defined domain, and standardisation in general is full of paradoxes. After

choosing a case study approach three cases from Nordic and European practices is reported. The results of these studies are summarised and used as input for design of some proposed actions.

2. What is LET standardisation?

LET community practitioners keep asking themselves how standardisation should be understood in their domain. After having completed a successful project in CEN WS/LT, Simon Grant tweeted his new insights into what standardization is, or should be: “Standardization, properly, should be the process of formulation and formalisation of the terms of collective commitment.” @Asimong (Grant’s TwitterID is) got an immediate response from @crispinweston “Commitment to whom and why? In the market, fellow standardisers are competitors.”

In a Twitter conversation this author had with @LearningImpact (who is Rob Abel, CEO of IMS Global, a consortium standardisation body) the market as a pivotal concept was stressed: “There is no such thing as “LET” standardization. Standardization requires an industry/market & LET is not one. LET is a concept” (Tweet of 3rd May 2013). If there is no such thing as LET standardisation, there is for sure a community of LET standardisation experts who work in a number of committees. What is raised again and again is the issue of how well this community of experts represents the “real” interests in standardisation, which is another way of asking who should lead this activity.

The questions of representation and leadership are linked to the main characteristic of learning technologies for learning, education and training: It is a domain that is volatile, emergent and highly innovative. Consequently, we are talking about prospective (anticipatory) standardisation, which in itself is a new paradox: How to fix (and make someone commit to) something that is in flux?

3. Related work

In general, standards are seen as a common good. What causes conflict is disagreements on when this common good should be applied. Cargill has captured this in still another paradox: “By definition, a standard is reasonably unchanging; therefore, the only time that an architecture should be standardized is when it is no longer subject to change – and when an architecture is no longer subject to change, it is dead” (Cargill 1989, p. 70). Consequently, timing of standardisation is key to understanding the different stakeholder positions to a particular project and their participation in different phases of a development project (Ecke & Pinto, 2008).

To boost European industry, the European Commission has proposed to use standards as a way to leverage R&D results, which “inherently means ‘early standardisation’: standardisation takes place at a very early stage of technology development” (Ecke & Pinto, 2008). This means promoting anticipatory standardisation. Sherif (2001) linked standards timing with the technology lifecycle, and derived three classes of standards. Figure 1 shows the technology S-curve depicting the trajectory of technology, from idea to mature technology, and transition to a new technology. Anticipatory standardisation works hand in hand with product design; while participatory standardisation is initiated only at the stage when knowledge of the technology is shared and products start being brought to the market. Responsive standards codify knowledge already established in practice.

Most of the standards the LET community has been working on fall into the first category, anticipatory standards. Early standardisation may inhibit innovation if introduced at an inappropriate time, with premature lock-in to a specific technology and economic inefficiency as a results (Ecke & Pinto, 2008). The alternative, to wait till the technology is more mature before gathering the participants around the committee table is not very attractive when you realise that you then will be working with yesterday’s technologies. So, for the LET community the only viable approach is to find a way to do anticipatory standardisation right when it comes to timing and stakeholder engagement.

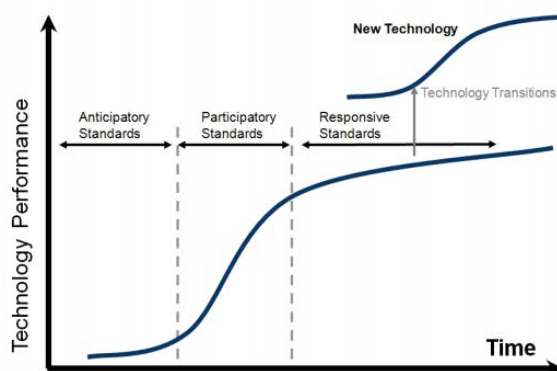


Figure 1: Timing of standards in relation with the technology S-curve, from Sherif (2001)

Spirco et al. (2008) investigated how standards influence flexibility of information technology infrastructures, based on a literature review. They found that standards were regarded both a stabilizer of technology and as a means to increase flexibility. “On the one hand, standards make technology stable. On the other hand, some characteristics of standards can increase flexibility. We concluded that these perspectives do not contradict each other. Moreover, from the managerial standpoint a balance between flexibility and stability is beneficial” (Spirco et al. 2008).

A simple model adapted from Egyedi (2008) is used to guide the exploration in this paper. The model (Figure 2) is developed to give a schematic representation of the phases leading up to the standard implementation, highlighting three main states of a standard, the conceptual idea, the specification, and the implementation. Two translation processes intermediate between these states, the standards process and the implementation process.

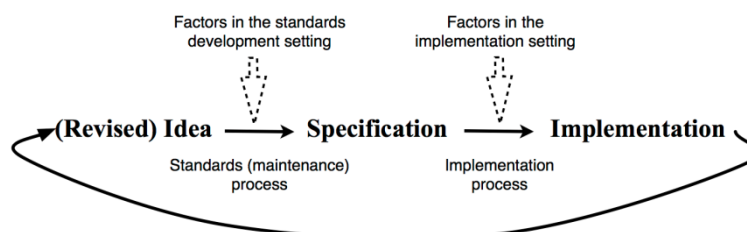


Figure 2 Simple model of standardisation phases, from Egyedi (2008)

This study is an instance of reflective inquiry, following Schön’s theory for reflection-in-action consisting of on-the-spot surfacing, criticising, restructuring and testing of intuitive understandings of experienced phenomena (Schön 1983). As the trigger events for selecting cases and spur the reflective inquiry the author uses the dilemmas, disagreements, and conflicts experienced in European and international standardisation. The aim is to arrive at what Schön calls ‘knowledge-in-action’, presumably having solved some of the dilemmas that disrupt the practice as an committee expert. However, between inquiry and knowledge-in-action modelling of the domain takes place, following the Design Science Approach developed by Hevner et al. (2004).

The cases are chosen from the recent practice of this author, the analysis focusing on stakeholder roles and frames of understanding.

3.1 Case 1: Reactivating the Norwegian mirror committee – searching for stakeholders

This mini case study have analysed two years of activities within the Norwegian mirror committee SN/K 186, which is responsible for developing a national position on a standards developed in the European Committee for Standardization (CEN), and ISO. The National Standards Body was not satisfied with stakeholder engagement and with the committee’s ability to solicit funding.

The re-organised K186 got a new leader, representing Norwegian Centre for ICT in Education, a government agency. This agency started an internal study coming to grips with the domain of LET standardisation and how to prioritise. Active recruitment brought some new members (vendors and publishers) to the mirror committee, which launched a kickoff of the reformed committee beginning of 2013. After two years of planning and sense making, the committee has still not come up with an agreed work programme, and it is not clear what role K186 will play in national and international standardisation work. As a participant for nearly ten years in the committee, the following observations can be noted:

- More industry (as in non-educational institution) involvement in the committee has not led to a clearer identification of use cases for standardisation.
- The links between European and international standardisation efforts and the needs for national standards or adoption of international standards are not clear.
- The proposed focus areas for the mirror committee are generic (e.g., digital learning resources, and questions and tests), with only one item reflecting national needs (definition of groups in primary education). For the generic areas, there is no identification of business needs, neither from industry nor education.
- The focus of the proposed work programme seems to be retrospective, centred around outdated specifications, e.g., an old application profile of IEEE LOM, not much used in Norway.

3.2 Case 2: Open process with closed IPR – the role of a pre-standardisation body

The European Union is about to launch a major initiative under the slogan Opening Up Education. Openness is being embraced by Education, as in open content, open processes, open software, open data, etc; whereas formal standardisation is going in the opposite direction. This represents a problem as standardisation work in LET is funded by public institutions and done by experts that have nothing to gain from their contributions, other than recognition. This mini case study is based on participation in standardisation work on a European level (CEN WS/LT and TC353).

From time to time, the European Commission fund CEN to perform pre-standardisation work resulting in a CEN Workshop Agreement (CWA). The work is subcontracted to a group of experts hired by one of the CEN members, in the case of the InLOC project (<http://wiki.teria.no/display/inloc>), AENOR of Spain. Experts of this project were able to negotiate a contract giving AENOR exploitation rights to their work; however, retaining the right to reuse and republish for non-commercial purposed material developed by them within the scope of the contract. Furthermore, they agreed that the final deliverables should be published under a Creative Commons “by-nc-nd” licence, and that implementers should be granted a perpetual, irrevocable, royalty-free licence equivalent to the Open Web Foundation Agreement OWFa 1.0 - except reserving commercial exploitation rights.

When CEN saw the consequences of an open process, they instructed AENOR to repudiate the contract with the experts, and they started a process to discipline the CEN WS/LT to conform to the closed working process of formal standardisation with document exchange only through a password protected repository (LiveLink) and a monitored e-mail reflector.

When the experts argued there are no pecuniary motivation for CEN to restrict access to the CWAs, as these are openly available for download from CEN at no charge, they realised that the IPR issues for these kinds of documents are less than clear. The documents are only for the use of the person downloading them. This might make any implementation illegal, unless the document is bought through one of the CEN members.

From this case study the following observations can be noted:

- Formal standardisation bodies are on a collision course with the educational community on how to contribute to the development of learning technologies. With openness being the imperative of learning and research, a closed development model is bound to alienate experts from universities and organisations supporting open processes.
- Most of the work in LET standardisation is done on voluntary basis. Therefore, motivation needs to be carefully managed by the standard bodies. Open processes and new and efficient forms of collaborative work seem to build motivation among LET standards experts, and should be acknowledged by the SSBs.
- In the LET domain, the problem is not having too few standards to choose among. The challenge is to make sense of a highly disruptive field, and this presupposes an open conversation.
- A paper and document based business model for standardisation within ICT is outdated. To insist on pre-web practices is the same as asking for competing consortia standardisation to take over the work.

4. Discussion

Is standardisation in general, and LET standardisation in particular, a “failing paradigm”? It was Cargill and Bolin who raised the question, based on the threat of fragmentation of solutions due to “an excessive proliferation of specifications and SSOs (..) undermining the very value of standards and the markets that they serve” (Cargill & Bolin, 2007).

Our analysis shows that even if there is an identified LET standardisation community, there is no clear understanding what a LET standard is. It is hard to draw the borders between use of technologies for learning, education and training; and use for library functions, recreation and culture, knowledge management, etc. The LET standardisation community has not been very successful scoping our work, which has led to setbacks and delays in development of metadata standards, quality standards, etc.

What is the problem?

The case studies point to stakeholder involvement as a key challenge. If there are issues with scoping of the work, it becomes hard to motivate the right stakeholders to be involved. Furthermore, if the process is closed and is experienced as bureaucratic, stakeholders used to open innovation processes see no reason to engage.

The mirror committee case epitomized how hard it is to get stakeholder involvement in standards development within educational markets. While international SSBs focus on regional or international markets, local vendors and educational authorities often concentrate on national requirements. There are few incentives for a national mirror committee member to contribute to international standardisation, as this is an overwhelming process taken care of by players in a transnational market. At most, a national committee would make a profile of an international standard.

Timing is essential for stakeholder engagement. No stakeholder wants to waste time and money to enter a process at the wrong stage. First, if the sharing of the results of pre-standardisation is not happening (as in the 2nd case study), there is no way for industry and others to judge where the technology development is heading. Second, there is always the Catch-22 argument that you should not standardise anything before there is an implementation; or you don't have anything to implement because there is no specification agreed upon. These lines of argumentation are to a large extent part of a positioning game among organisations and expert communities. However, the problem with the standardisation - implementation circle (ref Figure 2) is real enough. Often we have to wait for the piloting, showcasing and first implementations of new specifications, something that lead to delays and lost market opportunities, and that create a sense of futility for the whole standardisation activity when new emergent technologies make the old solutions obsolete.

Who should act?

Standards being a public good, Cargill and Bolin (2007) pointed to the responsibility of government "to strengthen the standardization system through minimal intervention". Cargill and Bolin have got a point; however, their remedy does not sell well to any of the parties caring about standardisation. Engagement of the market (often understood as industry) has been the test for the sustainability of a standards initiative, e.g., for funding of new projects in CEN WS/LT or explaining the failure of a mirror committee. However, this author would claim that the market for learning technologies is not fully understood to support the notion that industry should be the prime mover and shaker when it comes to creating LET standards.

No doubt, the learning technology market is substantial in terms of invested money. From a European perspective, you will only find a few market players identifying themselves as learning technology providers, e.g., focussing on Learning Management Systems, textbook publishing, training services, etc. The dominating actors are the universities and a maze of educational institutions and authorities. But they should not develop technologies, as it were, because they are on the receiving end as buyers of the products and services being developed. The result in Europe is a non-energetic formal standardisation process with educational stakeholders being told to lay off, industry interests not in sight, and as usual, a host of academics circling around to write papers and do more or less grounded designs for their research. Moving to ISO level the situation is not much different. From a US perspective the market is king, as stated by the CEO of IMS Global, the consortium being behind a number of LET specifications: "In general, if an industry is not willing to manage their own destiny they get what they deserve" (Tweet by @Learningimpact, 2013-05-03). However, IMS Global as a membership driven organisation has slowed down making new standards and seems more into organising conferences and doing consultancy based on their existing catalogue of specifications.

If industry is not in the position to drive LET standardisation, who should then do it? If we go beyond the market rhetorics we see that other forces than industry have played an important role in ICT standardisation. This paper would suggest that the Educational Authorities, both nationally and regionally, should step up to their responsibility and realise that they are the only stakeholders that could strengthen the LET standardisation process and give the activities a new footing. Both education and standards are public goods and standardisation in this domain is too important to be left to a non-functioning market to be fixed. However, a more active role needs to be based on a good scoping of the domain and a deep understanding of anticipatory standardisation being something different from the regulatory practice, which is the main concern of these authorities.

What should be done?

What “minimal intervention” could the government come up with to improve the LET standardisation process? Already today, European Union bodies (<http://joinup.ec.europa.eu/>) work towards opening up innovation processes, including standardisation. Through project funding European agencies promote standardisation as a way to disseminate results. However, a more direct intervention in the process is needed in order to speed up the Idea - Specification - Implementation cycle.

5. Conclusions and further work

This study was sparked by a number of paradoxes from the field of LET standardisation experienced by the author as a reflective practitioner. Participatory observations and two mini case studies led to the conclusion that the current processes maintained by international and regional Standard Setting Bodies are suboptimal. Lack of openness hampers the conversation that could lead to better scoped project and more stakeholder engagement. The market for educational services is substantial; however, this does not imply that there is a great interest in standardisation as means for innovation in this domain.

How the market works for LET tools and services and what stakeholder interests are represented in a way that is accessible for anticipatory standardisation projects needs further exploration. Furthermore, the role of government in learning technology development needs also more thought. This paper has identified government as a potential driving force in formal standardisation as well as in supporting community-developed specifications. Within LET standardisation, the idea - specification - implementation cycle tends to be disrupted by two lines of arguing: 1) An academic standards expert led process will not produce a strong and effective standards as the process will not be informed by real industry requirements. 2) LET standardisation should be based on implementations and one need to wait till industry is ready to get involved. The resulting waiting game needs to be broken, and in a fragmented market, the only stakeholder being able to keep the process going is government.

In a study of standards dynamics Egyedi (2008) concluded, “Many standards bodies do not address standards implementation issues because they argue that this is best left to the market”. Egyedi found this to be wrong for the cases he analysed, and pointed out that development and implementation of a standard are intertwined and cannot be separated in a meaningful way. “We would, therefore, recommend that standard bodies shift their emphasis from the development of standards to a more systematic inclusion of implementation concerns” (Egyedi 2008). This conclusion is supported by this study as well. However, to achieve this transformation within the field of standardisation studied in this paper, more research needs to be done on how organisational and management issues can be aligned with the specific needs and business culture of learning, education and training.

References

- Cargill, C. F. (1989). Information technology standardization, Theory, Preocess, and Organizations (pp. 1–73). Digital Press.
- Cargill, C., & Bolin, S. (2007). Standardization: a failing paradigm. Standards and public policy, 296–328.
- Ecke, P., & Pinto, P. (2008). EU Study on the specific policy needs for ICT standardisation. oa.uninova.pt.
- Egyedi & Blind. (2008) The Dynamics of Standards, Edward Elgar Publishing
- Egyedi, T.M. (2008) An Implementation Perspective on Sources of Incompatibility and Standards’ Dynamics, in The Dynamics of Standards, (ed) Egyedi & Blind.
- Hevner, A. R., March, S. T., Park, J., and Ram, S. (2004) “Design science in information systems research”, MIS Quarterly, Vol. 28, No. 1, pp 75–105.
- Jakobs, K. (2003). Information Technology Standards, Standards Setting and Standards Research. Paper presented at Stanhope Center's Roundtable on systematic barriers to the inclusion of a public interest voice in the design of Information and Communications Technologies, 1–21.
- Sherif, A Framework for Standardisation in Telecommunications and Information Technology, IEEE Com. Mag. 2001
- Sherif, M. H., & Seo, D. (2009). Government role in information and communications technology innovations. Innovations for Digital Inclusions, 2009. K-IDI 2009. ITU-T Kaleidoscope:, 1–5.
- Schön, D. (1983). The reflective practitioner: How professionals think in action. New York: Basic Books.

- Spirco, J., Fomin, V. V., & Egyedi, T. M. (2008). Standards and infrastructure flexibility: Literature review. *Standardization and Innovation in Information Technology*, 2007. SIIT 2007. 5th International Conference on, 71–80.
- van den Ende, J., van de Kaa, G., den Uijl, S., and de Vries, H. J. (2012) . The Paradox of Standard Flexibility: The Effects of Co-evolution between Standard and Interorganizational Network, *Organization Studies* 2012 33: 705 DOI: 10.1177/0170840612443625