

JISC CETIS response to RFI Effectiveness of Federal Agency Participation in Standardization in Select Technology Sectors for National Science and Technology Council's Sub-Committee on Standardization

JISC CETIS

The JISC Centre for Educational Technology and Interoperability Standards is an Innovation Support Centre advising UK Further and Higher Education (F/HE) on the strategic, technical and pedagogical implications of educational technology and interoperability standards. CETIS supports the Joint Information Systems Committee (JISC) development and innovation programmes and represents UK F/HE on a range of international standards bodies including the IMS Global Learning Consortium, IEEE LTSC, ISO SC36, BSI, CEN/ISSS WSLT, DCMI, the Open Web Foundation and others. Through an iterative cycle of horizon scanning, publications, and community engagement, JISC CETIS fulfils a crucial role in linking innovative technological and standards developments with national UK development programme and initiatives.

While CETIS are not in a position to draft a comprehensive response to the National Institute of Science and Technology's Request for Information on the development and implementation of standards, the Centre has a comprehensive portfolio of public documents that are of direct relevance to this RFI. These documents address many of the issues raised in the RFI particularly those relating to:

- Benefits of standards development,
- Standard development lifecycle,
- Resources required for standard development,
- Link between standardisation and innovation,
- Barriers to standard development and implementation,
- Lessons learned.

Relevant Documents and Publications

Assessing the Business Case for Standards: An introduction for strategy planning and resourcing committees

Cooper, A., Kraan, W., Holyfield, S. (2009) *Assessing the Business Case for Standards: An introduction for strategy planning and resourcing committees*, JISC CETIS Briefing paper,
<http://www.jisc.ac.uk/publications/briefingpapers/2009/bpbusinesscaseforstandards.aspx>

Making a business case for interoperability and standards is a challenging task for those involved in the strategic planning of IT systems in educational institutions. This briefing with its accompanying references is intended to provide advice and supporting materials to help people to incorporate standards in their ICT-related business cases. It assumes some familiarity with the way IT systems are presently deployed and maintained in educational institutions, and will be of interest to Information Services managers and senior managers for strategy planning and resourcing.

This briefing paper covers definitions of interoperability standards, key benefits of interoperability standards, how to decide where standards are relevant, interoperability without open standards, a middle way?; generic standards vs domain specific standards

The Future of Interoperability and Standards in Education – System and Process

Yuan, L., Wilson, S.B., Cooper, A., and Campbell L.M., (2010), *The Future of Interoperability and Standards in Education – System and Process*, JISC CETIS Whitepaper,
http://wiki.cetis.ac.uk/images/3/38/Fis_whitepaper_final.pdf

In January 2010, JISC CETIS organised a working meeting to bring together participants across a range of standards organisations and communities to look at the future of interoperability standards in the education sector. This paper summarises the views expressed by delegates and outlines present and future models for collaboration between open and informal communities and the formal standardisation system with particular reference to the current issues and barriers in specification and standard development and adoption processes. This whitepaper also presents possible directions of future interoperability standards in education.

Barriers to participation, development and adoption:

- Complex and inflexible standardisation processes.

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- Lack of inclusiveness in the process of developing and adopting specifications and standards.
- Lack of consistent approach to allow multi-stakeholder collaboration and participation.
- Lack of early implementation of specifications.
- Lack of ability to create derivative works.

Open culture and community engagement in technology development and standardisation:

- Ownership, licensing and the copyright of informal specifications.
- Informal communities require a process to engage with FPS bodies and connection to a business need.
- Public procurement policy does not currently recognise standards from this variety of sources.

Enablers for collaboration between formal and information specifications:

- Building shared concepts between stakeholders is a key.
- Criteria for enabling informal specifications to engage with formal standardisation organisations.
- IPR and copyright.

Suggestions for future development :

- Raise awareness, especially among policymakers, of the diversity of the standards system. Recognise, understand and work with bodies which differ across a range of dimensions - e.g. legal status, respect, trust, openness and business models.
- Identify solutions for patent, ownership and licensing issues to enable organisations to adopt, ratify, profile or create derivative works from specifications developed by other bodies.
- Improve transparency across the system and increase effective co-ordination between different bodies through more effective dissemination.
- Understand the drivers and motivations of stakeholders in the domain, manage conflicting expectations, and increase adoption through the involvement of more stakeholders.
- Learn from the culture and lightweight processes of informal specification communities, and provide support for adoption, community engagement and advocacy from incubation to adoption and beyond. Improve the quality of specifications and standards through early implementation and evaluation.
- Use funding support from organisation and governments to make specification documents freely available and release them in such a way that they can be incorporated into application profiles and adapted to meet new requirements.
- Ensure all completed standards documents and updates are persistently identified and available for reference by anyone.

Principles for Structuring Data-oriented Interoperability Specifications

Cooper, A., (2010), Principles for Structuring Data-oriented Interoperability Specifications, JISC CETIS Position Paper,
<http://blogs.cetis.ac.uk/adam/files/2010/09/fis-suggested-principles-for-structuring-standards.pdf>

This paper suggests, at a high level, a set of guiding principles for specifications designed for exchanging data (processes and services are a separate concern). It tries to take a view that is one step removed from current practices and to identify some general principles that can be applied across a range of practices.

It has been created for discussion and as a contribution to debate about how we should approach standard design and documentation in the future, improving on weaknesses and avoiding identifiable challenges. It is inspired by a number of examples of emerging practice and lessons learned, and largely drawn from people other than the author too numerous to acknowledge, over the last decade of work in learning technology specifications/standards.

It is assumed that the specifications are intended for general adoption rather than for implementation of point solutions. i.e. that they are “standards” in loose terms.

This paper is intentionally limited to principles relating to the technical expression and does not cover some very important matters of process such as “conceptual calibration” before creating the specification and “many eyes” during its creation.

Collaboration between open, informal specification communities and the formal standards world: the role of the Open Web Foundation agreements

Wilson, S.B., (2010), *Collaboration between open, informal specification communities and the formal standards world: the role of the Open Web Foundation agreements*, JISC CETIS Blog,
<http://zope.cetis.ac.uk/members/scott/blogview?entry=20100105111029>

Open, informal specification development enables communities to rapidly prototype specification ideas without the overhead of more formal processes, and may become the method of choice for working on specifications that anticipate future requirements.

However, when it comes to working with specifications produced in this fashion, there are a number of legal and IP barriers both for adoption and for engagement in formal standardisation that need to be overcome. Broadly, these are the issues of ownership of the specifications, the rights and conditions of use of the specification, and the status of patents related to the specifications. Without clarity on these issues it is difficult for large organisations and government

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agencies to adopt the specifications. Formal standards organisations also may find it difficult to build on or include informal specifications as a part of formal standards for similar reasons.

The Open Web Foundation is developing key instruments to clarify these issues, and which will provide a solid basis on which formal and informal specification communities can collaborate in the future.

Concepts and Standardization in Areas Relating to Competence

Grant, S. and Young, R., (2010), *Concepts and Standardization in Areas Relating to Competence*, JISC CETIS White Paper, http://blogs.cetis.ac.uk/rowin/files/2010/08/grantyoungwp_final.pdf

This paper reviews terminology, motivation, history and current work in areas relating to skill or competence. Many useful services, clarifying pathways within and from education to employment, self-assessment, and selection would be facilitated by better standardization of the format in which related definitions are represented, and also by a standard approach to representing the structured sets often called frameworks. To be effective, information models underlying interoperability specifications must be based on common conceptual models; the authors propose one such model as a work in progress. The authors see the way forward as reaching greater consensus about the components of competence, including intended learning outcomes, agreement on a model for frameworks allowing reuse of and comparison between components in and between frameworks, and investigation of how requirements and claims for skill and competence can be coordinated in the light of common practice in recruitment.

Key Challenges in the Design of Learning Technology Standards: Observations and Proposals

Cooper, A., (2010), "Key Challenges in the Design of Learning Technology Standards: Observations and Proposals" in *International Journal of IT Standards and Standardization Research (IJITSR)*, Vol 8, Issue 2 <http://www.igi-global.com/bookstore/article.aspx?titleid=46110>

This paper considers key challenges that learning technology standards must take into account: the inherent connectedness of the information and complexity as a cause of emergent behavior. Some of the limitations of historical approaches to information systems and standards development are briefly considered with generic strategies to tackle complexity and system adaptivity. A consideration of the facets of interoperability—organizational, syntactic and semantic—leads to an outline of a strategy for dealing with environmental complexity in the learning technology standards domain.

Community-Driven Specifications: XCRI, SWORD, and LEAP2A

Wilson, S.B, (2010), "Community-Driven Specifications: XCRI, SWORD, and LEAP2A" in *International Journal of IT Standards and Standardization Research (IJITSR)*, Vol 8, Issue 2 <http://www.igi-global.com/bookstore/article.aspx?titleid=46114>

This paper explores the issues and opportunities for specifications that develop outside of the traditional governance processes of industry consortia or formal standards organisations through a discussion and comparison of three specifications developed in the education sector: XCRI (eXchanging Course-Related Information), SWORD (Simple Web service Offering Repository Deposit), and LEAP2.0 (Learner Portfolios 2.0). In each case study, there are challenges, opportunities, and accomplishments, and the experiences of each project are compared to identify commonalities and differences. Based on these case studies, the paper applies the framework developed by Wilson and Velayutham (2009) to position the specifications against similar specifications from established consortia and formal standards. Finally, the topic of incubating specifications is discussed, with implications for funding agencies with an interest in supporting interoperability.