

AWG Scope Definition

Purpose

This document is intended to contribute to defining the Scope of Work to be undertaken as “SCORM 2.0” and as a result, the work of the Architecture Working Group as a part of that effort.

Audience

The initial audience will be the Chairs of LETSI working groups. If deemed suitable, they may choose to release it more widely.

SCORM 2.0 - Challenges and Objectives

The challenges and objectives for SCORM 2.0 are defined and published on the LETSI site (<http://www.letsy.org/letsy/display/nextscorm/Home>) as the result of previous work. They are pasted below for ease of reference for the purpose of this discussion (bullets have been changed to lower case letters for identification only and do not necessarily imply any form of prioritization).

SCORM 2.0 is intended to be an interoperability model that, like its predecessor, can be used strategically across market sectors and geographical regions. The following overarching criteria for SCORM 2.0 have been identified:

- a) *Support existing and emerging technologies and architectures and encourage innovation in applications across the LET life cycle: authoring and ISD, learning management, content management, knowledge management, HR systems, mobile delivery, Web 2.0, service-oriented architecture, and hosted learning activities.*
- b) *Support multiple learning paradigms and teaching methods, e.g., immersive learning environments, informal learning, community-based learning, blended learning, and collaborative learning.*
- c) *Support multiple training and education contexts, e.g., classroom, distance learning, on-the-job performance support, and individual self-study.*
- d) *Incorporate a modular and extensible software architecture to provide communities of practice maximum flexibility to profile and experiment.*
- e) *Allow convenient migration strategies to preserve existing investments in systems and learning materials.*
- f) *Include specifications and standards created and managed using open, transparent processes that are not encumbered by patents, licenses or restrictions that would impinge on its availability to the global LET community. LETSI will create an open source software community to support SCORM adopters and product developers.*

These begin in some way to define both the scope and nature of SCORM 2.0, however, further these statements require additional effort to be translated into

actionable tasks for the various working groups. In brief, items a) and f) are more global level statements for LETSI as a whole and the values it holds important in the conduct of its mission. Item e) will always be a challenging issue and while it will form some of the requirements for the AWG, it will also extend to other educational/informational activities across LETSI as a whole and is very much dependent on vendor-based implementation of SCORM 2004 into applications and the higher-level implementation of an existing infrastructure that includes such applications. In short, it may not always be an objective that can be fulfilled due to reasons that beyond the scope of control of any standards/specification organization.

The greatest interest for the AWG lies within the remaining items. In terms of process and responsibility, items b) and c) are primarily the work area of the Teaching and Learning Strategies Working Group (TLSWG), however, a healthy and continuous dialogue between the working groups is critical. A simplified statement of the process would be that the output of the TLSWG is a set of requirements that are the input of the AWG for its primary work which is described in point d). There is also a "Content" working group that was very much focused on describing the new requirements for "sequencing" and the interrelationship of that work to requirements for SCORM to support competency. The authoritative record of the discussions of the Content/Sequencing Track at the Pensacola Workshop (15 – 17 October 2008) are available on the wiki

(<http://www.letsi.org/letsi/display/nextscorm/SCORM+2.0+Workshop+Minutes>). In the minutes of their workshop sessions they describe sequencing as follows:

Sequencing is the way to get the right content to the right learner at the right time based on knowledge, skills, abilities (KSAs), competencies, learner choices, learner role, and other matters of context.

Clearly, *'this is sequencing but not as we know it [Jim]'*. A slightly different interpretation of the definition that amplifies the difference between current 'in-course' sequencing versus the new vision for sequencing might be to say that:

Sequencing facilitates some form of controlled access to content that is rule-based. Rules may be applied according to an individual learner's needs, either within the context of a single 'course' (ie a predefined unit of learning that is meaningful to both organization and learner) or across multiple courses. The determinants for the rules are likely to be factors based upon a learner's current profile that may be expressed in terms of knowledge, skill, ability, competence, role etc or by learner choice, or by other contextual matters related to the learner and/or organizational need.

Again, within the work of this group there are significant implications for SCORM architecture and the interrelationship between the Content/Sequencing working group and the architecture group will need to be strong to secure the success of both work efforts.

Outcomes of the Pensacola Workshop Relative to the AWG

The minutes of the meeting are available from the LETSI site via the link provided previously for verification or clarification of the content of this section or to challenge the representation of any material herein. All comments are welcome.

From a SCORM Architecture perspective several themes were evident (refer to Chris Raasch's one page document titled *Key Assumptions being from the Architecture Group* which will be available on the LETSI site for a more concise record):

Support for LET requirements outside the LMS and browser

The original version of SCORM was intended to solve a range of problems being experienced by the LET communities more than a decade ago. Most of these issues concerned the portability of courses (later including sequencing rules) between Learning Management Systems (LMSs). While these needs still exist they are not common to all industries and are more characteristically required by those industries that are externally regulated and/or that are required to demonstrate some form of compliance to a set of governing regulations (eg Defense, Aerospace, those under FDA regulation, Occupational Health and Safety training etc).

In particular, education sectors are starting to move away from LMS-based course delivery and private enterprise is increasingly interested in a broad range of tools other than LMSs (Wikis, Blogs and other social networking tools; EPSSs; tools that support mobility; simulations; smart gaming etc). Their objectives are to more comprehensively and more effectively meet their requirements to increase the capability and effectiveness of the workforce and to better manage the flow of knowledge through their organization and to their partners and customers.

Support for service oriented approaches

The common trend in IT architectures for some years has been towards service-oriented approaches where best-of-breed applications (ie "most fit for purpose") interoperate by exchanging structured messages through a network of services. The greatest value is achieved when the messages and the services conform to international standards. LET communities have already been adopting service-based approaches for many aspects of their IT infrastructure interoperability and communication but SCORM itself does not support a service-based approach. It is also silent with regard to a range of capabilities that are now increasingly important to LET communities (eg competency management).

There are significant and extensive impacts for LET content, process and practice in the context of service-oriented approaches. One of the assumptions made by the architecture track during the Pensacola workshop was that content would be accessed by a range of applications that were both browser-based and non browser-based and also that currently monolithic applications would become more modular and service-based. A SCORM 2.0 architecture needs to support these requirements so that LET communities can be supported within the context of their organizations.

Obviously the expression of these requirements within LETSI is not the first time that one or more LET communities have started to move towards service-oriented approaches. There are already a number of initiatives that have made progress, in some cases substantial progress, down this particular pathway. The AWG and LETSI itself has repeatedly stated their aversion to 'reinventing the wheel' and to openly seek to work with other initiatives, standards organizations and the like in order to pursue the optimal outcome for LETSI's objectives.

One of the most relevant initiatives is the e-Framework project.

The [e-Framework](#) is an initiative that was initially established by the UK's [Joint Information Systems Committee \(JISC\)](#) and Australia's [Department of Education, Science and Training \(DEST\)](#), which is now the [Department of Education, Employment and Workplace Relations \(DEEWR\)](#). In 2007, the two founding partners were joined by the [New Zealand Ministry of Education \(NZ MoE\)](#) and The Netherlands [SURF Foundation \(SURF\)](#).

Documentation concerning the e-Framework is available at:

Overview - (<http://www.e-framework.org/Default.aspx?tabid=934>)

Early position document from 2004 -

(http://www.jisc.ac.uk/uploaded_documents/AltilabServiceOrientedFrameworks.pdf)

Given the range of existing initiatives related to service-based approaches to infrastructures for LET requirements, it is necessary to answer the question, "What is the work that LETSI should be doing that no other organization is doing?" In other words, what is the unique scope of work that should be defined as SCORM or what it is that SCORM will become?

What might SCORM be?

While the importance of the use case analysis and requirements gathering undertaken by the TLSWG is vital to the structuring of what SCORM brings to LET communities SCORM has always been a reference model concerned with educational technology. In the past it was stated (See SCORM technical books) that it was the intention of SCORM to remain agnostic to pedagogy so that no particular approach to pedagogy was forced upon adopting communities. Unfortunately, 'being agnostic to pedagogy' was often misinterpreted so that pedagogy and andragogy were of diminished importance. This is clearly not the case and while SCORM should not impose a teaching and learning strategy on adopters it should fulfill the broader role of supporting as many of the use cases and requirements specified by the TLSWG as possible.

From the work at the Pensacola workshops it was suggested that SCORM has an important role to play in developing some form of "Integrated Learning Services Architecture". Given the focus on the reuse of content and data across service-based applications and platforms, the desire to include various models for working with competence, the importance of supporting diverse learner requirements (incl.

support for learners with disabilities), it is likely that loosely coupled service-oriented approaches will be required.

SCORM has provided significant value by enabling content interoperability between LMSs. This requirement still exists even though it is likely that the requirement to include a broad range of applications other than LMSs is growing rapidly. By way of example, SCORM has moved towards working with similar requirements in the SCORM – S1000D Alignment project. It is interesting to note that in this model SCORM does not provide any particular support for S1000D. It is merely used as a delivery approach for content that has been converted to SCORM conformant learning content. It would seem clear that if SCORM were able to support one or more structured content models that this would provide greater value and utility to a wide variety of communities of practice.

A high-level requirements statement might be something like:

SCORM 2.0 (if the name persists) is a framework (architecture?) that is designed to enable a comprehensive set of learning, education and training approaches through a content, data and service architecture that support the SCORM 2 high level functionalities (eg interoperability, reusability, accessibility, durability, adaptability, affordability, maintainability, syndicatibility, etc...)

Other References:

Webservices Architecture for M-Learning (<http://www.ejel.org/volume-2/vol2-issue1/issue1-art2-sharma-kitchens.pdf>)