Tactical Guidelines, TG-19-7451
J. Lundy

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SCORM Standard Unites E-Learning Software and Content

The Sharable Content Object Reference Model has emerged as the de facto standard that enables e-learning content and software to be integrated with each other.

Core Topic
Knowledge & Content Mgmt., Collaboration & E-Learning: Corporate Learning Strategy, Systems and Technology

Key Issue
Which technologies will best enable learning strategies?

Strategic Planning Assumption
By 2008, user experiences in custom content courses where dynamic simulation is used will begin to mimic the experience of computer gaming (0.6 probability).

Tactical Guidelines
- Validate that any potential e-learning software and content providers support SCORM

- Validate that the specific content being considered can be launched and tracked by the LMS being used.

- Validate that stand-alone authoring tools and shared tools that are part of an LCMS can generate and modify SCORM-compliant content.

Although not yet a "household" term in technology circles, Sharable Content Object Reference Model (SCORM) is quickly evolving into the de facto standard for e-learning content. Corporate enterprises, higher-education institutions and even K-12 school systems are beginning to make it one of their mandatory requirements for e-learning content and software vendors. New SCORM validator tools (see "Use Saba's Tool to Validate E-Learning Content More Quickly") help to solve the problem of having to test every course for compatibility with a learning management system (LMS). Here, we review the benefits of using SCORM as an e-learning standard.

SCORM evolved from a U.S. Department of Defense (DOD) initiative (see Note 1). The e-learning industry is on a fast track to make SCORM the de facto standard. E-learning software vendors, as well as content creation vendors, are making or have already made their offerings SCORM-compliant. Enterprises should insist on deliverables that are standards-compliant because there is a higher probability that those content objects could be migrated from one LMS to another to be launched/tracked and reused than if the standards were not used. SCORM, being XML-based, also makes it easier for object reuse. Newer versions of SCORM will allow dynamic courseware to be developed, enabling a course to dynamically sequence itself, based on answers the student gives. Today, courses can be designed that way, but are often in proprietary formats.

Note 1
The History of SCORM
In 1999, Executive Order 13111 required the U.S. DOD to come up with a common set of standards for technology-based learning. The result was initial work that led to the SCORM 1.0 standard in January 2000. The SCORM leverages current technology that is developed — from groups such as the IMS Global Learning Consortium, the Aviation Industry Computer-Based Training Committee, the Alliance of Remote Instructional Authoring & Distribution Networks for Europe and the Institute of Electrical and Electronics Engineers Learning Technology Standards Committee — to a specific content model to produce recommendations for consistent implementations by commercial software and content developers. Since then, there have been two subsequent updates, SCORM 1.1 and SCORM 1.2. The latest version, SCORM 1.3, is still being finalized.

SCORM is an XML-based reference model that consists of three parts:

- Content aggregation (how to assemble and move content)
- Content delivery and tracking (how to deliver a course and track what the user does)
- Tagging: Descriptions of how to create metadata for courses and objects

Much of what is in the SCORM 1.2 specification is XML-based, and much of that came from the IMS Global Learning Consortium (see Note 2). XML is an open standard that has been widely adopted, and most of the participants of the IMS agreed that this was the best way to proceed. The tagging of the content needs to be in XML, because by using XML, searching dispersed libraries of e-learning content will be much easier. Information on this can be found in the metadata information model in the SCORM specification (www.adlnet.org). Additionally, a piece of content that is SCORM-compliant would be incorporated into what is known as an imsmanifest.xml file. This file is similar to a play list in that it contains the objects (HTML, flash objects, and so on) and the order in which they would be played for the course to run.

Note 2
IMS Global Learning Consortium
The IMS was formed after initial work by EduCause, a nonprofit group of more than 600 colleges and universities. The IMS Global Learning Consortium develops open technical specifications to support distributed learning. Its mission is to facilitate the delivery of online learning to all users and all use environments worldwide. IMS is supported by a worldwide consortium, which includes more than 50 contributing members, more than 100 developers' network subscribers and a Web community of users.

There are numerous benefits that enterprises will experience when they begin to use SCORM.

Learning object reuse

One of the benefits of a learning content management system (LCMS) is that different learning objects can be merged to create a new or different course. SCORM-compliant content is much easier to integrate because of the common underlying XML tagging of each object. Enterprises that decide to make SCORM part of their underlying content format, will, in the long run, be able to leverage their investments in custom content.

Easier content migration

SCORM compliance allows courses to be migrated more easily from one system to another. For an enterprise that might be considering replacing its current LMS, having SCORM-compatible content will make the migration task much easier. Note that a technical validity check should still be done by physically launching the courses with the new LMS or using some of the new content validation tools.

Dynamic content

Future versions of SCORM will allow each student to have a unique experience by presenting different parts of a course based on inputs/responses by a student that is taking the course. The SCORM 1.3 standard will enable content to be constructed for dynamic use so that a user will have an experience customized to his or her responses and knowledge level.

As dynamic content enables more of an immersive learning experience, it is easy to see the intersection between dynamic content and computer gaming, where users decide where they want to go in a game. In fact, by 2008, user experiences in custom content courses where dynamic simulation is used will begin to mimic the experience of computer gaming (0.6 probability).

Elimination of vendor lock-in

One of the historical issues with e-learning content has been that it is often in a proprietary format, making it difficult to integrate with e-learning software. This created integration barriers or obstacles for enterprises and meant that every release of software had to be tested with every change to any content. These early problems with content integration are one of the reasons that the SCORM standard was developed. By leveraging SCORM and the standard application programming interface calls it uses for interfacing into LMSs, enterprises can ensure that their content is portable across multiple LMSs. This is important, because many enterprises will have multiple LMSs.

Advice for Enterprises

Enterprises that have or are about to embark on an e-learning initiative need to start asking prospective vendors about SCORM and how they support it. What version do they support (should be 1.2)? How long will it take them to support 1.3, and what support do they offer to validate that their software or content are SCORM-compliant? Enterprises that are having custom content developed should ensure that the content passes a SCORM validation test before signing off on it.

Acronym Key

DOD	U.S. Department of Defense
LCMS	Learning content management system
LMS	Learning management system
SCORM	Sharable Content Object Reference Model

Bottom Line: The Sharable Content Object Reference Model started out as a U.S. Department of Defense standard, and has quickly become a corporate one as well. Enterprises need to ensure that SCORM compliance is part of their overall e-learning deployment plan. By doing so, enterprises can avoid the traps of proprietary content that has limited reuse capability.