The University of Wisconsin's journey through standards has lessons for anyone about to embark on e-learning.

Not too long ago, an e-learning project manager I know jokingly referred to SCORM as "a happy place in the future." In the minds of many e-learning developers, standards are a bitter pill—providing little in return for the effort. But that view is turning around. Standards is a hot topic. Even though there's much work ahead in defining universal standards, a solid foundation is in place upon which to build your e-learning strategy. For e-learning project managers, that points to certain considerations for every project.

A SCORM
Odyssey

By Bill Shackelford

SCORM—sharable content object reference model—promises to bring together the best of current standards and provide a common ground for e-learning in the future. Such seemingly diverse bodies as the U.S. Department of Defense, major academic institutions, and rival vendors of e-learning products are working together to get to that happy place in the (not so distant) future.

In the meantime, one group's SCORM odyssey can serve as an itinerary for your own journey into the world of e-learning standards and help you focus your efforts.

Lots of acronyms

In November 1997, the DoD and the White House Office of Science and Technology established the Advanced Distributed Learning initiative to promote collaborative development of common standards for e-learning. The first ADL Co-Laboratory opened in 1999 in Alexandria, Virginia. Another, the Joint Co-Lab in Orlando, Florida, was set up to encourage collaborative development of ADL projects and systems acquisitions. During 1999, preliminary versions of SCORM specification began to appear. In January 2000, the Academic Co-Lab was established on the University of Wisconsin-Madison campus, with Judy Brown as executive director, to serve the academic community. At roughly the same time, SCORM version 1.0 arrived.

The University of Wisconsin Learning Innovations was created in 1997 by the UW Board of Regents to serve all 26 of the UW campuses and support their online degree programs. In addition, UWLI offers consulting and course development services to organizations outside the university, whose close contact with the ADL operation provided the opportunity to be an early participant in the Academic Co-Lab's activities as a contributor of staff time and resources, and beneficiary of the co-lab's efforts.

But first, let's break down the acronym SCORM and define its parts:

Sharable. The goal is to make learning content readily available, without adaptation, to virtually all members of the learning community. That means that the content should run on multiple platforms and be launchable from any number of SCORM-conformant learning management systems. It also means that the content should carry information that enables identification and search of the content. That identifying information is called meta-data—data about the content rather than the content itself. To draw upon an analogy from the world of digital music, meta-data would be the title, performance date, and artist for a song. Putting aside the complicated issues of intellectual property and copyright, such meta-data might someday enable the free flow of learning content à la Napster.

Content. The choice of the word *content* rather than *course* is especially important. A piece of content can be as small as a single page, a single image, a single audio file, or even one word or character. This broad spectrum of granularity provides great flexibility for learning developers.

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E-Tips

Object. This term, from the world of information technology, implies that, as standards evolve, the existence of learning chunks or objects containing data and behaviors will make it easier to develop reusable content. **Reference model.** This term reminds us of SCORM's role as a roadmap to standards work, similar to a bookshelf of reference materials. SCORM-based standards depict, or model, the learning content so that everyone needing to access or combine that content into larger composites can understand it thanks to its description through the SCORM framework.

How it all began

SCORM grew out of a series of events that started back in 1996, when the DoD began exploring ways to increase readiness and reduce duplication of training efforts through the use of network and Web-based technologies. During that same period, a growing number of colleges and universities launched initiatives to add e-learning (a.k.a. distance education) courses to their curricula. Meanwhile in corporate training, e-learning began replacing many instructor-led offerings. Suppliers of courseware, course development tools, and learning management systems fought for market share.

Standards usually take years to develop. Rather than draft and dictate an arbitrary set of new standards for e-learning compliance, ADL took the SCORM approach, emphasizing the reference model. That built on a foundation of the best current standards to define key aspects of e-learning, giving developers and tool vendors an evolving de facto standard until final versions of the reference model could be presented to standards bodies such as the Institute of Electrical and Electronics Engineers (IEEE) for adoption. By drawing from the work of several key consortiums, SCORM provided time-tested industry specifications that could be honed into a comprehensive reference model for the testing and certification of e-learning products and content.

For example, SCORM's run-time environment specification comes more or less intact from AICC (Aviation Institute CBT Committee), one of the early

entrants into the world of computer-based and Web-based training. A major goal was to try, wherever possible, to prevent the need for rework as the reference model matured.

ADL's stated goals covered these capabilities:

Accessibility. The learning content needs to be available anywhere in the world, not just on a local network or CD-ROM.

Interoperability. The learning content should work on all conformant platforms, browsers, and LMSs—not for just one or a handful of products.

Durability. Components developed in current versions of the reference model should work in later versions without people having to redesign or recode content (a.k.a. upward compatibility).

Reusability. Content can be used not just in a single course or lesson, but wherever it's needed. No special codes or links are allowed that would lock content into a specific course or lesson.

Adaptability. Perhaps a longer-term goal, this is the ability of learning content to configure itself based on learning progress or preferences. If that sounds utopian, witness the sophisticated capability of many commercial Websites to adapt to customer behavior. Adaptability means, simply, ways to label content to match learner preferences or skill levels.

Affordability. Meeting the previous goals will eventu-ally reduce production costs for e-learning content and make quality learning widely available at significantly lower costs.

The efforts of UWLI will, in many ways, test whether those goals are achievable as people begin to embrace SCORM.

Goals, roles, and tools

Mike Bestul, UWLI's CIO, created a SCORM task-force to target several major areas:

Develop capacity to deliver SCORM-conformant content. That would involve

● creating an internal education program through a progressive SCORM training experience, developed by UWLI deputy CIO Gerry Smith. Success in creating and delivering the internal training provides a model for external offerings in the future.

● selecting and testing course content delivery tools. These experiences would inform the choice of tools for development and provide a model for future consulting and training activities.

● implementing the tools in three phases. Each phase would lead to a higher level of sophistication in SCORM expertise and enhance ULWI's competitive edge.

Support a SCORM certification process. As SCORM standards evolve, the demand for certification of products and content will increase. UWLI plans to continue to participate.

Develop the capability to deliver SCORM knowledge training and consulting. The goal is for UWLI's expertise in delivering SCORM-conformant products to put it in a favorable position to offer consulting to the private and public sectors. Its external education offerings will mirror the internal education programs developed to prepare UW staff to deliver SCORM products. As part of that goal, UWLI plans to assemble a growing body of knowledge to facilitate continuous refinement in the delivery of SCORM products.

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Starting small

UWLI's initial training efforts prepared it to embark on its odyssey. The university took its course development staff through a series of training experiences to examine the current version of the standard and gear up for the emerging standards being brought together by ADL. The university's close affiliation with the Academic Co-Lab proved valuable in learning the latest developments. In return, UWLI provided staff and other resources to the co-lab effort. That synergy helped accelerate the entire evolutionary process.

One of UWLI's instructional developers, Scott Reeser, worked for a time for the Academic Co-Lab. In the process, he became an advocate of the SCORM initiative, also involving himself in the ADL Plugfests—forums for course developers and tool vendors to test their e-learning courses and products for conformance. Says Reeser, "At that time—and still today—practical guides for SCORM implementation were needed desperately for e-learning content designers and developers." UWLI continues to service the university community and other customers. Creation of current materials is with the SCORM reference model clearly in view. That provides benefits for the present and advantages for the future, such as

● ability to provide SCORM-conformant courses for government contracts. To participate as an e-learning provider in the public sector, SCORM conformance will be a primary screening requirement for most contractors. To compete in this market, SCORM is a real requirement now. "That in itself is sufficient motivation to get onto the SCORM bandwagon early," says Bestul.

● ease of migration from one LMS to another for all material. "By evaluating various rival LMSs, we're becoming conversant with a wide variety of vendor products and their levels of SCORM conformance," says UWLI courseware administrator David Wirth. Most major players in the LMS world are becoming SCORM conformant. That means that SCORM-conformant content will be increasingly easier to migrate from one LMS to another. Says UWLI's Smith, "We realize there can be tremendous efficiencies and other benefits from the application of e-learning standards."

● reusability of content. The real promise of SCORM is the ability to tag and reuse learning objects. Reeser gives the example of a one-hour course that might take 100 hours to produce at roughly US$100 per hour. If that $10,000 course can be reused as little as 5 percent, that's a $500 savings. A curriculum of 50 courses would garner $25,000 in savings with the same small percentage of reuse.

● product and content testing and certification. ADL provides free software to test e-learning products. UWLI uses those tests on its own products for conformance. "As SCORM evolves," says Wirth, "testing and evaluation for conformance will become increasingly important."

Looking to the future

SCORM version 1.3, due out this year, will provide a valuable missing piece in the e-learning standards puzzle. Beyond being a refinement to SCORM 1.2, the new SCORM 1.3 specification will at long last provide the basis for specifying sequencing and navigation rules without having to set up such rules independently and simultaneously within an LMS. To achieve that and maintain the goal of true reusable learning objects are critical requirement to help SCORM fulfill its promise. SCORM 1.3, sometimes referred to as "navigation lite," doesn't achieve true adaptive sequencing and navigation, but it at least provides a degree of flexibility comparable to most current e-learning.

SCORM version 2.0, planned for 2003, and subsequent versions will move beyond those capabilities and put into place specifications for creating self-adapting sequencing and navigation, as well as more complex simulations. There's even talk of version 3.0, but it still resides in that happy place in the future.

Even though UWLI has had an advantage by residing in the backyard of the ADL Academic Co-Lab, it offers an example for other e-learning developers. "Because most of the work done by the Academic Co-Lab is virtual," says executive director Brown, "the services and information are free to all ADL partners regardless of geographic location."

ADL continues to lead the world in bringing together e-learning specifications from the best available sources and keeping the e-learning community involved and informed about the evolving SCORM. **TD**

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