

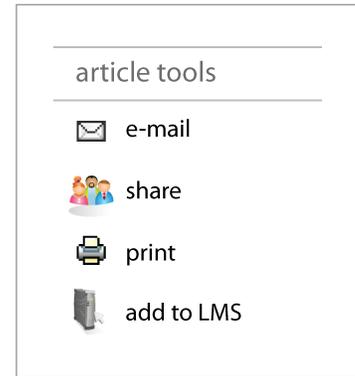
SCORM 2.0: Grab the Low Hanging Fruit

Create Real Interoperability for Learning Management Systems and Content

By Len Murphy
July 1, 2008

I found an excellent article on the Internet entitled "Ten Tips for Designing On-line Learning." Accompanying the article was an online video series demonstrating helpful techniques and concepts for creating web-based learning programs.

I wanted to share the article and videos with colleagues. The site hosting the article displayed user friendly icons under a feature dubbed "article tools." These tools included e-mail, share, print, and add to LMS. Excellent!



Click "add to LMS" to incorporate SCORM complaint content into your LMS.

E-Mail and Sharing

I clicked the "e-mail" icon and was directed to an "e-mail this story" page. I typed in a colleague's e-mail address, my name, my e-mail address, and a comment. I clicked "send" and I was finished. It took less than ten seconds. So, I sent it to two other colleagues.

I was able to do the same thing with the video series. This all took me less than a minute.

As an alternative, I could have used the "share" feature. When I clicked on the "share" icon, the web page listed popular sites that use social bookmarking links. These social sites included Yahoo, Google, Facebook, and others. These sharing features are common on almost all modern web sites.¹ I could use these devices to recommend articles or share them by e-mailing or posting items to a web location accessible to people in my pre-established social groups.

For example, after clicking on "share," I clicked on the "Facebook" link and a pop-up window appeared. It displayed the story headline and a one-line abstract. It gave me the option of typing in a comment and either posting the article to my profile page or sending it to friends. I typed in a short comment and clicked "post." The story with the headline, link, abstract, and my comment instantly posted to my Facebook page. The pop-up window closed automatically.

¹ For example, a developer who wishes to design a web page with a share link to Facebook can follow the instructions at their Facebook Share Partners page at http://www.facebook.com/share_partners.php (accessed 6/13/2008).

Add to LMS

I now wanted to share this great article and the outstanding videos with others at my company as part of our continuing education efforts. So, I simply clicked on the "add to LMS" icon, which is found on most websites. The website directed me to an "LMS" pop-up window.

The LMS pop-up window displayed the title and abstract for the article/module. The window also advised me about tracking. The tracking portion said that when launched from a SCORM compliant LMS, the provider tracked the user's progress and reported either "complete" or "incomplete" back to the LMS. In this instance, that's really all we need! Awesome!

It gave me the option to attach a comment and either post the article to the company's LMS or e-mail the information to the corporate LMS content supervisor. I have content management rights on the LMS, so I typed in a comment and clicked "post." The headline, link, abstract, and my comment instantly posted to the company's LMS. I didn't have to download anything else. The content remained on the provider's site and was now accessible as part of our corporate LMS library.

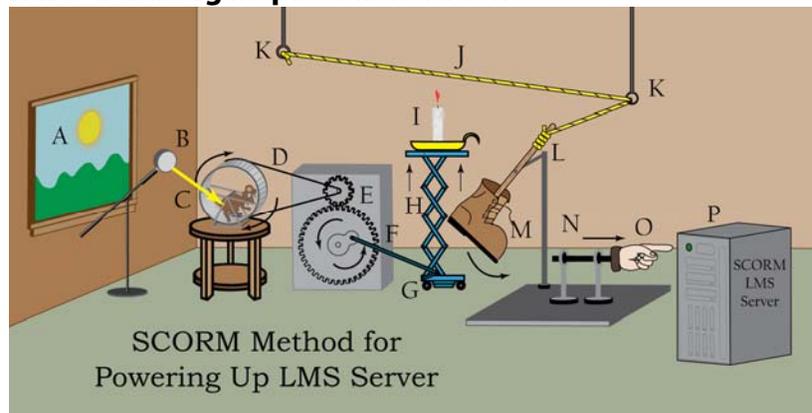
Then I woke up from the dream!

Although I can effortlessly share web content using e-mail and share features, I can't easily incorporate content into an LMS. Content authors can't easily make their web content SCORM compliant. And, LMS users cannot simply launch and track web-based content.

This is because the SCORM standards for learning management systems and content don't establish protocols for effortless sharing of information over the Internet. SCORM based systems are *accessibility challenged*.

By today's standards, SCORM interoperability

Rube Goldberg Inspired Illustration



A Rube Goldberg Machine is "a contrivance that brings about by complicated means what apparently could have been accomplished simply." Answers.com (accessed 6/26/2008).

works like a Rube Goldberg Machine.² In other words, it is more complex than it needs to be, and, quite frankly, it doesn't work in the modern world.

In the modern world, business people and educators share information with the click of a button. In the modern world, content is housed on the Internet, not on dedicated content servers. Also, in the modern world, content can come from many sources, not just high priced consultants and overworked corporate training departments.

Proposed Design Concepts for SCORM 2.0

With SCORM 2.0, LETSI³ has the potential to immensely change the business world. SCORM 2.0 could be the indispensable ingredient that trainers and educators need to make the corporate LMS as popular for workers as YouTube, FaceBook, and mySpace are for Millennials and Gen Xers.

As LETSI designers work to develop SCORM 2.0,⁴ I hope they put the highest priority on "grabbing the low hanging fruit." What I mean by this is that the standards for interoperability should focus *first and foremost* on making it possible to effortlessly add simple web-based content to an LMS. Corporate trainers, educators, and managers should be one click away from adding any useful content they encounter.

To accomplish this, the SCORM 2.0 working group needs to overcome major inadequacies in the current version by adopting a few basic concepts. Those concepts include:

- (1) Make it easy,
- (2) Establish a cross-domain communication standard,
- (3) Plan for web-based content, and
- (4) Make it easy.

(1) Make It Easy

Acquiring LMS content should be as easy as linking to readily available web-based articles, web-based videos, or web-based learning modules. The process should work like other web-based sharing options.

If this concept conflicts with the current SCORM model and upgrade plans, I suggest that the SCORM 2.0 working group consider developing a "SCORM 2.0 LITE" version in

² A Rube Goldberg Machine is "a contrivance that brings about by complicated means what apparently could have been accomplished simply." Answers.com (accessed 6/26/2008). Also see <http://www.rube-goldberg.com/> .

³ <http://www.letsi.org/letsi/display/welcome/Home> .

⁴ See <http://www.prweb.com/releases/2008/06/prweb988494.htm> .

conjunction with SCORM 2.0 (which will undoubtedly be overly complex). This "LITE" standard could establish a protocol for interoperability equivalent to SCORM 2.0 but designed for simple loading and sharing of web-based content.

Consider the following:

- Most content need not be complex to be useful.
- All content loaded into an LMS need not include a price tag of \$25,000 to \$75,000 per hour of courseware.
- An LMS doesn't necessarily need to control all the assets in a web-based module.
- Obtaining SCORM compliant content and loading it into an LMS should not require a team of outside consultants working alongside an army of in-house experts.
- Loading new content from a new provider should take seconds not days, weeks, or months.
- Complex tracking is usually not essential; tracking "complete" or "incomplete" will often suffice.

Introducing SCORM 2.0 LITE

Basic Features

- "add to LMS" tool
- LMS tracking wrapper
- No substantial content downloads
- Developer/host manages the content

Concepts

- Developers can incorporate the "add to LMS" tool and an LMS wrapper to any web page or series.
- LMS managers can add content to their LMS by clicking on the "add to LMS" tool
- If a web page with an LMS wrapper is launched from an LMS, the page sends tracking data back to the LMS.

SCORM 2.0 or "SCORM 2.0 LITE" should be modeled after existing web-sharing concepts.

First, the standards should include a tool that developers can easily add to their web-based content.⁵ The "add to LMS" tool would be incorporated into the developer's web pages in the same way other article tools such as e-mail, print, and share are incorporated on many websites now. The "add to LMS" tool would provide a standard method to instantly import content into an LMS from the web.

Second, the standard should include an LMS tracking wrapper. The wrapper would be a package of SCORM designated html or java code that could be inserted into web-based assets as appropriate. The code should be readily available to content developers and easy to add. When an LMS user launches a web-page, the wrapper on the page sends and retrieves any tracking information required. In many instances, this might simply mean (1) communicating "incomplete" or "complete" status, and (2) sending the exit command to the LMS.

(2) Establish a Cross-Domain Communications Standard

⁵ For example, a web page designed to set up a share link to Facebook can follow the instructions at their Facebook Share Partners page at http://www.facebook.com/share_partners.php (accessed 6/13/2008).

I have read countless writings by Claude Ostyn and others on the subject of cross-domain scripting.⁶ A SCORM compliant LMS, as is, does not allow cross-domain communications. In other words, I can't launch a module that is hosted on a website different than the LMS. Mr. Ostyn and others tell us that this is a "feature not a bug."⁷

As John McEnroe might say, "You can't be serious!"⁸ The inability to communicate across domains is not a "feature." Maybe it's not a bug *per se*, but it is definitely not a "feature." "Feature" makes is sound desirable.

The inability of SCORM compliant systems to universally communicate across the Internet is a design flaw. It is also something that is simply unacceptable by modern standards.

Think about it. How is it that I can:

- purchase goods and services on the Internet;
- register for conferences over the Internet;
- file my taxes on the Internet;
- manage my healthcare insurance on the Internet;
- manage my retirement account on the Internet; and
- bank online;

but I can't take an online SCORM compliant course because online Internet security is a problem that can't be overcome in the SCORM standard?

What? That is obviously nonsense.

Consider some of the "conceptual starting point[s] for SCORM:"⁹

Accessibility: The ability to locate and access instructional components from one remote location and deliver them to many other locations.

Interoperability: The ability to take instructional components developed in one location with one set of tools or platform and use them in another location with a different set of tools.

⁶ See for example <http://www.ostyn.com/resscornitech.htm>; and Gord MacKenzie, SCORM 2004 Primer ((McGill 2004) http://www.mcgill.com/media/SCORM_2004_Primer_v1_McGill_Digital_Solutions_Gord_Mackenzie.pdf.

⁷ Wilbert Kraan, *A feature or a bug; SCORM and cross-domain scripting* (Cetis 2003) <http://zope.cetis.ac.uk/content/20030622203659>.

⁸ http://www.barrypopik.com/index.php/new_york_city/entry/you_cannot_be_serious_john_mcenroe/

⁹ Philip Dodds, *SCORM 2004 3rd Edition Overview*, Sec. 1.2.1 (Advanced Distribution Learning 2006).

The Internet satisfies these high level functional requirements. Yet, the SCORM communication method doesn't establish a standard communication channel for the Internet. The SCORM 2.0 working group must undoubtedly address this.

The ADL published a list of proposed *work-arounds* to the cross-domain scripting issue.¹⁰ SCORM is the international standard established by the ADL for learning management systems and content, and the ADL provides hundreds, if not thousands, of pages of technical guidelines, specifications, and instructions for SCORM implementation. Yet, at the end of the day, users must download a supplemental paper with cryptic explanations of ways to *jury rig* their SCORM compliant LMS and content to circumvent the "security feature."

And this makes LMS operators the lucky ones. For content providers, no ADL *work-around* exists to make content easily usable from the Internet.

Claude Ostyn provides a solution for LMS operators through the use of a reverse proxy server.¹¹ If Claude's proposal is the best solution to the cross-domain communication problem, then by all means it should be incorporated into the standard; and an LMS should not be considered SCORM 2.0 compliant unless it communicates through a reverse proxy server.

Next, if the SCORM 2.0 working group cannot develop a cross-domain communication standard using java scripting, then other alternatives should be considered. For example, the SCORM 2.0 working group should consider adopting something similar to the AICC HACP¹² communication protocol for certain low-risk content. This might be acceptable, despite security concerns, because, for some content, high level security is not essential.

Most people don't work for the military, the CIA, or INTERPOL. Online learning is not usually a top-secret endeavor. Furthermore, most professionals don't rely on completion of e-learning modules to earn absolutely vital certifications or badges.

When most people complete online courses, they hope to satisfy continuing education

". . .if the SCORM 2.0 working group cannot develop a cross-domain communication standard using java scripting, then other alternatives should be considered."

¹⁰ <http://www.adlnet.gov/downloads/downloadpage.aspx?ID=58>

¹¹ <http://www.ostyn.com/resscormtech.htm>.

¹² See <http://support.fronter.com/faq/pdf/51.pdf> for a short explanation.

requirements or advance their general professional knowledge. Most people will not hack into an LMS or decode web communications to cheat the system for the purpose of getting a few continuing education credits.

So although security is important, the level need not be universally set to *DEFCON 1*. Security should be established with an eye to balancing the security needs against accessibility and interoperability goals. More than one level of security may be appropriate and essential to functionality for widespread application of a new SCORM standard. And if this is the case, a method similar to the AICC HACP communication protocol may be appropriate as a SCORM 2.0 option.

In any event, SCORM 2.0 must mandate a method for cross-domain communications that content developers and LMS purchasers can depend upon.

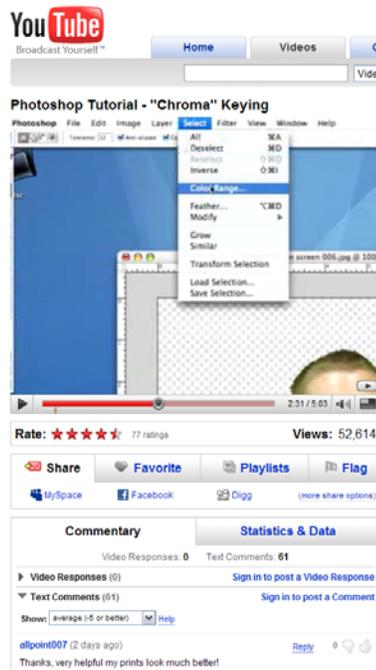
(3) Plan for Web-Based Content

In today's environment, it is unrealistic to think that learning content will be housed in a content repository within the same domain as the LMS. In many ways, a SCORM compliant LMS, is the equivalent of an 8 track tape player in our 8 GB iPhone,[®] mp3 player world.

SCORM 2.0 should be designed assuming that a great deal, if not all, courses will be web-based and housed in a domain and repository outside the LMS. The era of SCORM content packages that are stored in one location along with the LMS seems as outdated as delivering computer based training via floppy disc.

There are several reasons to focus on this, such as:

- (a) availability of content,
- (b) copyright,
- (c) updating,
- (d) record keeping,
- (e) advertising, and
- (f) functional issues.



Free or inexpensive educational snippets like this one on chroma keying are widely available on the Internet.

Example hosts/providers include:

- YouTube
- ExpertVillage
- CE providers
- Product Manufacturers

Such content should be easily sharable using a SCORM 2.0 compliant LMS.

(Note: Use of this image is without express permission. The author believes the use is a fair use here.)

(a) Availability of Content

Obviously, the Internet makes a wealth of information available. This includes informative articles and multi-media content. For example, at expertvillage.com, an in-house trainer could learn professional techniques for speaking by watching a short online training video.¹³ At schulter.com, a flooring installer could learn about installation of tile underlayment by reading an article and watching online videos.¹⁴ At onlinece.com, chiropractors can earn online continuing education credits by taking online courses.¹⁵ A developer could learn about green-screen and chroma keying techniques on YouTube.¹⁶ And, a teacher could encourage her students to learn about Copernicus at the History Channel's website.¹⁷

(b) Copyright

In general, most content is copyright protected. A corporate trainer can't simply make copies of other's protected work and import it into the company's content management system without permission or licensing. That would likely constitute infringement. However, if the content is on the Internet, there are safe ways to link to the content and make it available without infringing.¹⁸ Creating greater access to web-based content through an LMS can increase the amount of useable content and reduce licensing and infringement concerns.

(c) Updating

One of the conceptual starting points for SCORM was durability. Content on the Internet can be easily updated, edited, corrected, or modified on a moment's notice by the developer. However, if a developer's content is housed as copies on individual clients' content management servers, each copy will need to be updated. That's not easy or practical. Universal updating to hundreds of private content servers will require broadcast communications, multiple implementations, numerous schedules and timelines, varying degrees of technical support, and more.

(d) Record keeping

Oversight of user identity, monitoring of course progress, and maintenance of completion records of electronic courseware must sometimes take place outside

¹³ http://www.expertvillage.com/video/75104_news-reporter-body-language.htm .

¹⁴ <http://www.schluter.com/5793.aspx> .

¹⁵ <http://www.chirocredit.com/> .

¹⁶ See for example <http://www.youtube.com/watch?v=sAF9GFBTaAo> .

¹⁷ <http://www.history.com/media.do> .

¹⁸ See Brad Bolin, *Linking and Liability* (<http://www.bitlaw.com/Internet/linking.html> accessed June 27, 2008).

the typical corporate LMS. Many governing bodies establish continuing education (CE) requirements for licensed or credentialed professionals. Example professions include lawyers and insurance adjusters.

Qualifying CE courses can be completed online. States or governing bodies require CE providers to regularly authenticate user identities, update materials, and maintain completion records. Providers can meet the requirements when housing content on their own systems. However, providers can't meet the requirements if they must send a package of content to be housed on an LMS at the professional's place of employment.

(e) Advertising

Quality content can be expensive to create. However, many developers may be willing to make content free if they can recoup their production costs by selling advertising on their site.

(g) functional issues

It is easy to create interactive web content. However, making all content SCORM compliant is not.

There are many other reasons that Internet-based modules are the future of e-learning. But, the fundamental notions are: (1) users are connected to the Internet; (2) content providers are connected to the Internet; so, (3) a SCORM LMS should facilitate the communications between the two.

(4) Make It Easy

I am repeating "make it easy" because it *bears repeating*.

Creating SCORM compliant content should be as easy as adding a simple SCORM wrapper to handle communications and including an "add to LMS" tool to any web-based content on the Internet. Incorporating the content into an LMS should be as easy as clicking on the "add to LMS" icon, adding a comment, and clicking "post."

"... make SCORM 2.0 the lynchpin of online learning."

Advanced concepts and tools such as immersive learning, interactions, collaboration, adaptive instruction, and discovery learning excite developers, trainers and educators. But those concepts represent the *high-hanging fruit* at this point.

People can learn a great deal from much simpler content. That content is readily available now on the Internet. The SCORM 2.0 working group should focus on the basics of communications that will enable users to access that *low hanging fruit* through an LMS and make SCORM 2.0 the lynchpin of online learning.



(I, Len Murphy, wrote this article and created the graphics with the exception of the YouTube screen capture, which I believe is a fair use. I grant LETSI non-exclusive license to reproduce my article and graphics in any medium, anywhere in the world.)