

A Standards-Based Approach for Facilitating Discovery of Learning Objects at the Point of Care

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Recent concerns about the quality and safety of healthcare practice provide an imperative for discovering and accessing learning resources. The growing ubiquity of the Internet, World Wide Web, and on-line educational content provide opportunity for healthcare practitioners to identify and master learning in a granular and rapid fashion. The e-learning community at large has developed a number of standards to facilitate interoperability of learner competencies, metadata describing on-line content, and packaging and navigation of such content. The overall goal of our project is to enable healthcare professionals to easily and rapidly discover learning content at the point of care. This discovery and access of learning content will be based on healthcare-specific extensions of existing e-learning standards, which are themselves based on other Web standards, such as Web Services.

As with many applications in medical informatics, e-learning standards provide a foundation that can be used in healthcare, but additional attributes unique to healthcare must be added to make them usable. MedBiquitous (www.medbiq.org) is devoted to advancing healthcare education through technology standards that promote professional competence, collaboration, and improved patient care.

The work of this project builds on the following standards from the e-learning community:

- Advanced Distributed Learning (ADL) SCORM - A suite of standards for online education that enables interoperability of learning content, SCORM implements a modular approach to online learning that aggregates discrete units of digital instruction called learning objects. Learning objects are self-contained and may be reused in multiple contexts and environments, including online courses, knowledge management systems, and performance support systems.
- Institute of Electrical and Electronics Engineers (IEEE) Learning Object Metadata (LOM) - Providing descriptive information about learning objects, LOM includes the title, author, description, keywords, educational objective, and other relevant information.

- IEEE Reusable Competency Definitions - Learner progress is tracked against a set of competencies within a curriculum.

The SCORM technical framework and the LOM metadata standard provide a basic structure for describing and aggregating learning objects. These standards do not, however, address the special requirements for healthcare education, including credit information, off-label use disclosure, financial relationship disclosure, level of evidence, and ACGME core competencies. SCORM for Healthcare addresses these special requirements, extending the LOM standard and providing custom vocabularies for some metadata elements. This LOM profile is called Healthcare LOM. SCORM for Healthcare is simply a version of SCORM that implements Healthcare LOM. SCORM for Healthcare does not customize other parts of the SCORM framework, such as the SCORM Runtime Environment, Simple Sequencing and Navigation, and Content Packaging standards.

Competency and curriculum standards are less well-developed. MedBiquitous is convening a working group to define healthcare requirements for competency definitions. The group will work with the IEEE Learning Technology Standards Committee's Reusable Competency Definitions working group. We aim in this project to develop healthcare extensions to standards that emerge from the e-learning community. The competencies and curricula will be linked to learning objects that are described by SCORM and Healthcare LOM.

Funded by a Systems Grant from the National Library of Medicine, we are implementing these extensions using a Web Services framework. Our poster will provide more detail on how SCORM and LOM are being adapted for the healthcare learning environment, with examples shown in the areas of endocrinology and medical informatics. While our initial approach will focus on users actively seeking learning content, our system architecture will be developed to allow other means of connecting users to content, such as automated reviews of clinical practice outcomes.