SCORM For Healthcare
Specifications and Description Document

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Date: 14 February 2005
Author: Valerie Smothers
Author email: valerie.smothers@medbiq.org

Version History

Version No.	Date	Changed By	Changes Made
0.1	26 Mar 2004	Valerie Smothers	Initial draft
0.2	21 April 2004	Valerie Smothers	Modified ActivityAccreditation, CreditType, and Unit list of valid values. Changed CommercialRelationship to CommercialSupport. Added Provider Relationship, ProviderRelationshipDisclosure, FacultyRelationship, FacultyRelationshipDisclosure.
0.3	27 April 2004	Valerie Smothers	Changed ActivityAccreditation to ActivityCertification. Added several items to the list of valid values for ActivityAccreditation. Removed CEU from list of valid values in CreditType. Added several valid values to CreditUnit. Added CommericalSupportAcknowledgement.

0.4	31 August 2004	Valerie Smothers	Changed MedicalMetadata to healthcareMetadata, changed MedicalEducation to healthcareEducation, changed filename to healthcaremetadata, changed Medical LOM to Healthcare LOM. Added learning outcomes to classification purpose vocabulary. Added appendix for provider accreditation types. Used the SCORM LangString for the offLabelDescription, commercialSupportAcknowledgement, providerRelationshipDisclosure, and facultyRelationshipDisclosure elements. Changed elements to lower case to be consistent with LOM. Added contact, targetAudience, specialty, and profession elements.
0.5	27 Sep 2004	Valerie Smothers	Separated out Healthcare LOM as a separate specification.
0.6	14 Feb 2005	Valerie Smothers	Changed MEDBIQ-SCORM to SCORM for Healthcare.

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- Sharon Dennis, Ph.D., HEAL, University of Utah
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This specification is a profile of SCORM 2004, developed by the Advanced Distributed Learning Initiative (ADL). For more information, visit http://www.adlnet.org.

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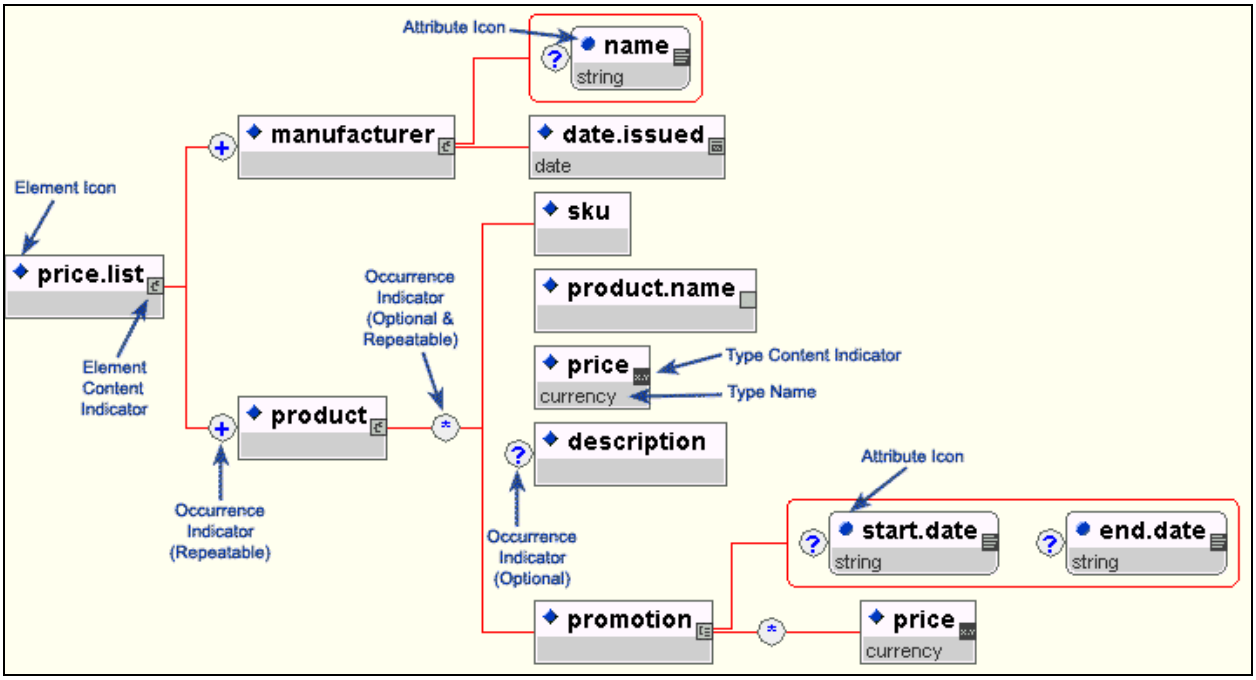
Documentation Conventions

This document uses the following conventions.

Documentation Conventions

Convention	Description
monospaced type	Sample XML tags, code, schema, or portion thereof
BoldText	When used with an XML tag name, indicates that the element contains sub-elements
Italicized Text	When used in an XML tag description, an attribute of the XML tag.
Tag description	Shading indicated that the tag is further described in a later part of the document

The following graphical standards are used for the XML diagrams in this document.



Graphical Standards from TIBCO's Turbo XML, Copyright TIBCO Software Inc.

Introduction

This document describes the SCORM for Healthcare, the MedBiquitous SCORM Profile, in detail. It is intended for use by anyone who wants to develop tools or implement electronic systems for managing online modules of healthcare education that are accessible, reusable, durable, and interoperable. The status of the document is indicated at the bottom of the page; draft documents are subject to review and approval through the MedBiquitous standards development process (see http://www.medbiq.org/about_us/consortium_process/processdocument.pdf).

The objective of the SCORM for Healthcare is to customize SCORM to address the needs of healthcare educators and learners.

SCORM is 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.

Learning Object Metadata (LOM) provides descriptive information about a learning object. Just as a label on a container provides information on what's inside, learning object metadata provides information on a learning module, including the title, author, description, keywords, educational objective, and other relevant information. This information helps learners and content developers to find just the right piece of instruction. Learners can use the learning object as a mini-course, and content developers can include the learning object in a new course.

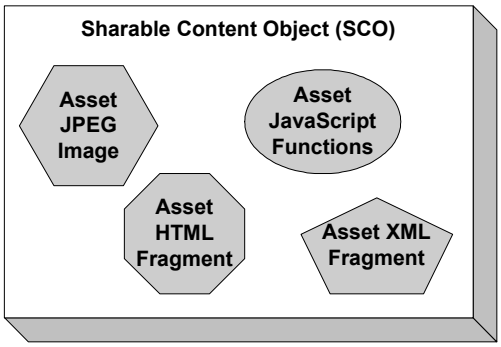
The SCORM technical framework and the LOM metadata standard provide a basic structure for describing learning objects and aggregations of learning objects. These standards do not address some of the special requirements for healthcare education, including disclosure of financial interests, implementation of medical taxonomies, and indication of continuing education credits. SCORM for Healthcare addresses these special requirements and others. SCORM for Healthcare extends the LOM standard and provides 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. For more information about Healthcare LOM, see the Healthcare Learning Object Metadata Specifications and Description document.

SCORM for Healthcare does not customize other parts of the SCORM framework, such as the SCORM Run-time Environment, Simple Sequencing and Navigation, and Content Packaging standards.

This document provides technical information on the SCORM for Healthcare specification itself; the SCORM for Healthcare Implementation Guide provides further information on instructional design and content development aspects of implementing SCORM within a medical or healthcare organization or community. (development pending)

SCORM Content Model

The process of creating online learning experiences involves bringing together a number of different resources - such as text, images, and applications - in a cohesive and instructionally meaningful way. The SCORM Content Model describes the components used to build a learning experience from reusable learning resources. The Content Model also defines how constituent sharable and reusable learning resources are aggregated to compose higher-level units of instruction. The following figure shows how simple text fragments, images, and code fragments can be assembled into a shareable content object.



Aggregating Assets Into More Complex Learning Resources
Copyright Advanced Distributed Learning, 2003

The following table describes the components of the SCORM Content Model.

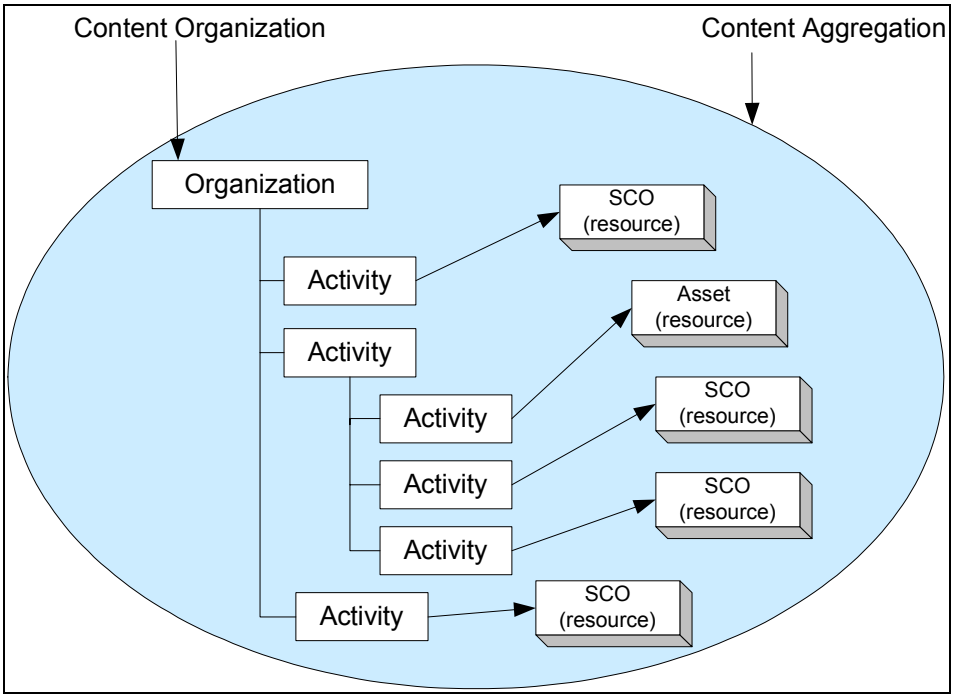
The SCORM Content Model *

Component	Description
Asset	The most basic of learning resources is an Asset. Assets are an electronic representation of media, such as text, images, sound, assessment objects or any other piece of data that can be rendered by a Web client. Individual Assets are not launchable by a SCORM Conformant LMS. An asset is described at the *resource* level within SCORM Metadata.
Shareable Content Object (SCO)	A SCO is a collection of one or more Assets that represents a single learning resource that can be launched by an LMS. SCOs may be tracked by an LMS using the SCORM Run-Time Environment Data Model. SCOs are intended to be subjectively small units, such that reuse across multiple learning objectives is feasible. A SCO is described at the *resource* level within SCORM Metadata.
Activity	Activities are cohesive units of instruction used to enable content sequencing based on a set of rules. Activities may be associated with a SCA or SCO, or activities may be used to group other activities. An activity is described at the *item* level within SCORM Metadata.
Content Organization	A Content Organization is a map that describes cohesive units of instruction (Activities), relates Activities to one another, and may associate learning taxonomies to the Activities (e.g., course,

Component	Description
	chapter, module, etc.). A Content Organization is described at the *organization* level within SCORM Metadata.
Content Aggregation	A Content Aggregation is a collection of learning resources and a Content Organization.

* Text adapted from the SCORM Content Aggregation Model, version 1.3.

The following figure shows the different components of the SCORM content model.



Resources within a Content Aggregation

Learning resources can be associated with metadata using the SCORM Content Package. Metadata requirements are different for each resource, but all resources use the data model defined by the LOM standard. For more information on Content Packaging, the SCORM Content Model, and Sequencing, see the SCORM Content Aggregation Model Version 1.3, available as part of the SCORM 2004 specifications from ADL at:
http://www.adlnet.org/index.cfm?fuseaction=SCORDown

Additional Requirements

To be SCORM for Healthcare conformant, the metadata document must indicate that it is conformant with the LOM version 1.0, SCORM Content Aggregartion Model version 1.3, and Medical LOM version 1 standards. To indicate this conformance, include the following XML code in the metaMetadata section of the metadata record:

```
<metadataSchema>LOMv1.0</metadataSchema>
<metadataSchema>SCORM_CAM_v1.3</metadataSchema>
<metadataSchema>HEALTHCARE_LOMv1</metadataSchema>
```

Metadata Recommendations

SCORM for Healthcare provides a great deal of flexibility with regard to metadata. Some elements are required; many others are optional. To facilitate cross-organization content search and discovery, we recommend using the following elements for healthcare educational content. The table below specifies whether the metadata is recommended for use with SCO or Asset metadata. Any elements recommended or required for SCO metadata are also recommended or required for Content Organization and Activity metadata.

Many of these metadata elements may be completed by automated systems to reduce the burden on content authors.

Recommended SCO Metadata Elements

Element	Recommended/ Required	Comments
1.0 General	Required	
1.1 Identifier	Required	
1.1.2 Entry	Required	MedBiquitous recommends using a URI as the identifier entry unless your organization uses Digital Object Identifiers (DOIs) or other persistent unique identifiers.
1.2 Title	Required	
1.4 Description	Required	
1.5 Keyword	Required	MedBiquitous recommends using keywords from UMLS, preferably from SNOMED. For taxonomy-enabled systems, indicate the unique identifier for the keyword using the classification element.
2.0 Lifecycle	Required	
2.1 Version	Required	
2.2 Status	Required	
2.3 Contribute	Recommended	
2.3.1 Role	Recommended	Use with SCORM for Healthcare vocabulary to identify authors, reviewers, and publisher.
2.3.2 Entity	Recommended	
2.3.3 Date	Recommended	When the role is publisher, this indicates the date of publication. When the role is reviewer, this indicates the date of last review.
3.0 Metametadata	Required	
3.1 Identifer	Required	
3.1.2 Entry	Required	

Element	Recommended/ Required	Comments
3.2 Contribute	Recommended	Recommended to support federated repositories using the OAI protocol.
3.2.1 Role	Recommended	Creator value is recommended to indicate the organization creating the metadata record.
3.2.2 Entity	Recommended	The organization creating the metadata record.
3.2.3 Date	Recommended	The date the metadata record was created. Recommended to support federated repositories using the OAI protocol.
3.3 Metadata Schema	Required	
4.0 Technical	Required	
4.1 Format	Required	
5.0 Educational	Recommended	
5.6 Context	Recommended	Use with SCORM for Healthcare vocabulary to indicate the audience and educational level within health professions education.
6.0 Rights	Required	
6.1 Cost	Required	
6.2 Copyright and Other Restrictions	Required	
6.3 Description	Recommended	Use to describe or reference copyright and cost information.
9.0 Classification	Recommended	Use to describe learning objectives and competencies. Advanced: Can also be used for referencing drug lists, clinical guidelines, level of evidence taxonomies, medical taxonomies, and curriculum using the Taxon Path element.
9.1 Purpose	Recommended	Use with SCORM for Healthcare vocabulary for advanced references. Use SCORM vocabulary to indicate educational objective or competency.
9.3 Description	Recommended	Use to describe learning objectives and competencies.
10 Healthcare Metadata	Recommended	
10.1 Healthcare Education	Recommended	
10.1.1 Expiration Date	Recommended	
10.1.2 Credits	Recommended	

Element	Recommended/ Required	Comments
10.1.3 Off Label Use	Recommended	
10.1.4 Off Label Description	Recommended	
10.1.5 Commercial Support	Recommended	
10.1.6 Commercial Support Acknowledgement	Recommended	
10.1.7 Provider Relationship	Recommended	
10.1.8 Provider Relationship Disclosure	Recommended	
10.1.9 Faculty Relationship	Recommended	
10.1.10 Faculty Relationship Disclosure	Recommended	

Other Schema Referenced

The Healthcare LOM schema is based on the IEEE LOM schema, a component schema of the SCORM model. Information on SCORM and LOM are available through the SCORM Content Aggregation Model version 1.3, available for download from:
http://www.adlnet.org/index.cfm?fuseaction=SCORDown

More information about SCORM is available form the ADL website at: http://www.adlnet.org

More information about IEEE LOM is available from the IEEE Learning Technology Standards Committee at: http://grouper.ieee.org/groups/ltsc/index.html