Reusable Competency Definitions Version 0.4

This document proposes a self-contained specification for (and only for) an information model for *referencing competency definitions*, primarily in the context of online and distributed learning. It is intended for use in a variety of contexts including

- Incorporation into specifications produced by the IMS Profiles working group
- Incorporation into current and future ADL SCORM specifications
- As a format for records in competency repositories

The proposed specification does *not* address the aggregation of smaller competencies into larger competencies (e.g., "throws" plus "catches" equals "plays ball"). It does *not* address how an ISD process uses competencies. It does *not* address how competencies are to be assessed, certified, and/or recorded. What it *does* do is provide a common model for referencing competencies and a means to create a common understanding of the meaning of a competency and its various levels of performance.

History of this Document

Version	Date	Contributors	Changes/Notes
0.1	August 11, 2000	Debbie Brown, Phillip Dodds, Leonard Greenberg Claude Ostyn, Clark Quinn, Daniel Rehak, Robby Robson	This document is based on http://ltsc.ieee.org/doc/wg20/CompDefInit.doc, a document written by Claude Ostyn and submitted to the IEEE P1484.20 working group in May 1999.
0.2	August 12, 2000		Performance changed to Statement Levels added to criteria Scale removed Multiplicities of elements changed
0.3	August 16, 2000		Levels, conditions, criteria put under performance (grouped into single element) Language handled only by langstrings with "single for each language" as multiplicity
0.4	September 8, 2000		Cosmetic revisions

Discussion

The proposed data model is intended to be minimalist and extensible. Extensibility can be achieved by adding elements or by including LOM elements in the Meta-data portion.

The data model is broken into four pieces (plus a comment element):

1. **Identifier:** This includes a unique identifier, a name, a version, and a catalog entry. The identifier is made up of elements 1, 2, 3, and 4

2. **The Type of the Competency:** This identifies the general nature and intention of the competency – whether the competency is a goal, a skill, a proficiency, a qualification, etc.

3. **The Definition of the Competency.** A competency is defined by specifying:

   a. **Statement.** This is the statement of the competency itself, generally in terms of expected performance. For example, "Uses Microsoft Excel".

   b. **Performance.** A set of statements, *one for each level of performance*, including

      i. **Level.** For example, "Beginner".

      ii. **Conditions.** This defines the conditions or contexts to which the competency applies. For example, "under Mac OS 8 or higher".

      iii. **Criteria.** Assessable criteria defining that level of competency**.** For example, "Opens, closes, and updates Excel spreadsheets. Writes and applies simple formulas. Navigates using cursors and mouse." Note that specifying assessable criteria is *not* the same as specifying assessments themselves, which is not done in a competency definition.

   Note: Multiple definitions of the same competency are permitted to accommodate multiple languages, but only one definition may be given for each language.

4. **Meta-data.** Meta-data about the competency as a learning resource.

Taxonomies of Competencies

There is a plethora of taxonomies of competencies. This specification is intended to meet the simple need of referencing a competency, not classifying it. Nonetheless, an implementation might want to include classifications, which can be done through the optional meta-data mechanism.

Proposed Reference Model Elements

No	Name	Explanation	Reqd	Mult	Type	Note
1	Identifier	Unique Identifier	M	Single	String	Corresponds to LOM *Identifier*
2	Name	Name of Competency	M	Multiple	LangString	Corresponds to LOM *Title*
3	CatalogEntry	See Meta-data. Also known as SouredID	O		As in IMS Meta-data	Corresponds to LOM *CatalogEntry*
3.1	Catalog					
3.2	Entry					
4	Version		O	Single	String	Corresponds to LOM *LifeCycle.Version*
5	Comment	Permit the inclusion of comments	O	Multiple	LangString	Corresponds to LOM *Annotation*
6	Type	Type(s) of the Competency	O	Single	List of Strings	Best Practices List
7	Definition	Definition of the Competency in three parts	M	Single for each Language		
7.1	Statement	Statement of the Competency	M	Single	LangString	
7.2	Performance			Single for Each Level		
7.2.1	Level	Level of competency or performance	O	Single	Unordered list of LangStrings	List of equivalent designations for a level
7.2.2	Conditions	Conditions or context under which the Competency is to be achieved or measured	O	Single	Unordered list of LangStrings	
7.2.3	Criteria	Criteria for demonstrating competency at the given level under the given conditions	O	Single	Unordered list of LangStrings	
8	Meta-data	Additional IMS Meta-data may be incorporated	O	Multiple		Best Practice List of Meta-data Elements: *General.Coverage Contribute Relation Classification*

Data Types

Data types are as in IMS specifications. Lengths of strings and lists still need to be determined.

Known Open Issues

- Should the Identifier be modeled after LOM or use the Profiles structure? Hopefully this will be unified across all specifications.

- Will the structure of a competency be acceptable? The classic work has three parts: Performance, Conditions, and Criteria. [Robert Mager, 1984. *Preparing Instructional Objectives, 2nd Edition.* Lake Pub. Co., Belmont, CA.]. Typical educational performance objectives used in standards-based education, plus many licensures and certifications, include the notion of a level. Assuming that including levels makes sense, should different levels of the same competency be considered as different competencies?