Experience-based Quality in European ODL

E-Quality

www.e-quality.eu.org

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SZCZECIN, POLAND
Quality in eLearning Standards and IMS Learning Design

Daniel Burgos
Educational Technology Expertise Centre (OTEC)
daniel.burgos@ou.nl
www.open.ou.nl/dbu
Part I: Quality and eLearning standardization

Part II: Quality and IMS Learning Design

Part III: State of the art on IMS Learning Design
The eLearning standards and the educational modeling languages seen from outside
Part I: Quality and eLearning standardization
In norm ISO 8402, quality is defined as “the totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs”

Entity and stakeholders
Target groups in eLearning specifications

- Students
- Teachers
- Learning designers
- System developers
- Content providers
- Standardization bodies
- Vendors...
What are standards? An analogy

Think about ...

...different plugs around the world
The standardization process

- Spec. Consortia
- Labs, Testbeds, Markets
- Standards Bodies
- Defacto standards

Specifications → Reference Models → Standards
There is a need in industry or users

There is a regulation to face the need

Tools and environments are generated

Debugging and programming. New releases

Validation and launch (ISO, BSI, CEN, IEEE...)

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Standarization bodies

- IMS Global Learning Consortium.
- Advanced Distributed Learning (ADL).
- Dublin Core Metadata Initiative.
- Institute of Electrical and Electronic Engineers (IEEE) Learning Technology Standards Committee (LTSC).
- International Standards Organisation (ISO) Sub Committee 36 (SC 36).
- AFNOR, et cetera
eLearning specifications

SCORM
Dublin Core Metadata

IMS Simple Sequencing
IMS Content Packaging
IMS Question and Test Interoperability
IMS Learning Design
Why do we need specifications and standards in eLearning

- A teacher makes some content
- The teacher adapts the content online
- (s)He integrates the content with the platform
- Validation and use
- Change of platform, player, editor...

Problem
Why do we need specifications and standards in eLearning

A teacher makes some content

The teacher adapts the content online

(s)He integrates the content with the platform

Validation and use

Change of platform, player, editor...
Why do we need specifications and standards in eLearning

1. They prevent content becoming “locked in” to proprietary systems
2. Ensure educational content can be reused
3. Enable educational content & learner information to be shared
4. Facilitate interoperability
5. Enable users to search for, locate and retrieve appropriate content
6. Share content between systems
7. Create and deliver computer aided assessments
8. Record and share learner information
9. Ensure educational content is accessible to all users
10. Improve the research and the quality
Main contribution of a spec to eLearning quality:
Interoperability of content, structures and technology
Where could the quality be improved in the eLearning process?
Where could the quality be improved in the eLearning process?

Original diagram by C. Duncan

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Architecture of an eLearning specification and Quality

- Authoring
- Repository
- Run tool
- LD Player
- Portal
- Learner & Staff Administration
- Learning services

Design time
Run time

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Part II: Quality and IMS Learning Design
What is IMS Learning Design?

- An eLearning specification
- to model Units of Learning
- in an interoperable way
Levels in IMS Learning Design

C
B
A

Notifications

Properties, conditions, calculations, global elements and monitoring services

Users, learning activities, support activities, environments, resources, method, plays, acts, roles

External resources, links and services (forums, chats...)

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Example IMS LD Unit of Learning

1. Introduction: What is Candida?

What is Candida?
Candida albicans is an opportunistic yeast that normally inhabits the mouth, throat, intestines and genitourinary tract of most humans and is usually considered to be a normal part of the bowel flora (the organisms that occur with us in our lower digestive tract). Its job is to recognize and destroy harmful bacteria. Without Candida, otherwise healthy individuals would be defenseless against many pathogenic bacteria. In a healthy person, Candida albicans is not considered to be dangerous.

It is controlled by a properly functioning immune system and "friendly" bacteria. However, if the number of friendly bacteria is decreased (antibiotics), the immune system is weakened, or other conditions for yeast proliferation occur (diet high in sugar, improper pill as the digestive system), Candida albicans will shift from yeast to saprophytic fungal form and start to invade the body. In the yeast state Candida is a non-invasive, sugar-fermenting organism, while in fungal state it is invasive and can produce hyphae, very long pseudohyphal structures. Hyphae can penetrate mucous or intestinal walls, leaving microscopic holes.

2. Environment
- Another_bacteria
- Margaret_story
- References_and_links

3. Video
## IMS Learning Design, from 2003 to 2007

<table>
<thead>
<tr>
<th>Year</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>Raw Spec</td>
</tr>
<tr>
<td></td>
<td>Level A</td>
</tr>
<tr>
<td></td>
<td>Example UoL</td>
</tr>
<tr>
<td></td>
<td>Prototypes</td>
</tr>
<tr>
<td></td>
<td>General dissemination</td>
</tr>
<tr>
<td></td>
<td>Awareness Rising</td>
</tr>
<tr>
<td></td>
<td>Engine</td>
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<tr>
<td>2004</td>
<td></td>
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</table>

**Video**
IMS Learning Design, from 2003 to 2007

<table>
<thead>
<tr>
<th>Year</th>
<th>Level</th>
<th>Example</th>
<th>Prototypes</th>
<th>General Dissemination</th>
<th>Awareness Rising</th>
<th>Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>Level A</td>
<td>UoL</td>
<td>Technical Editing Tools</td>
<td>Specific Dissemination</td>
<td>General Facilitation</td>
<td>Rough Players</td>
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<td>2004</td>
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<td>Prototypes</td>
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<td></td>
<td></td>
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<tr>
<td>2005</td>
<td>Levels A, B, C</td>
<td>UoL</td>
<td>Templates</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Video
<table>
<thead>
<tr>
<th>Year</th>
<th>Raw Spec</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006-07</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Level A</td>
<td>Example UoL</td>
<td>Levels A, B, C</td>
<td>Levels A, B, C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prototypes</td>
<td>UoL</td>
<td>Templates</td>
<td>Templates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>General dissemination</td>
<td>Technical Editing Tools</td>
<td>Specific dissemination</td>
<td>Learning scenarios</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Awareness Rising</td>
<td>General facilitation</td>
<td>Rough Players</td>
<td>User-centered Editing Tools</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engine</td>
<td>Kind Players</td>
<td>Adaptation</td>
<td>Inductive dissemination</td>
</tr>
</tbody>
</table>

IMS Learning Design, from 2003 to 2007
Quality in IMS Learning Design

- **2006-07**
  - Levels A, B, C
  - Templates
  - Learning scenarios
- User-centered Editing Tools
- Inductive dissemination
- Adaptation
- Kind Players

**Outcomes**
- New releases of the Spec
- Development of UoLs
- Tools
- Learning Networks

**Stakeholders**
- Designers, teachers
- Developers, vendors, teachers, designers
- All stakeholders
- Designers, std bodies, developers,

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Authoring: Quality in the life-cycle of a Unit of Learning
From teaching to an online Unit of Learning
Life-cycle Unit of Learning

1. Narrative
   - Lesson plan
   - Resources
     - html, avi, swf... editors
   - Revision
     - Modelling
     - Implementing
     - Publishing
     - Running
     - LD editor
     - LD engine & LD viewer
Life-cycle Unit of Learning

- Narrative
  - Lesson plan
    - Resources
      - html, avi, swf... editors

Revision

Modelling

- Implementing
  - Publishing
    - Running

- LD editor
- LD engine & LD viewer
Part III: State of the art on IMS Learning Design
Current state of IMS LD: Research hot topics

- Learning Networks
- Interoperability
- Adaptation in eLearning
- Educational eGames
Thematic and exogenous Learning Networks

Community 1
Theme

Community 2
Theme

Community 3
Theme

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Thematic and exogeneous Learning Networks
Interoperability inter-systems-specs

IMS Learning Design and IMS Content Packaging

IMS LD is embedded in IMS CP
IMS CP, new release along 2006

IMS LD

- Unit of Learning
  - Manifest
    - Meta-data
    - Organizations: Learning Design
    - Resources: Resource
    - (sub)Manifest
  - Physical Files
    - The actual content: HTML, Media, Activity descriptions, Collaboration and other files

Regular IMS Content Package

- Package
  - Manifest
    - Meta-data
    - Organizations: Organization
    - Resources: Resource
    - (sub)Manifest
  - Physical Files
    - The actual content: HTML, Media, Activity descriptions, Collaboration and other files

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<table>
<thead>
<tr>
<th><strong>Moodle feature-component</strong></th>
<th><strong>IMS LD structure</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Full course</td>
<td>1 UoL, 1 play, 1 act, 1 activity structure (type selection)</td>
</tr>
<tr>
<td>Setting: Full name</td>
<td>Title of Learning Design</td>
</tr>
<tr>
<td>Setting: Short name</td>
<td>Title of Play</td>
</tr>
<tr>
<td>Setting: Hidden sections</td>
<td>Activity Structure:IsVisible</td>
</tr>
<tr>
<td>Setting: summary</td>
<td>LD learning objectives</td>
</tr>
<tr>
<td>Setting: Your word for Students</td>
<td>roles:learner:title</td>
</tr>
<tr>
<td>Setting: Your word for Teachers</td>
<td>roles:staff:title</td>
</tr>
<tr>
<td>Topic</td>
<td>Learning activity</td>
</tr>
<tr>
<td>Topic 0</td>
<td>Learning activity (first one)</td>
</tr>
<tr>
<td>Summary of Topic</td>
<td>Activity Description</td>
</tr>
<tr>
<td>Activity: Chat</td>
<td>Synchronous conference (conference-type)</td>
</tr>
<tr>
<td>Activity: Forum</td>
<td>Asynchronous conference (conference-type)</td>
</tr>
<tr>
<td>Activity: Glossary</td>
<td>-</td>
</tr>
<tr>
<td>Activity: Quiz</td>
<td>-</td>
</tr>
<tr>
<td>Activity: Scorm</td>
<td>No match</td>
</tr>
<tr>
<td>Activity: Survey</td>
<td>External</td>
</tr>
<tr>
<td>Activity: Workshop</td>
<td>External</td>
</tr>
<tr>
<td>Resource</td>
<td>Learning object</td>
</tr>
<tr>
<td>Resource: Directory</td>
<td>-</td>
</tr>
<tr>
<td>Resource: Label</td>
<td>Learning object</td>
</tr>
<tr>
<td>Resource: Link to file</td>
<td>Learning object</td>
</tr>
<tr>
<td>Resource: Link to website</td>
<td>Learning object</td>
</tr>
</tbody>
</table>

**Interoperability inter-systems-specs**

**IMS LD and Moodle**

Moodle will export a course to an IMS LD Unit of Learning along 2006

Moodle will integrate in 2006-2007 the importation facility

Moodle can link to SLED player to play UoLs
Some research to communicate IMS LD and SCORM using CopperCore

Minimal integration: link to a SCORM player

Interoperability inter-sytems-specs

IMS LD and Scorm

SCORM editor → SCORM Package → Running SCO

LD editor → IMS Content Package (UoL) → Running UoL

RESOURCE href="www.scormserver.org/sco345"

design time run time
Interoperability inter-systems-spects

IMS LD and external communication with others

Link without sending values

Sending values via a dispatcher
Re-purposing Educational eGames
Adaptive eLearning Model Layout

1. Who is the final decision maker?
2. How much is the weight of each?
Projects on research hot topics

Learning Networks:
- TENCompetence, www.tencompetence.org
- Learning Network for Learning Design, moodle.learningnetworks.org
- iCamp, www.icamp-project.org

Adaptive eLearning and professional learning:
- ProLearn, www.prolearn-project.org

Interoperability:
- Telcert, www.opengroup.org/telcert
- Unfold, www.unfold-project.net
Tools on IMS LD

- CopperCore, www.coppercore.org
- Reload Project, www.reload.ac.uk
- Sled, http://sled.open.ac.uk
- IMS Specifications, www.imsglobal.org
- Moodle, http://moodle.org
- CopperAuthor, www.copperauthor.org
- Cosmos Tool
- ASK LDT
- netUniversité, dotLRN, et cetera
Summary: Quality in eLearning specifications and IMS Learning Design

eLearning specifications and standards provide and claim for quality in:

- Research hot topics: interoperability, learning networks, adaptive eLearning, re-purpose of eGames
- New versions and reviews of specifications
- Development of tools
- Authoring process of Units of Learning
A few ways to say the same thing

Thank you
Yenkohe
Dank je
Muito obrigado
Danke
Molto grazie
Domo arigato
Merci
Spasiva
Tack
Sche-sche
Hvala lepa
Merci
Moltes gracies
Diolch
Gracias
...

Questions and contributions?

Daniel Burgos
www.open.ou.nl/dbu