Overview IMS Learning Design
work at the OUNL

Rob Koper
Director of R&D into Learning Technologies
IMS LD Summit
Heerlen, November 8, 2006
One of the core tasks is to innovate higher education.

Aspects of innovation are:
- research programmes
- implementation of innovation

One of the research programmes is directed at Technology Enhanced Learning.
Research into Technology Enhanced Learning at OUNL

- 5-year research programmes
- In 1998 we started the programme “Competency-based Learning in an Electronic Learning Environment”
- in 2003 we started 'Learning Networks for Lifelong Learning'
- Themes in our research:
  a. Create & use learning activities in Learning Networks
  b. Positioning/competence assessment in Learning Networks
  c. Navigation in Learning Networks
  d. Social Software in Learning Networks
  e. Ubiquitous access to Learning Networks
  f. Learning Networks Integrated
- Each theme has various internally/externally funded projects.
The 1998-2003 Programme
EML 2000
Educational Modelling Language
XML Notation for Units of Learning

\[
\text{\textlt{unit-of-learning}\textgt}
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Edubox
EML Runtime Environment
version 1, 2, 3

1998 - 2003
OUNL
Research

2000
"\[
\text{\textlt{objectives}\textgt}
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EML
Educational Modelling Language
2000

IMS LD

2003

Information Model
Best Practice Guide
XML Schema Binding

Open Universiteit Nederland
Small Introduction into IMS Learning Design
First have a look at some of the many different processes and settings ...
What did you see?

- Large variety of *learning activities*
- Large variety of *learning environments* (generic, task specific)
- Sometimes *individual*, sometimes *group* interactions
- In most situations some kind of *support*
- Sometimes *self-directed*, sometimes *teacher directed*
- When appropriate using *computers* and other new *technologies*
Basic Question for Learning Design:

- Can we describe these learning events in a generic way?
- Can we make a generic description of all
  - the learning & support activities,
  - including the learning environment in which they take place?
- => search for a notation of the teaching-learning process in a Unit of Learning (e.g. a course, workshop, event, ...)

auld lang syne, We’ll drink a cup o’ kindness yet For auld lang syne.
How it works...

**Role:** Teacher
- Tell about X
- Write on blackboard
- Ask questions
- Manage group

**Environment:** Classroom

**Tools:**
- Controls
- Tables, Pen, Paper

**Activities:**
- Listen to Information
- Take Notes
- Answer questions

**Role:** Student

**Communication Services:**
- face-to-face comm.
- blackboard
Basic Learning Design Model

Role: architect

Activities: 
- make design
- create prototype

Environment:
- Mobile Phone

Tools: 
- Pencil
- Table
- Prototype

Objectives: 
has

performs within an
It is not static, it is a process

Sequence

Environment

Act

Activity Description

man stands up

man looks up in confusion

then slaps his forehead

continues walking off

Fade Out

follows someone

rings ring... man stops

man stands up

man looks up in confusion

then slaps his forehead

continues walking off

Fade Out
Some Example Pedagogical Constructs that can be expressed with LD

- The traditional pedagogical approaches
- Exploratory learning approaches
- Active and Collaborative learning
- Adaptive learning and personalisation
- Automation of workflow in the teaching-learning process
- Dynamic task selection
- Conditional text and runtime tracking of user performance
- ePortfolio's and new forms of assessment
- Multi-role activities (e.g. role-playing games)
- Modelling of pedagogical patterns
- …
Example XML LD Coding

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When interpreting LD, the computer provides to end-users

● the sequenced and personalised activity descriptions

● the description of the learning environment in which the activities must be performed

● the references to digital and non-digital resources in the environment that are needed for the activities

● The (adapted) digital resources (learning objects, audio-visuals, conferences, collaborative tools & other services)

● the administration of user-data, including ePortfolio data
Some LD Tools

- **LD Engines**: CopperCore (web engine)
- **Editors**: Reload, CopperAuthor, Cosmos, Alfanet editor
- **Graphical Designers**: MOT+, ASK LDT, LAMS
- **Players**: only demos: CopperCore Player, SLED
Authoring Tool examples
Visual Representation Learning-Teaching Process

BPMN

UML activity

ad hoc notations
Worked out runtime example
Learning Activities, structured into sequences and selections

The environment associated with the selected activity

An activity description for the selected activity
4.2 Geheugen

1 introductie

- Om u nieuwsgierig te maken...
- Doelstellingen

2 wat

- Bestuderen

Bestudeer hoofdstuk 7 uit het tekstboek.

Studeeraanwijzingen

In hoofdstuk 7 worden verschillende technieken beschreven om het geheugen te verbeteren (geheugensteuntjes). Sommige daarvan zou u kunnen gebruiken bij het bestuderen van het tekstboek. Dat geldt met name voor het vormen van anagrammen (blz. 287) en de OSLORO-methode (blz. 288). Als u een reeks punten wilt onthouden, zou u een anagram kunnen vormen van de beginletters (bijvoorbeeld CBO voor de stadia in het geheugenproces: coderen, bewaren, opzoeken). De OSLORO-methode (overzie, stel vragen, lees, overdenk, reciteer en overhoor) is een efficiënte manier om teksten voor een tentamen te leren. De methode - waarop in de loop der tijd tal van varianten zijn bedacht - is door onderwijspsychologen ontwikkeld en stimuleert een actieve verwerving van studiemateriaal, waardoor teksten beter kunnen worden onthouden.

- Verwerkingsopdrachten
- Muiseexamens
- Bijzondere verplichtingen

Complete ok
What IMS LD is expected to bring....

Base for the next generation of e-learning systems:

- It will extend the possibilities of e-learning: new more effective, efficient & attractive learning models (active learning, problem based, competence based, informal,...)

- **Integrate** the large number of isolated existing standards (LOM, CP, QTI, RCD, LIP, ..) to create executable and interoperable units of learning ('courses')

- Support automation of the **workflow** in the teaching/learning process to decrease workload of all actors involved

- Every other advantage that a **standard notation** brings: reflection, communication, sharing, reuse, research, similarity studies, valuation, etc.
Selected overview of LD activities
Project with IMS LD tasks

Projects with IMS LD tasks:

- Alfanet (authoring, runtime, integration other specs)
- TELCERT (conformance testing)
- UNFOLD (Communities of Practice around IMS LD)
- Various JISC projects (SLED, QTI integration, pedagogical modelling)
- COOPER (pedagogical models for distributed team work)
- Integration in existing platforms (Moodle, LAMS, .LRN, IMC Clix, …)
TENCompetence Project (tencompetence.org)

- EU IST Integrated project (dec. 2005 – dec. 2009), Budget 14 Million

- Aim: development of an open source infrastructure for lifelong competence development, based on IMS LD principles & tools

- 13 partners, 9 countries + associated partners & collaborations in Canada & Australia (various EU IMS partners are members!)

- Pilots in various areas (digital cinema, health care, water management and lifelong learning within a city context)

- Research on possible new standards for:
  a. Learning Path Descriptions
  b. Integration of new forms of assessment in QTI
  c. Further work on competences and portfolios

- TENCompetence is sponsoring this event
Some Current Research Topics

- Authoring environments & other tools for Learning Design
- Learning Design Patterns
- Graphical notation of learning designs
- Ontologies for specific pedagogical models, to support the learning design process
- Runtime & designtime adaptations
- Runtime Collaborative Services integration
Want to know more about LD?
Specification at:

www.imsglobal.org/learningdesign
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Publications

- Some publications: 'Learning Design' book from Springer (overview)


- Special Issue Journal of Interactive Media in Education on Learning Design (2005)

- Preprints of articles & presentations at dspace.ou.nl
Thank You!