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# IMS Learning Design: State of the art and research hot topics on eLearning standardization

Daniel Burgos  
Educational Technology Expertise Centre (OTEC)  
daniel.burgos@ou.nl  
[www.open.ou.nl/dbu](http://www.open.ou.nl/dbu)



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Part I: eLearning standardization

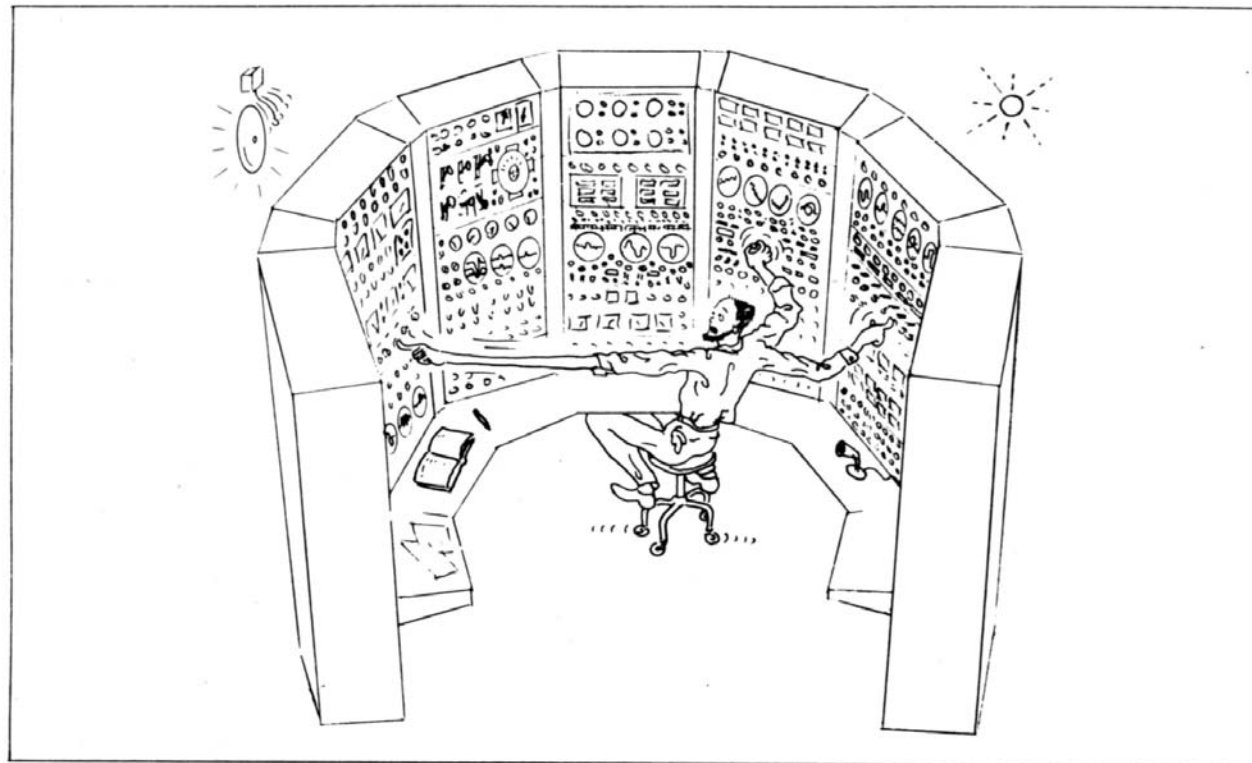
Part II: What is IMS Learning Design?

Part III: Research hot topics and projects



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The eLearning standards and the educational modeling languages seen from outside



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# Part I: eLearning standardization



What are standards? An analogy

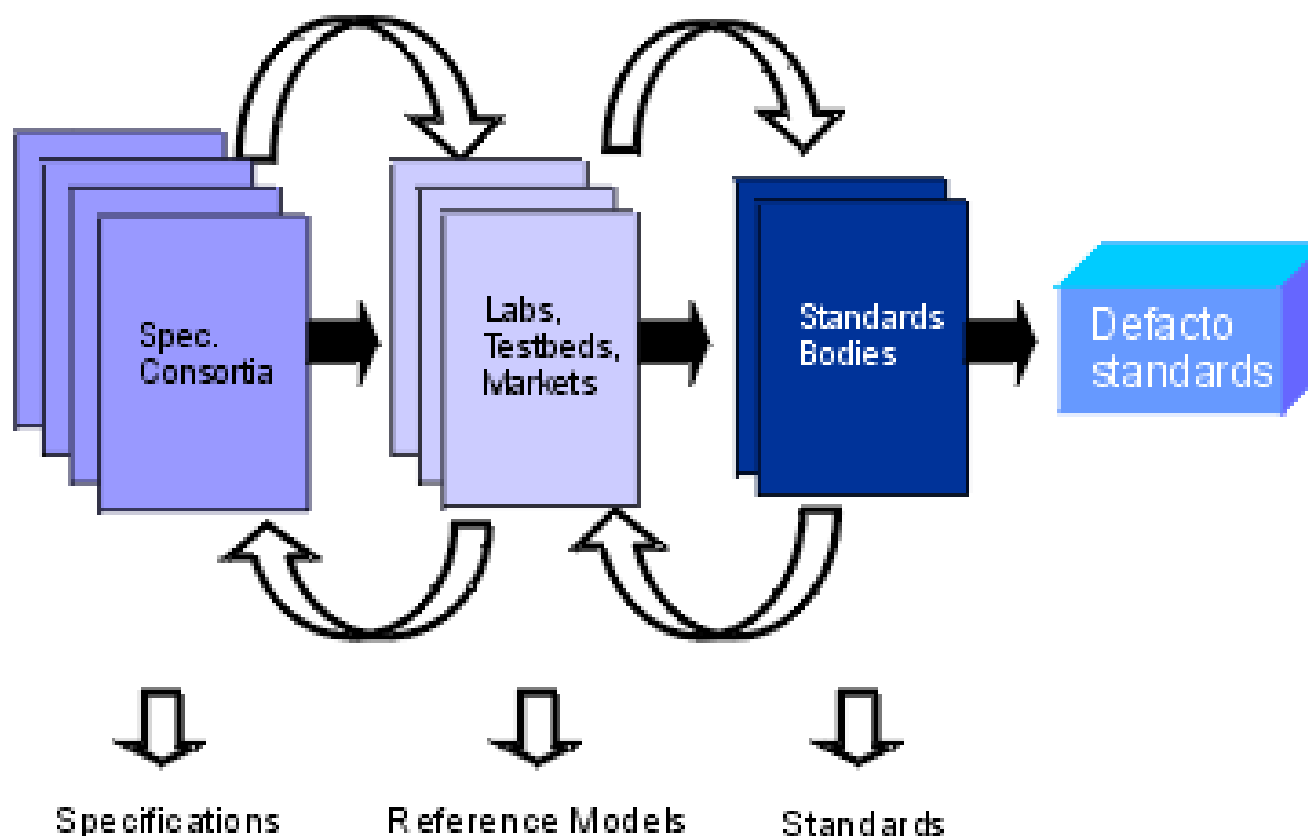
Think about ...



...different plugs around the world



The standardization process





## Specification versus Standard

Company

Institute

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...)

Independent  
institution



## Standardization bodies

- IMS Global Learning Consortium.
- Advanced Distributed Learning (ADL).
- European Centre for Standards/Information Society Standardisation System Learning Technologies Workshop (CEN/ISSS WS-LT).
- 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

WIHTOUT  
speciciation

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

WIHT specification

A teacher makes some content

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Validation and use

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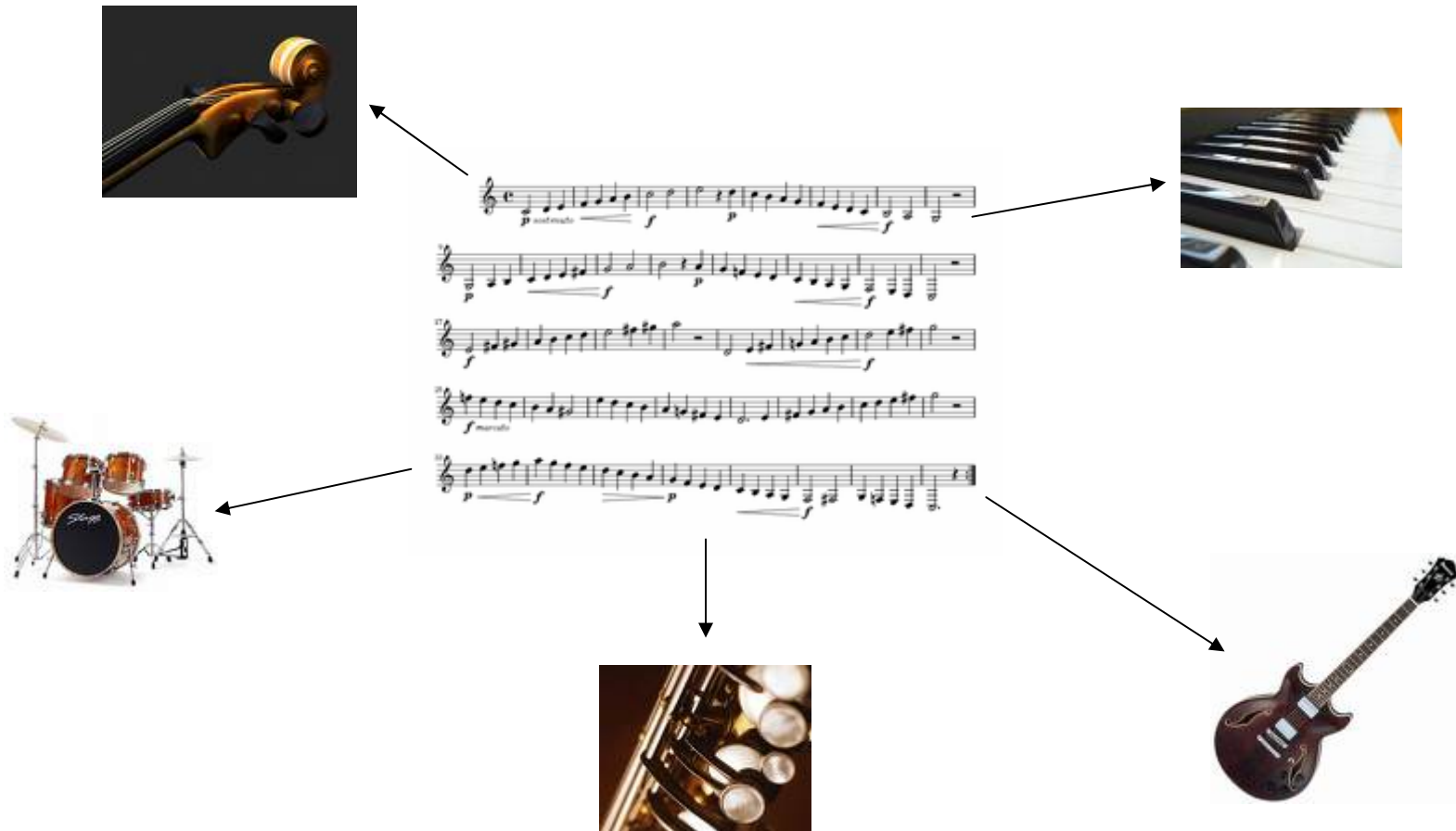


## Why do we need specifications and standards in eLearning

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

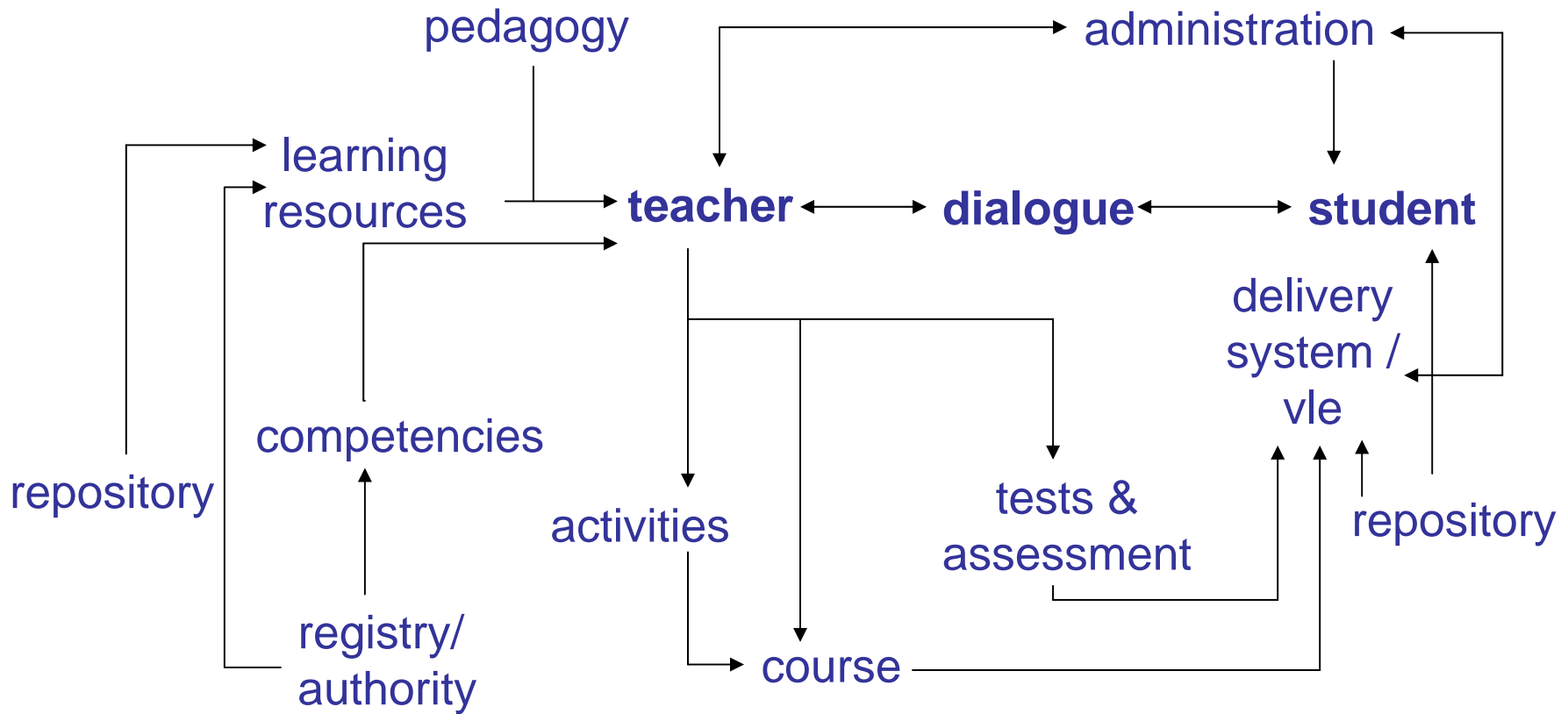


Main contribution of a spec to eLearning:  
Interoperability of content, structures and technology



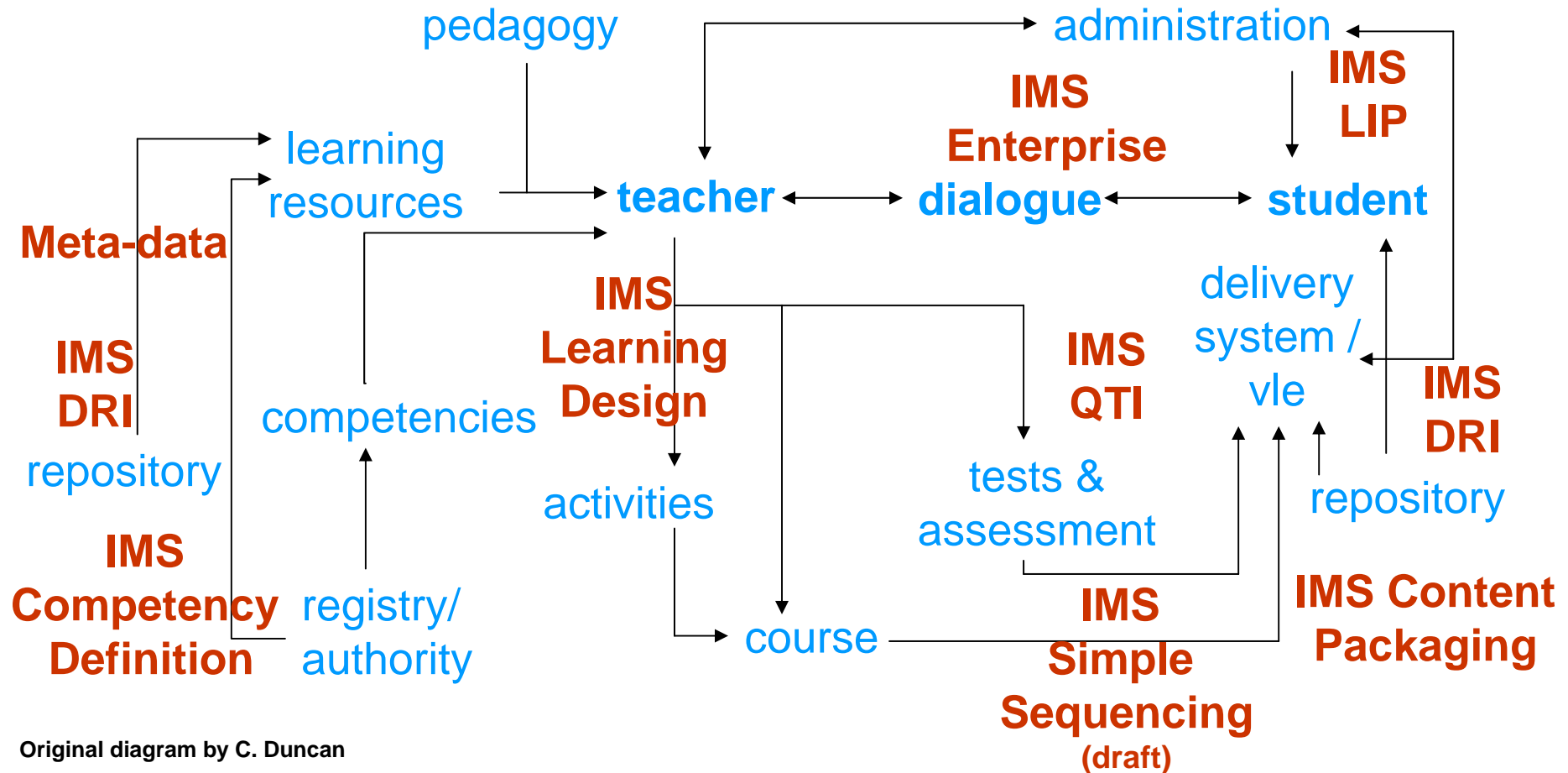


Where could we use standards in the eLearning process?





Where could we use standards in the eLearning process?





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## Part II: What is 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**

Notifications

**B**

Properties, conditions, calculations, global elements and monitoring services

**A**

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

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



Example IMS LD Unit of Learning

The screenshot shows a web browser window titled "CopperCore Player Demo - Microsoft Internet Explorer provided by Open Universiteit Nederland". The address bar shows a local URL. The main content area is titled "Candidas. The great unknown (I)" and "Introduction:What is Candidas?". The interface includes a navigation pane on the left with a tree view showing the unit structure, and a main content area with a description and a photograph of Candida albicans. Red circles and numbers highlight specific elements: 1. The navigation pane tree view; 2. The photograph of Candida albicans; 3. The "Environment" section in the navigation pane; 4. The title bar of the browser window.

1

2

3

4



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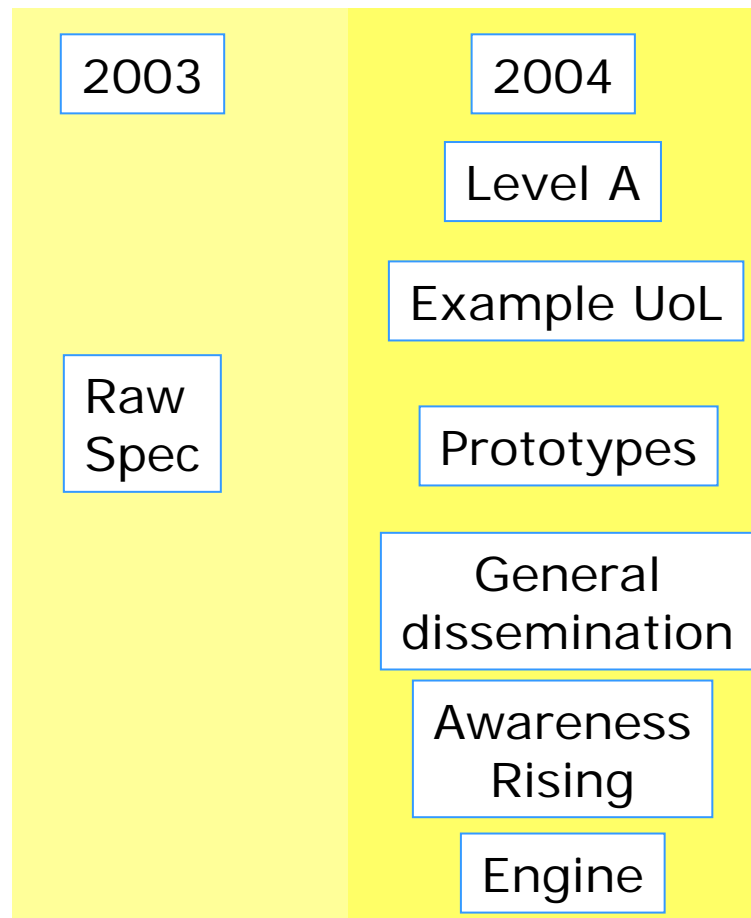
IMS Learning Design, from 2003 to 2007

2003

Raw  
Spec

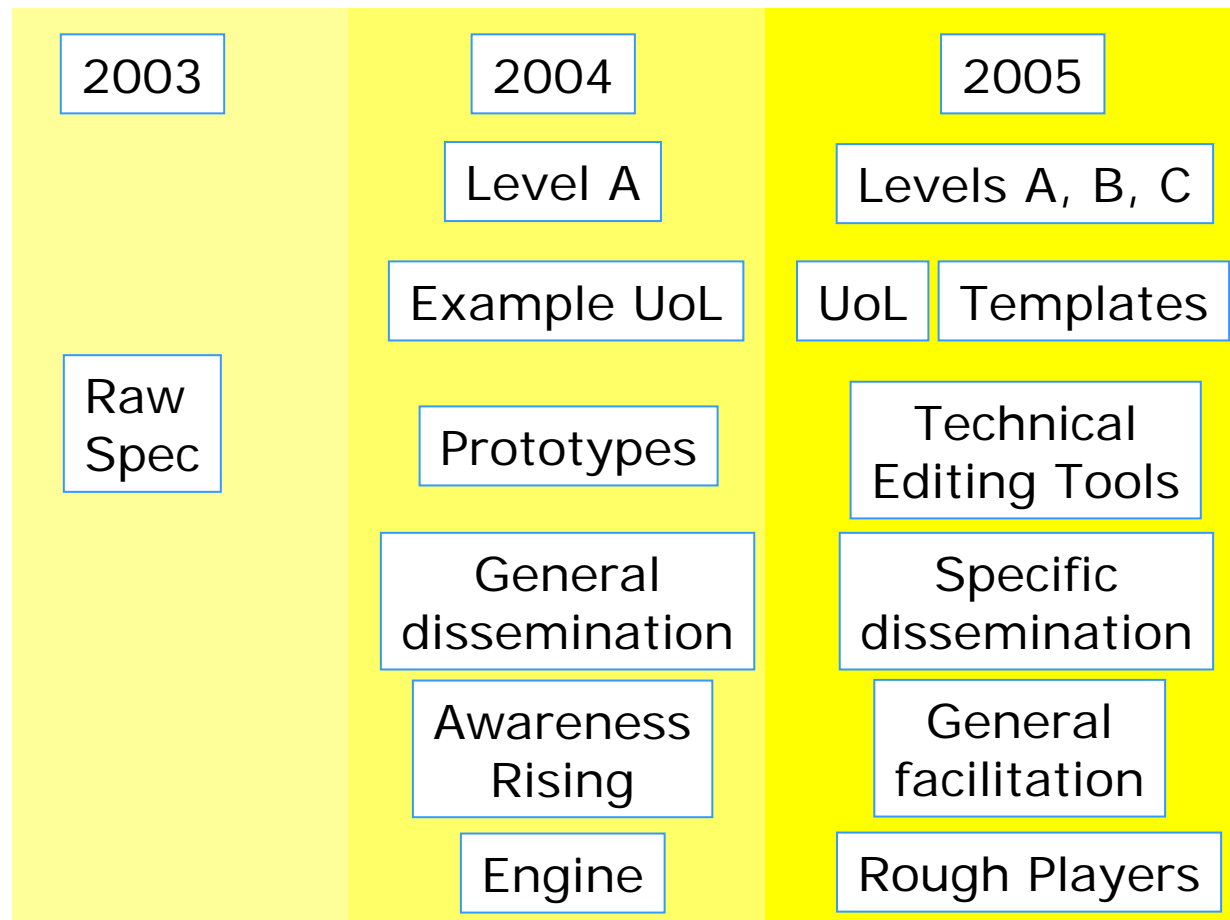


IMS Learning Design, from 2003 to 2007



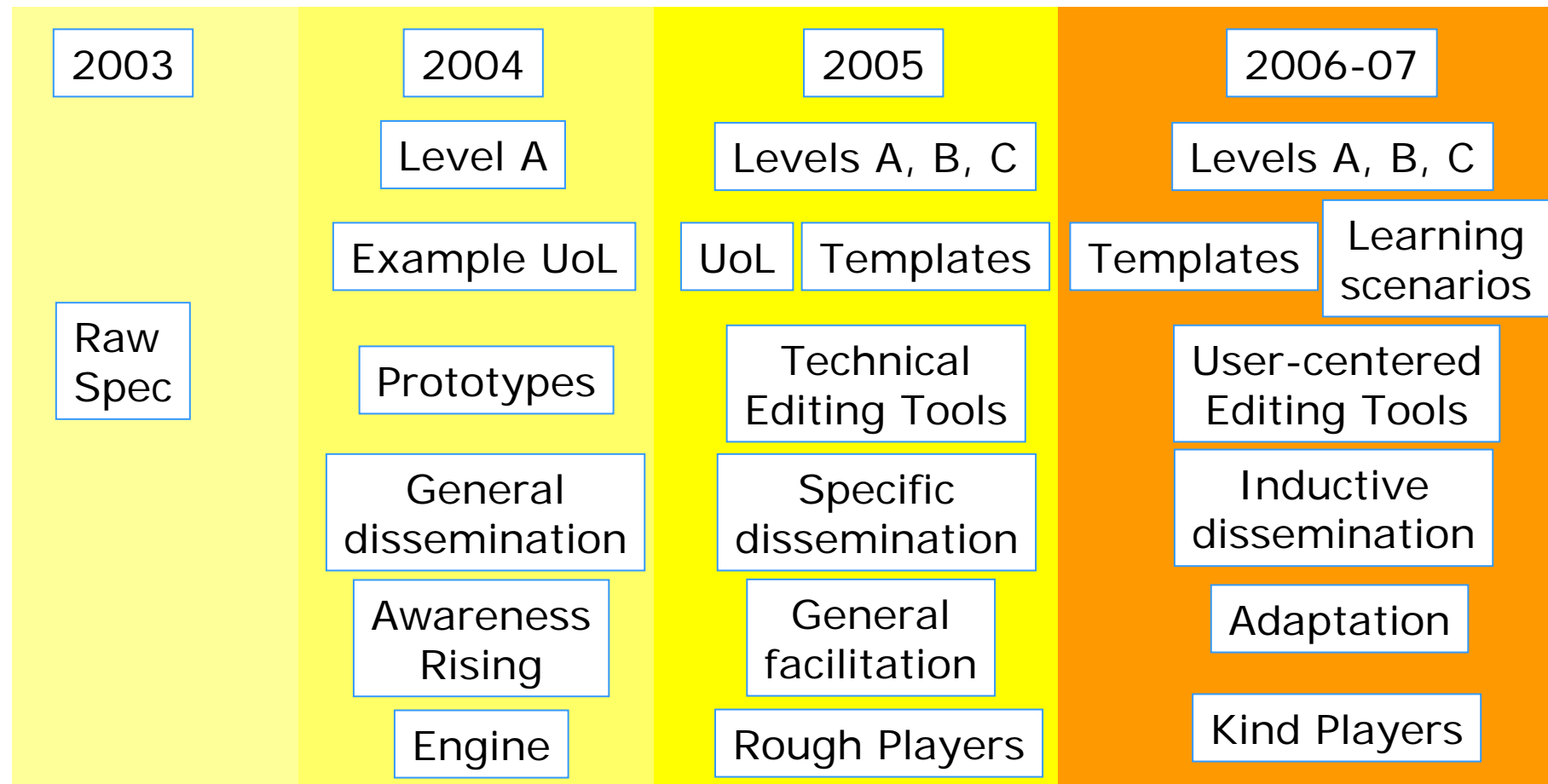


IMS Learning Design, from 2003 to 2007



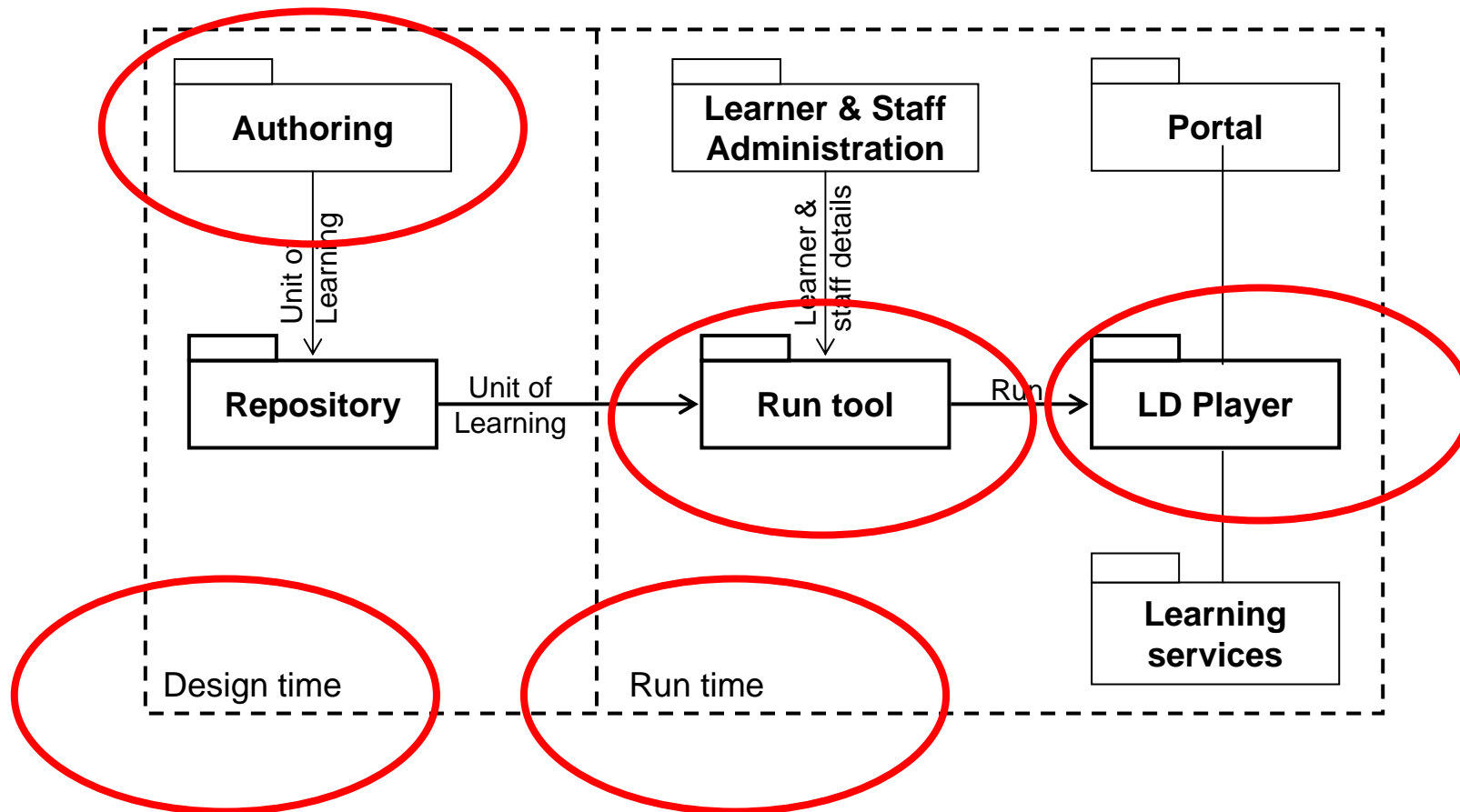


IMS Learning Design, from 2003 to 2007





Where could we use IMS LD in the eLearning process?







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## Part III: Research hot topics and projects on eLearning standardization



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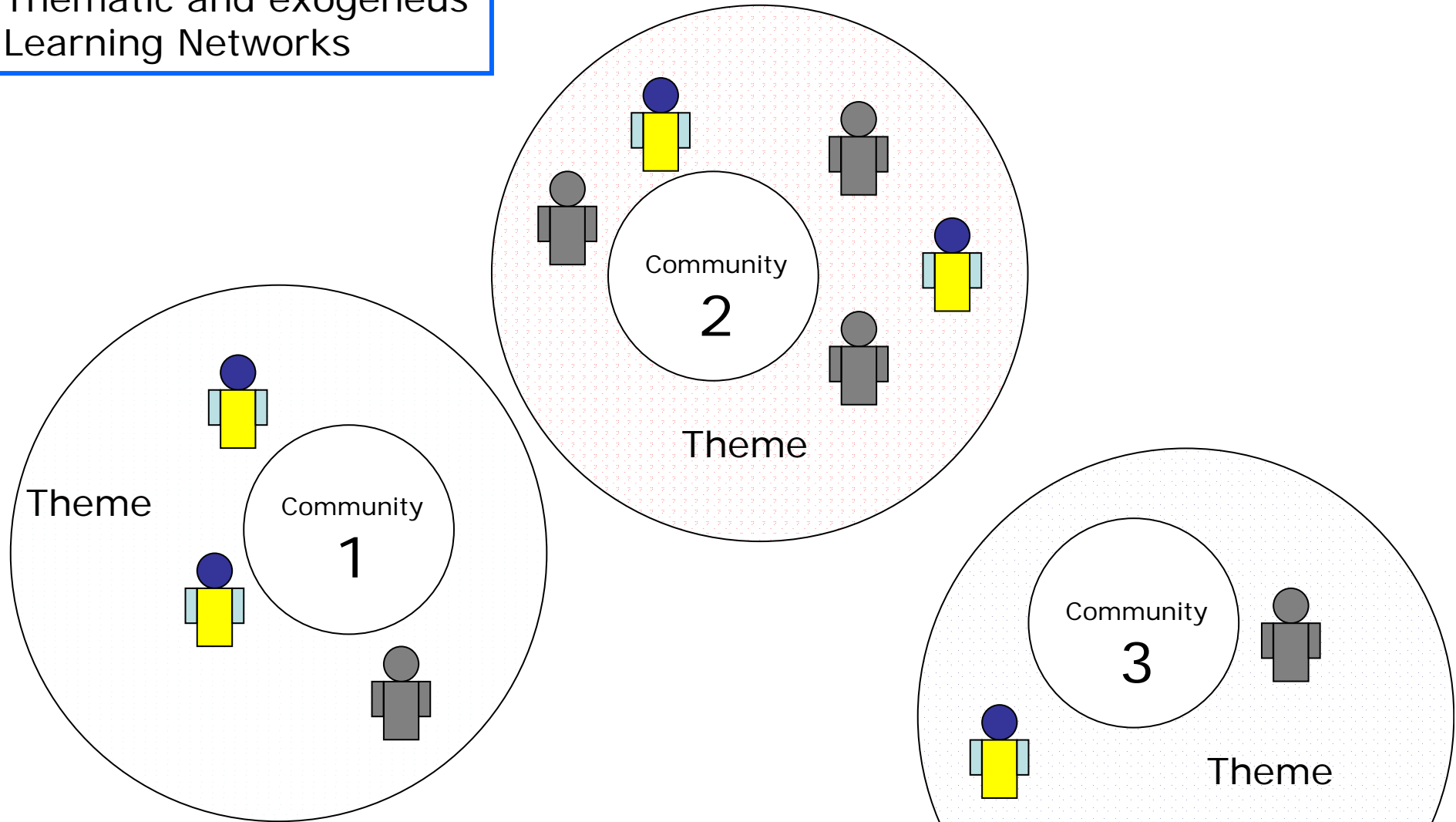
Building The European Network for Lifelong Competence Development

Research hot topics

- Learning Networks
- Interoperability
- Educational eGames
- Adaptation and eLearning
- Tools: second generation

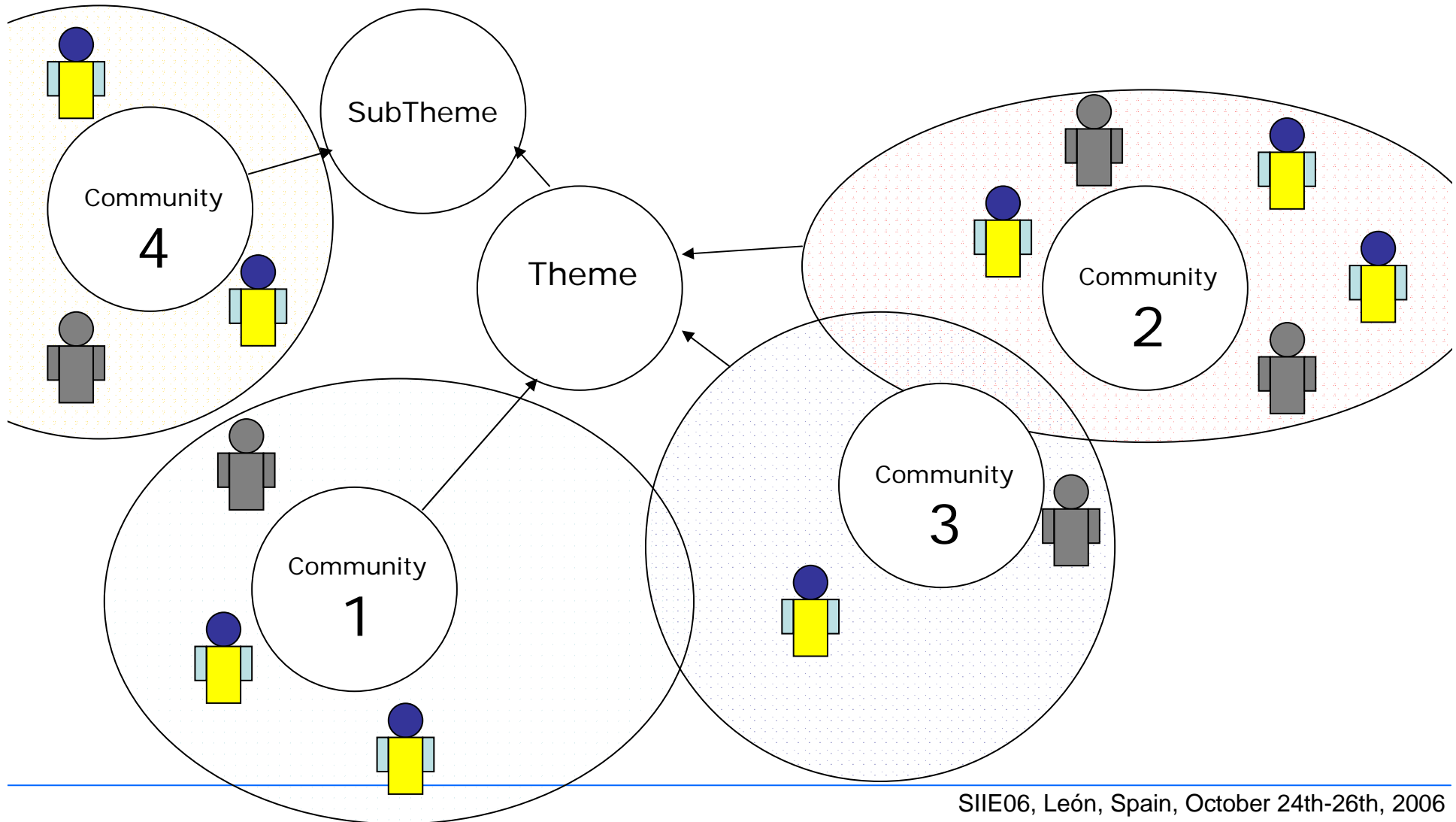


Thematic and exogeneous Learning Networks





Thematic and exogeneous Learning Networks

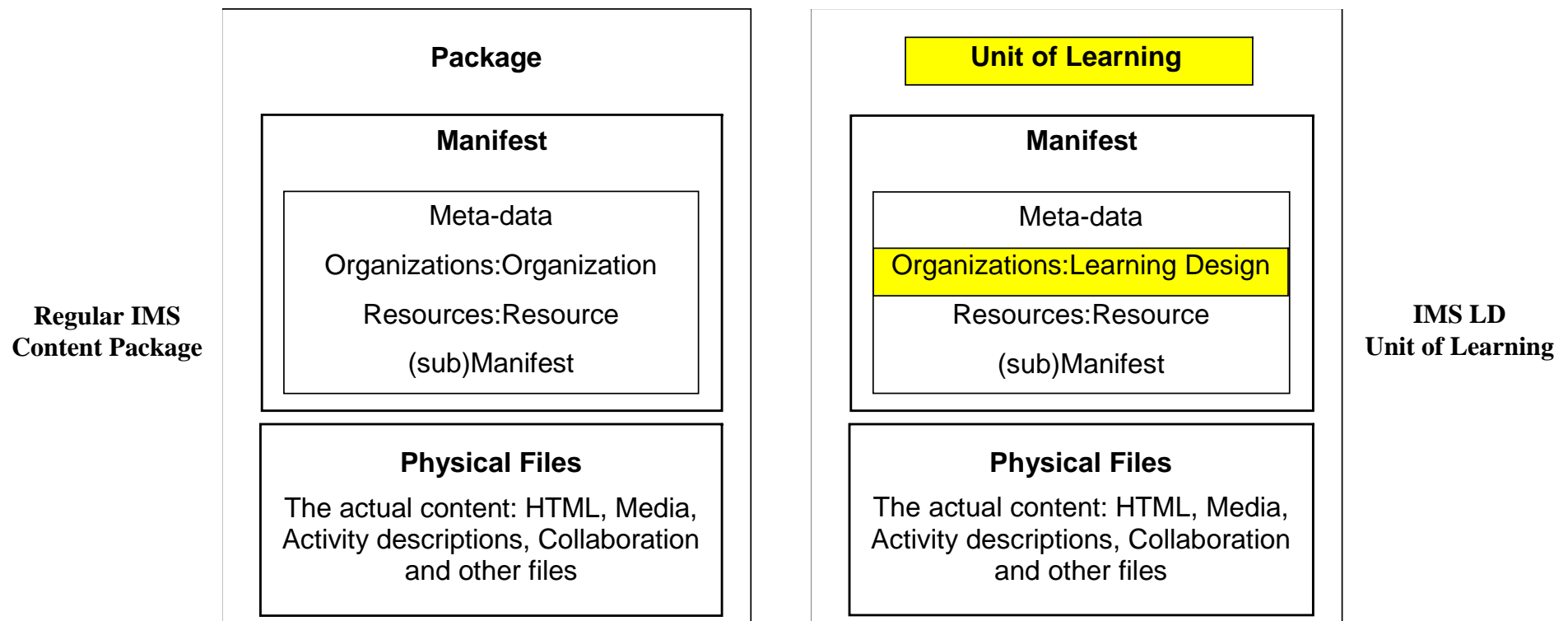




## Interoperability inter-sytems-specs

### IMS Learning Design and IMS Content Packaging

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



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

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

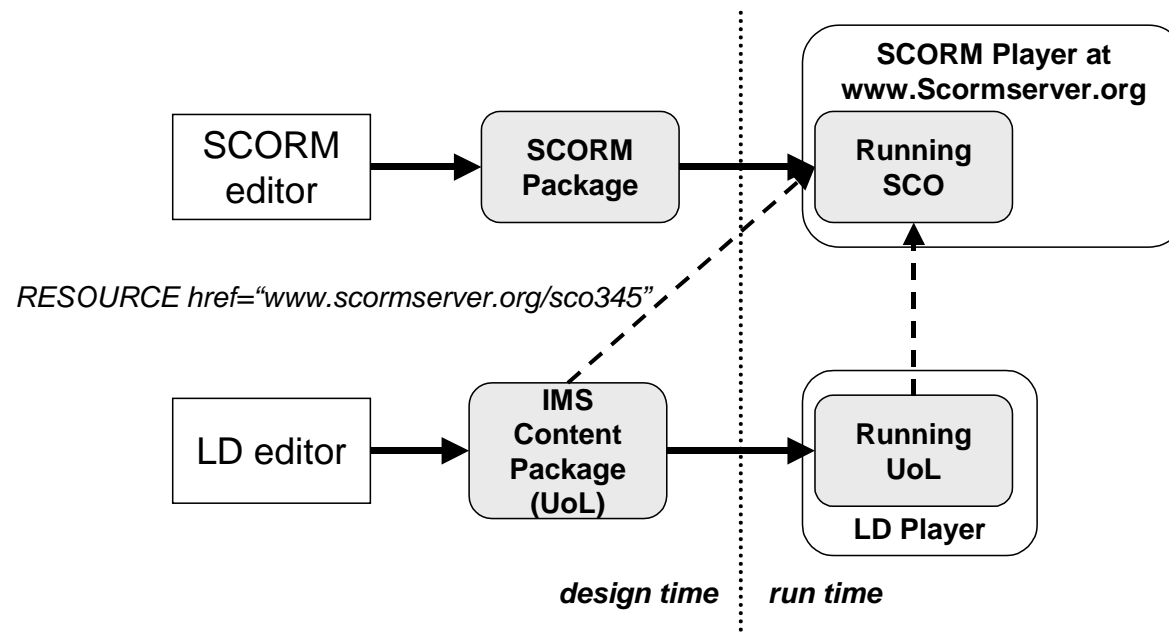


## Interoperability inter-sytems-specs

### IMS LD and Scorm

Some research to communicate IMS LD and SCORM using CopperCore

Minimal integration: link to a SCORM player

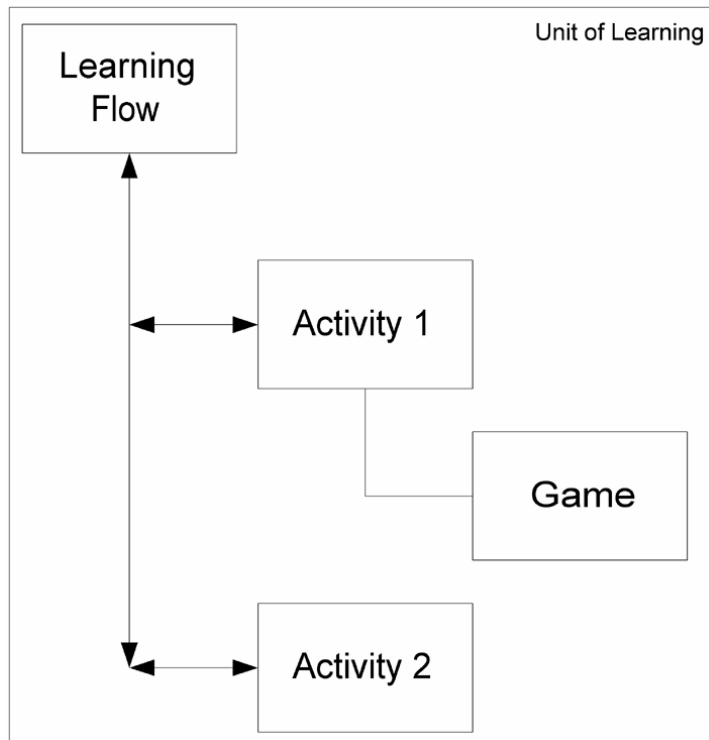




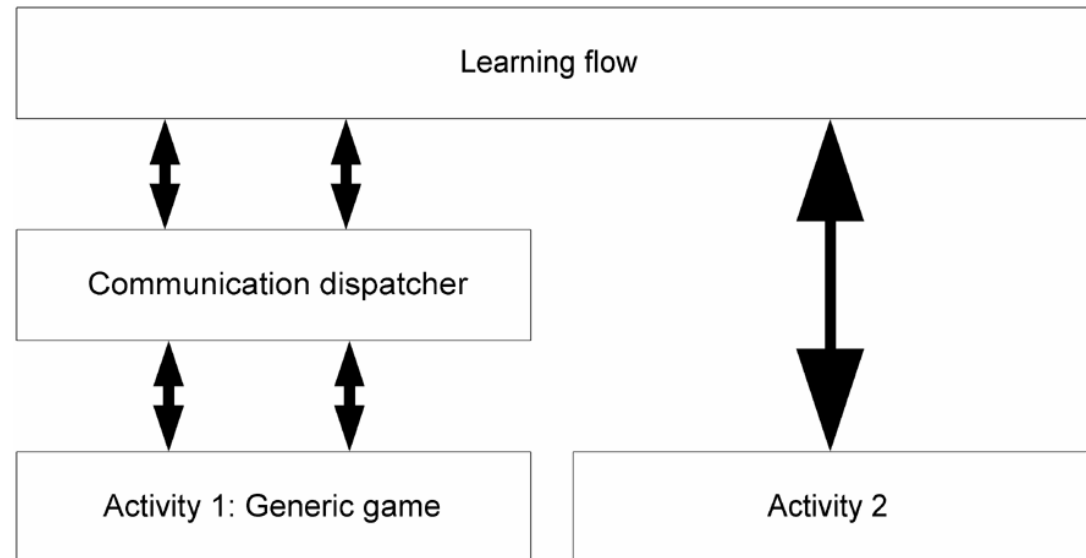
Interoperability inter-sytems-specs

IMS LD and external communication with others

Link without sending values



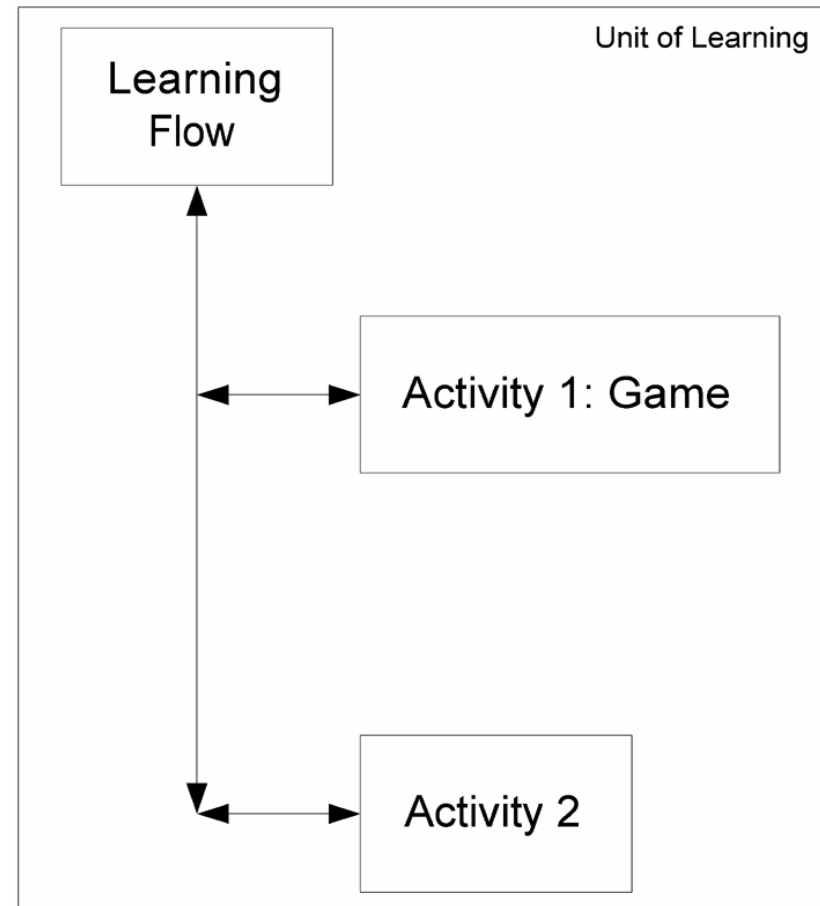
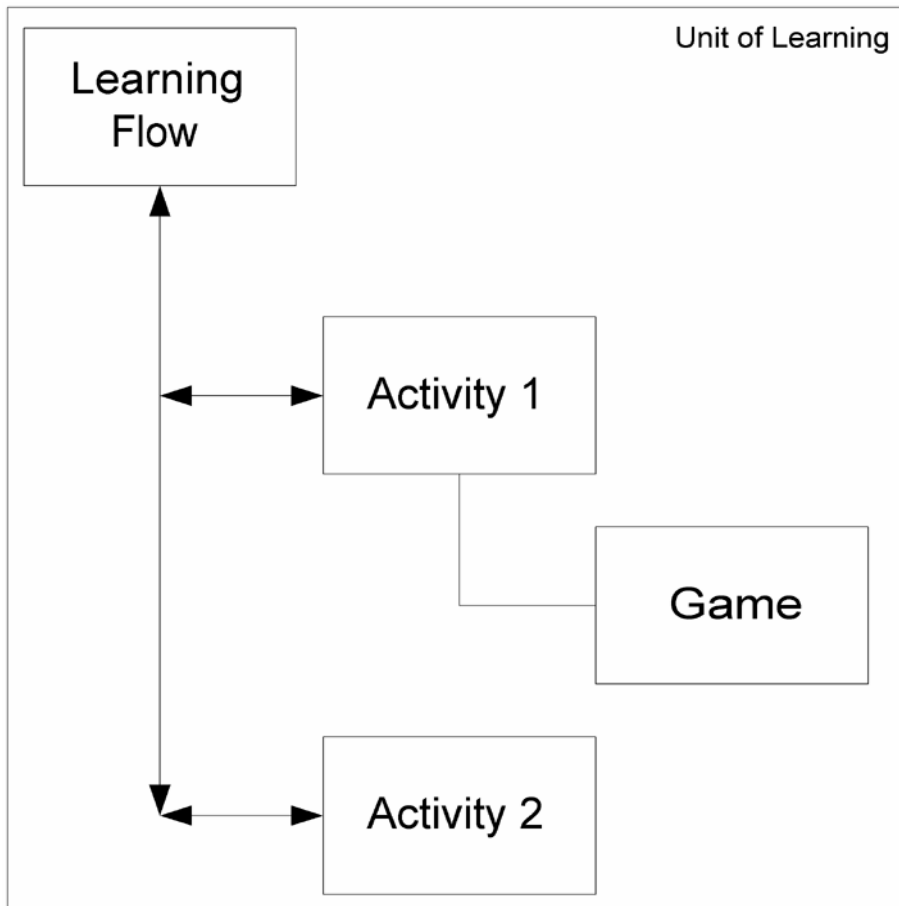
Sending values via a dispatcher



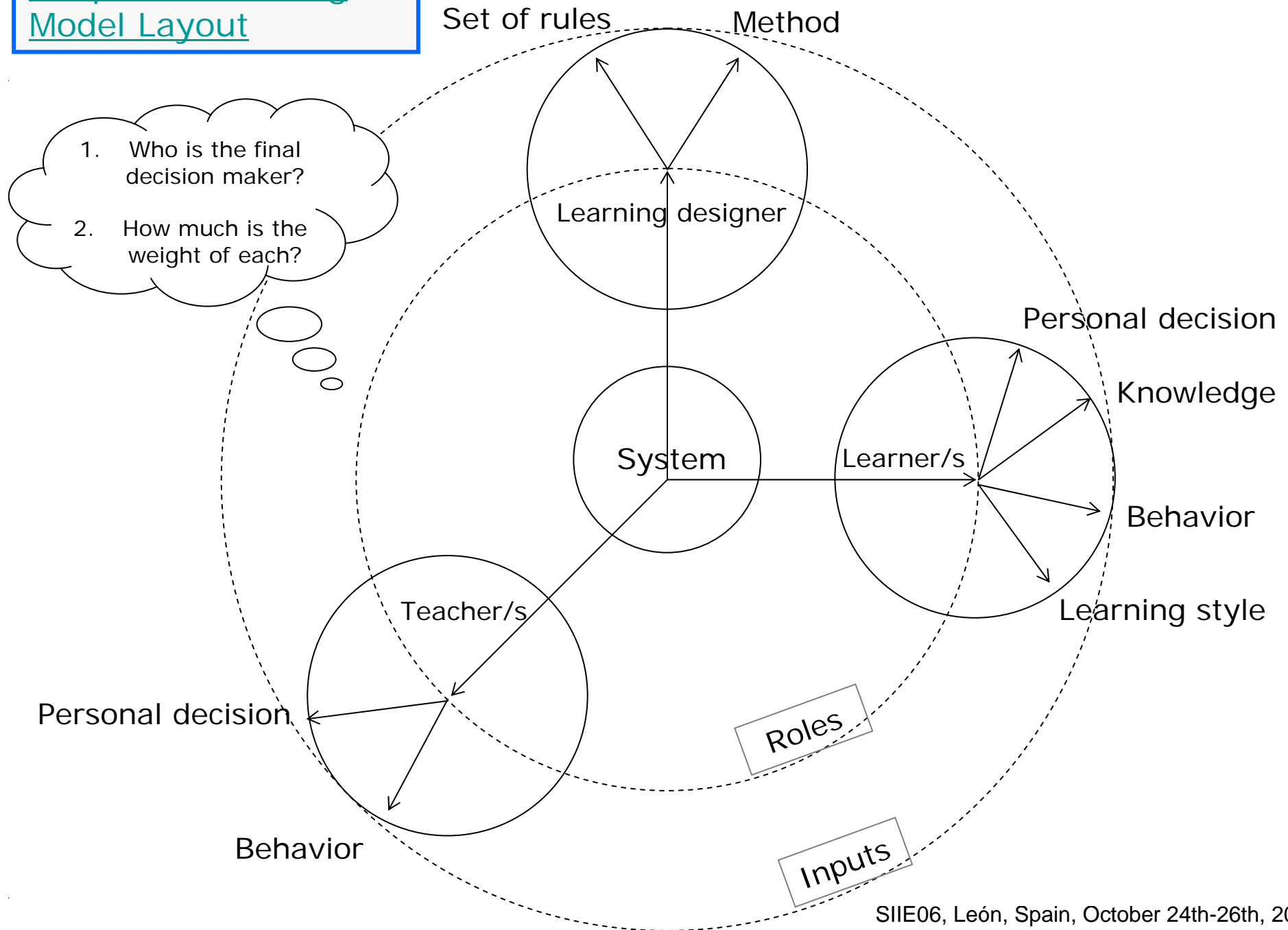




# Re-purposing Educational eGames



# Adaptive eLearning Model Layout





## Tools on IMS LD

- CopperCore, [www.coppercore.org](http://www.coppercore.org)
- Reload Project, [www.reload.ac.uk](http://www.reload.ac.uk)
- Sled, <http://sled.open.ac.uk>
- IMS Specifications, [www.imsglobal.org](http://www.imsglobal.org)
- Moodle, <http://moodle.org>
- CopperAuthor, [www.copperauthor.org](http://www.copperauthor.org)
- Cosmos Tool
- ASK LDT
- netUniversité, dotLRN, et cetera

1st generation

2nd generation



- Easier authoring
- More powerful engines
- Smoother viewers
- Templates
- Flexible run-time
- Interoperability



## Projects on research hot topics

### ▪ Learning Networks and tooling:

- TENCompetence, [www.tencompetence.org](http://www.tencompetence.org)
- Learning Network for Learning Design, [moodle.learningnetworks.org](http://moodle.learningnetworks.org)
- iCamp, [www.icamp-project.org](http://www.icamp-project.org)

### ▪ Adaptive eLearning and professional learning:

- ProLearn, [www.prolearn-project.org](http://www.prolearn-project.org)

### ▪ Interoperability:

- Telcert, [www.opengroup.org/telcert](http://www.opengroup.org/telcert)
- Unfold, [www.unfold-project.net](http://www.unfold-project.net)



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Stress: Research hot topics

Learning networks

Interoperability

Re-purpose of eGames

Adaptive eLearning

Second generation of tools



## News and announcements

TENCompetence: Becoming an associate partner

Open University NL: Research visits

2 special issues and 1 workshop at ICALT 2007 on eGames and Personalized eLearning (with Baltasar F. Manjón and Griff Richards)

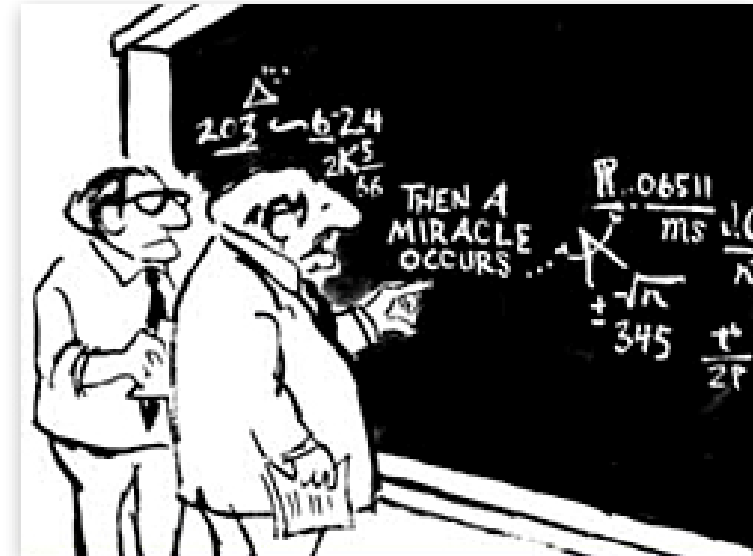
1 special issue on Adaptation and IMS Learning Design (with Alexandra Cristea)

Daniel Burgos  
daniel.burgos@ou.nl  
www.open.ou.nl/dbu



## A few ways to say the same

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



**"I think you  
should be  
more explicit  
here..."**

Questions  
and  
contributions?

Daniel Burgos  
daniel.burgos@ou.nl  
www.open.ou.nl/dbu