A TAXONOMY FOR SCENARIO-BASED ENGINEERING

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• Subject of this presentation:
  – Integrating ICT in education
  – Concept of learning scenario
  – The role of teacher as a scenario designer and as a scenario manager
Recent evolutions of representation of new roles of teacher with ICT

• (90's) handicraft approach: the teacher as a developer

• (mid-90's) editorial approach: the teacher as an author in a team

• (2000) documentalist approach: the teacher as a prospector and an organizer of learning resources
Resource-centered approach: LOM

SIMPLE SEQUENCING?

Same set of metadata?

Is composed of

Is composed of

Is based on

Granularity

Granularity

Metadata

Curriculum

Metadata

Course

Metadata

Lesson

Metadata

Media
Educational Modeling Languages

• Statements
  – Knowledge Objects are not the key thing in educational process (Koper 2001)
  – Resource-centered approach promotes a standardized educational model: consultation + (self) evaluation

• Goals
  – Providing adapted languages to design the widest range of learning situations
  – Insure pedagogical neutrality

• A main result: IMS Learning Design
Integration of ICT in education: a more complex reality

- Object of study: Learning environments (partially) instrumented by (notably) digital technologies.
The environment is not only composed of digital knowledge resources.

Each activity can produce a result.
Learning Design is not only a prescription of tasks..

...But also the definition of a process

- Conditions of observation
- Rules of regulation
- Associated data flow
Refine activity-based paradigm

• A central concept: learning scenario
  – Frequently used by teachers: scénario pédagogique (in France)
  – Scenarize resources or learning situations?
  – Multiple definitions…

• Propositions (current work):
  – Refine concept by proposing a scenario's taxonomy
  – What is the scenario's life cycle?
  – Identify the different facets of a scenario
Proposed Definition

A learning scenario represents a description, made a priori or a posteriori, of the progress of a learning situation at a given level, or learning unit, whose goal is to ensure the appropriation of a precise set of knowledge. A scenario describes roles, activities and also knowledge resources, tools and services necessary or resulting for each activity.
### Taxonomy (see paper)

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<th>informal</th>
<th>formalized</th>
<th>automatable</th>
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<td><strong>degree of formalization</strong></td>
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<td>generic</td>
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<td><strong>Degree of constraint</strong></td>
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CELDA, Lisboa, December 2004

A. Lejeune & J.P. Pernin
Learning objects and granularity of scenarios

Knowledge resources

- Composite resource
  - Elementary resource

Learning Units

- Structuring unit
  - instructional sequence
    - Elementary activity

Scenario relationships:
- Structuration scenario
- Sequence scenario
- Activity scenario
- Produces or modifies
Learning scenario's lifecycle and dedicated tools

1. Design
- creating
- reusing
- adapting

2. Contextualization
- Affecting roles
- Scheduling
- Mediatizing
- Instrumenting
- Refining

3. Exploitation
- Prescribing
- Observing
- Controlling
- Regulating
- Assessing

4. Evaluation
- Decontextualizing
- Cataloging

Scenario Manager

Scenario Editor

Descriptive scenario

Contextualized scenario

Abstract scenario

Scenario Pattern

Scenario Manager (to be integrated into LMS)

Scenario Player

Scenario Editor

Scenario Manager

Scenario Editor

Scenario Manager

Scenario Editor

Scenario Manager

Scenario Editor
Promote news modes of reuse

Find resources with following characteristics...
Find scenarios with following characteristics...
Find scenarios which refer following resources...
Find resources referred by following scenarios...
Conclusion

• Specify an develop new tools dedicated to manage scenarios in collaboration with the potential designers
• Promote exchanges between communities of designers => Scenario repositories
• Take account of specificities
  – Type of designer
  – Context ? (domain, level, pedagogical style, etc.): scenario patterns
  – Textual, graphic languages ?