Learning from a Planets Game:
Elements of a didactical transposition
described with the CPM language

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Outline of the talk

- Aims and general characteristics of the CPM language
- Snapshots of the Planets Game specification
- Discussion
CPM : General overview

✓ A language dedicated to the specification and design of cooperative PBL situations (PBL concepts)

Design phase

- Natural language
  - Initials requirements

- UML
  - Analysis and design

Implementation phase

- IMS-LD
- EML
- Educational ontologies
- Meta-data
  - Detailed design

CPM focus

✓ A language focusing on the modeling of didactical choices
CPM : a UML Profile

✓ A graphical language on top of the UML Language (static models / dynamic models)

✓ A language supported by a toolset (CPM Profile)
General sequencing

Part 2: Snapshots of the Planets
Game specification
**Focus on the didactical transposition (1)**

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**Game specification**

- Solid Planets are near the Sun
- Gaseous are not near the Sun
- Exception: Pluto
- Temperature determines Distance from the Sun
  - Exception: Venus
- Length of year determines Distance from the Sun
  - Exception: Pluto

**A language to express learners knowledge (personal/shared views) and tutoring strategies at Domain level:**

- Sun, Planet, Group of planets (Giant planets)
- Planet properties (Distance from sun, length of day, composition, ...) and values
- Adjacence of Planets, correlation of properties, Exception, ...

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**Part 2: Snapshots of the Planets**

**Game specification**
Focus on the didactical transposition (2)

Part 2: Snapshots of the Planets
Game specification

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Didactical choices:

**A Team**
- must find the names of planets from the forum
- must discover some \{distance / length of year /Temperature\} values
- must correlate length of year / Distance properties
- must correlate Distance properties / Temperature properties
- should identify giant/solid planets from others
- should formulate exceptions
Focus on the didactical transposition (2)

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Didactical choices:

**Tutor**
- must facilitate property correlations (and exception discovery)
- must assist Teams when they fail to discover important properties (via posts in the forum)
- must assist Teams asking precise questions / analysing the posts in the forum
Details of Act2: Game

Act2: Game

- Exploits available information to draw conclusions
- Reciprocal teaching
- Task advertising
- Forum posts analysis
- Forum posts manager
- Proposes a solution

Roles:
- Learner
- Teacher
- investigator
- Group manager
- Solar System expert
- Forum posts Manager
- Team
- Timer

Part 2: Snapshots of the Planets
Game specification
Focus on the didactical transposition (2)

Part 2: Snapshots of the Planets

Game specification
Focus on the Reciprocal Teaching use-case (1)

✓ Modelling Reciprocal Teaching
Focus on the Reciprocal Teaching use-case (2)

Part 2: Snapshots of the Planets
Game specification

- Teacher:
  - Activates Teacher role
  - Selects next untreated interview
  - Cancels Teacher role
  - Selects a paragraph to process
  - Deactivates Teacher role
  - Reads and comments selected paragraph
  - Formulates a statement to be agreed

- Learner:
  - Activates Learner role
  - Reads selected interview
  - Returns a Resource
    - Current Expert interview [unread]
  - Reads and comments on Resource
  - Answers questions
  - Reads selected paragraph and annotates
  - Asks questions
  - Agrees / disagrees
  - Writes notified statement in the forum
Focus on the Forum posts management (1)
Focus on the Forum posts management (2)

Part 2: Snapshots of the Planets
Game specification
Discussion (1)

✓ Specifications from which agreements/disagreements can be expressed by pedagogues

✓ Focus on the dynamics of teaching/learning
  - a CPM specification ≠ a script (a scenario)
  - A CPM specification = a set of complementary views including
    - Use case diagrams
    - Class diagrams
    - Statecharts
    - Activity Diagrams
    - Object Diagrams

✓ Specifications are computable (transformations into IMS-LD compatible code, OCL checking, …)
From contextualized roles, resources and activities to contextualized services and tools
Thank you…

Thierry Nodenot

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URLs: http://liuppa.univ-pau.fr
      http://idee.iutbayonne.univ-pau.fr
About Modeling languages

✓ voir (Pohl, 94)

Agrément

Spécification

Entrée Initiale

Vue commune

Vues personnelles

Formel

Semi-formel

Informel

opaque

complète

Résultat accepté

Trace du processus

Langage de Représentation

Texts, Tables

IMS-LD

Designers agreements ?