Journée d'étude INRP
13 Juin 2006

Langages de modélisation pédagogique : enjeux, perspectives et évolutions…

Anne Lejeune (*), Jean-Philippe Pernin(*, **),

(*) **Laboratoire CLIPS-IMAG, Grenoble**
(**) **Institut national de recherche pédagogique, ERTé e-Praxis**

Why this seminar ?

INTERNATIONAL LEVEL
(Since 2002)

Intense activity about Learning Design and Educational Modelling Languages
Centered on IMS LD Specification, based on Instructional Design approach
New challenges…

FRENCH COMMUNITY

- Not closely implied in current works
- Specific socio-educational context
Role of teacher
Importance of didactic features
Situated learning
- Emergence of a French scientific community about Educational Modelling

EVALUATE, EXCHANGE AND COMPARE

BUILD NEW COLLABORATIONS ?

Scheduling 9h-13h

- Presentation of Colin Tattersall (OUNL)
  - Learning Design : Current questions and new challenges
- Survey of french works
  - Anne Lejeune and J-P Pernin (CLIPS-IMAG & INRP)
- A series of specific presentations
  - Pierre Laforcade (laboratoire LIUM, Le Mans)
  - Xavier Le Pallec (laboratoire TRIGONE, Lille)
  - Thierry Nodenot (laboratoire LIUPPA, Bayonne)
  - Christian Martel (laboratoire SYSCOM, Chambéry, PENTILA)
  - Viviane Guéraud (laboratoire CLIPS-IMAG, Grenoble)
- Discussion

Colin Tattersall
Open University of the Netherlands

Learning Design : Current questions and new challenges

The last two to three years has seen a number of R&D projects investigating the use of the IMS Learning Design specification in e-learning. These projects have examined the nature of pedagogical models, the tools needed to create such descriptions, delivery issues, harmonization with other specifications, and the position of IMS Learning Design in a changing e-learning landscape. The specification plays a central role in a number of new European projects which aim to prepare the way for adoption and use of the specification by a wider audience. This talk will review the current state-of-the-art, posing a number of challenges to reaching this goal, together with plans for meetings them

Research about Educational Modeling in France: stakes and challenges…

Anne Lejeune / Jean-Philippe Pernin

INRP

CLIPS

Educational Modeling

- Part 1: Introduction
- Part 2: Topics, stakes and challenges in the French research landscape
- Part 3: Actors, goals and process

Describing Learning Situations: Why?

- To share:
  - Pedagogical expertise
  - Good practices
  - Learning experiences

In order to increase:
✓Effectiveness
✓Efficiency
✓Attractiveness
✓Accessibility

- To allow pedagogical scenarios to be processed automatically by LMS, and support:
  - Reuse
  - Adaptability
  - Interoperability

Describing Learning Situations: What?

- Face to face Learning

- Blended Learning

- Distant Learning

Describing Learning Situations: Who?

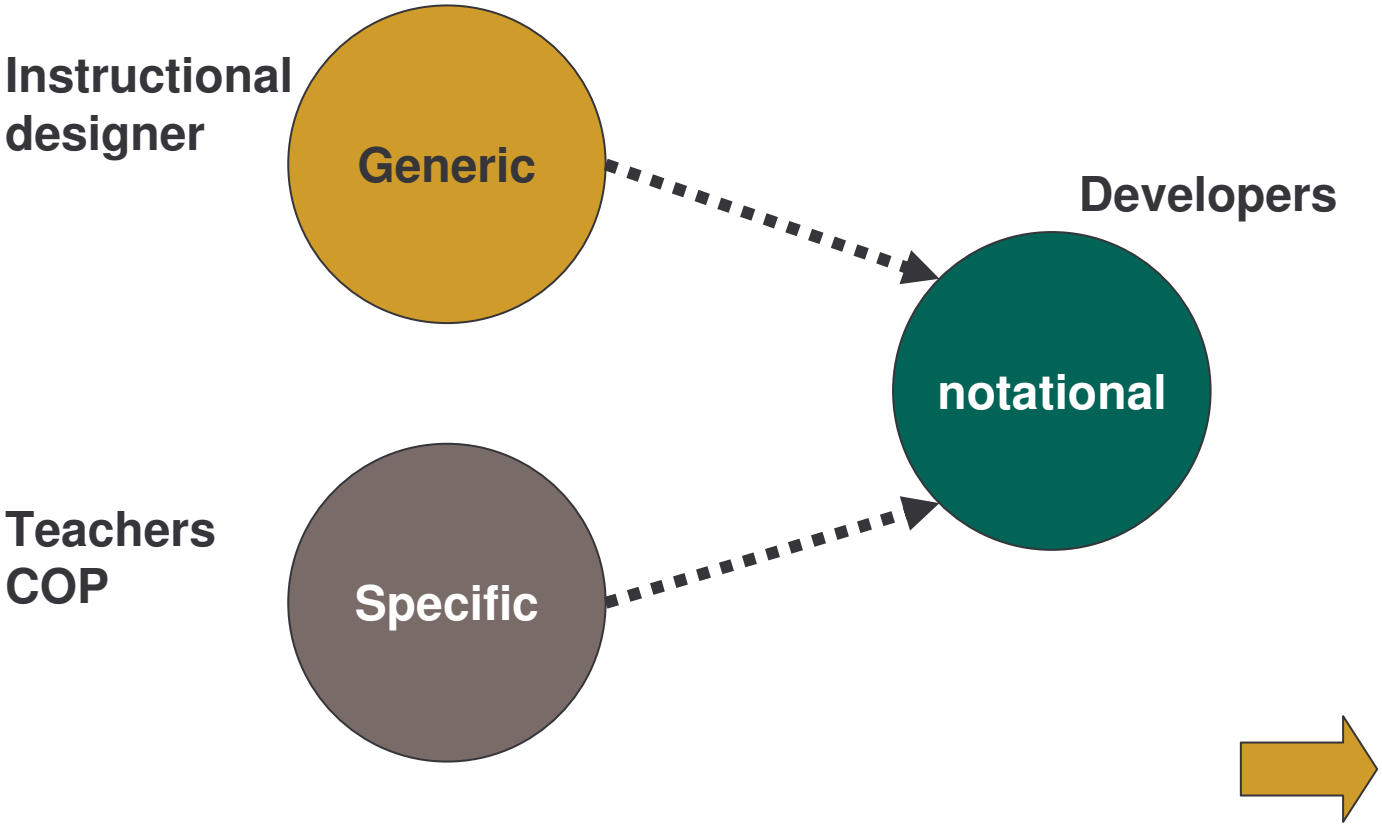
- Teacher
- Instructional designer (pedagogical engineer)
- Developers
- Teacher/pedagogical engineer

Describing → Modeling Learning Scenarios

- We need to formalize when:
  - The learning situation has to be run on a LMS
  - Consensus is needed to express a scenario between practitioners of a same community
  - Transformations are required to adapt a scenario
    - A priori (design phase)
    - During run time (execution phase)
    - A posteriori (evaluation/analysis phase)

Modeling Learning Situations: How?

- *Using Educational Modeling Language**S**…*



Educational Modeling Languages

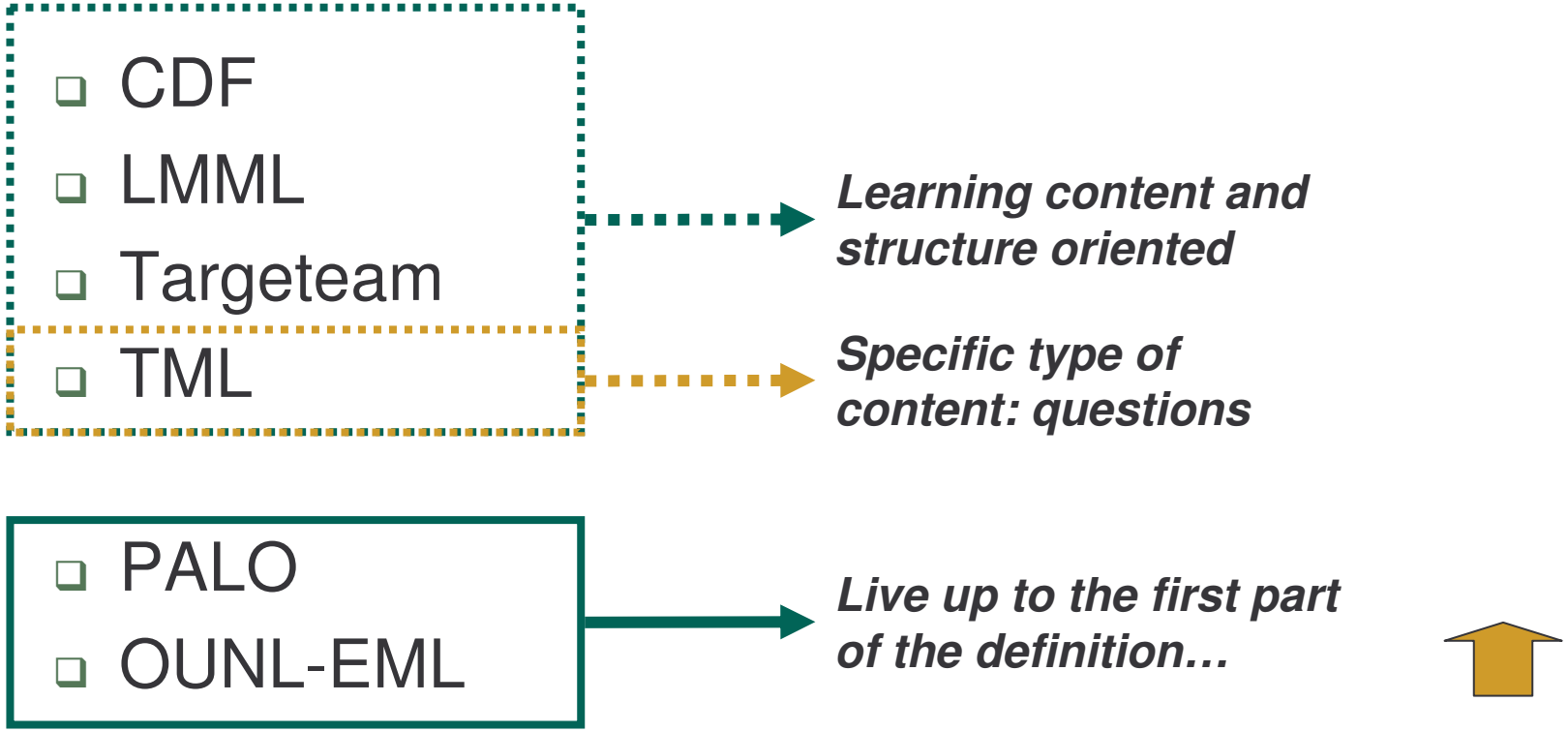
- EML Survey (CEN/ISSS 2002):

  An EML is a semantic information model and binding, describing the content and process within a 'unit of learning' from a pedagogical perspective in order to support reuse and interoperability

- EMLs studied in the survey:
  - PALO (UNED-Spain)
  - CDF (EPFL-Switzerland)
  - LMML (UP-Germany)
  - Targeteam (UB-Germany)
  - EML (OUNL-Netherlands)
  - TML/NetQuest (ILRT-United Kingdom)

Educational Modeling Languages

- Conclusions of the survey…



Educational Modeling Languages

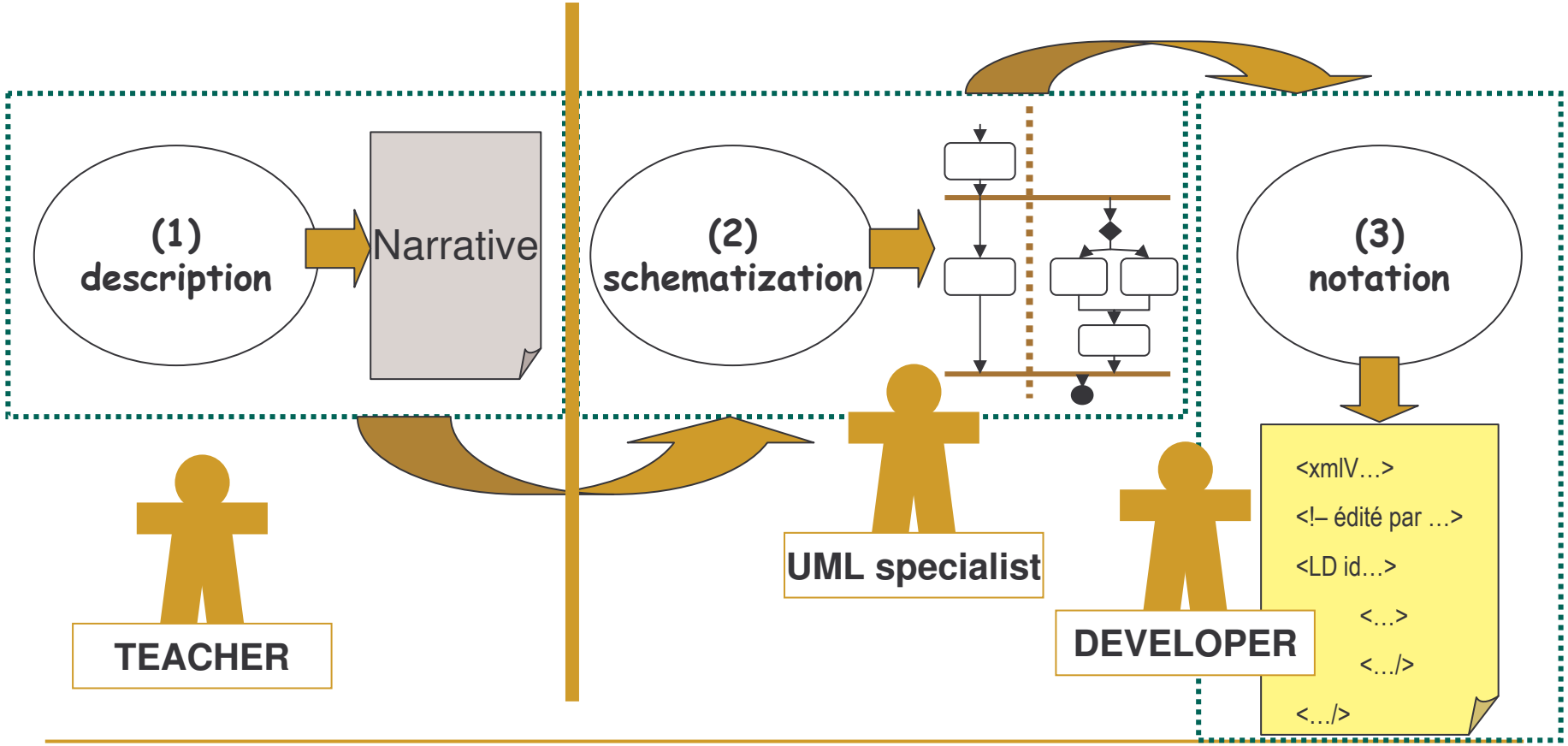
- And the winner is… ***OUNL-EML v1.1***

> « …*it is important to note that currently OUNL-EML (version 1.1) is the only one of the EMLs discussed which both is compatible with various international standards and follows the process and procedures to be accepted as a standard* »
>
> (CEN/ISSS 2002)

- OUNL-EML = basis of IMS LD

IMS Learning Design: design process

- From the description of a pedagogical scenario to a model compliant with IMS LD specification…



IMS LD / Our questions?

Designing with IMS LD			
Why	To share	?/Yes	XML docs?
	To process on a LMS	Yes	▪Interoperability ▪Reusing ▪Adaptability (when?)
What	Face to face	Utility?	
	Blended	?	All pedagogical situations?
	Distant	Yes	
Who	Teacher	?	Other languages may be necessary…
	Pedagogical engineer	?	
	Developer	Yes	If IMS LD specialist

French “specificities”

- The teacher manages his teaching methods
- National prescription rather constrains:
  - General programs
  - Required teachers' diploma ↔ level of learners' studies
  - Duration of cycles, courses,…
- Importance of didactic (few compliant with “instructional design)

Educational Modeling

- Part 1: Introduction
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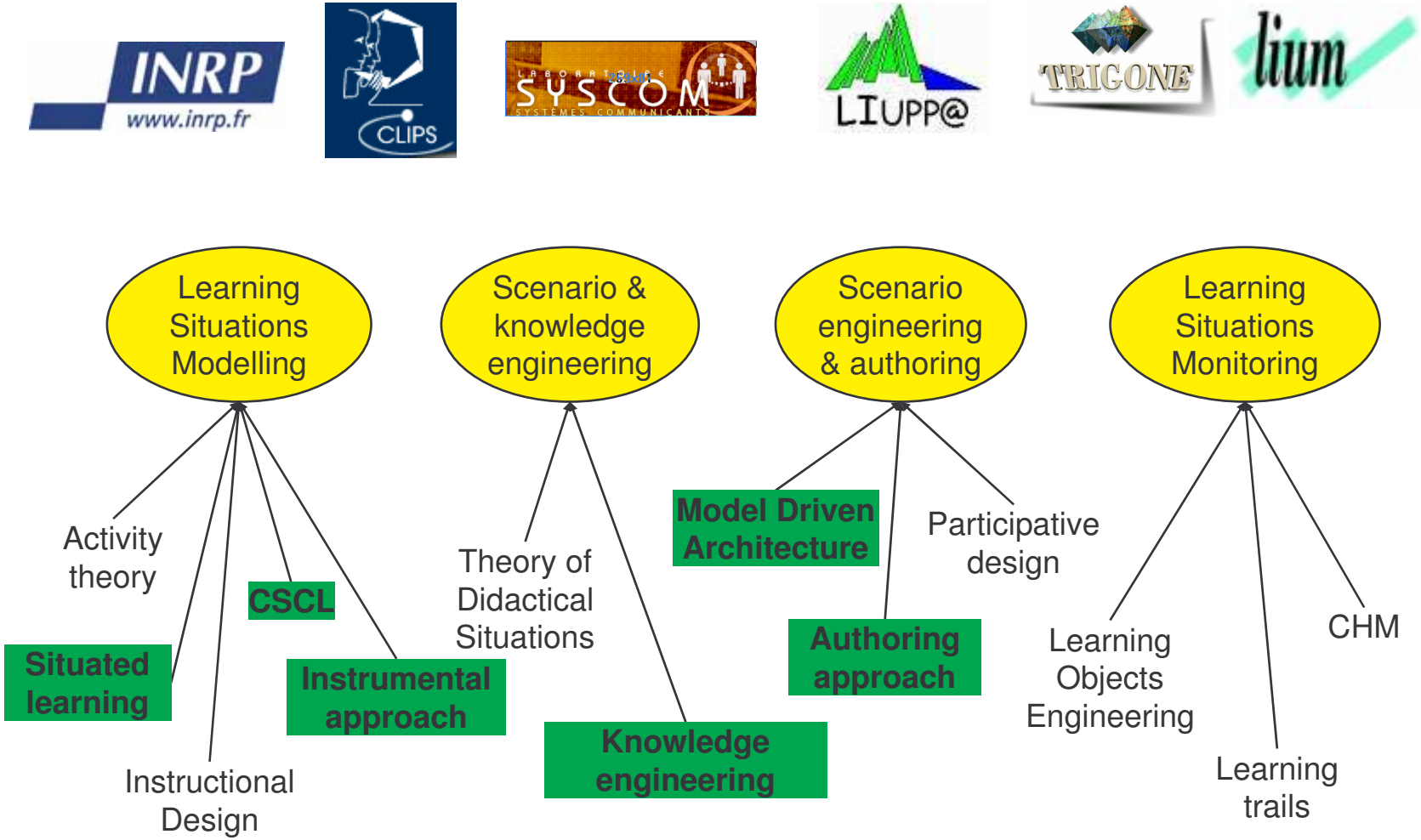
- Part 3: Activities, actors, goals and process

Research informal group about Learning Design

Recent main French events related to Learning Design

- **Jan-Dec 2004 : Kaleidoscope JEIRP TRAILS**, Trail on learning objects
  Repr. *J.-P. David*
- **Jan-Dec 2005 : Kaleidoscope JEIRP DPULS**, Design Patterns for recording and analysing Usage in Learning Systems
  dir. *C. Choquet*
- **April 2005 : UNFOLD presentation (dissemination of IMS LD)**
  Animation : M. Arnaud, B.Olivier, D. Burgos, C. Kew
- **May 2005 : Specific topic about IMS LD in EIAH 05 conference**
  J-P.Pernin, T. Nodenot, C. Martel, C.Choquet
- **July 2005 : EIAH Summer school in Autrans**
  J-P Pernin, C. Choquet, A. Lejeune, P. Laforcade, X. Le Pallex, T. Nodenot, C Martel, with participation of C. Kew (Unfold), O.Marino (Teluq)
- **April 2006 : Francophone conference about scenarization**
  J-P. Pernin & H. Godinet, 24 papers, 100 participants
- **July 2006 : ICALT workshop**
  Comparing Educational Modeling Languages on a case study
  proposed by C. Martel

Main theoretical frameworks and topics of interest



10h-10h40	**Anne Lejeune**, ERTé **E-Praxis - CLIPS-IMAG (Grenoble)** **Jean Philippe Pernin**, ERTé **E-Praxis - INRP (Lyon) et CLIPS-IMAG (Grenoble)** Modélisation pédagogique : acteurs, objectifs et processus *Educational Modelling : actors, goals and process*

11h-11h40 **Scénarios d'apprentissage et ingénierie dirigée par les modèles**	**Pierre Laforcade (laboratoire LIUM, Le Mans)** L'application de l'approche dirigée par les modèles aux scénarios d'apprentissage *Model Driven Approach Applied to Learning Scenarios*
	Xavier Le Pallec (laboratoire TRIGONE, Lille) Construction de dispositifs pédagogiques au travers de l'Ingénierie Dirigée par les Modèles *Constructing learning environment through Model-Driven Engineering*
11h40-12h40 **Quelle neutralité ou généricité pour les langages de modélisation pédagogique ?**	**Thierry Nodenot (laboratoire LIUPPA, Bayonne)** CPM: un profil UML pour concevoir des situations problèmes coopératives *CPM: a UML Profile to design Cooperative PBL situations at didactical level*
	Christian Martel (laboratoire SYSCOM, Chambéry, PENTILA) La modélisation d'activités d'apprentissage collaboratif : LDL, un métamodèle centré sur les interactions *Modelling Collaborative Learning Activities: LDL, a interaction-centred metamodel*
	Viviane Guéraud (laboratoire CLIPS-IMAG, Grenoble) Scénariser finement l'activité d'un apprenant sur un objet pédagogique interactif (simulation, micro-monde,...): modélisation, approche auteur et ingénierie *Fine-grained scenarios of student's task on interactive learning objects (simulation, micro-world,...) : modelling, authoring approach and engineering*

Educational Modeling

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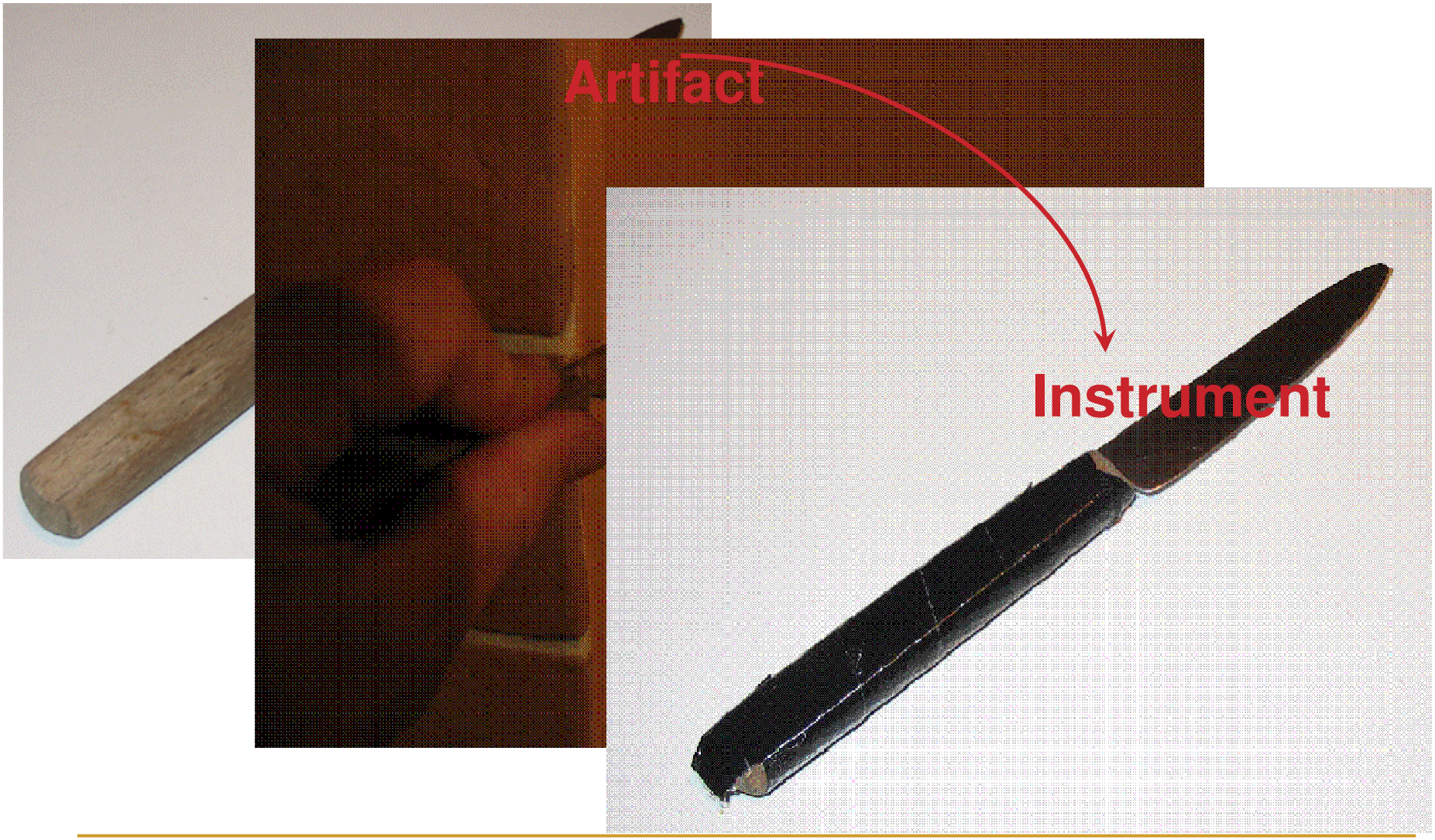
Situated Learning : what is a learning situation ?

Instrumental genesis theory (1)



Instrumental genesis theory (2)

- Two dual process
  - User's instrumentation
    - User builds the more coherent set of instruments adapted to his task
  - Artifact's instrumentalization
    - Adjusting artifact and its functions to a specific context
- Design of artifacts is shared between designers and users
- Design of artifacts is a continuous process

Consequences on Learning Design

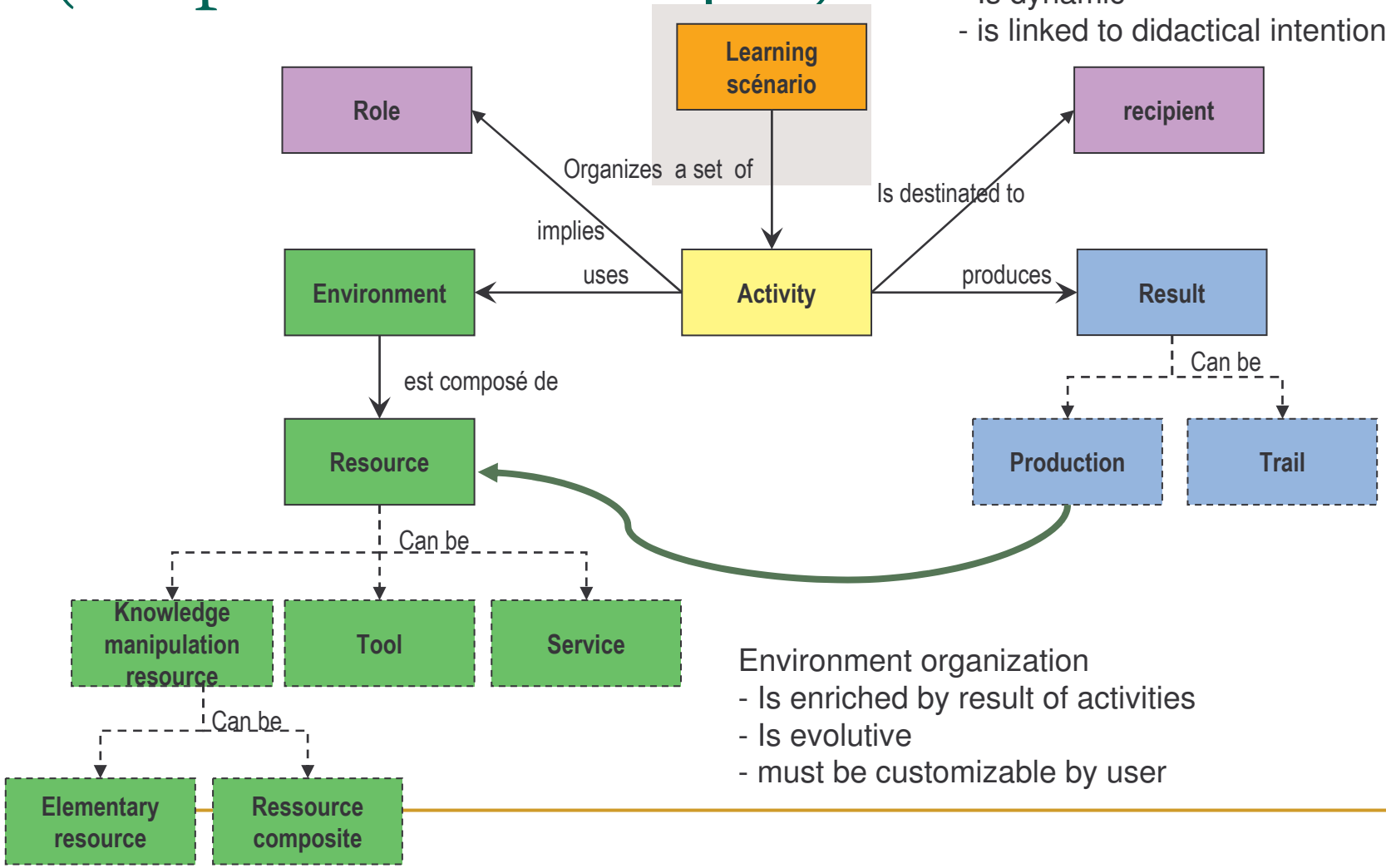
- Learning Design
  - is shared between designers and users
  - is a continuous process
- The organization of activities
  - a priori, can be only “roughly” defined
  - Is dynamically refined and adapted at runtime
- The technical environment (= instrumental system)
  - a priori, can be only indicatively defined
  - is enriched by results of activities
  - is adapted and customized by each user

Learning situation's characteristics

- Multiple interactions between humans and computer
  - Activity systems must be customizable
- Learning activity prescription and regulation result from a didactical intention
  - Activity systems must be related to didactical intentions
- Identify :
  - process : **scenarization**
  - Intermediary results : progressively enriched and adapted forms of the **learning scenario**

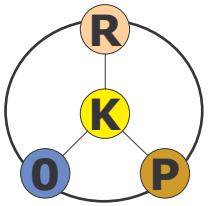
Proposed conceptual framework (adapted from Koper)

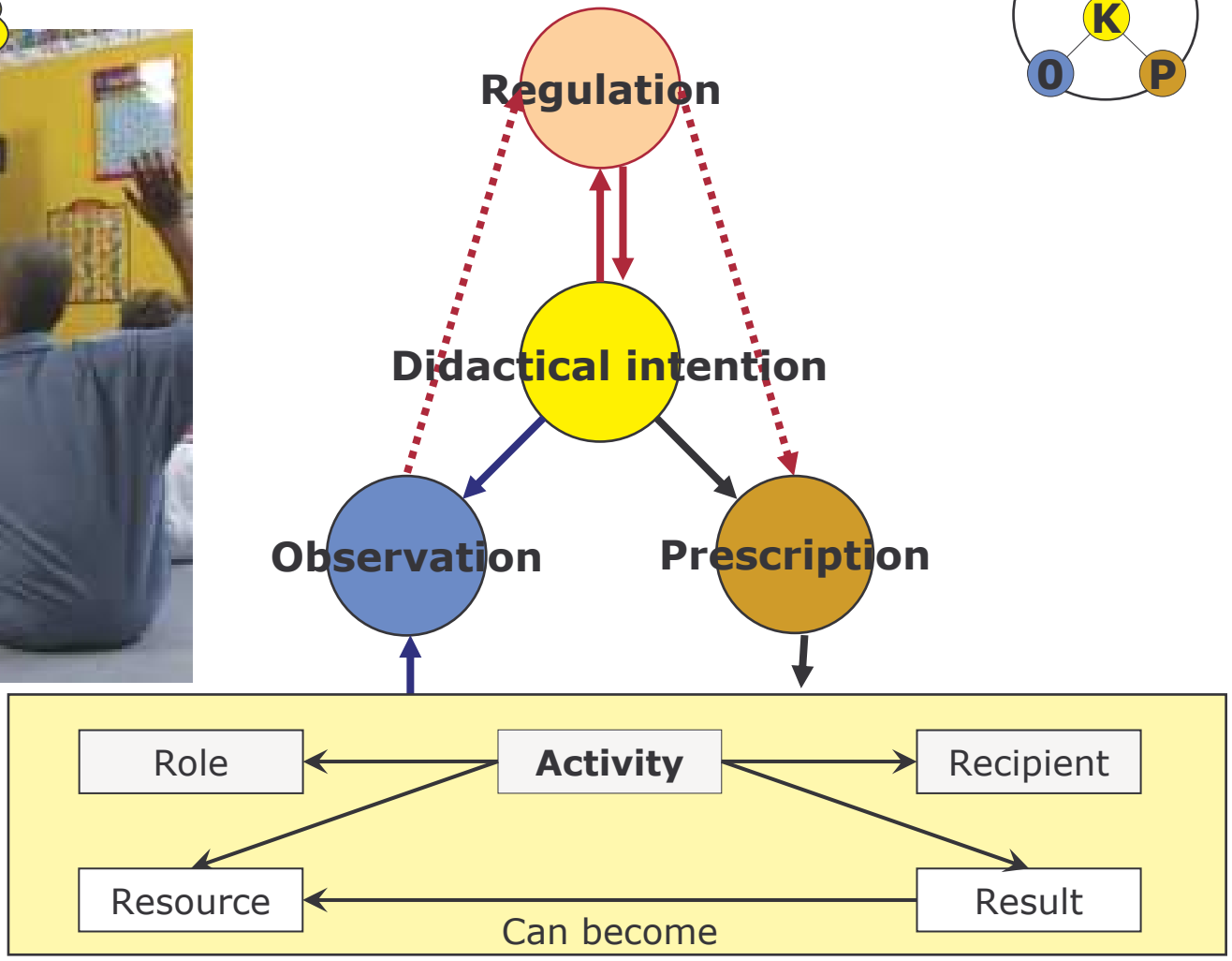
Learning scenario
- represents Activity organization
- Is dynamic
- is linked to didactical intentions



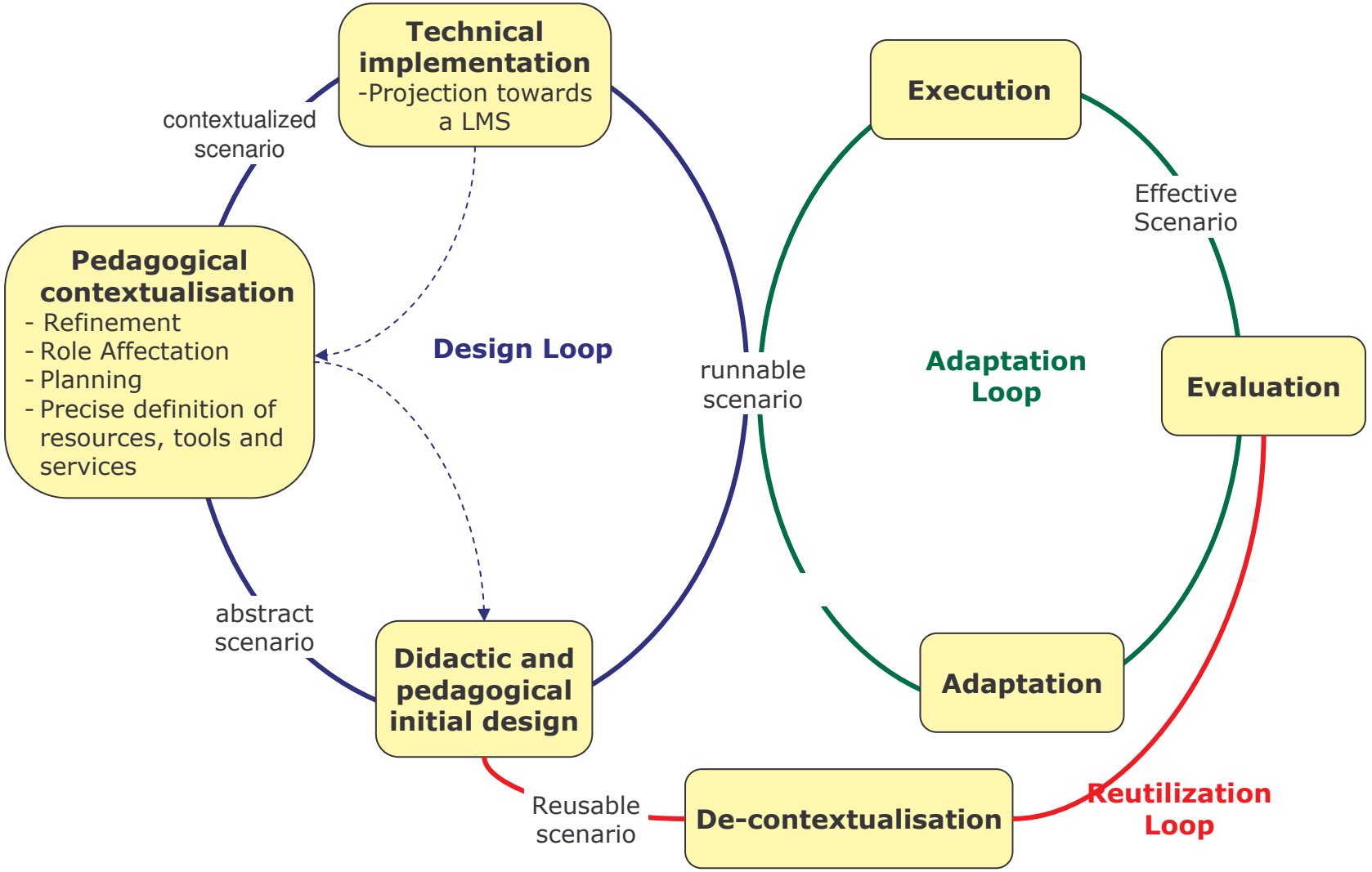
Environment organization
- Is enriched by result of activities
- Is evolutive
- must be customizable by user

A learning scenario : our proposition





Scenarization : an incremental process



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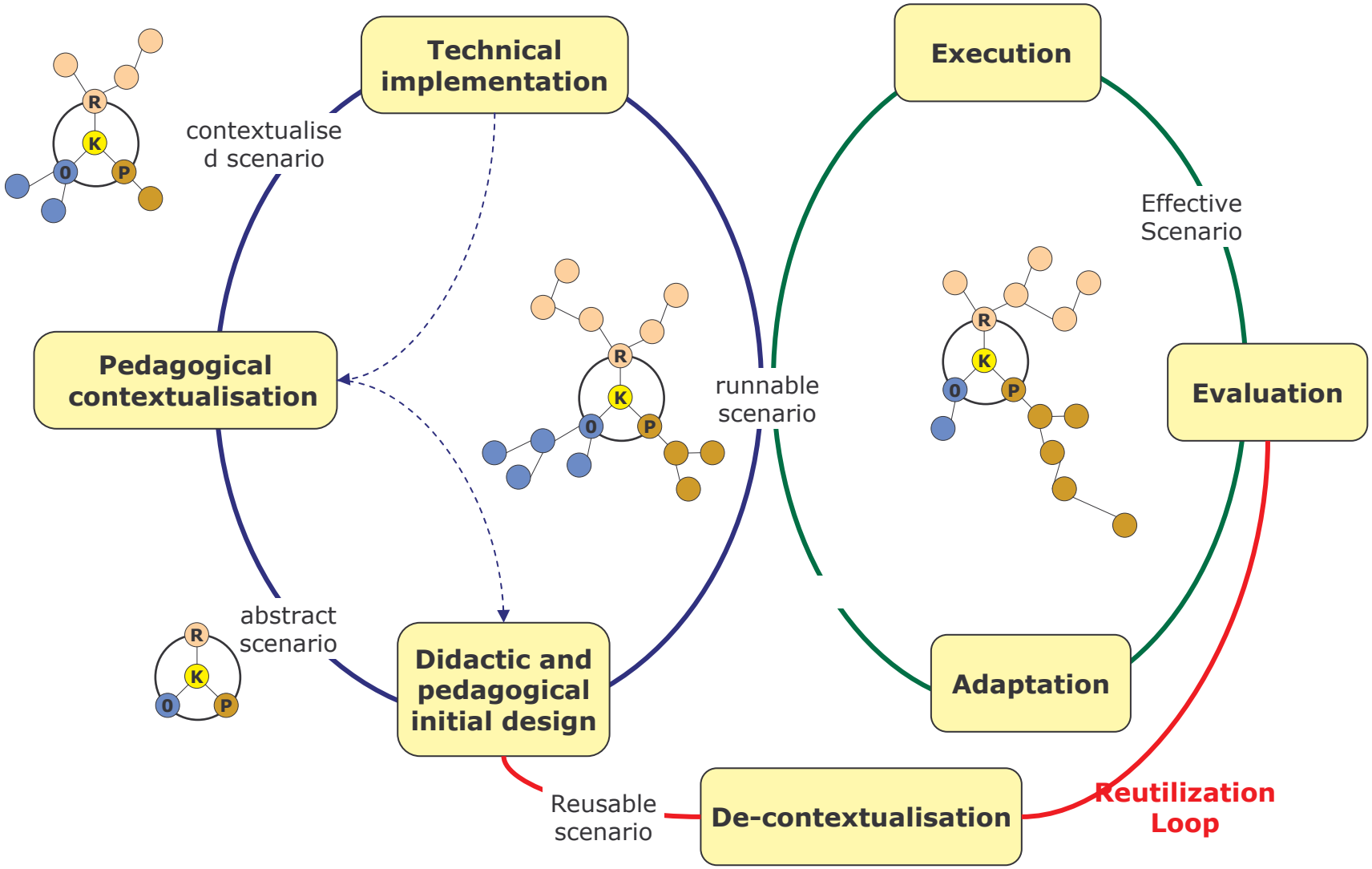

Questions about IMS LD

- IMS LD is a real success. Its allows to concentrate design on activity, not on resources. But :
- Such as a notational language
  - Can IMS LD be improved to propose more homogeneous concepts (ex: role, activity VS condition and properties) ?
  - Is really IMS LD neutral and able to express all kinds of learning situations (face to face, hybrid) ?
- Such a (suggested) lifecycle of scenarios
  - Is it compatible with an evolutive concept of learning ?