CLIPS
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Fine-grained scenarios of student's tasks on interactive learning objects : modelisation, authoring approach and engineering

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« Activity» on interactive learning objects

- Aimed learning situation :

Cursus	Organization of learning units
Learning unit	Sequence of various pedagogical activities
Activity	Accomplishment of a task, by interacting with an Interactive Learning Object (simulation, micro-word,…)

Active Learning Situation (ALS)
Situation Active d'Apprentissage (SAA)

- Example : Active Learning Situations based on the use of a simulation

Observations

1) It is in general possible to :
   - integrate an Active Learning Situation in a scenario describing a sequence of activities
   - link a situation with the desired simulation environment

2) It is in general impossible to :
   - describe finely the activity required on the simulation
   - observe the real activity of the learner on the simulation
   - parameterize the simulation according to the given task

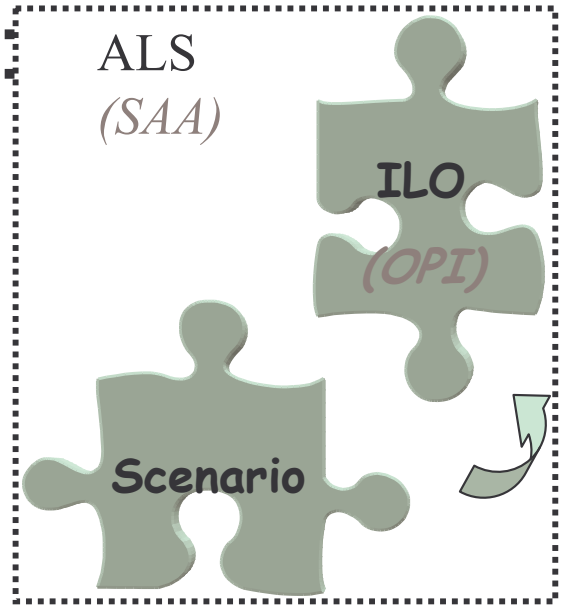
Observations and Objective

- Activity on the simulation = black box
  - giving, at best, a final result
- We do not know :
  - how the learner advances on the given task with the simulation
  - what are his difficulties
  - what are his mistakes, etc.
  - how to help him
- Our objective :
  - Activity on the simulation ➔ glass box

Our propositions

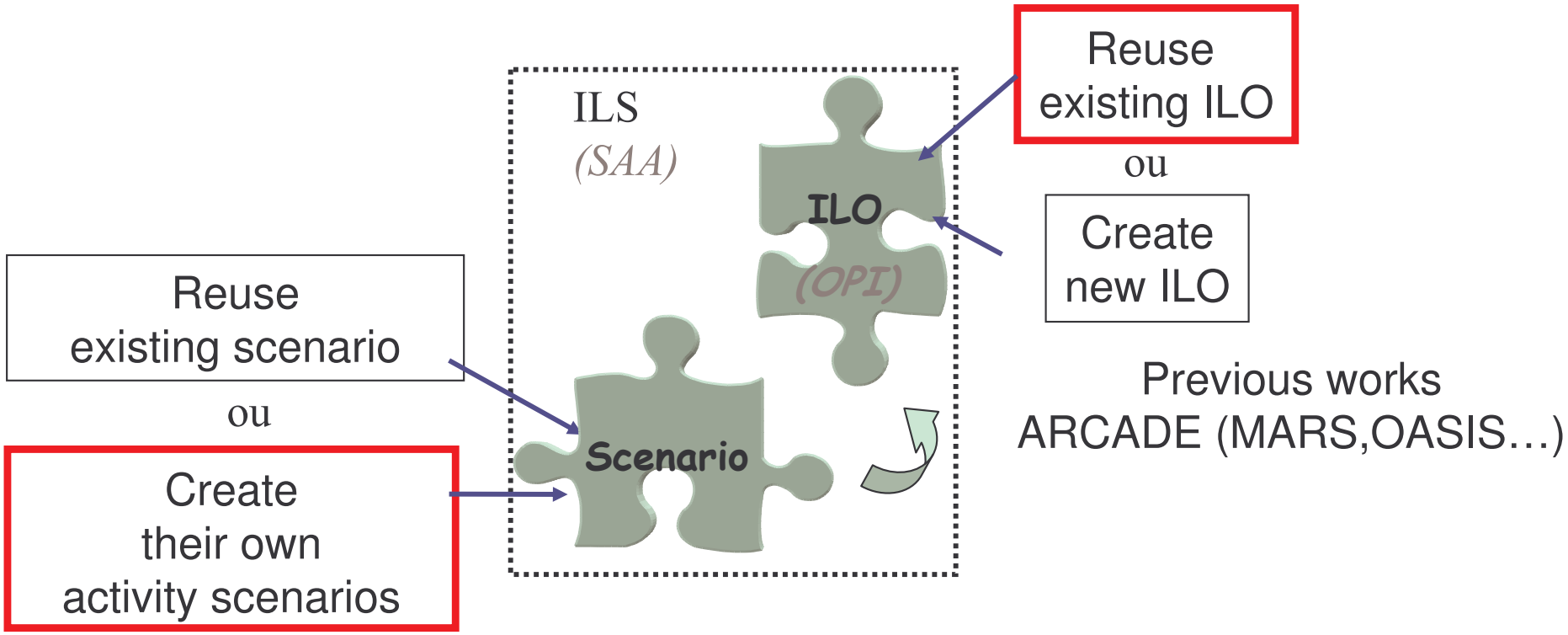
- are concerned by :
  - the creation of Active Learning Situations by authors
  - their exploitation by learners
  - their monitoring by trainers
- are based on a conception model :

  An Active Learning Situation (ALS):
  - an **Interactive Learning Object** (ILO)
    (Objet Pédagogique Interactif = OPI)
    (simulation, micro-world,…)
  - an « **activity** » **Scenario**
    proposing an activity on the ILO



Creation of Interactive Learning Situations (ILS)

- Our objectives
  - Allow trainers to create ILS, operational (for learners)



An activity scenario

describes precisely:

- the activity proposed to the learner on the ILO (simulation, micro-world,…)
- the control that will be made on his progression
- the associated assistance.

Initial situation
and situation to attain

Pertinent resolution steps
(required intermediate situations)

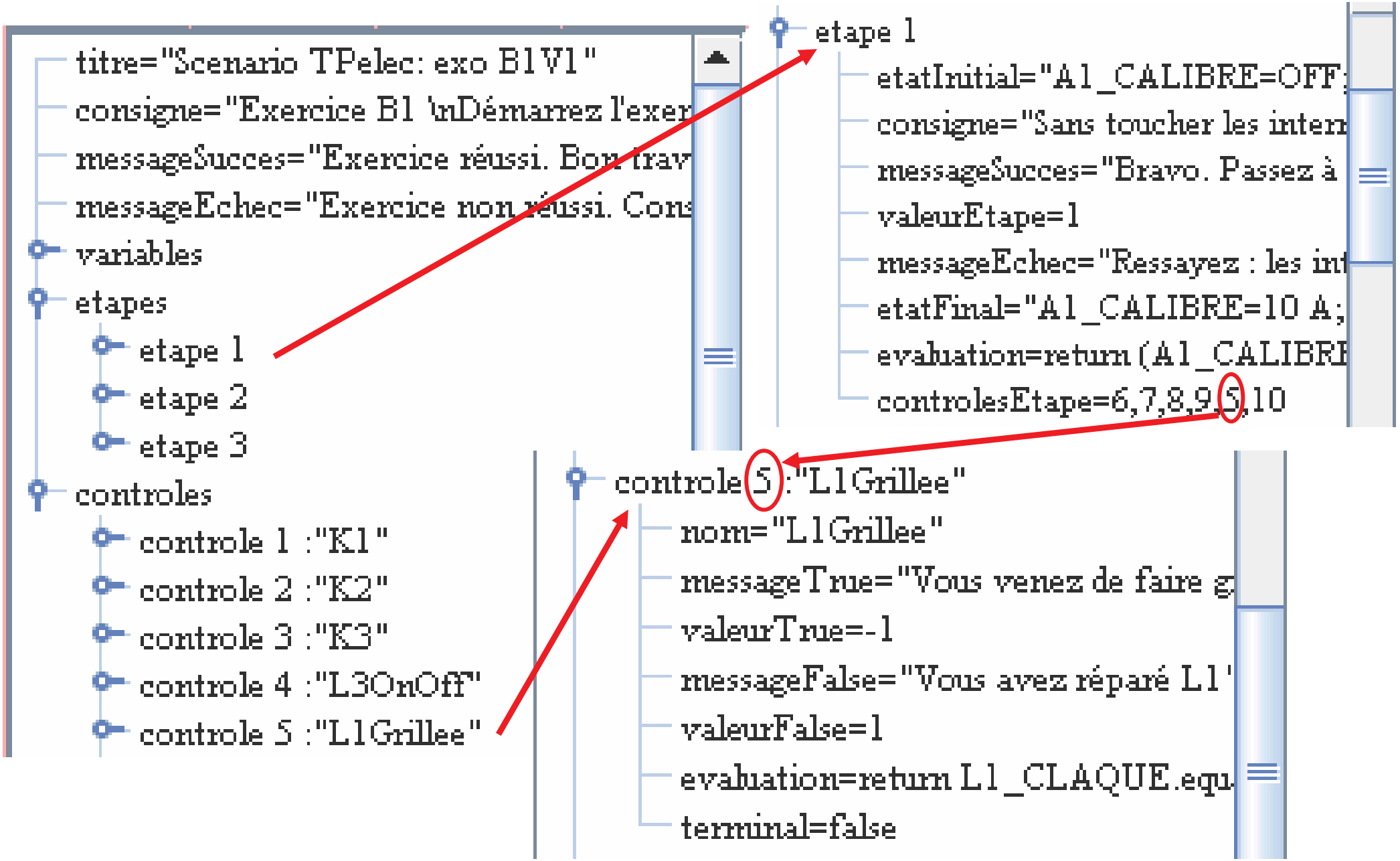
Particular situations to monitor
(constraints, errors,…)

Reactivity associated to various controls
(successful or failed steps,
particular situations to attain,…)

FORMID - Authoring

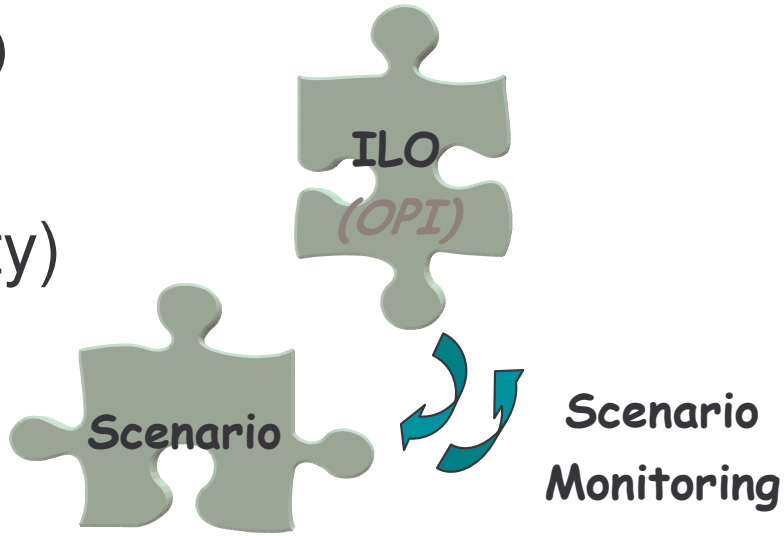
- Authoring environment for activity scenarios
  - Expression of situations
    - with references to Interactive Learning Object variables
    - by manipulation of the Interactive Learning Object, photography and extension
    - or by direct expression
  - Simplicity of creation and validity of created scenarios
    - but imagination required
  - Scenarios in XML format

Example of an activity scenario



FORMID – Scenario Monitoring

- Execution environment
  - interoperates with the ILO
    constraints on the ILO
    (inspectability and scriptability)



  - interacts with the learner
    and provides an automatic assistance
  - records activity traces

FORMID - Learner

The learner interacts

with the scenario monitor and with the ILO

Scenario selection
Scenario Start/Stop

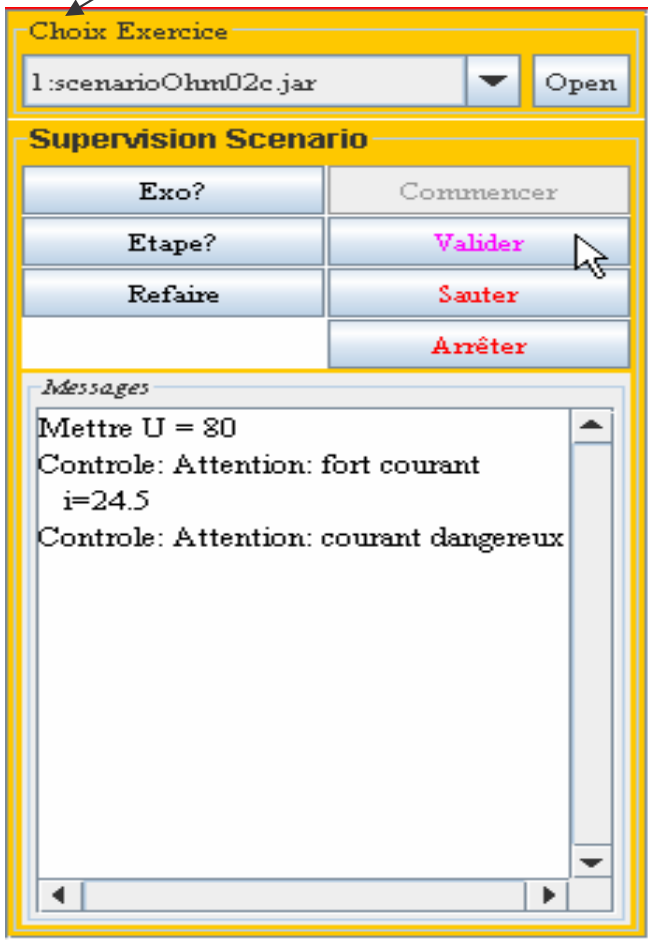
Display of instructions

Display of feedbacks after automatic detection of a control (situation to observe)

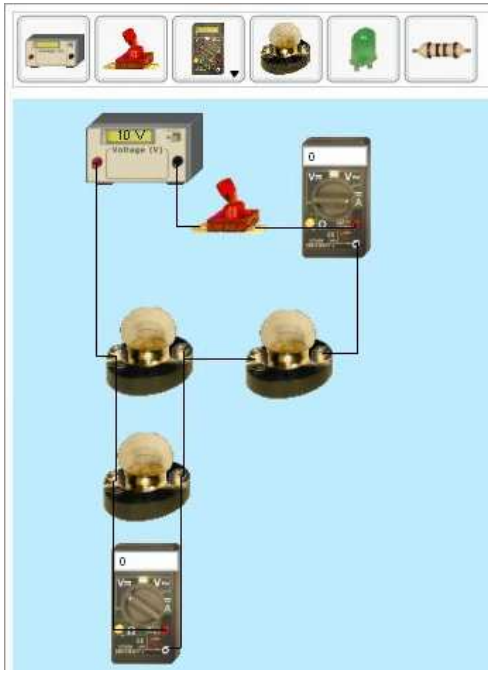
Step validation request

Display of feedbacks after a step validation request

Step Retry or Skip



Ex: manipulation of TPElec to attain the prescribed goal



FORMID – Teacher

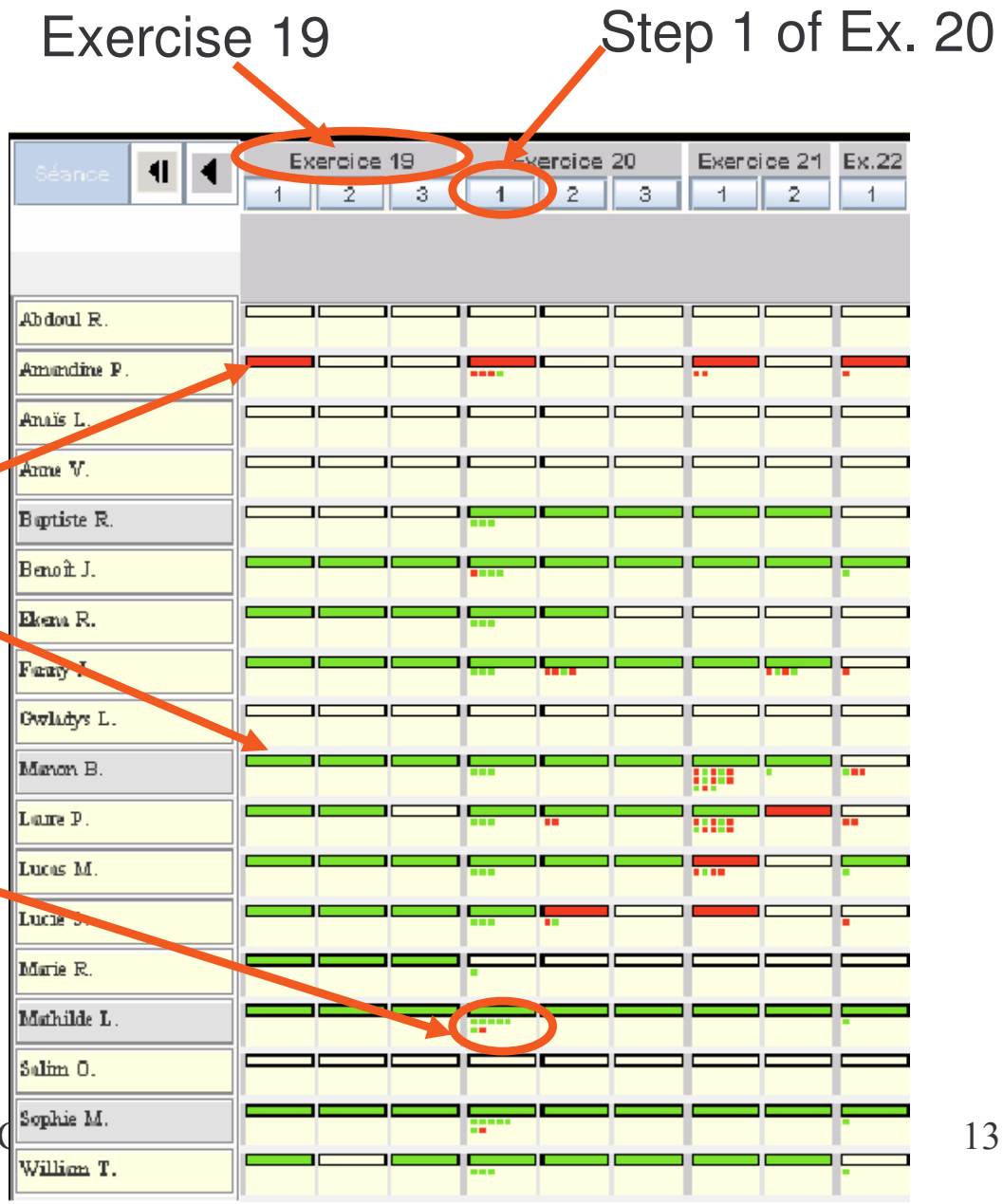
- Monitoring environment for the teacher

Monitoring interface for the teacher

- Synthetic group view :

Step validation
correct / incorrect

Automatic detection of situations to observe

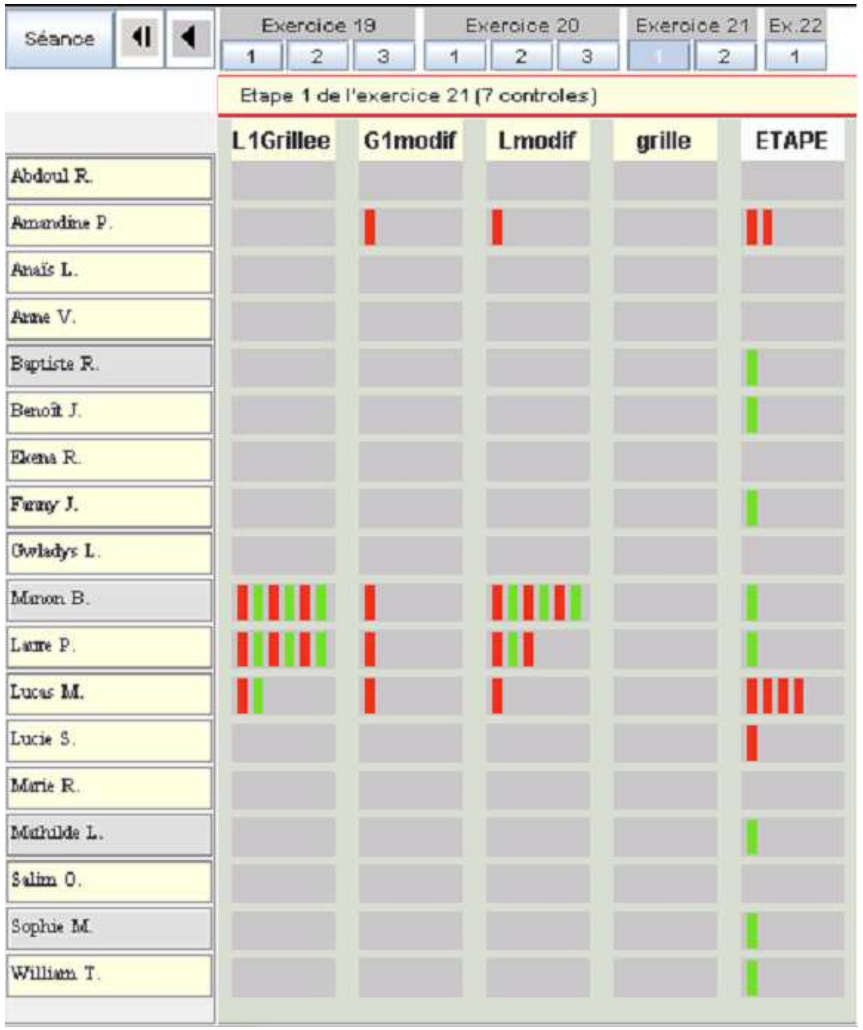


Monitoring interface for the teacher

- **Detailed views** for a step **:**
  situation to observe and step validation

Group activity
(on the right)

Learner activity :
chronological view
(not shown here)



Characterization of our approach

Learning Situation	**Granularity :**	☑ Activity	
		☐ Sequence of activities	
		☐ Pedagogical Structure	
	Type	☑ Based on Interactive Learning Objects	
		☑ Problem solving / Goal Oriented	
	Learning	☑ Individual	☐ Collective
Scenario	**Nature**	☑ Prescriptive	
		☑ Delivers information on the actual actions	
	Role (it defines)	☑ Situation and task	
		☑ Control	
		☑ Assistance	
	Level	☑ Operational (for every role)	
	Knowledge	☑ Implicit	☐ Explicit
	Diagnostic	☑ Behavioral	☐ Epistemic
	Personalization	☑ According to behavior	
		☐ According to user-profile models	

Towards integration of scenarios with different granularities (KAL-SVL, Pentila, Syscom)

Fine-grained scénarios

Status of the Activity : from black box to glass box

Conception, Exploitation, Monitoring

Questions…