# Modeling the process of authentic assessment in the technology-rich classroom: Why and how?

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# Overview

- Authentic assessment
- From methods to models
- The ECAAD modeling method and modeling toolkit
- Integration into ICT-enhanced learning environments
- Sharing models
- Applying to 21C learning

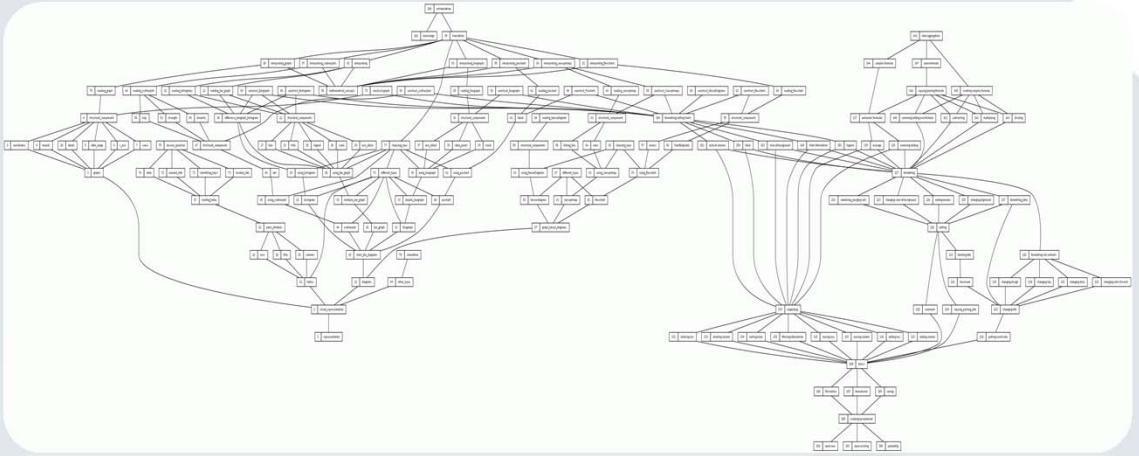
# What do we mean with authentic assessment?

- The “test” task resembles authentic practices, and the “test” situation resembles the practice situation (including tools and artifacts);
- The assessment purpose is primarily formative—it delivers information that guides pedagogical decision making (“here and now”);
- The assessment gives a voice to the assessed-- “authenticity” needs to be perceived by the students, possibly negotiated with them;
- The assessment is unobtrusive (“embedded”); the use of IT is extensive.

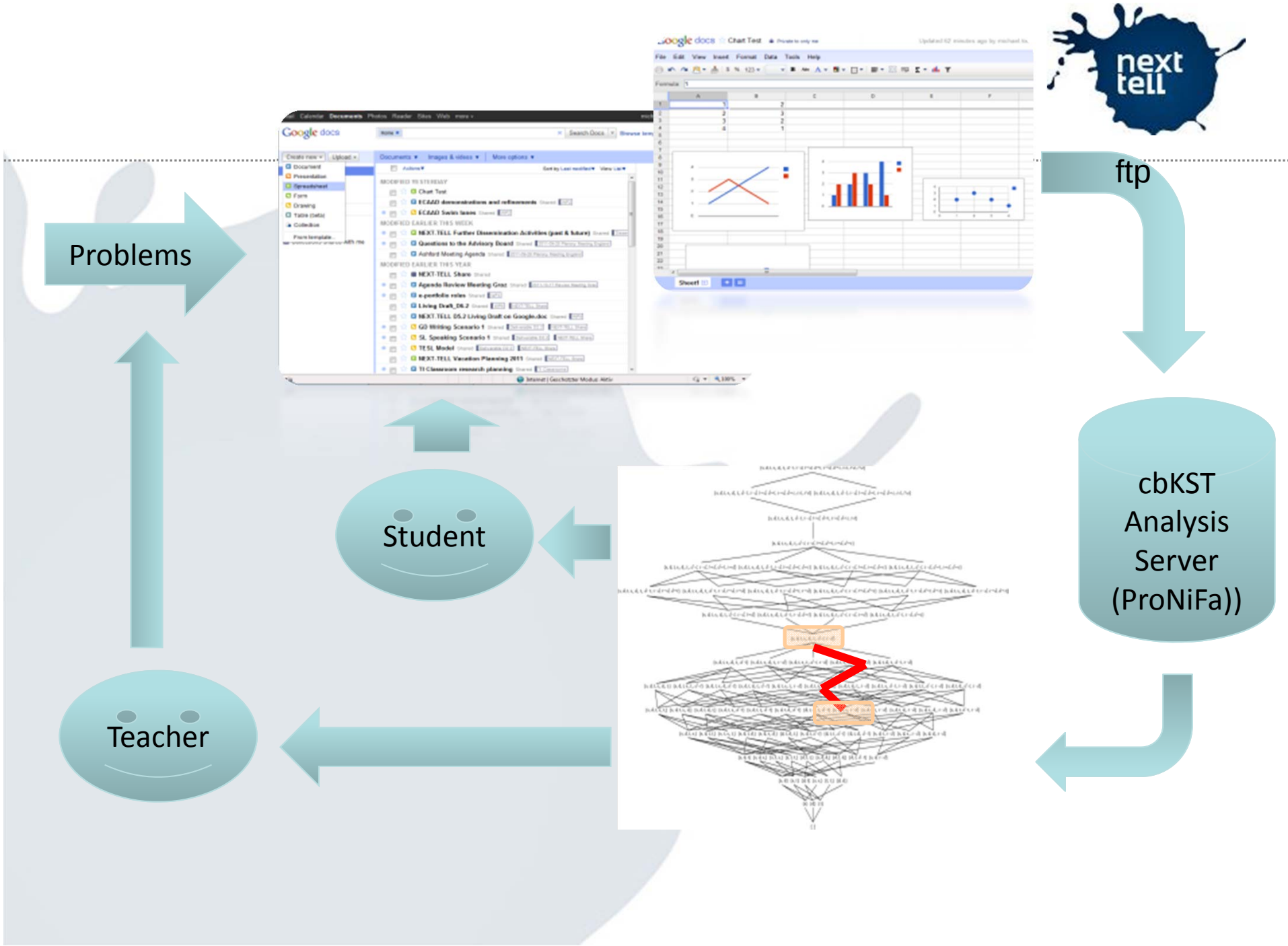
# STEM Teaching with Google Spreadsheets

## Domain: Handling quantitative data (e.g., measurement data)

- Software basics (working with Google Spreadsheet)
- Editing data
- Formatting data
- Organizing data
- Aggregating data
- Visualizing data



(104 sub-skills)


next tell
ftp
Problems
Student
Teacher
cbKST Analysis Server (ProNiFa))

# Vision Element #1

**In the 21st Century Classroom, ICT is used to engage students in meaningful learning activities, and to provide teachers and students with nuanced information about learning when it is needed and in a format that is supportive of pedagogical decision making, thus optimizing the level of stimulation, challenge, and feedback density.**

Teachers

Students

Parents

1. Skill Meters

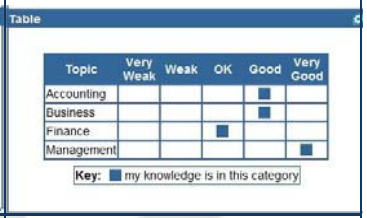

2. Smiley Metaphor


3. Traffic Light Metaphor


4. Sparkline


5. Graph (Student and Group)

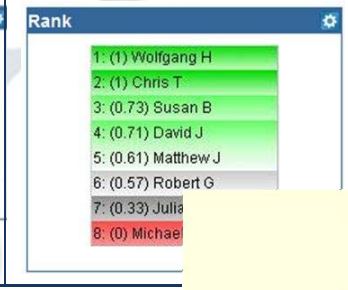

6. Table

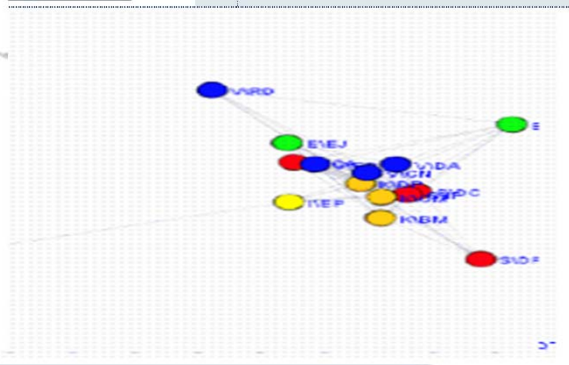


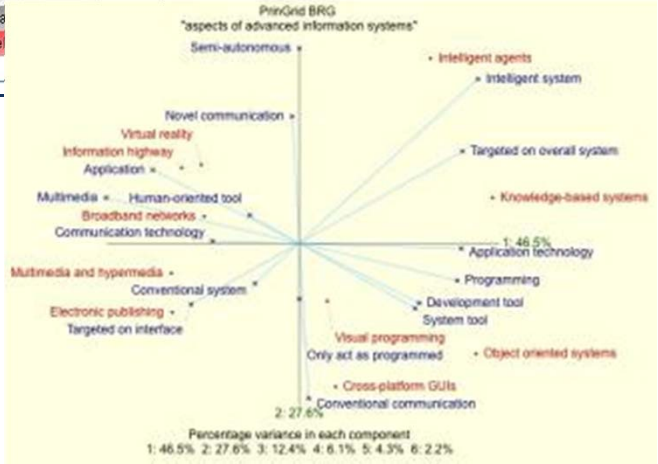

7. Histogram


8. Histogram (Named)


9. Ranking





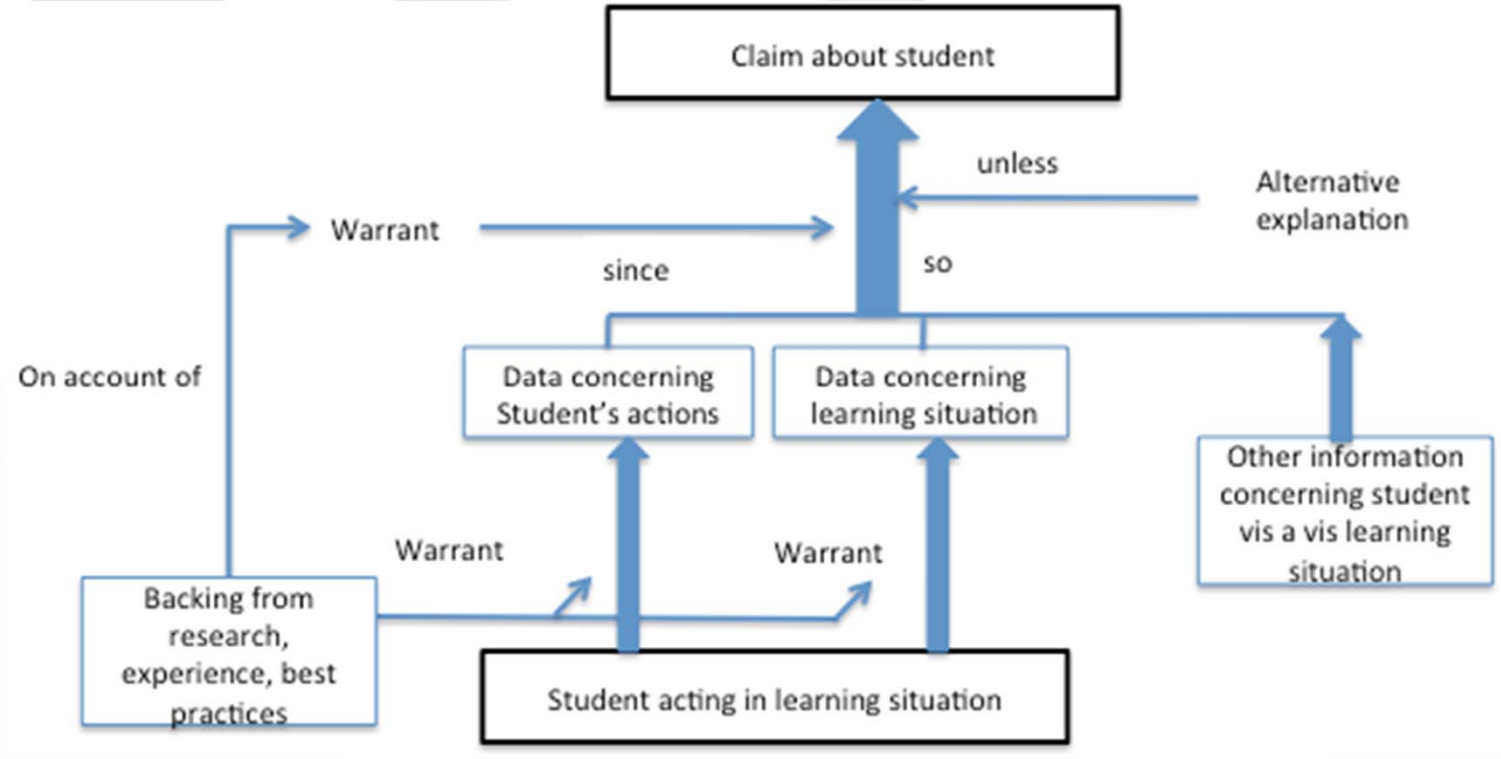
# Vision element #2

NEXT-TELL will provide an *innovation platform*: A set of methods and tools that can support teachers in continuously and collaboratively innovating the use of ICT for teaching, learning and formative classroom assessment.

This platform will support the stages of:

- creating the innovation
- deploying it in classrooms
- researching its effects
- communicating findings to peers and policy makers

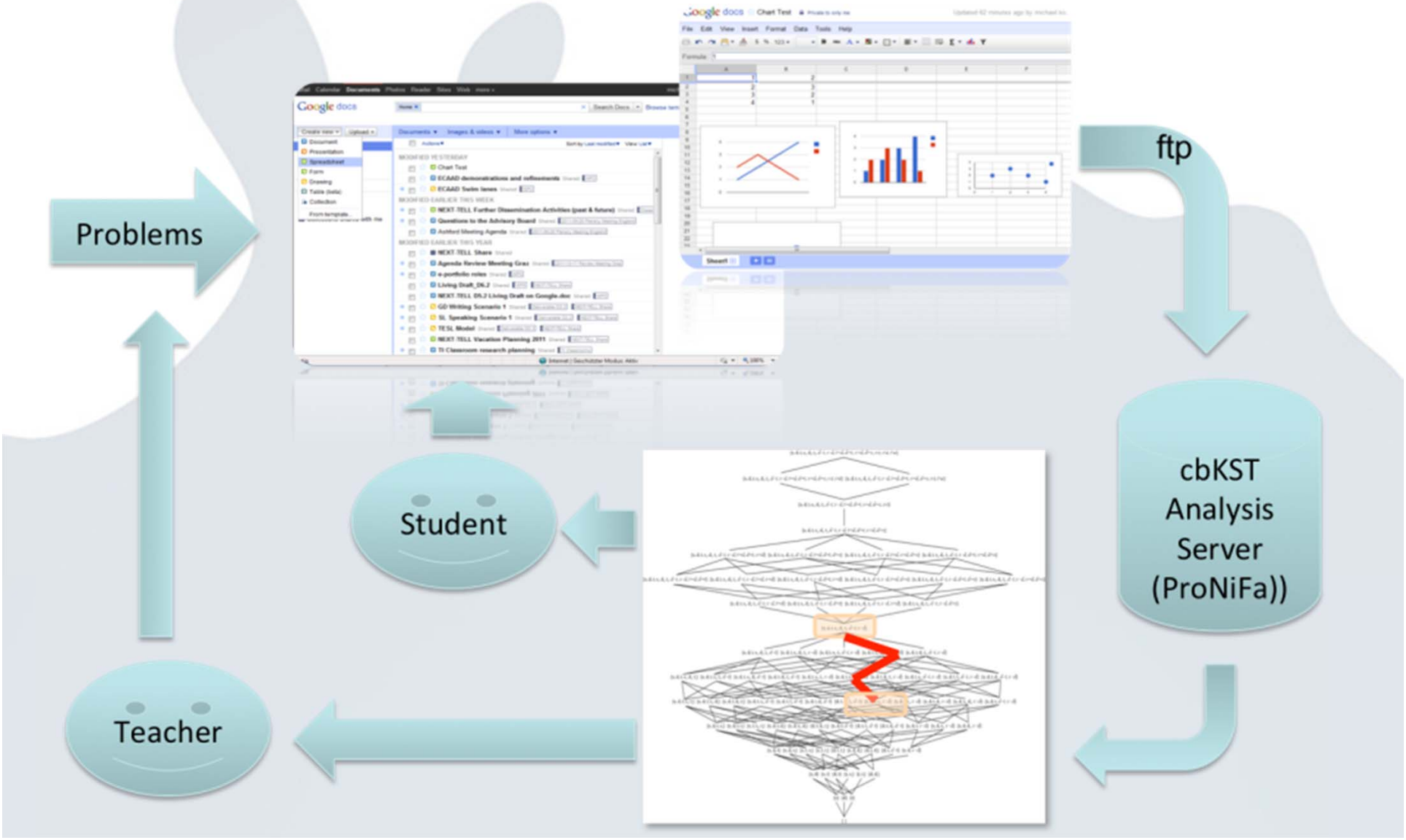
# Assessment as evidentiary argument (Mislevy)




Teachers need to be enabled and empowered to engage in this kind of argument!

# FROM (ASSESSMENT) METHODS TO MODELS

# From methods to models



# Why models?

"Models are knowledge that can be operationalized."

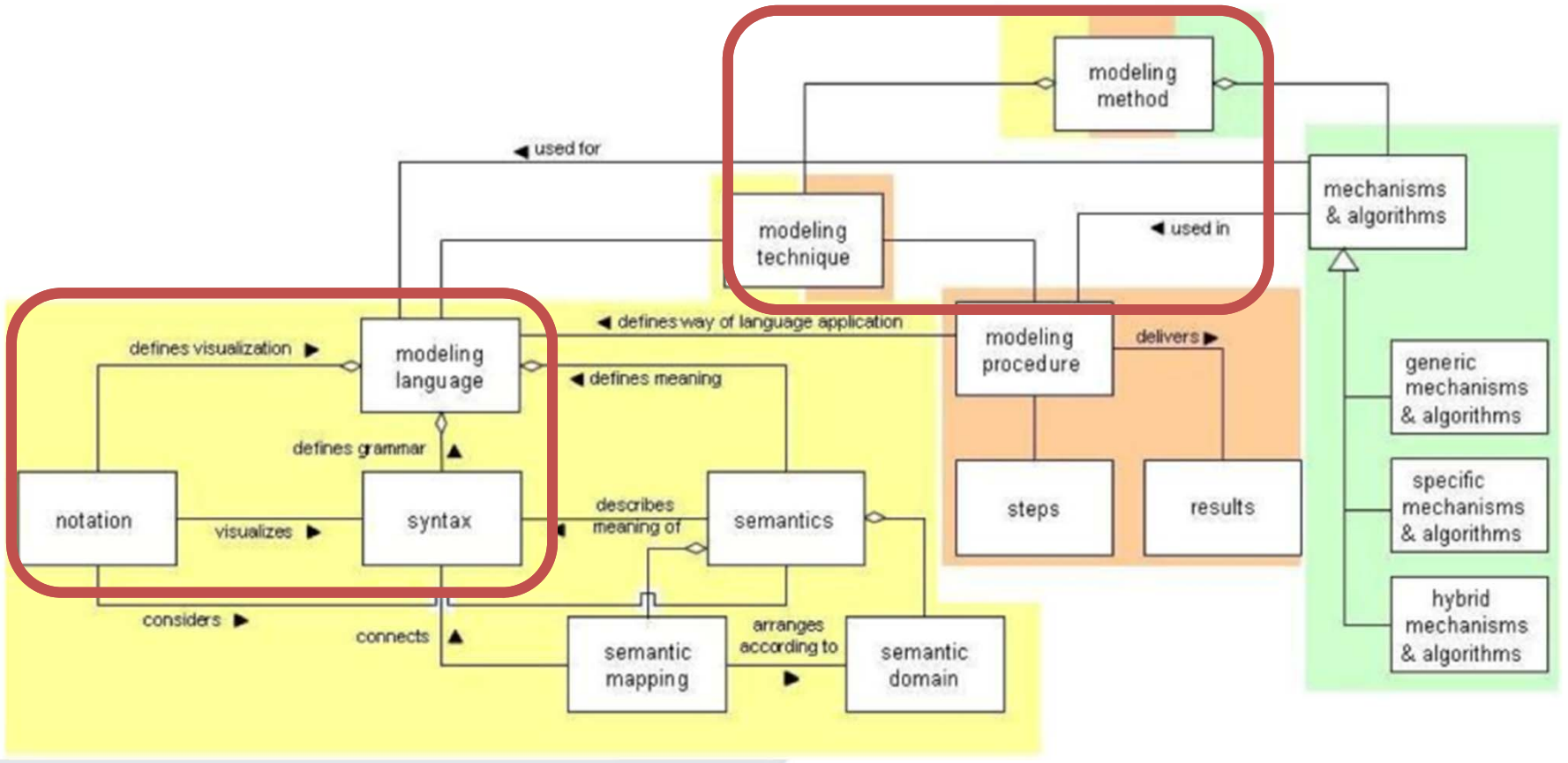
(Karagiannis, Hoffmann, Höfferer, 2008)

Models of:

- Asssessment methods
- Learning activity sequences
- Learners
- Inquiry workflows
- Strategic ICT plans

- Models are a clear specification of a target state;
- Models form the basis for documentation and communication, in general: knowledge management;
- Models are a means of for evaluation: What is the delta between model and implementation(s)?
- Models can be semi-automatically implemented.

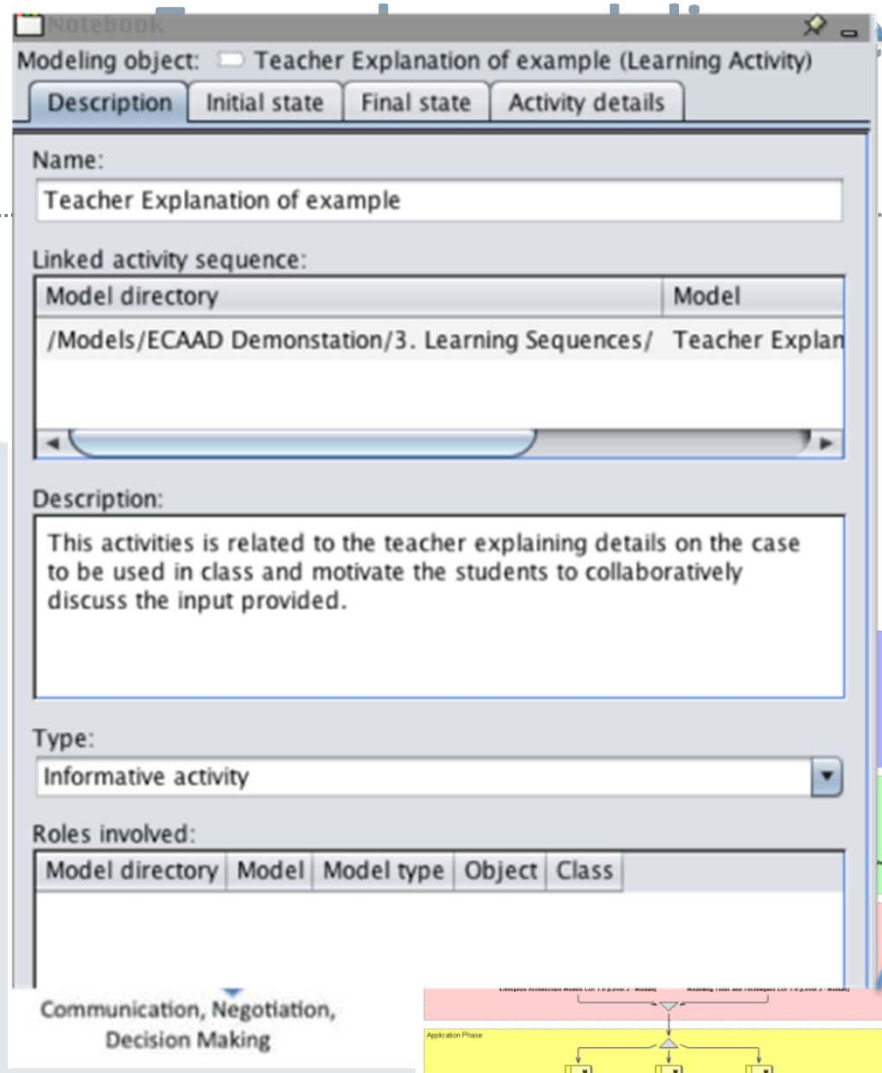
# Meta-modeling framework

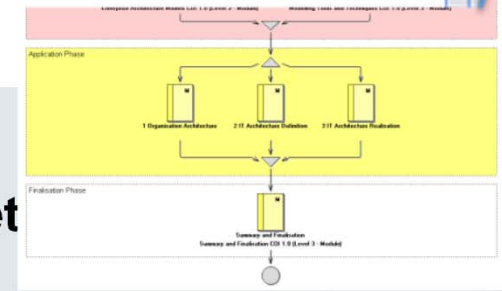



(Karagiannis et al., 2002)

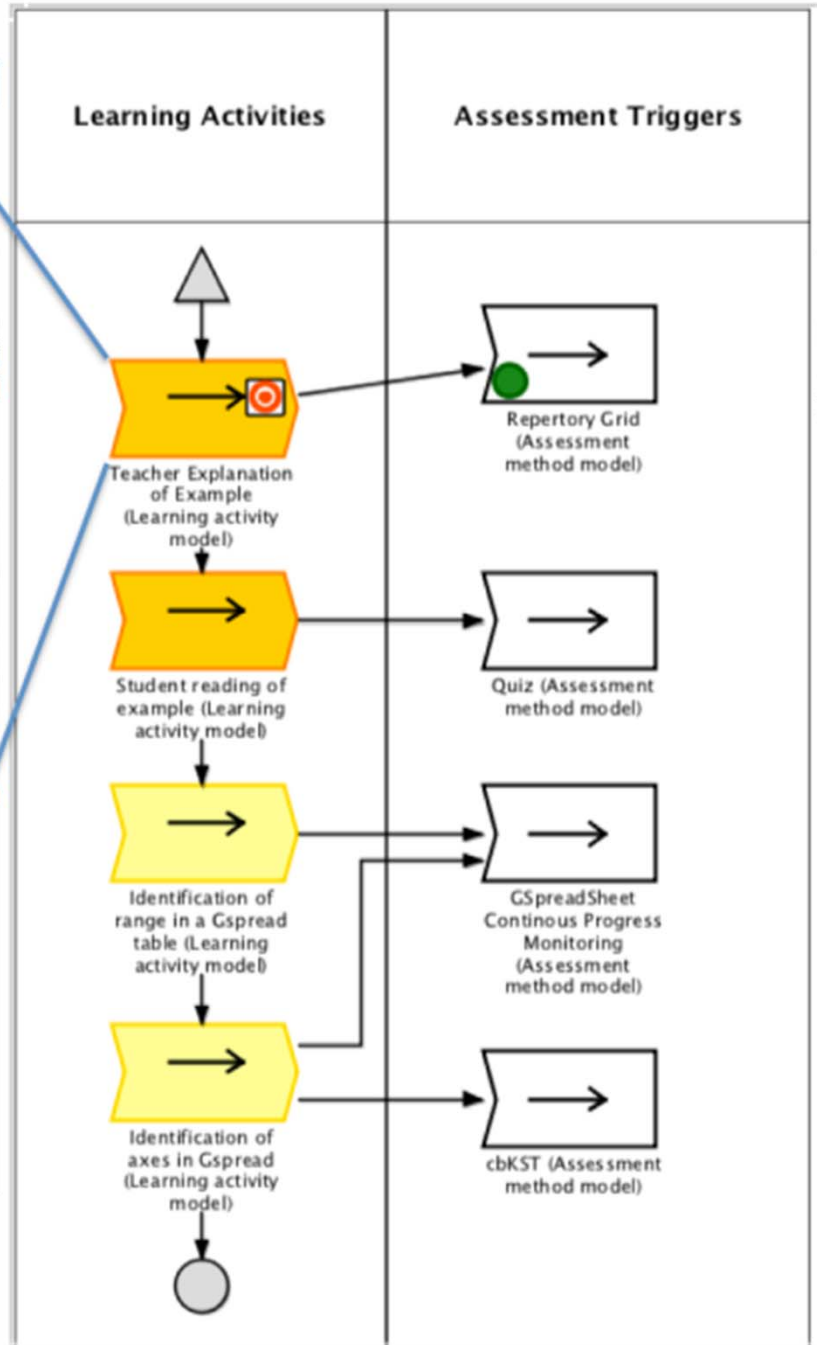
# Why meta-modeling?

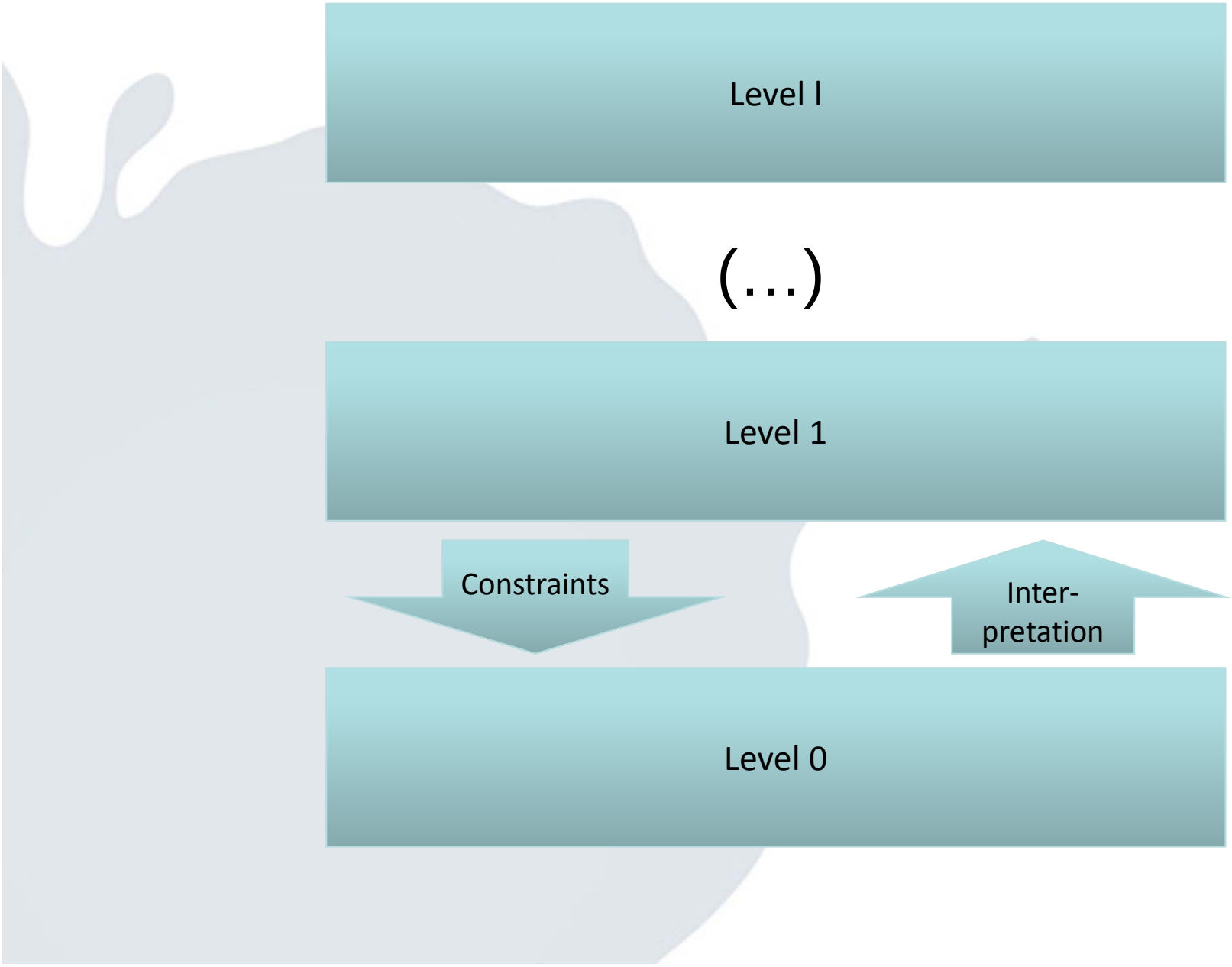
- **Separation of method and notation:**
  - The same method can be represented in multiple forms;
  - Information hiding: role-specific views;
  - Separation of areas of concern.
- **Models can be analysed computationally.**
- **Implementation can be accelerated**



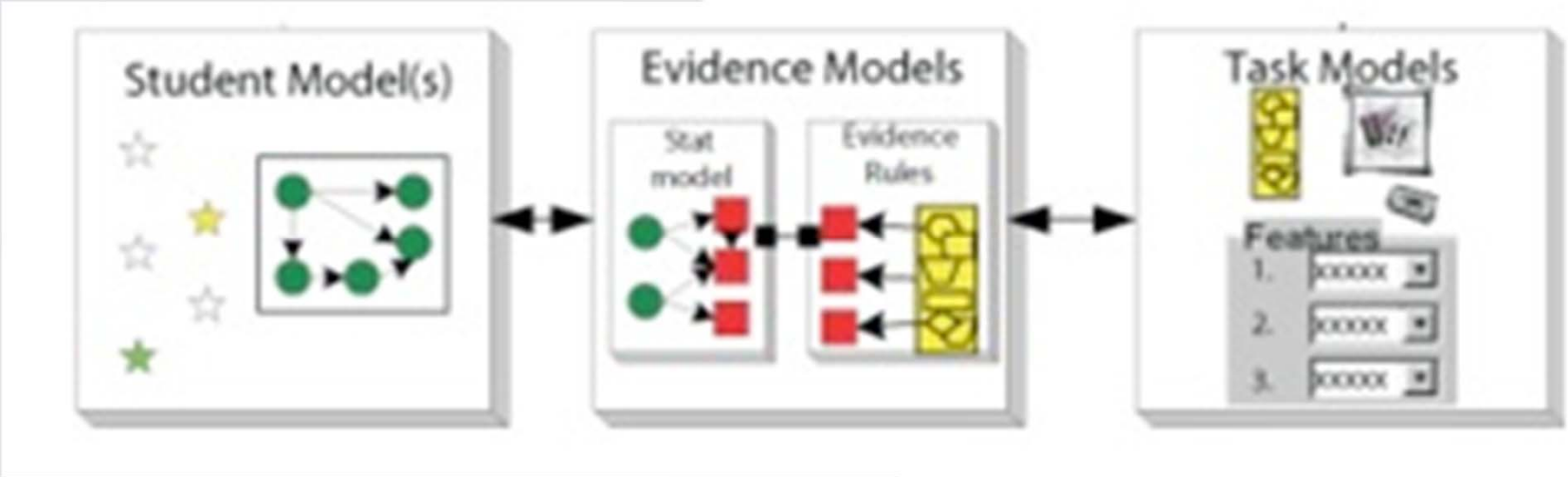
Modeling **met**




Level l
(…)
Level 1
Constraints
Inter-
pretation
Level 0

# THE ECAAD MODELING METHOD

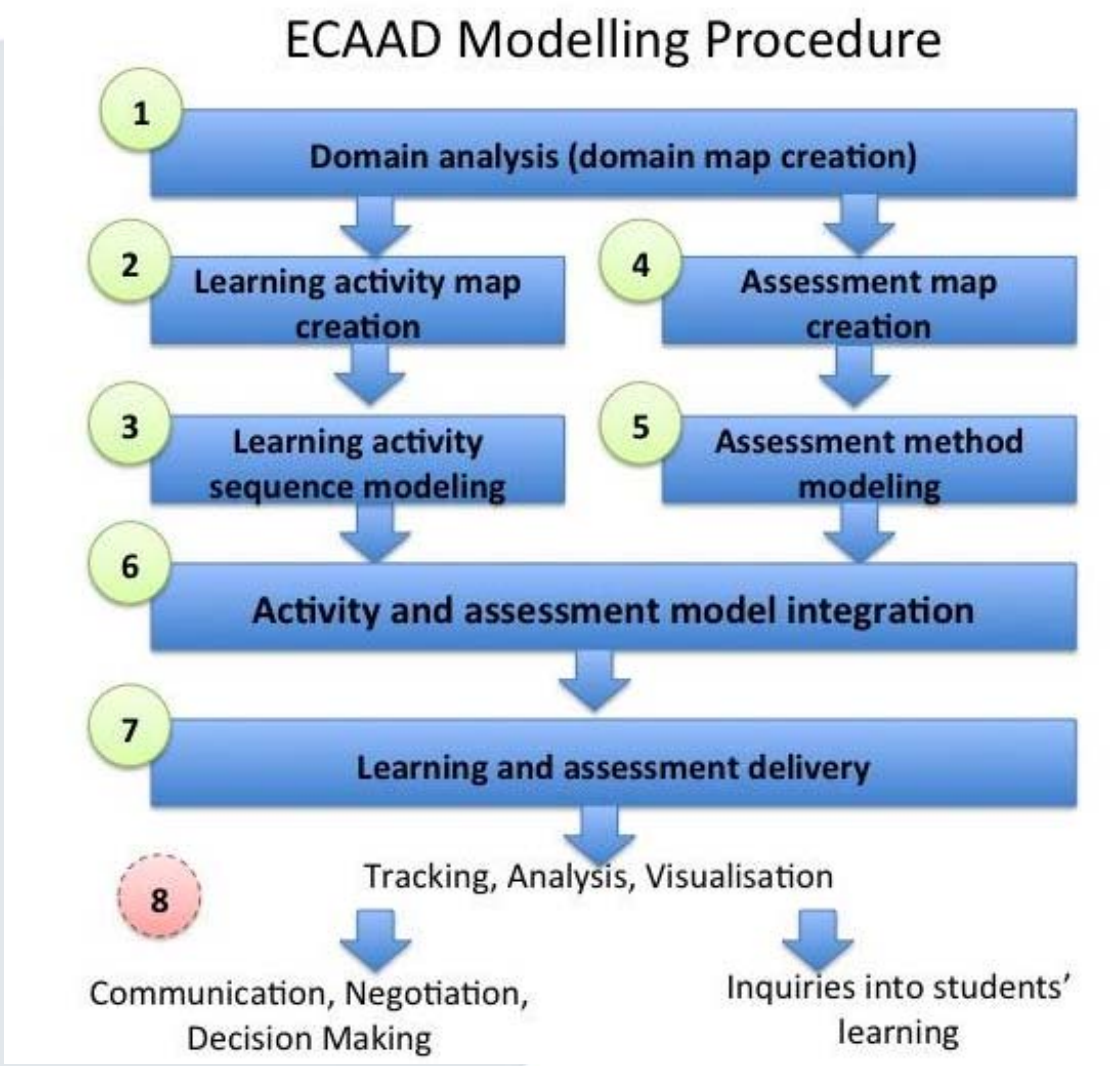
# Evidence-centered assessment design (Mislevy)



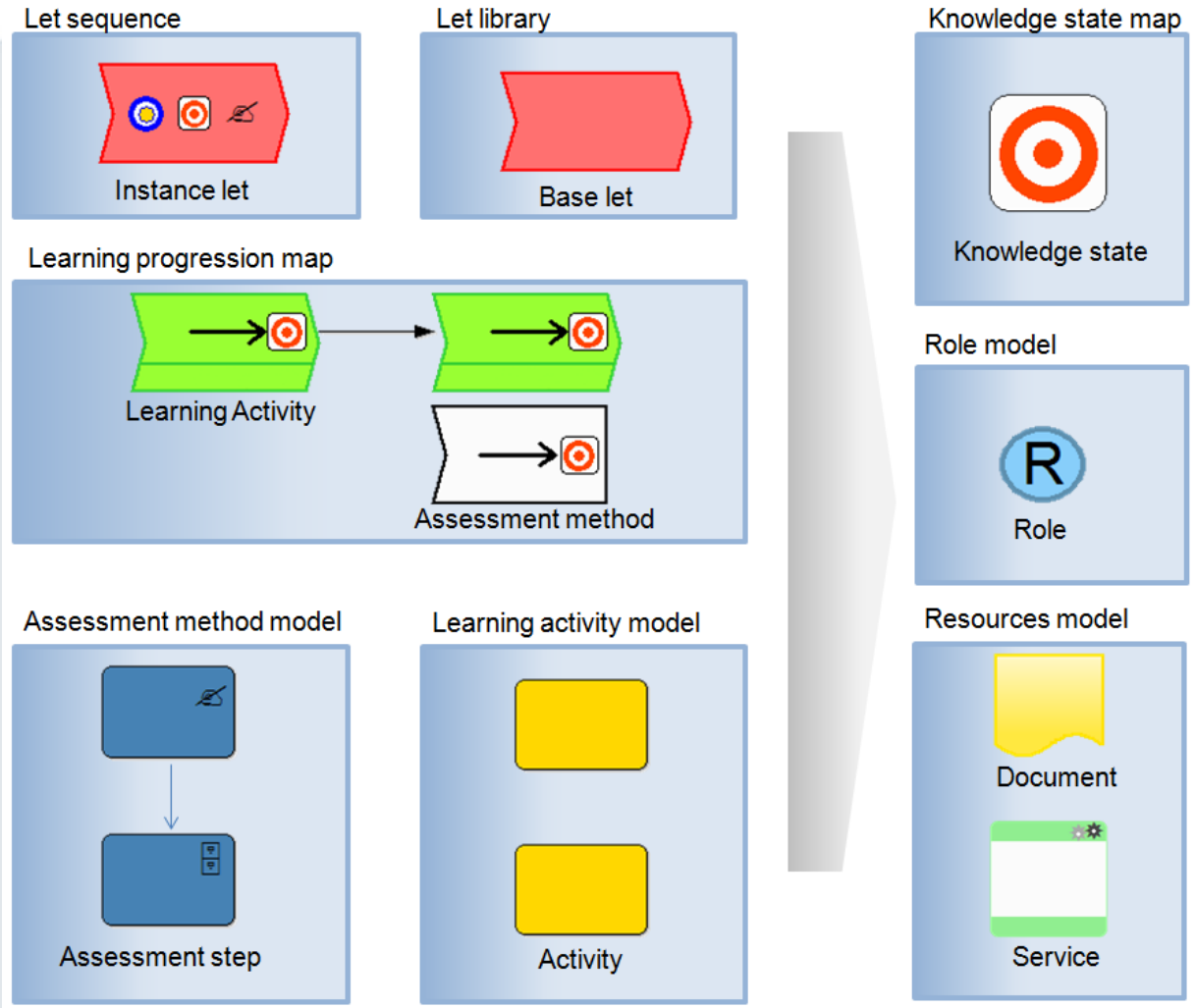
# ECD in Next-Tell

| ECD | Next-Tell | Modeling approach |
|---|---|---|
| Task model | Activity sequence & embedded assessment methods | Process modeling |
| Evidence model | Triggered tracking & decision rules | Data modeling & Decision modeling |
| Student model | From simple incremental to probabilistic & Visualisation & Negotiation | -/- |

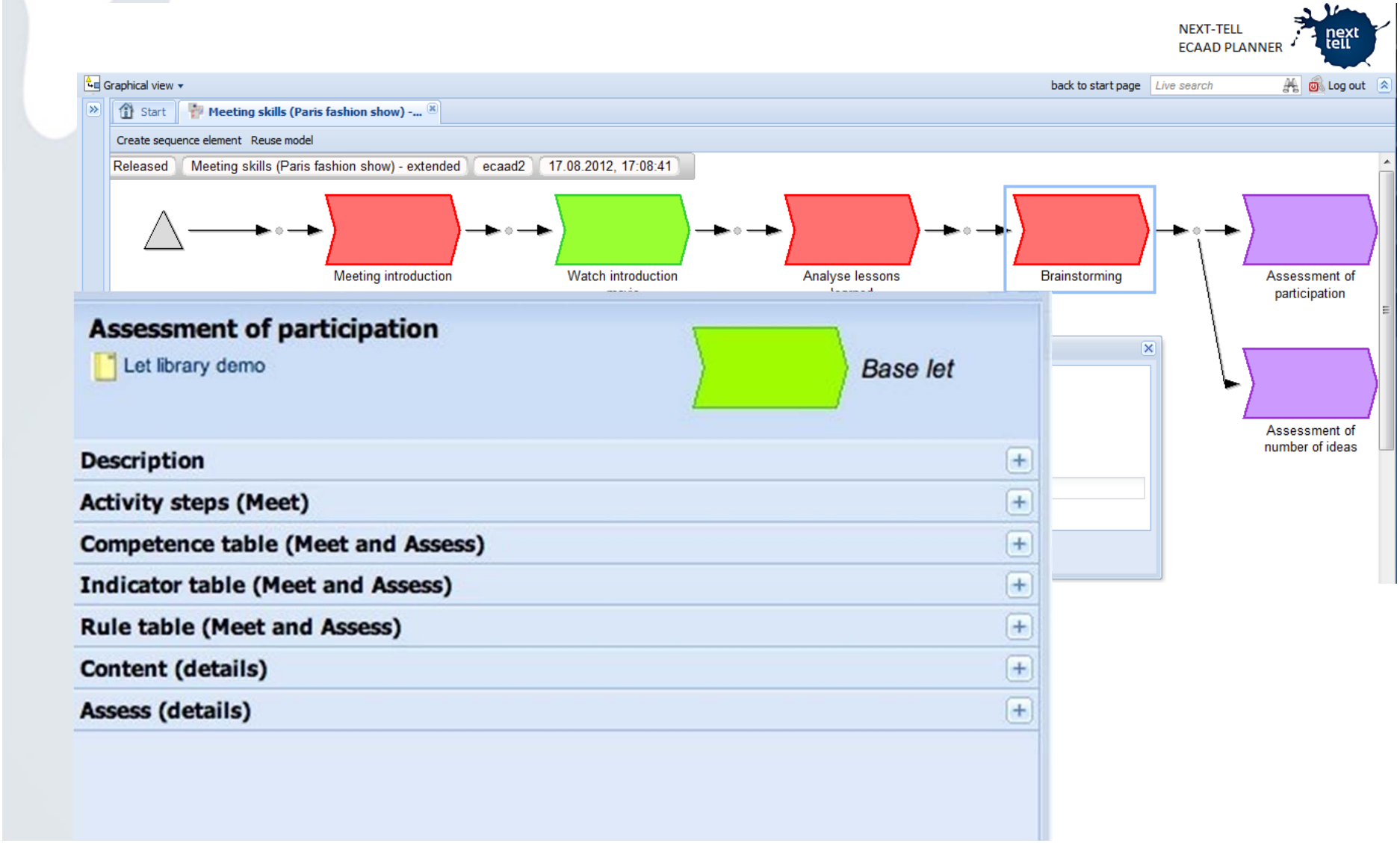
# The modelling procedure



# Modeling concepts



# Learning activity sequence (incldg. Assessments)



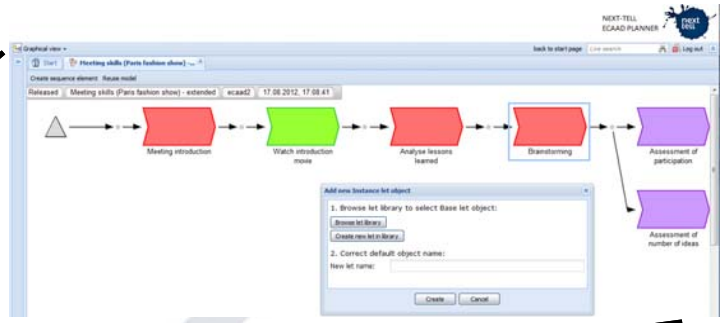
# Activity modeling and decision modeling

Assessment Model

Task Model

Evidence Model

Student Model



| DT EvidenceRule1 | | |
|---|---|---|
| Condition | | Conclusion |
| **Individual Ideas** | | **BSIndiv** |
| Is | 0 | Failed |
| Within | [1;3] | Satisfying |
| Within | [4;7] | Good |
| > | 7 | Excellent |

# More on Decision Modeling

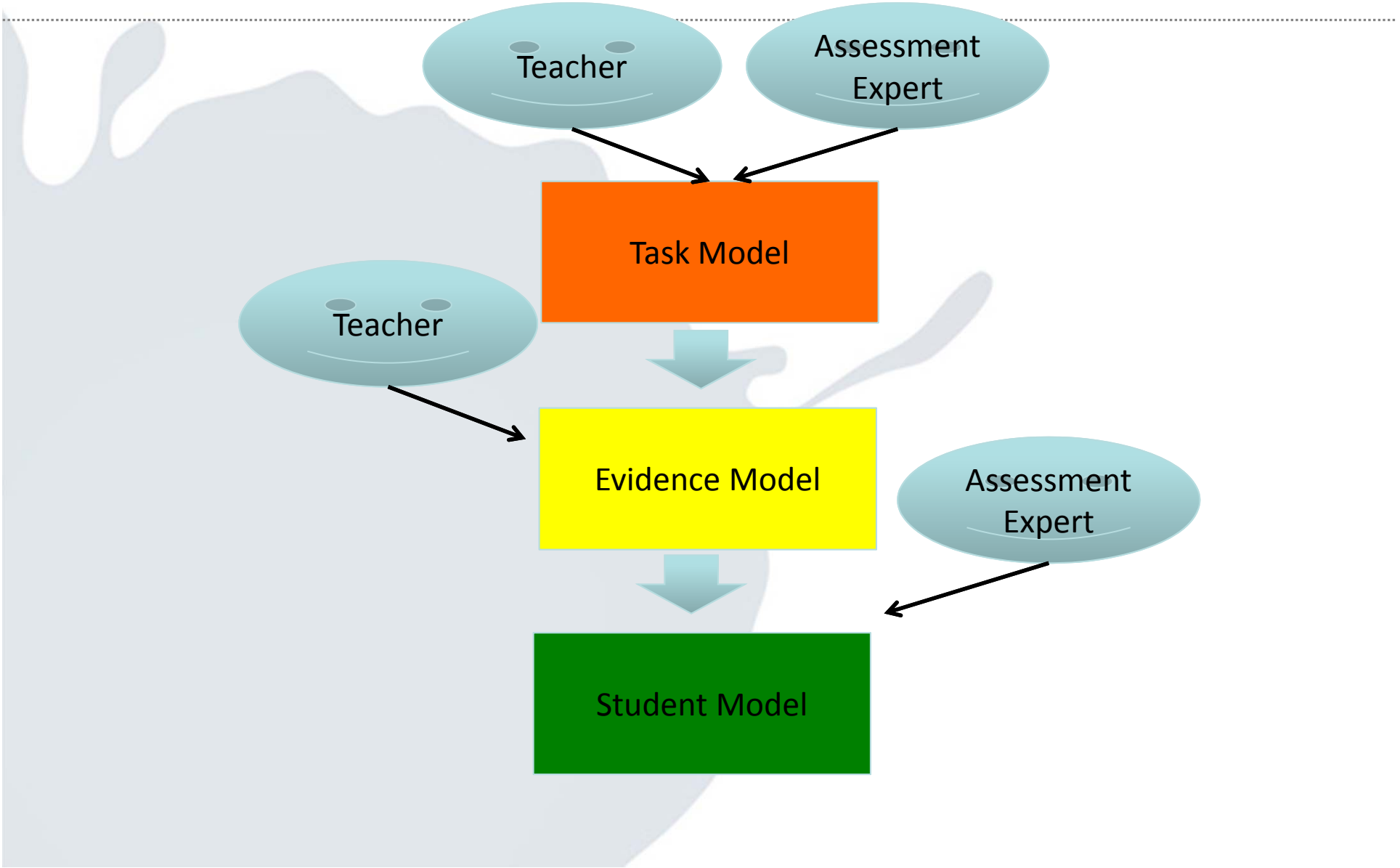
1. Artefact (and performance) appraisal (what rubrics are used for)

| DT EvidenceRule1 | | |
|---|---|---|
| Condition | | Conclusion |
| **Individual Ideas** | | **BSIndiv** |
| Is | 0 | Failed |
| Within | [1;3] | Satisfying |
| Within | [4;7] | Good |
| > | 7 | Excellent |

2. Learner model updating

| DT LMRule1 | | | | |
|---|---|---|---|---|
| Condition | | Condition | | Conclusion |
| **BSIndiv** | | **Difficulty** | | **Competency1** |
| Is | Failed | Is | Low | -2 |
| Is | Failed | Is | High | 0 |
| Is | Satisfying | Is | Low | 1 |
| Is | Satisfying | Is | High | 2 |
| Is | Good | Is | Low | 3 |
| Is | Good | Is | High | 4 |
| Is | Excellent | Is | Low | 5 |
| Is | Excellent | Is | High | 6 |

# Roles


Teacher
Assessment Expert
Task Model
Teacher
Evidence Model
Assessment Expert
Student Model

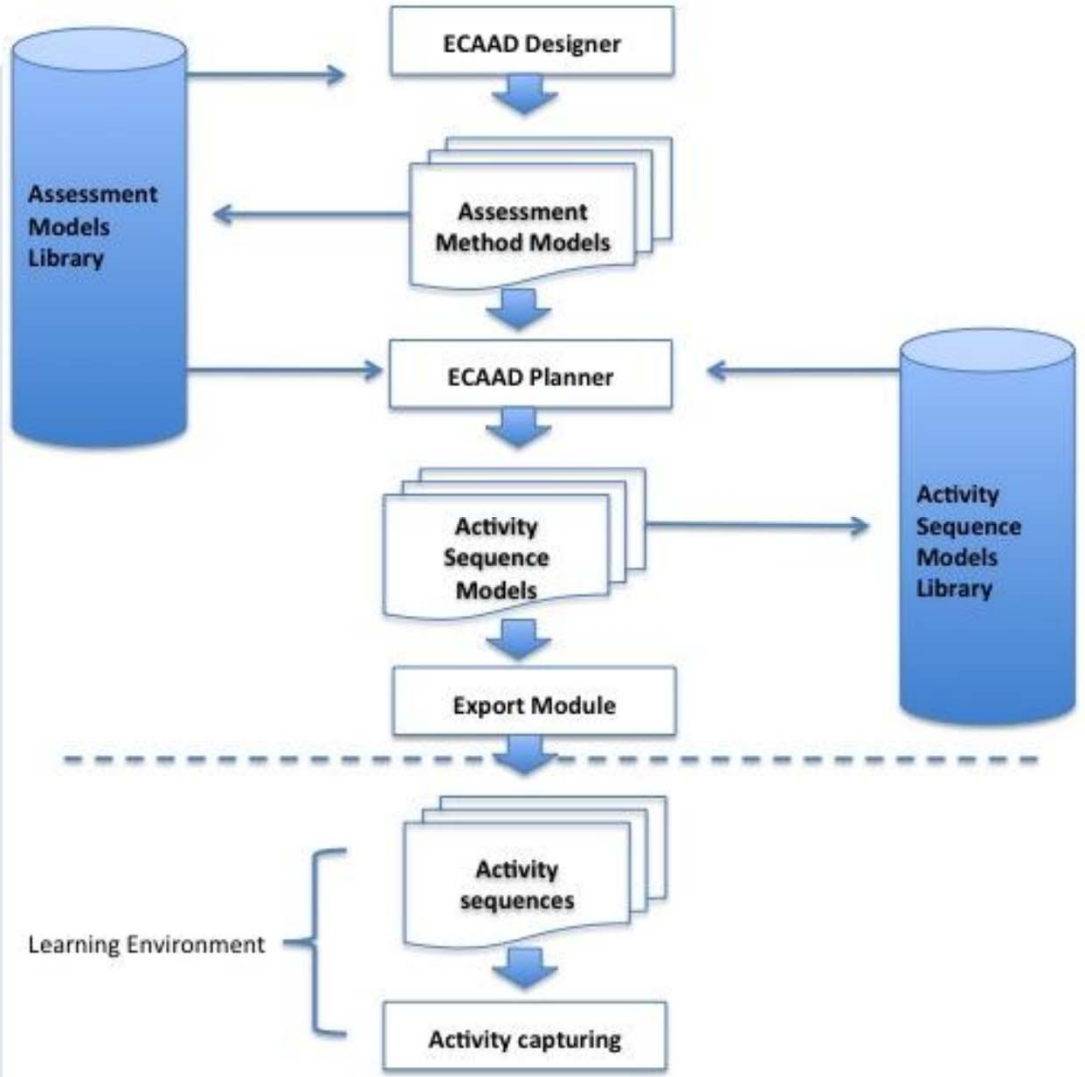
# First experiences with teachers

Teacher in the role of lesson planner, assessment planner, and ICT integration planner is not a feasible approach.

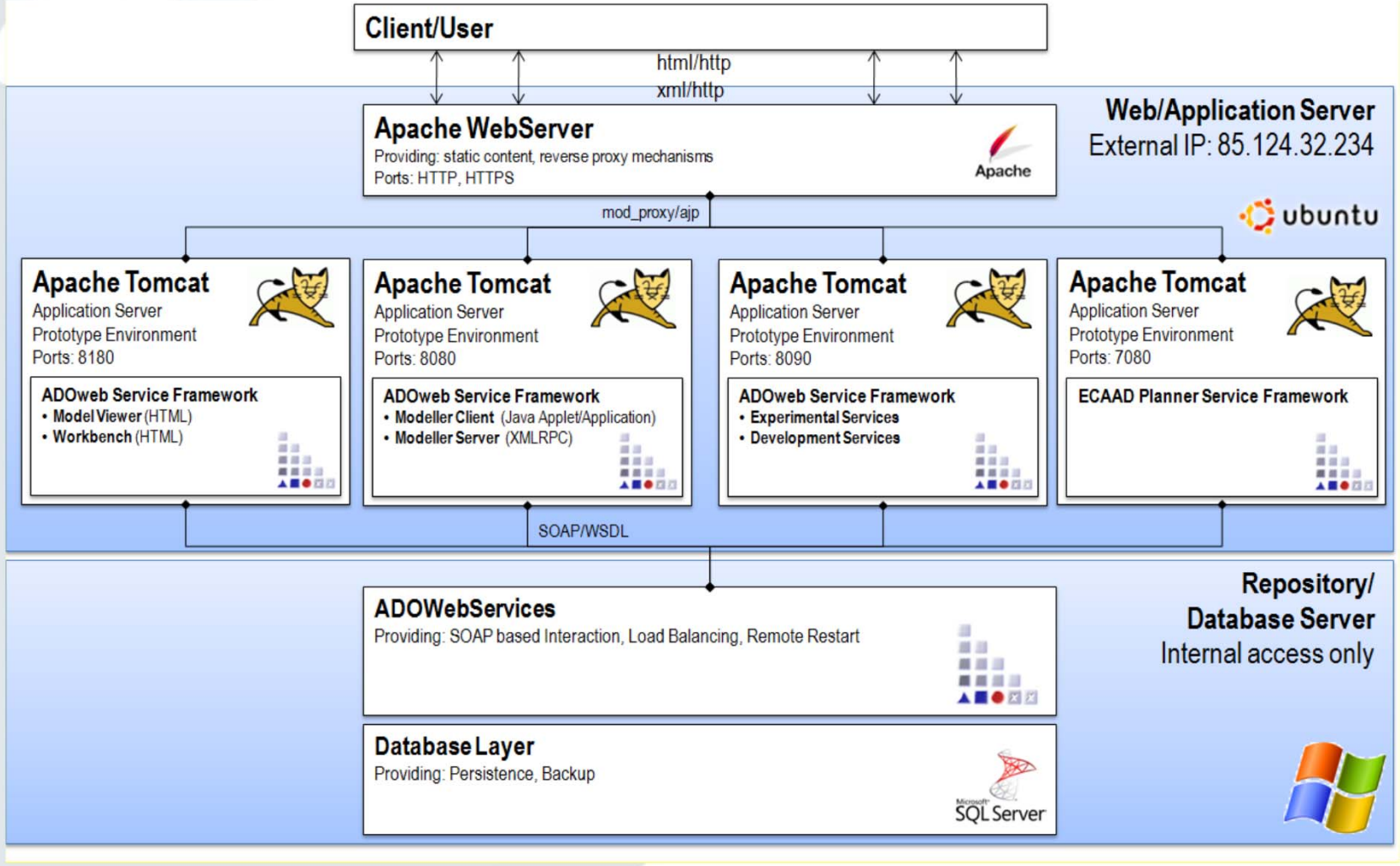
→ Divide tasks based on areas of expertise into different roles;
→ Design modeler as to roles
→ Simplify modeling tool

| Role | Functionality |
|---|---|
| Student[1] | • search lesson |
| Pedagogical expert | • create sequence<br>• edit sequence<br>• release and/or share<br>• browse (and reuse) sequence<br>• walkthrough |
| Assessment expert | • edit sequence<br>• release and/or share<br>• browse (and reuse) sequence |
| Technical expert | • browse (and reuse) sequence<br>• parameterize<br>• walkthrough |

# Model persistency



# Deployment architecture for the ECAAD modeler

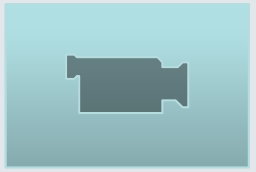


# ECAAD modeler in action

Graphical Interface overview

Adding an activity

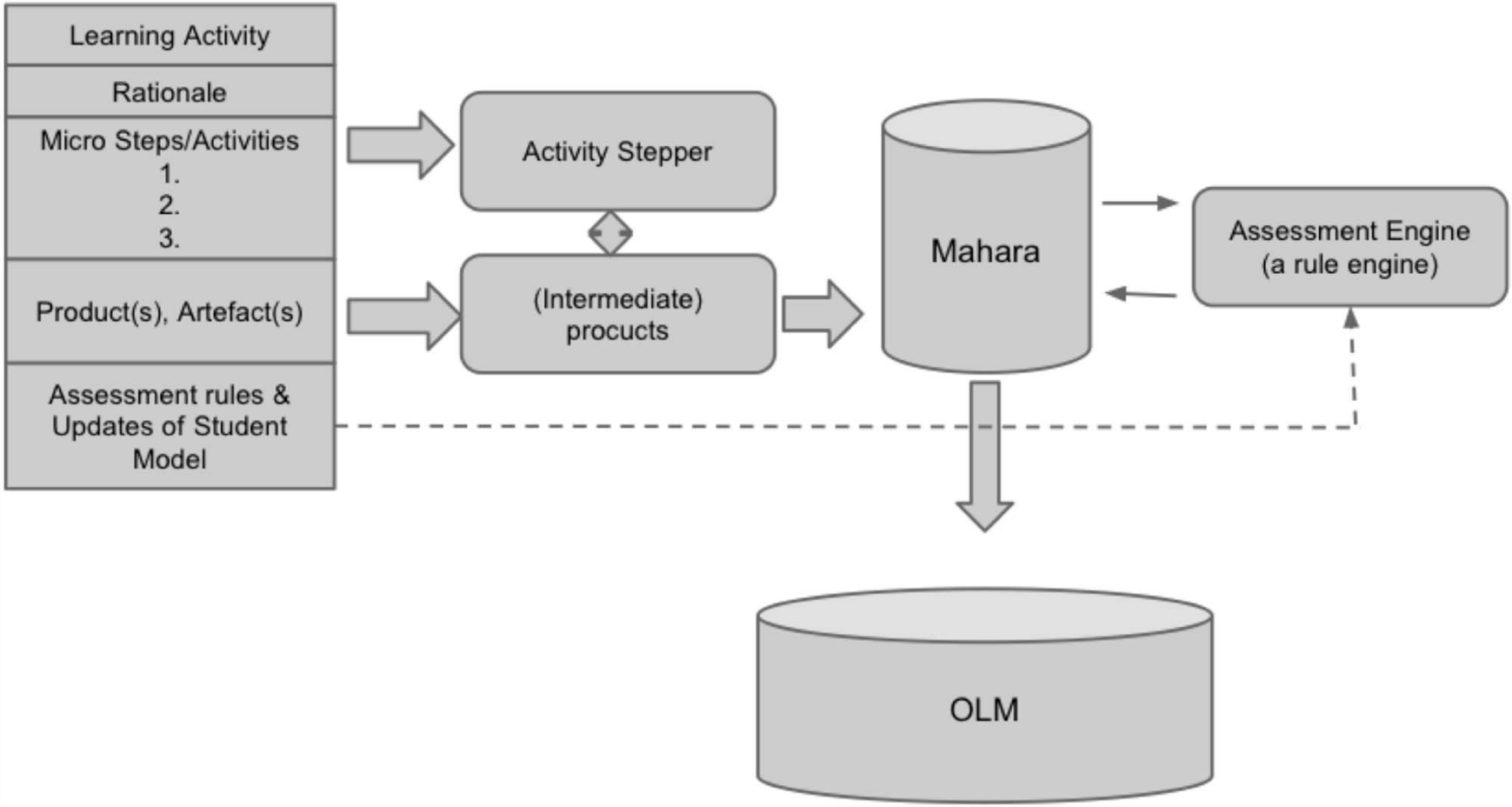
The model activities library



Graphical and textual model view

# INTEGRATION INTO ICT-ENHANCED LEARNING ENVIRONMENTS

# Integration into Learning Environment (work in progress)



# Eportfolio view

## Student Portal

This is what a student might present on her profile page

### Profile Information

I am currently in class 7a. My hobbies are travelling and stamp collecting.

- **First Name:** Peter
- **Last Name:** Reimann

### My projects:

- My writings
- Pieces of Art
- Student Portal
- Teacher Portal

### My groups

Link to team 1

Link to team 2

### My Reflections:

- **What I learned about agenda writing** in My Learning Journal on 12 June 2012, 12:21 PM
- **What I learned about planning a meeting** in My Learning Journal on 12 June 2012, 12:16 PM

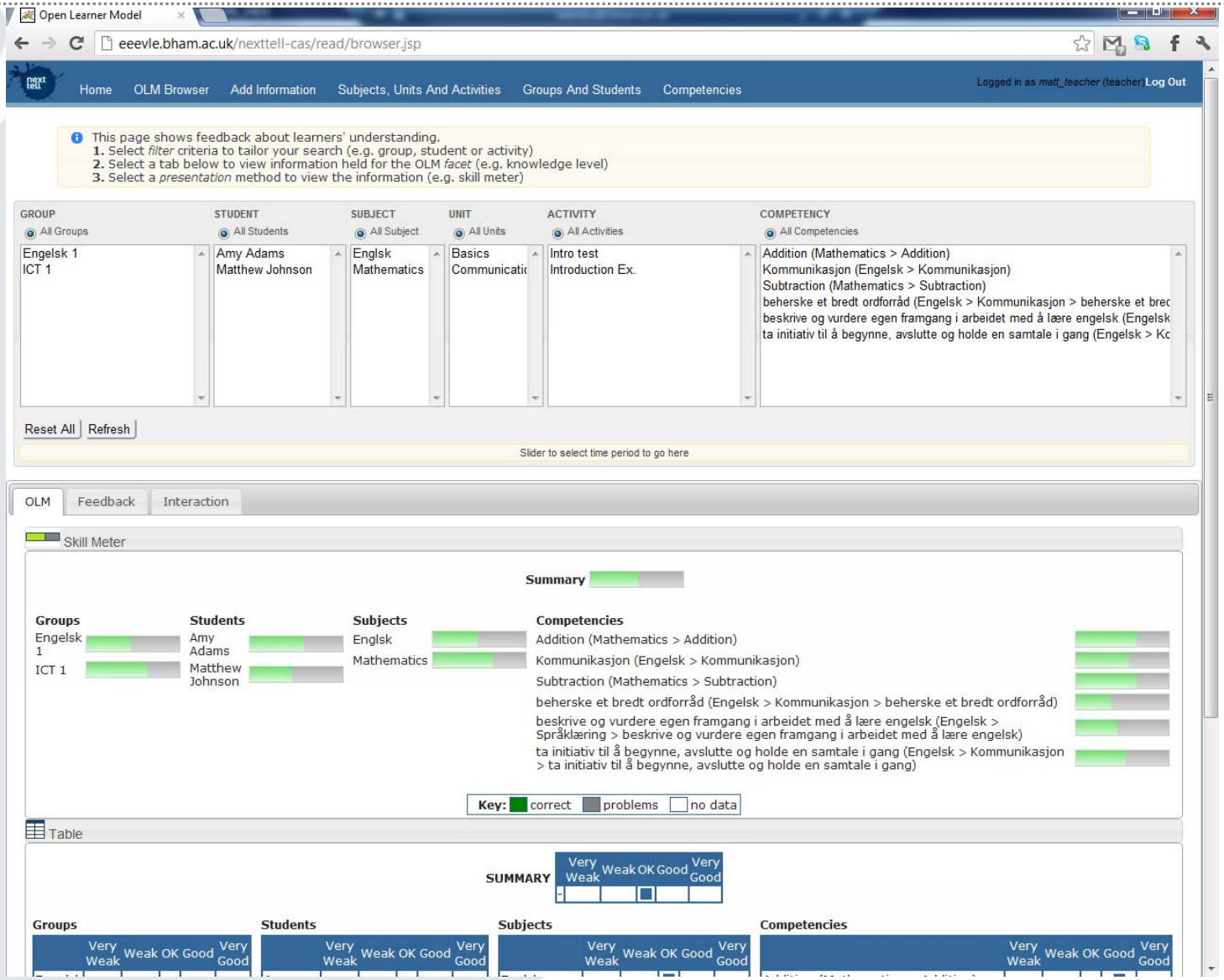
### My current learning goals

| Completion date | Title | Completed |
|---|---|---|
| 16 June 2012 | Learn about different group meeting goals | |
| 18 June 2012 | How to write a meeting agenda | |

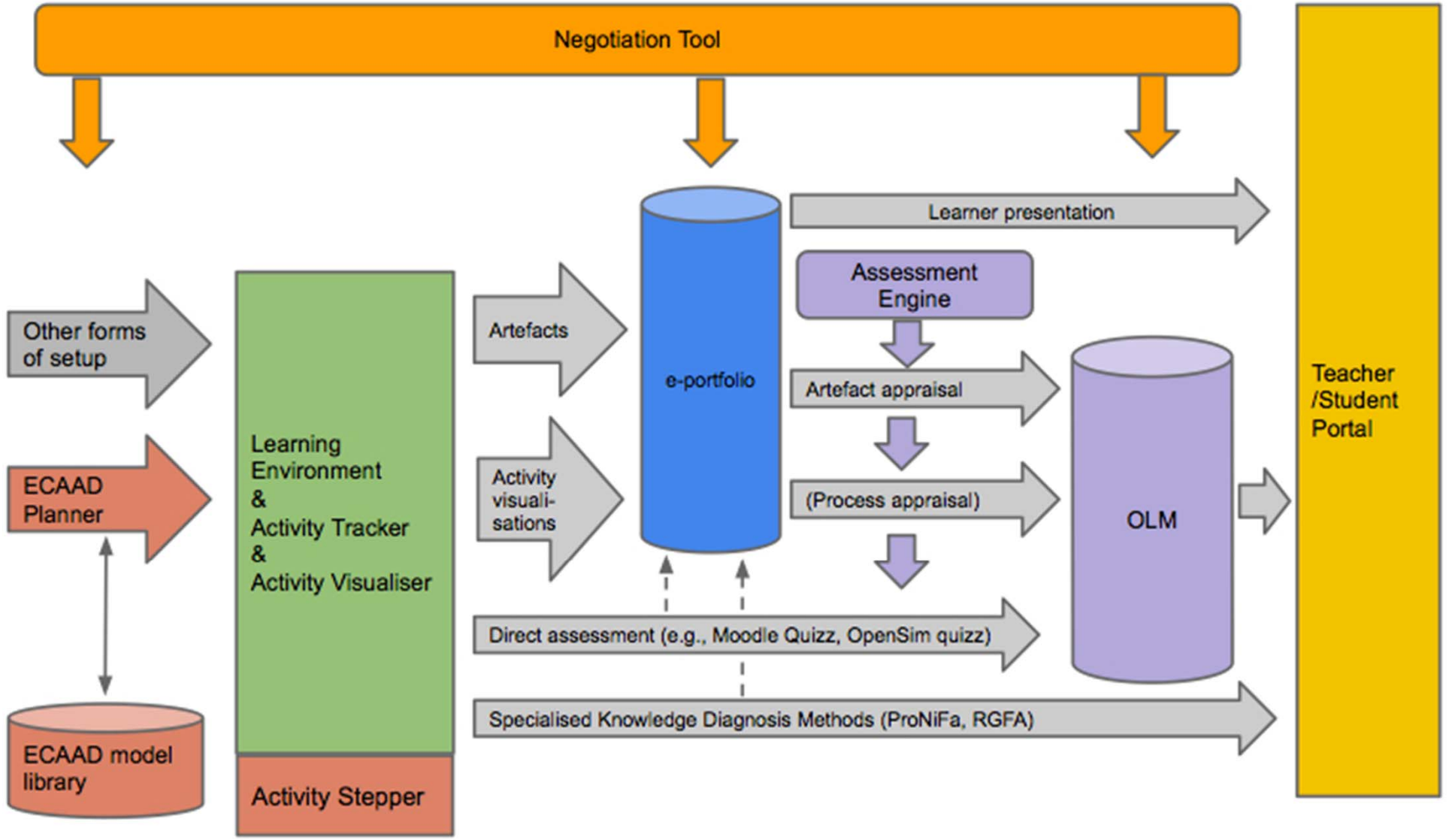
2 tasks

### My competencies:

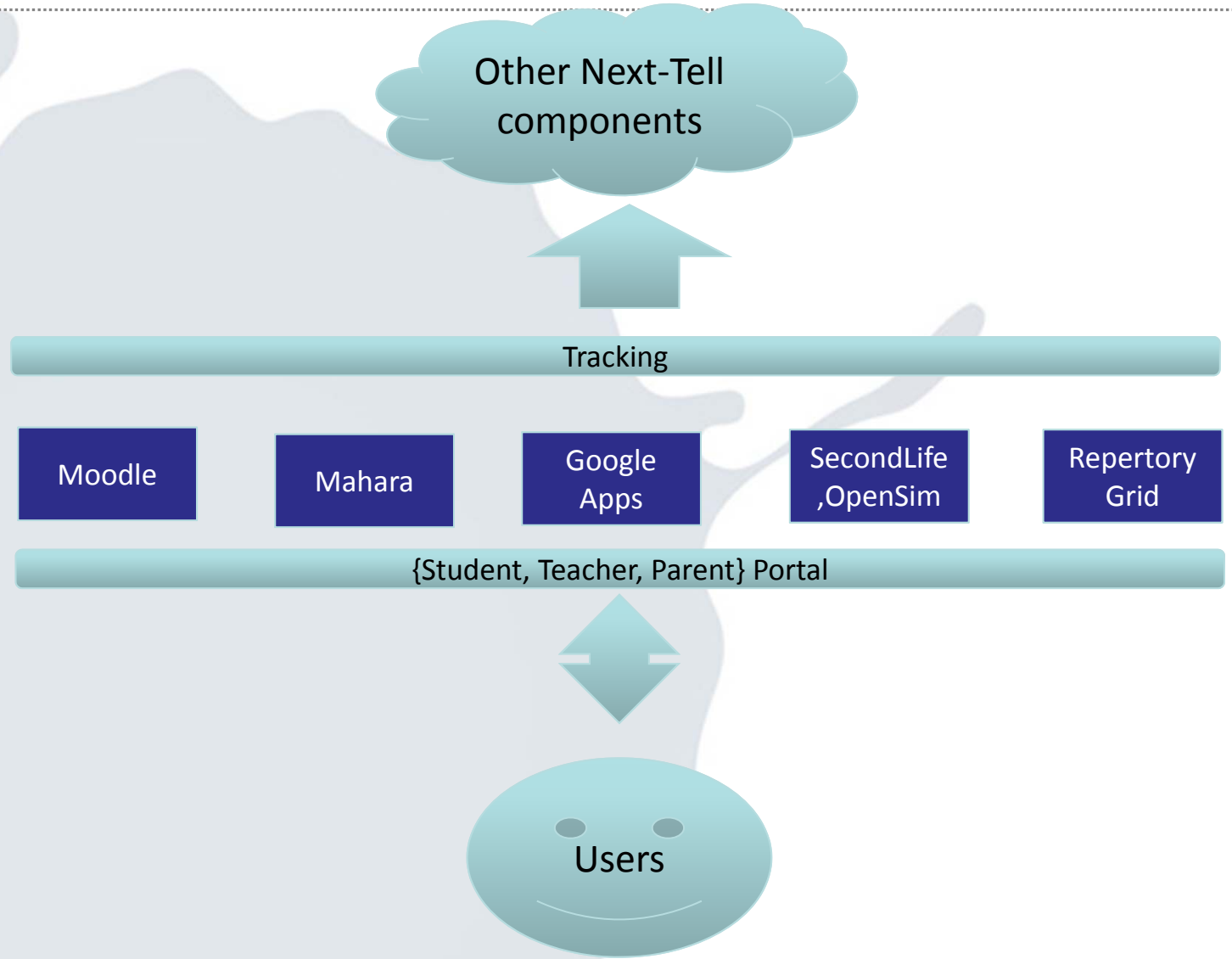
# Open Learner model view



# Assessment flows



# Current learning environment supported



Student information

Teacher

uses

ECAAD Method

to specify

Learning Activities

and

Assess-ments

Visualisation (Task Progress, OLM)

Analysis

Recor-ding

that get automatically* delivered to students.

On-line

Applications in schools

Physically captured

Mobile

Web 2.0

LMS

PCs

IDW

e top

Pictures

Videos

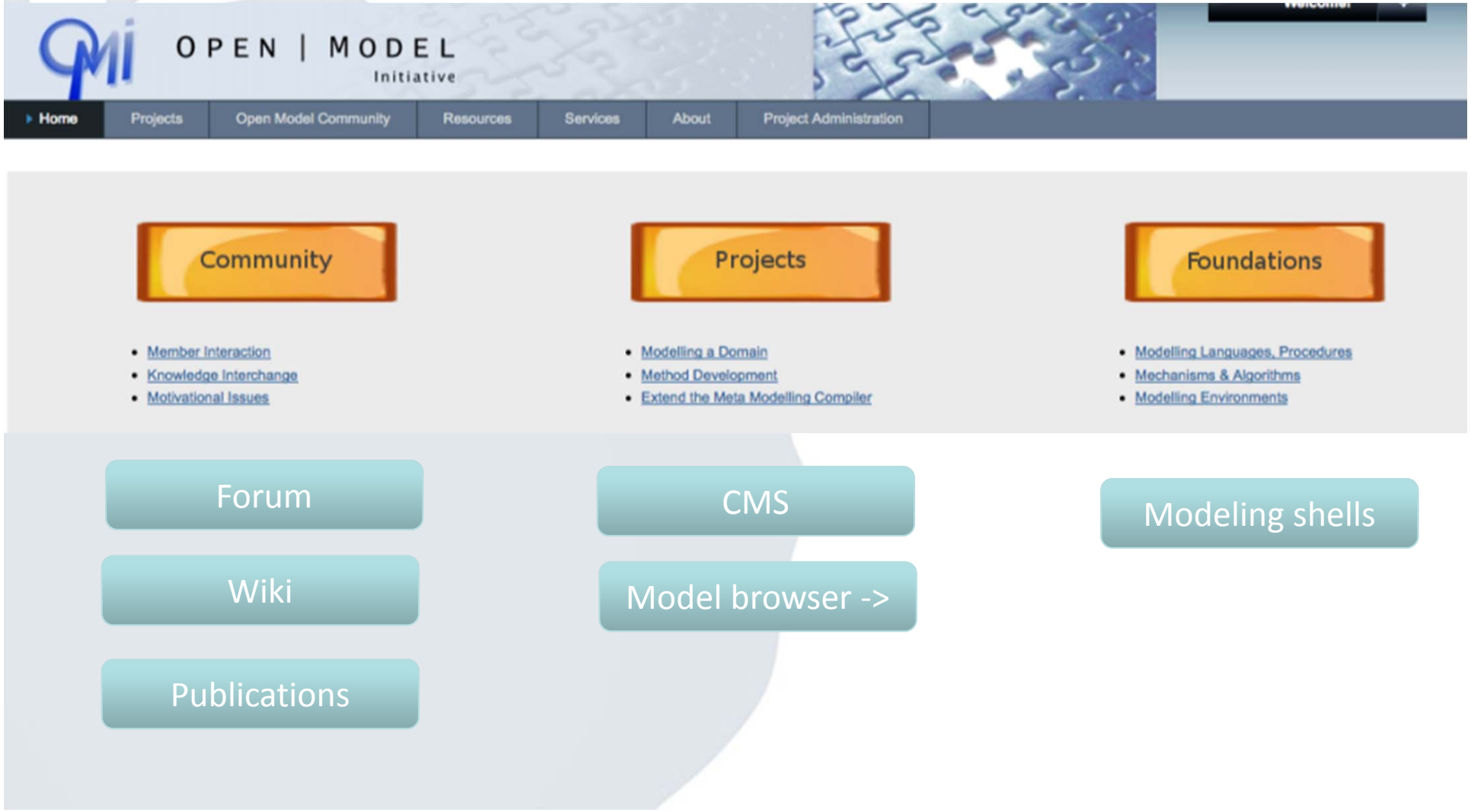
Learning activities

*) When based on software

# SHARING MODELS

# Where to provide models?

www.openmodels.at



# Some projects on openmodels.at


Showing 1 - 20 of 26 results.

Items per Page 20 Page 1 of 2 First | Previo

| Status | Name ▼ | Description | Type |
|---|---|---|---|
| | ADOxx Horus Method | | Restricted |
| | BEN | Business Engineering Navigator | Open |
| | BIM | Conceptual Models for Governance | Restricted |
| | CIDOC | | Open |
| | Co-creation in Design Teams | | Open |
| | ComVantage | Metamodelling for the EU Project Comvantage | Open |
| | COPROM | | Open |

# Openmodels: Details of a project


## eduWEAVER - A Coursware Design Tool

*Eduweaver is a manangement tool for lectures*

- eduWEAVER Method Overview
- Project Details
- References
- Activities Blog
- Members

**eduWeaver in Use**

- Best Practise
- Modelling Sandbox
- Tutorials

**eduWeaver Development**

You do not have the roles required to access this portlet.

**Area of application:**

Eduweaver supports teachers by the individual design of courses and the distribution of high quality multimedia teaching materials among higher educational institutes. Teachers can reuse the teaching materials offered through the learning object pool of eduWeaver and do not face any more the time-consuming and non-trivial creation of multimedia applications. Further they can structure their courses according to their individual requirements and focusing on didactical guidelines.

**Activities Blog:**

Search

**Geography Reference Course in Moodle**

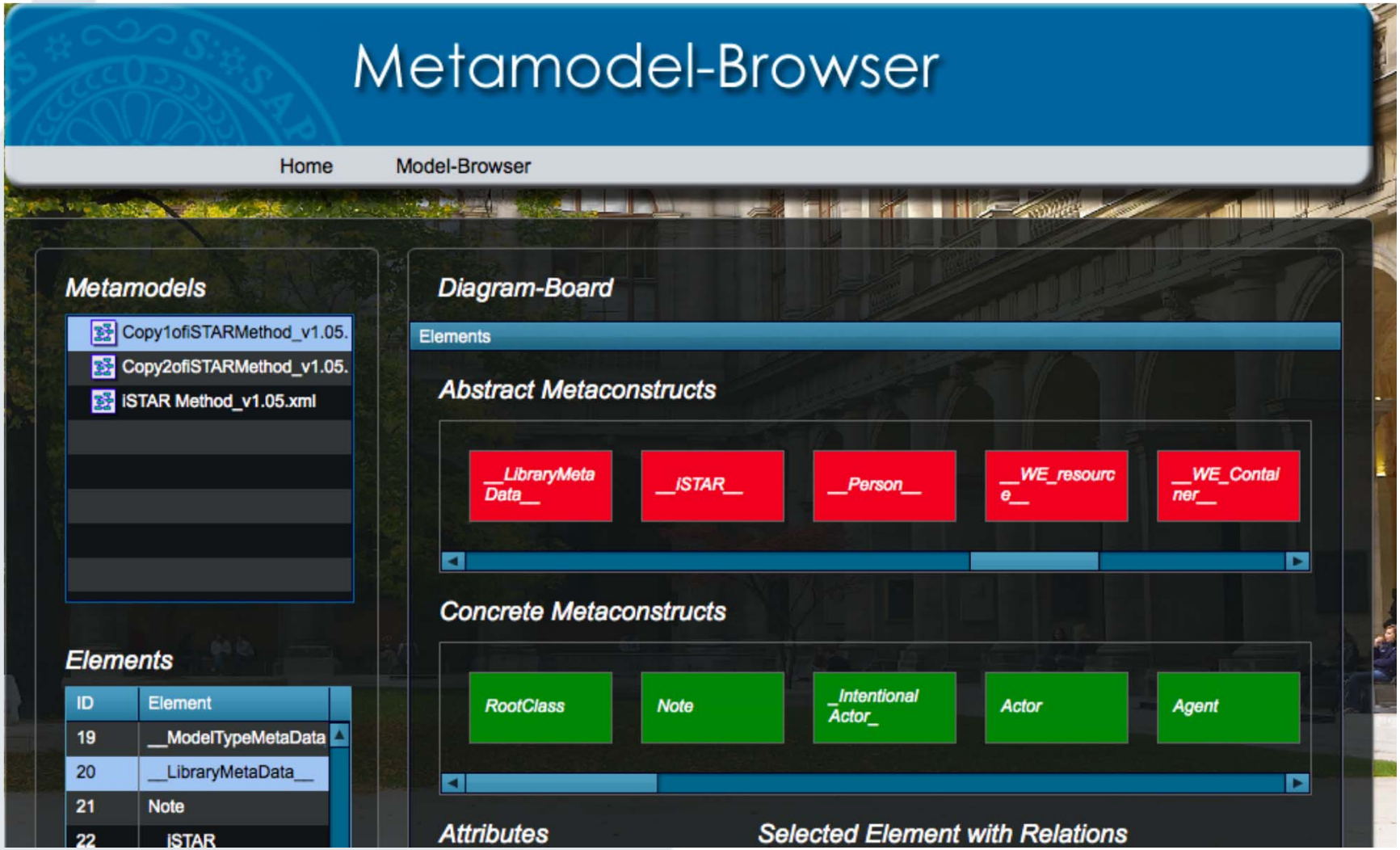
February 5, 2010 3:14 PM

Let me announce the latest feature on this website. We've set up a moodle environment that visitors can see how the "geography reference course" is doing in execution. The two steps to get useable toolcontents are

- creation of the course in the modelling environment
- import of the models into your execution environment (e.g. moodle)

The execution environment has to follow the standards of IMS Learning Design and / or SCORM.

# Openmodels: Meta model browser



# The NEXT-TELL consortium
# www.next-tell.eu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