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Scientific and Technical Information and Rural Development
Theme 1 – Session 2 « innovative Learning processes »

Interactive Knowledge Construction during the collaborative building of an agricultural Community Information System - the Hien Valley experiment -

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plan of the presentation

1. a participative building approach adopted in the Hien Valley CIS
2. theoretical background related to conversational learning
3. a framework illustrating interactive knowledge construction during the CIS collaborative design
4. discussion

1. a participative building approach adopted in the Hien Valley CIS

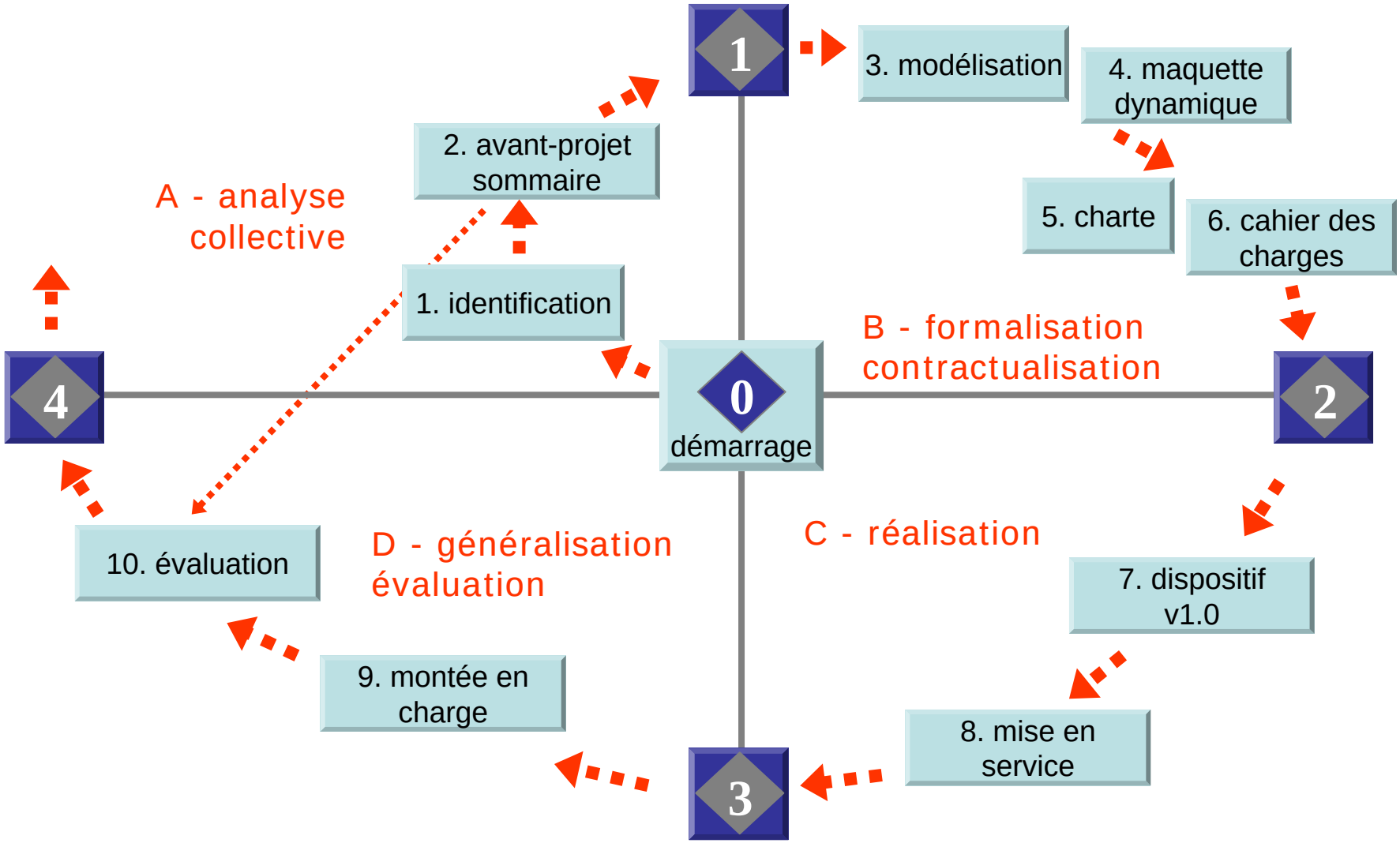
1. introduction

- Community Information Systems are multi partners information systems supporting collective action in relation with a challenge
  - the global dataflow is not under the vertical authority of one single partner
- the initial phase of “collective analysis” plays a crucial role, especially the drawing of the goals diagram
  - how do the stakeholders perceive the challenge?
  - how do the stakeholders practices impact the challenge ?

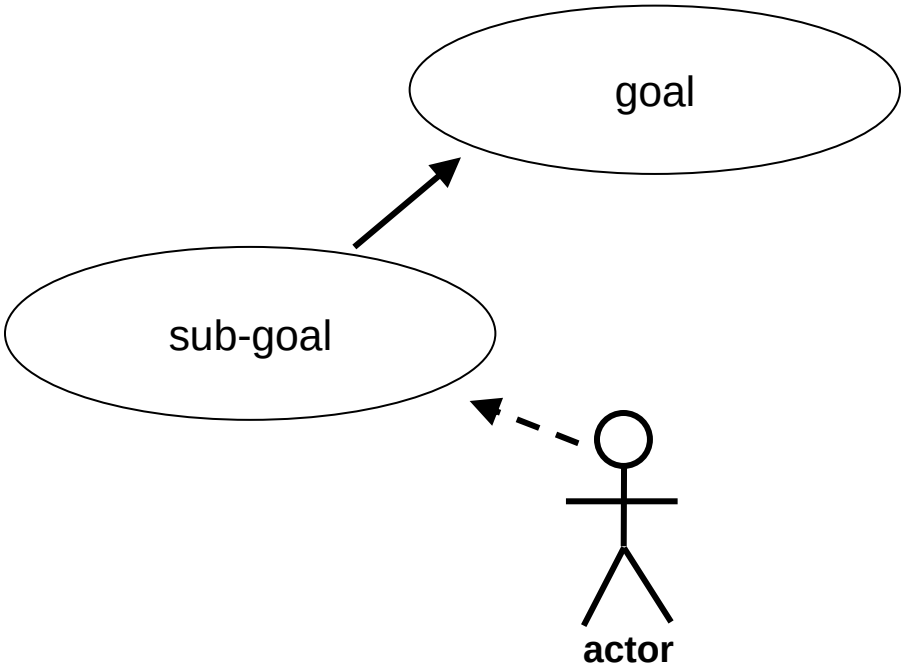
1. the Hien Valley case

- a small region (96 km2, 8600 inhabitants, 75 farms) in the French Alp foothills
- a challenge : to improve the underground water quality
- a CIS was started in 2006
  - Settings = thematic workshops + collective meetings
  - Formalism = UML

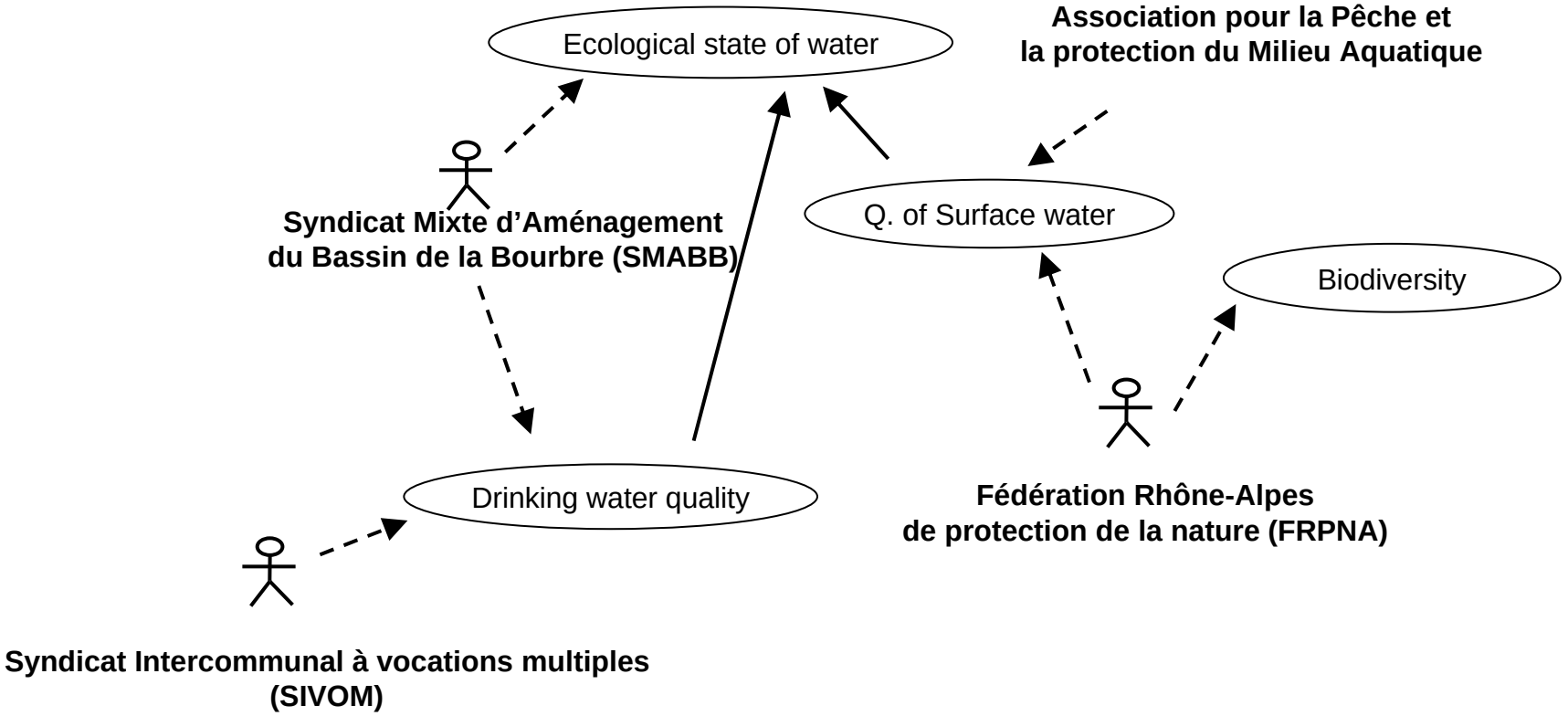
1. Co-Obs


1
3. modélisation
4. maquette dynamique
5. charte
6. cahier des charges
2. avant-projet sommaire
A - analyse collective
1. identification
B - formalisation contractualisation
4
0
démarrage
2
10. évaluation
D - généralisation évaluation
C - réalisation
7. dispositif v1.0
9. montée en charge
8. mise en service
3

1. a simple UML formalism



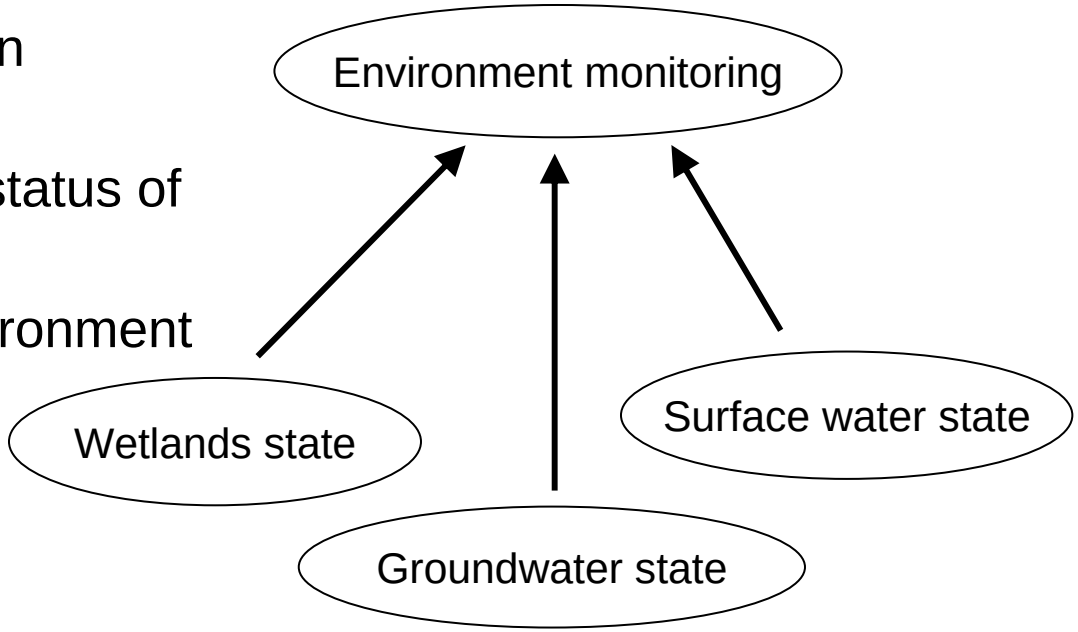
1. extract of “goals diagram” - a



1. extract of “goals diagram” - b

The final CIS diagram highlights three thematic goals and a function objective:

- Monitoring Agricultural Action Program
- Monitoring socio-economic status of agriculture
- Monitoring status of the environment
- Share information



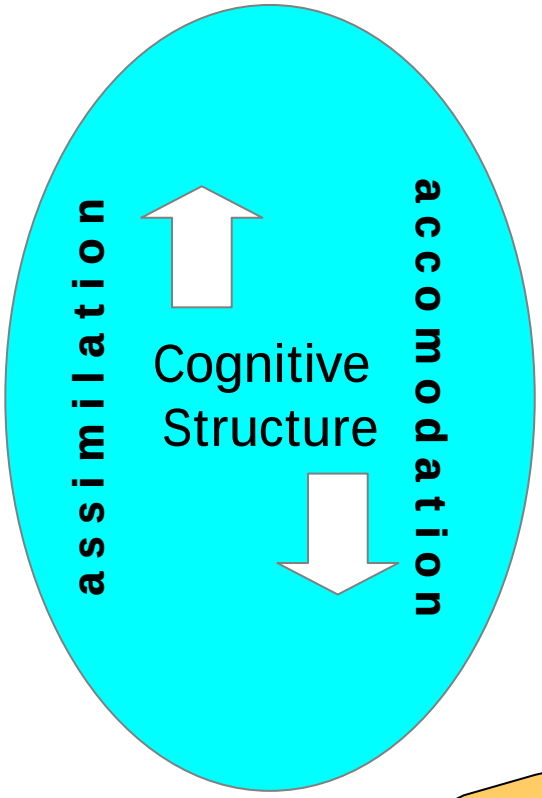
Water & Environment part of the CIS diagram

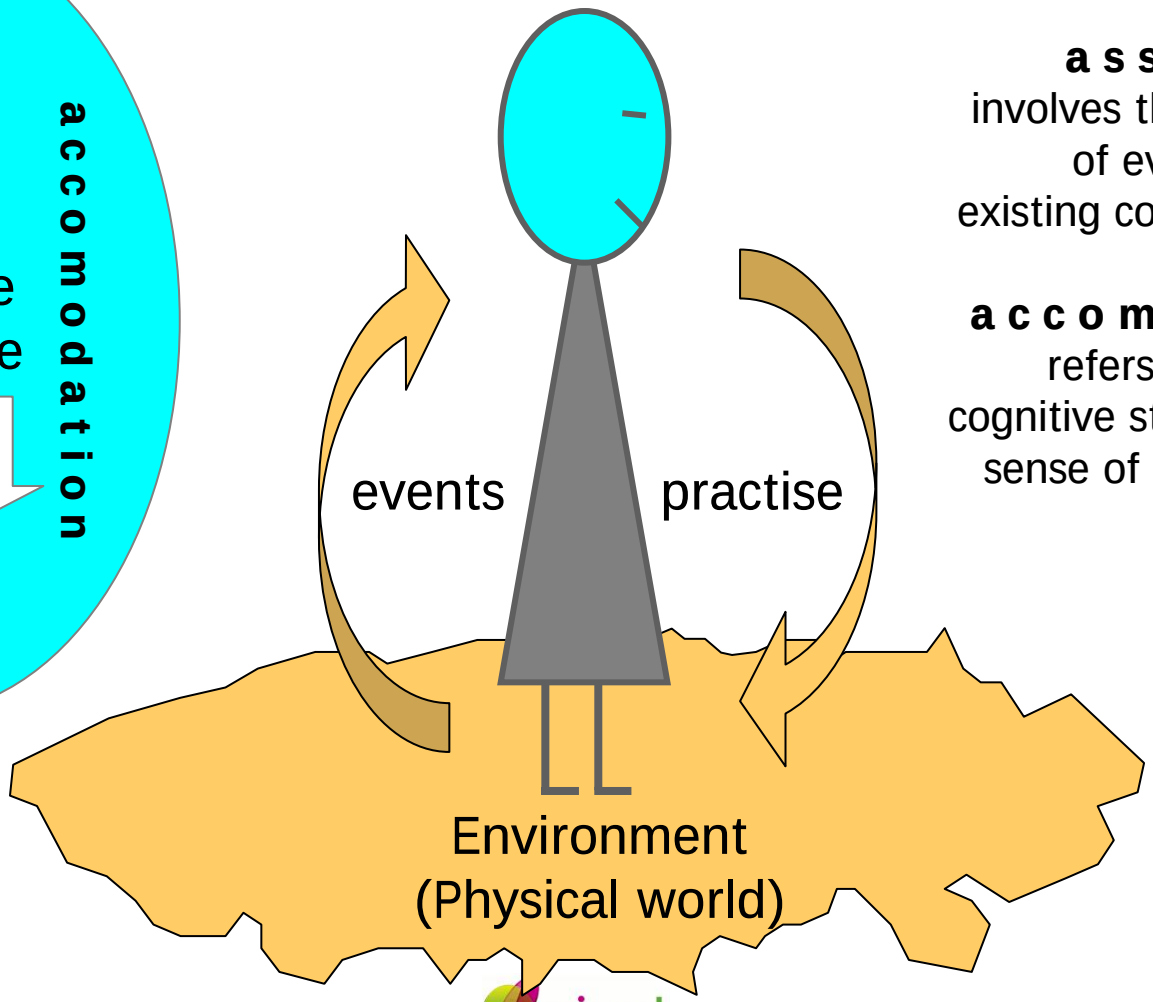
2. theoretical background related to conversational learning

2. Two complementary views

- a psychological view on learning : cognitive structures and processes (Piaget)
- a pedagogical scenario empowered by conversational interactions (Laurillard)

2. Piaget : cognitive processes





http://tip.psychology.org/piaget.html

a s s i m i l a t i o n
involves the interpretation of events in terms of existing cognitive structure

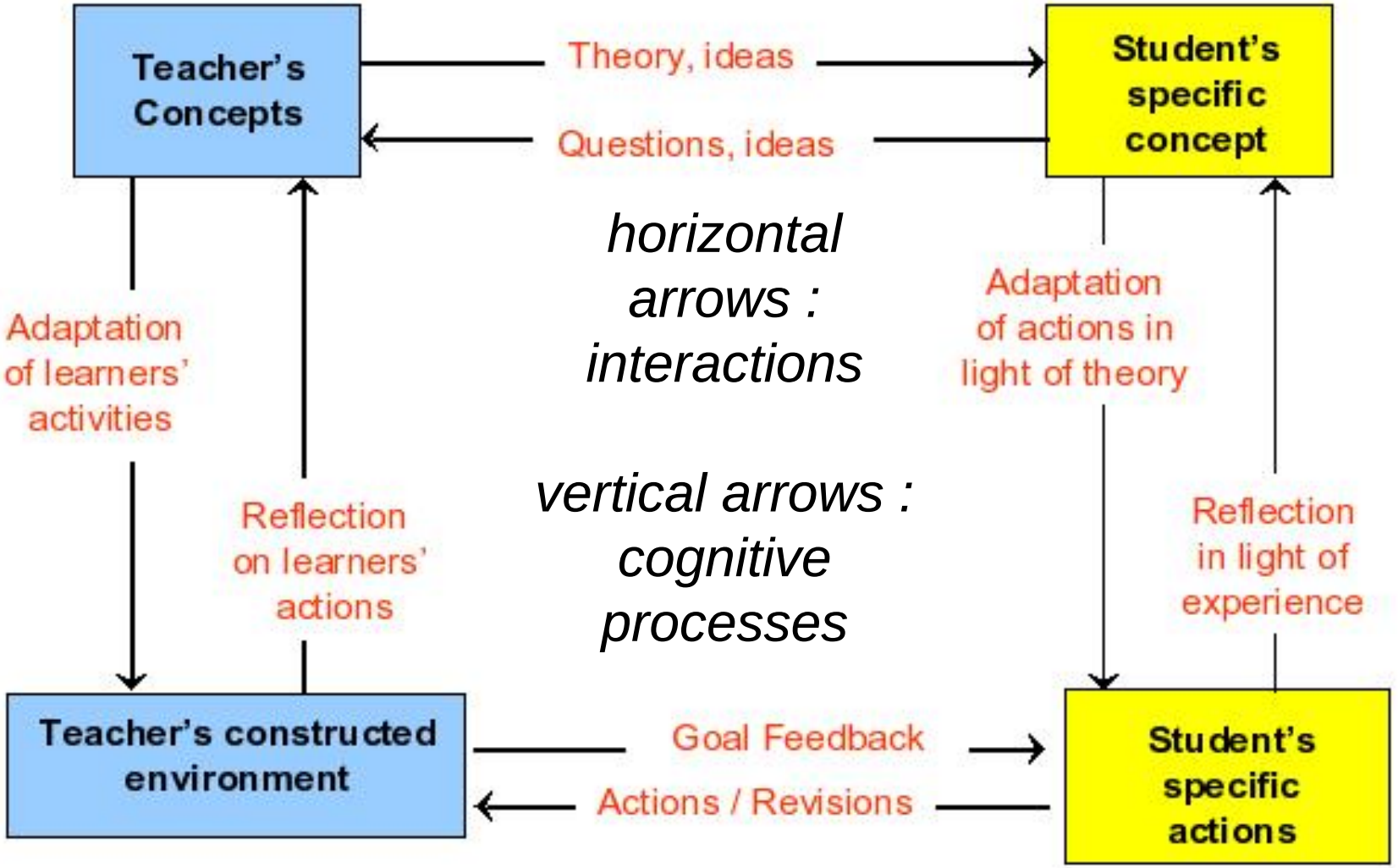
a c c o m m o d a t i o n
refers to changing the cognitive structure to make sense of the environment

2. Laurillard : conversational model

- intended for higher education
- asymetrical : teacher / student
- two levels in the teaching/learning interaction :
  - the level of concrete actions, when the student exercises under the direction of the teacher;
  - the discursive level, when the student exhibits his conceptual representation.

LAURILLARD D.,1999. A conversational framework for individual learning appliedto the 'learning organisation' and the 'learning society'. SystemsResearch and Behavioral Science, 16:113–122

2. Laurillard : conversational model



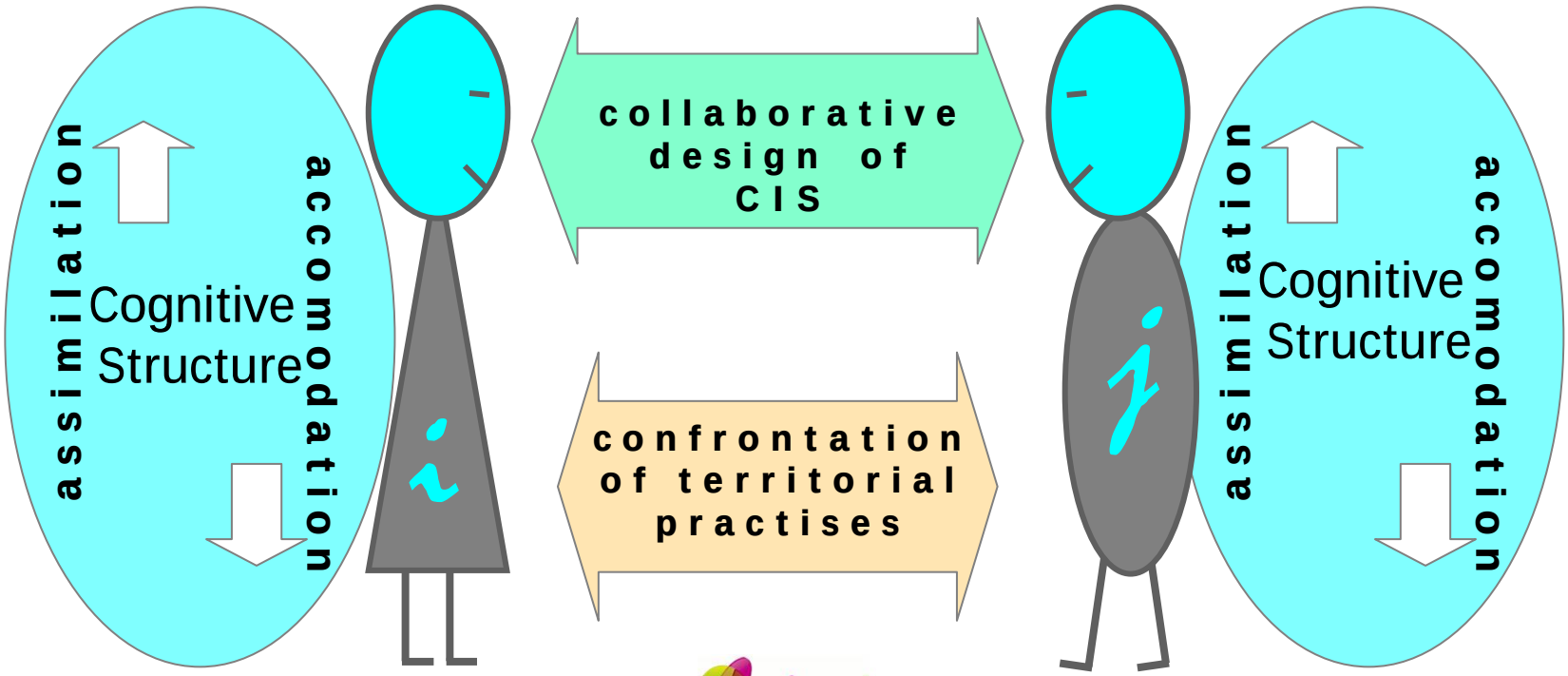
3. a framework illustrating interactive knowledge construction during the CIS collaborative design

3. a framework for participative CIS

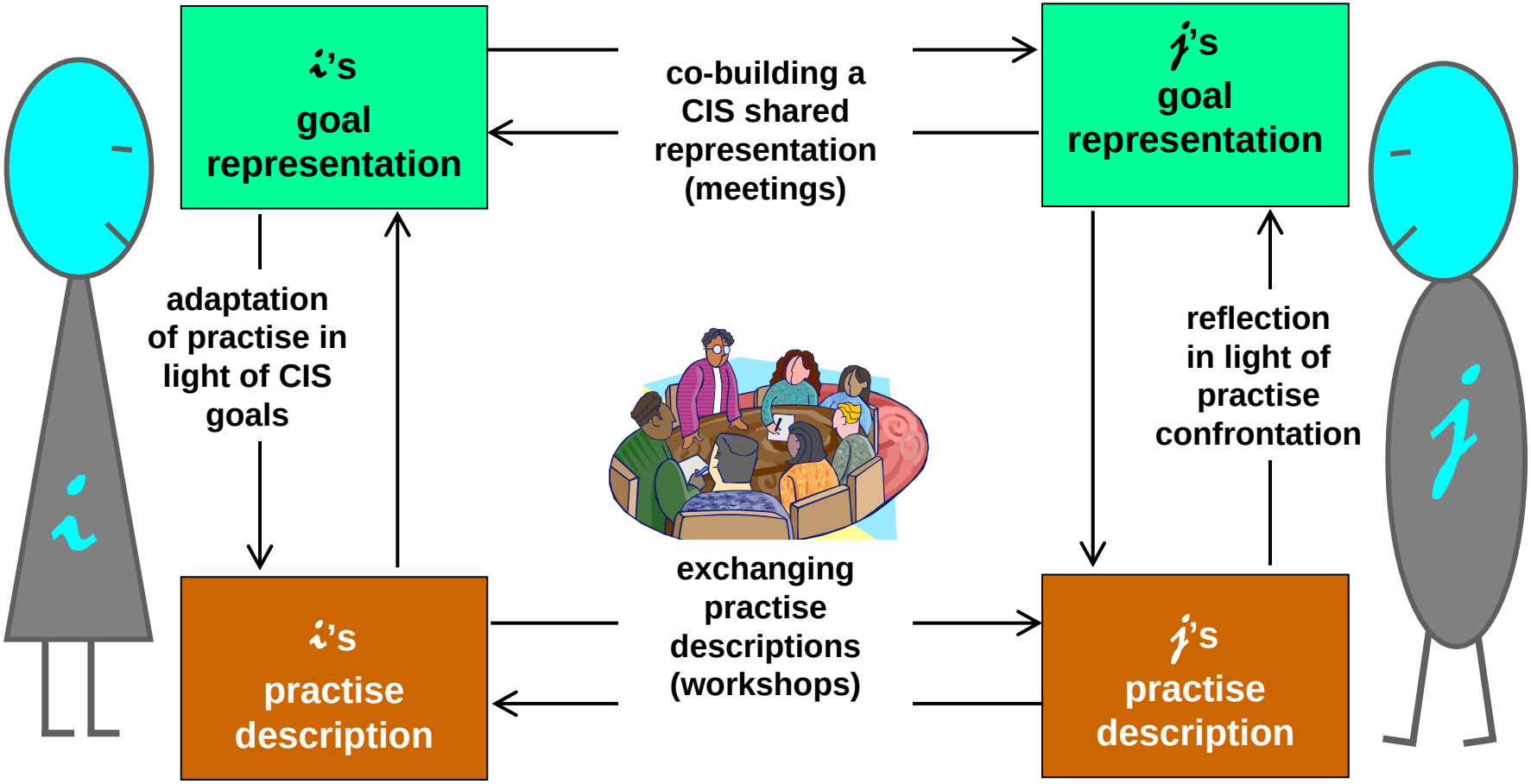
- While in the Hien valley experiment, teaching the UML formalism is a pedagogical scenario like Laurillard's …
- …in the "drawing goals" collaborative scenario, there are no pre-existing "conceptions" or "theories" to be taught to the stakeholders
- however it can ALSO be analyzed according to Laurillard's model :
  - horizontal "flows" :
    - ✓ confrontation of agricultural/environmental practices (*workshops*)
    - ✓ drawing CIS goals (*meetings*)
  - vertical "flows" :
    - ✓ the cognitive structures of the stakeholders assimilate their own activities and help the building of "actors and goals diagrams"
    - ✓ during the meetings these cognitive structures accommodate in order to make sense of the other's description of activities and events occurring on the same territory

3. a framework for participative CIS

- adapted from Laurillard's conversational model
- symetrical : actor / actor
- two levels in the actors interaction :
  - the level of concrete actions
  - the discursive level (CIS building)



3. a framework for participative CIS



4. discussion

4. « Goal diagrams » / CIS design

- « Goal diagrams » has been chosen as a prototypical illustration of the CIS design
  - it is a participative process
  - the underlying formalism is simple
- However, such collective construction occurred during several other steps of the CIS design
  - for instance when formalizing the CIS content through class diagrams

4. which assessment of learning ?

- how can we evaluate learning in a context where no pedagogical goal has been initially expressed?
  - taking inspiration from and the notions of “human capital” and “social capital”, we intend to evaluate knowledge acquisition (seen as an evolution of human capital) indirectly, though the transformation of territorial practice (considered as an evolution of social capital, Coudel 2009),.

Thanks for your attention !