A Starter Activity Design Process

… to Deepen Student's Understanding of Outcome-related Project Learning Objectives (LOs)

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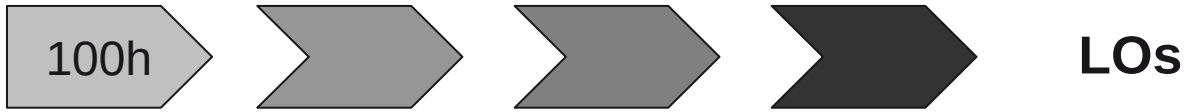
Curriculum context

- **Telecom Bretagne (CDIO collaborator since 2009):**
  - engineering school in 3 years (200 students/year)
    - French *Grande Ecole* system, freshmen with very poor prior experience
  - professional skills are a key goal
    - PBL since 2003
    - 4 semester-projects (approx. 100h/student, teams between 3 to 8)



  - PBL and teamwork experiences sometimes unsettling
    - slower project involvement and enthusiasm

Baseline: student struggle with project LOs

- **Students do not always early identify and understand the project LO spectrum:**
  - traditional course materials typically list LOs
  - often not read or understood by learners (not enough concrete experience)

Objectives

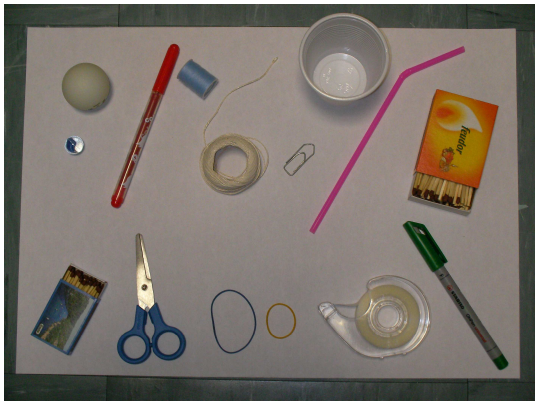
- **From the early stages of each project:**
  - to give students a clearer understanding of the skills and abilities they are expected to acquire
  - so as to participate more actively in their own learning path

- **Provide some meaning to their studies and learning, sense of responsibility, … engagement**

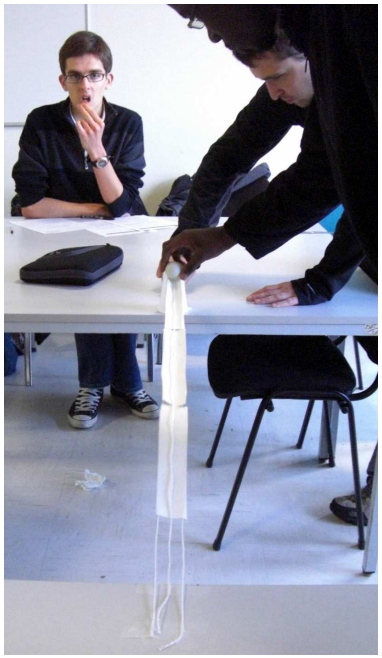
Approach: short starter activities

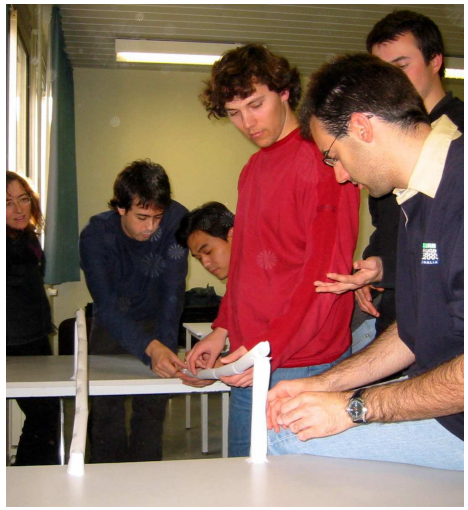
- **Proposal: systematic 2h concrete starter experiences:**
  - to help student recognize, *via* experience and *by themselves*, the project LOs
  - in the front-end of each project, as “icebreakers, kick-offs, warm-ups, energizers, brainteasers, etc.”
  - examples: tiny bridge design-build (cf. paper), board game development and validation (cf. paper), etc.
  - specific LO aligned with the forthcoming project

Bridge example
LOs: designing, cost/quality/delay

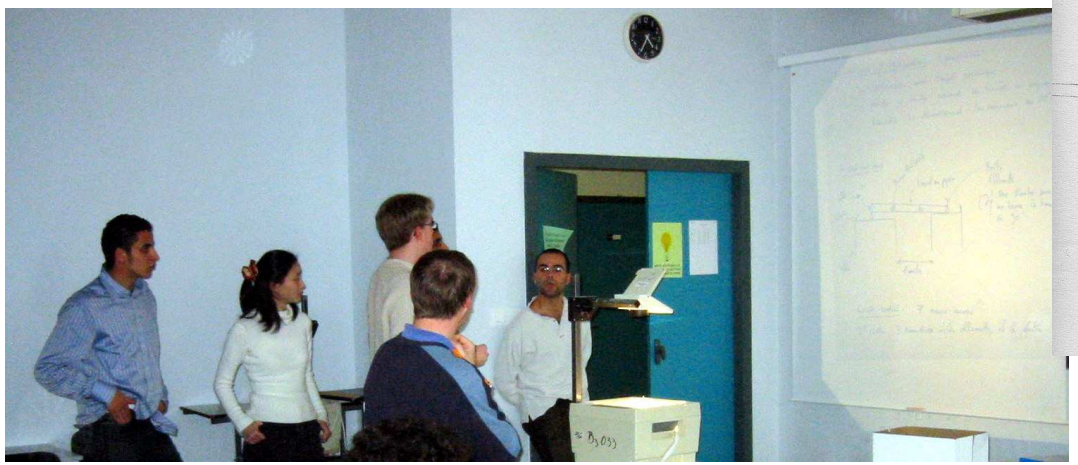


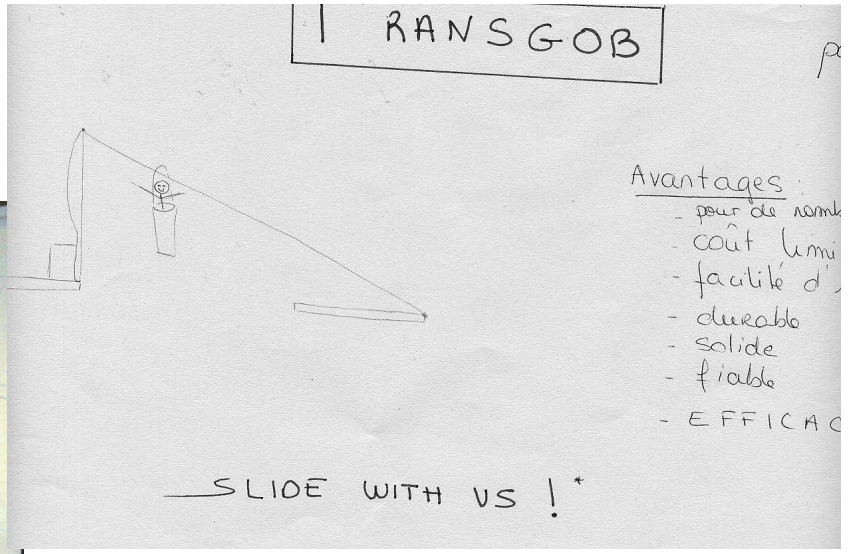
LO: building

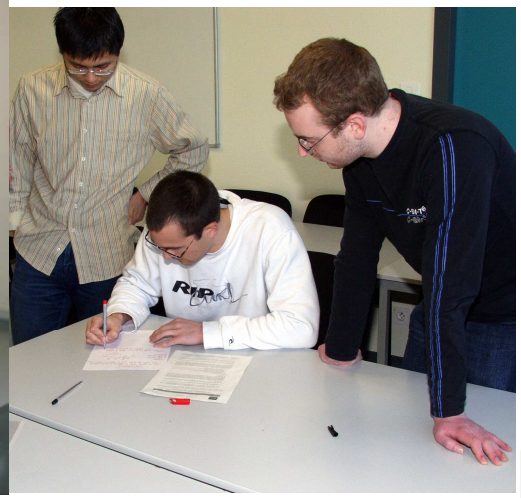




LO: valorisation





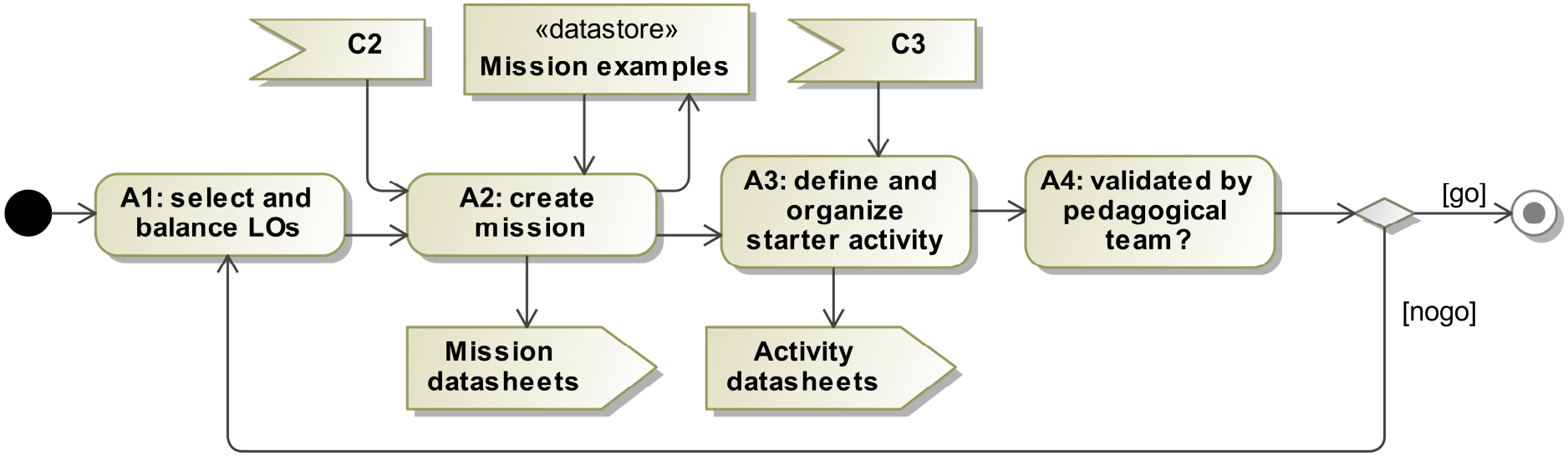


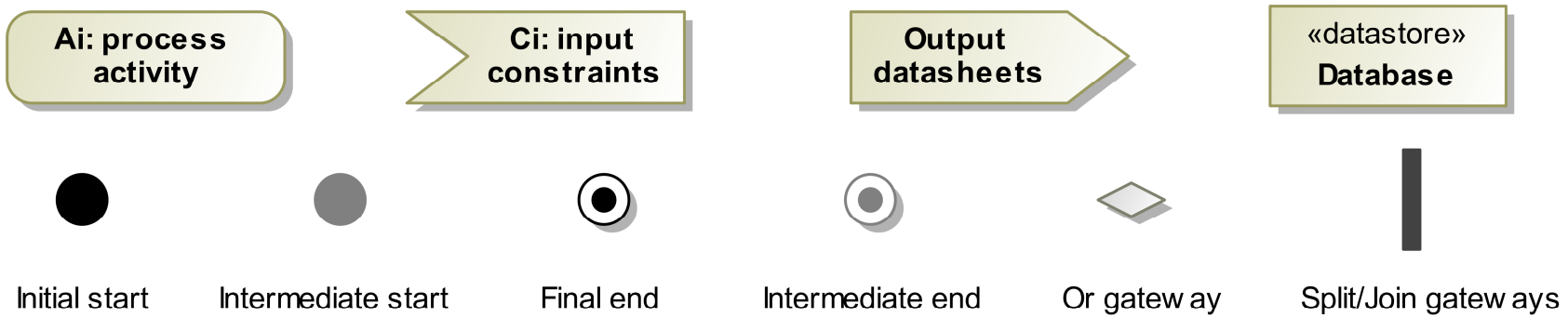
A 3 phase process

- **Require coherent treatment throughout the curriculum**
  - educational staff's skills sometimes heterogeneous
  - pedagogic responsibilities shared between the 4 projects
  - LO alignment

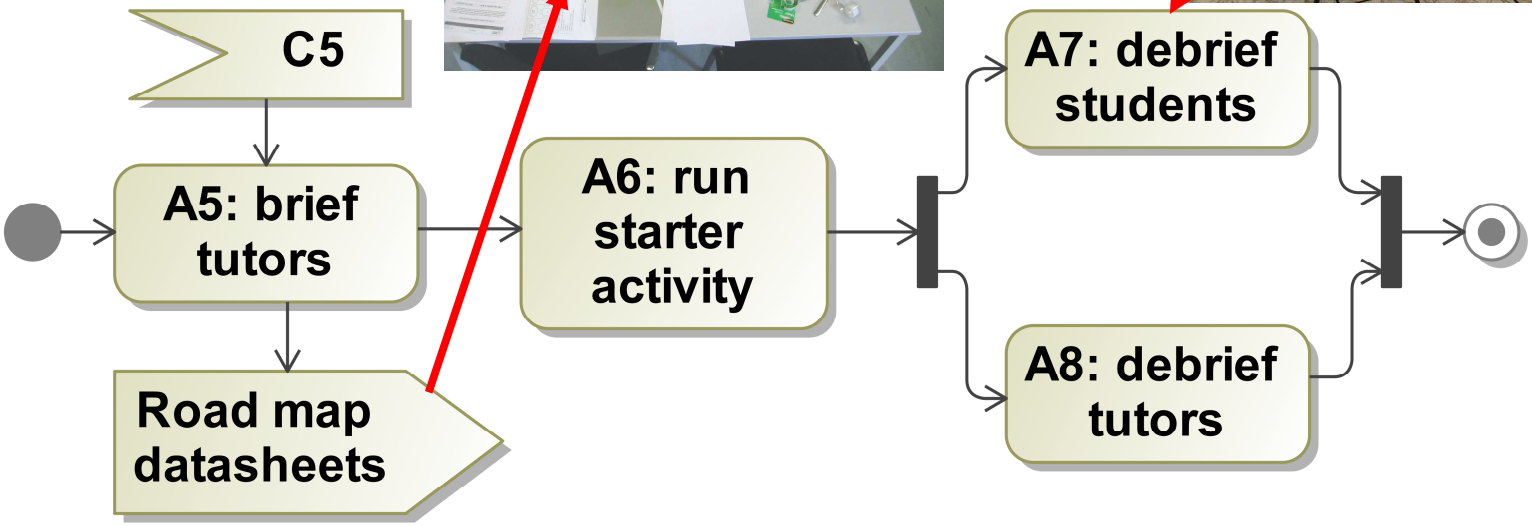
- **Establish guidelines for designing and managing such short sessions**

Design phase





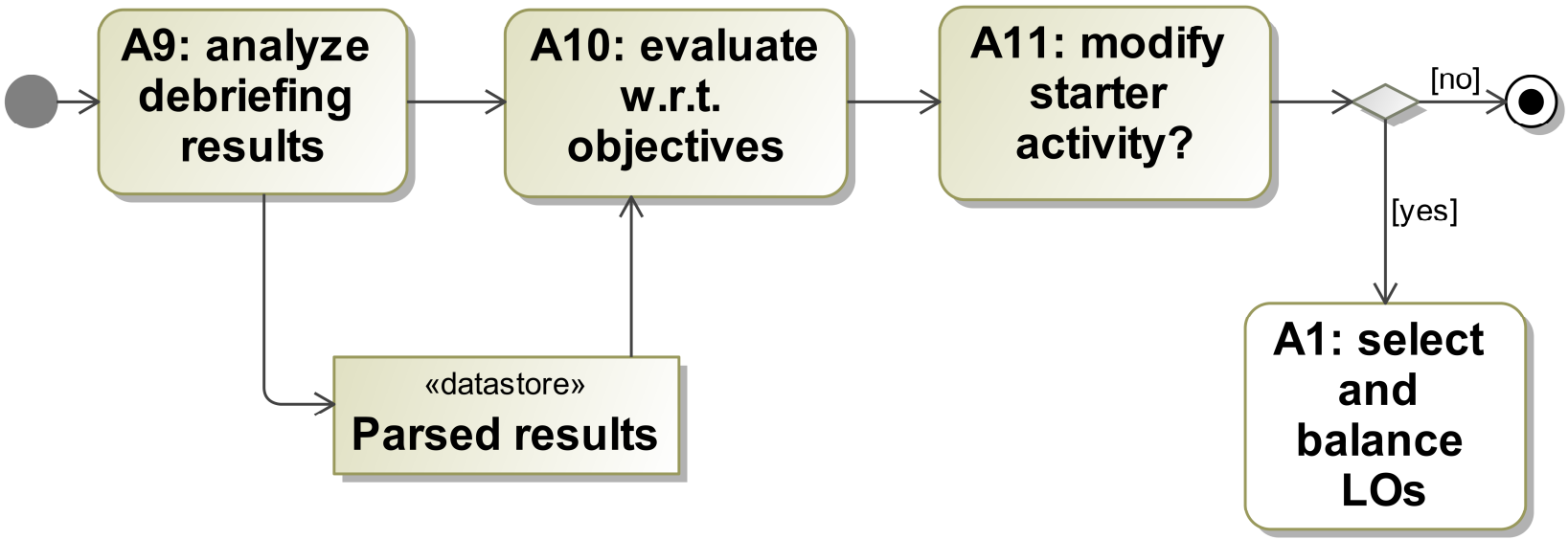
Deployment phase



- Debriefing with an “independent” tutor to shed light to LO and prompt reflection [Schön], abstract conceptualization

Improvement phase

- **Supporting the activity effectiveness *vis-à-vis* project leaders, essential to manage QA-continual improvement**



Benefits

- **If properly designed and deployed:**
  - students more motivated and creative to imprint a team dynamic on the upcoming project
  - reinforce student self-confidence, self-efficacy:
    - greater self awareness of his (team) strengths and weaknesses
  - short term identification and concrete understanding of dedicated LO:
    - Remembering category [Bloom] generally met, often comprehension
  - tutors can early point out possible weaknesses within teams to warn the next project instructor

Limits

- **Difficulties (students):**
  - number of LO addressed should be limited
  - analyzing and evaluating categories [Bloom] rarely met
  - dependant of individual learning preferences [Kolb]
    (to be taken into account in the process constraints)
- **Difficulties (tutors):**
  - more acting as observers, strenuous challenge of the reflective debriefing
  - adjust dynamically the feasibility constraints to galvanize student cognitive obstacles and awareness

- **A more rigorous analysis now necessary, to objectively assess if LO better perceived, interpreted and understood**

Questions, remarks ?

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