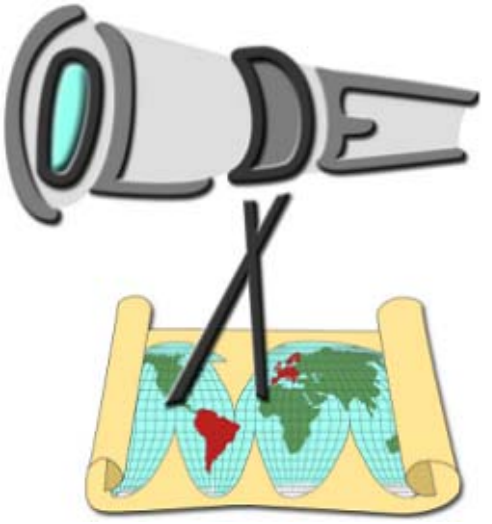
Second Project Review
Växjö (Sweden), Sept. 10, 2004



EU Project COLDEX

Collaborative Learning and Distributed Experimentation

(IST-2001-32327)

hoppe@collide.info

Topic List

- COLDEX framework and origin
- Approaches and challenges
- The background(s)
  -> partner profiles

"E-Learning Futures"

E-Learning futures is conceived as an action line open to fundamental and visionary contributions to shape the future of net-based educational systems and services. On the other hand, there is a popular understanding of e-Learning defining it essentially as "e-commerce with learning-related IT products and services". ... The "magic factors" neglected in this model are *context* and *culture*. To be effective, learning in groups and also in virtual communities should take place in a common context of habits, orientations, persons, locations etc. which serve as a frame of reference and allow for more implicit communication and shared understanding. In this sense, *inter-operability* is not only a technical feature but also a social and cultural phenomenon. If this is true, virtual learning communities have to be established by building up context and common culture which we believe has to proceed bottom-up, i.e., from the local to the global communities.

The Origin: Eurolatis

- Joint proposal authored by U. Chile and U. Duisburg (including UNED, VXU, USB as potential partners)
- Meeting in Santiago de Chile, Dec. 2000 => association of other interested partners
- Forming of the consortium around CSCL workshop in Duisburg (March 2001)
- Science centre (Xperiment huset, Växjö)
- Open door for associating other institutions: "open user scheme" (WP 7)

General Goals

- Putting new educational technologies in a rich social and global, multi-cultural context
- Building and supporting a heterogeneous community of learners in science and technology (from local to global)
- Blending and integrating different forms of direct and remote experience with computer-supported (collaborative) learning and modelling

“Technical” challenges

New tools:

- collaborative modelling tools (extension-diversification)
- specification, representation, processing of remote observations
- situation-adapted mobile and wireless devices and smart objects
- community archives with flexible and contextualised indexing and access mechanisms

“Technical” challenges

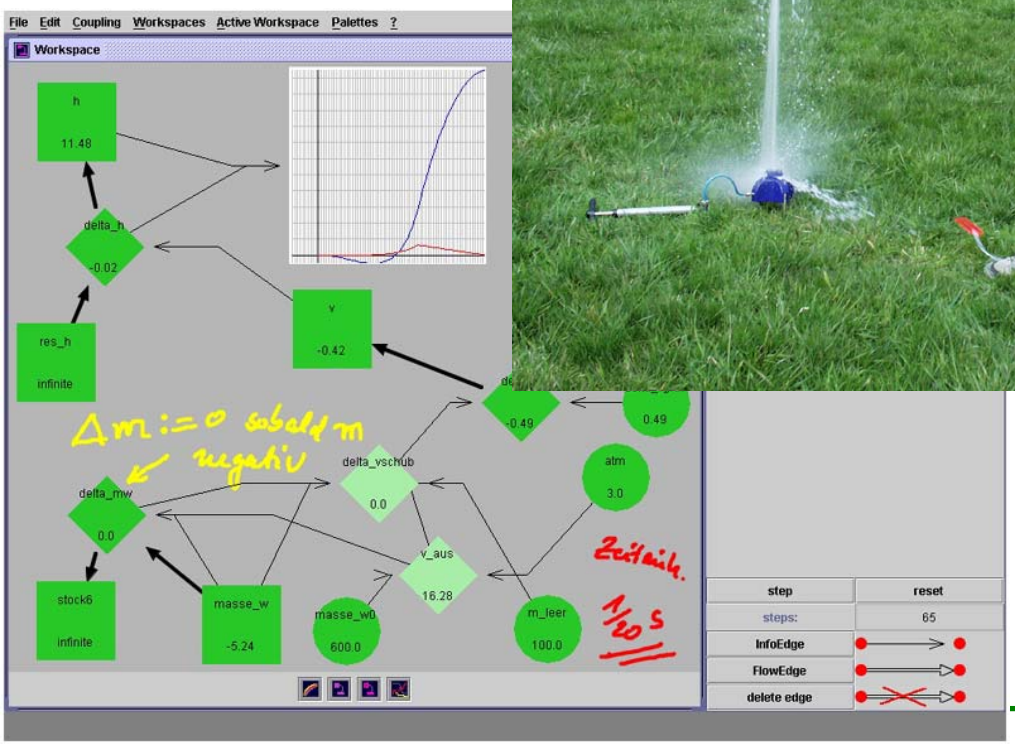
Integration:

- an integrated framework for synchronous and asynchronous collaboration support
- extended metadata using session and tool context
- remote experience and local modelling
- local experience/modelling and global re-use

Educational goals

- Stimulate interest for the understanding of complex phenomena.
- Provide a means to improve comprehension by challenging current understandings.
- Foster a "mixed reality" transition between virtual and tangible environments.
- Facilitate experience sharing between learners.
- Develop awareness and sensitivity to global cultural issues and perspectives.

Experiential Learning



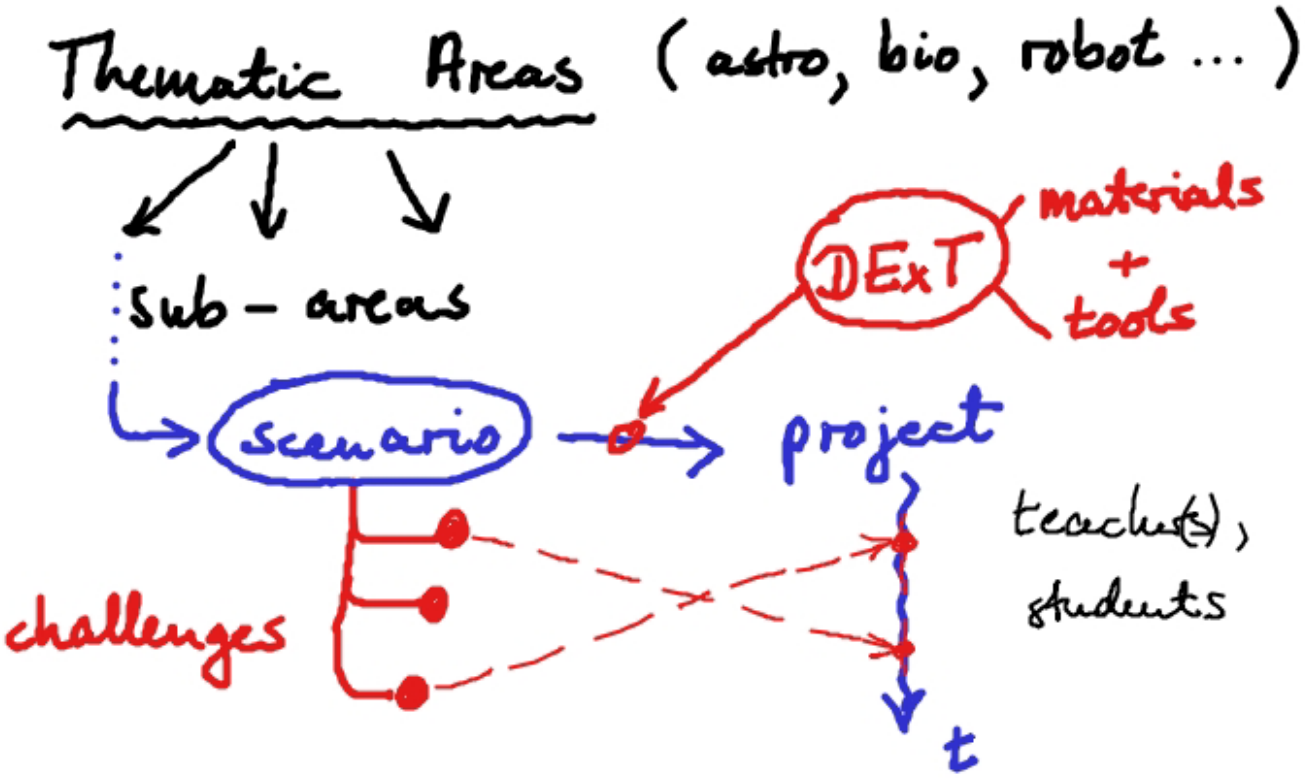
The DExT idea

"Digital Experimentation Toolkits"

- ... containing **interactive materials + tools**
- Delivery model:
  -> get your "package" from the web
  -> mostly self-contained,
  usage independent of personal contact
  or training

Related concepts

Theme - scenario - project



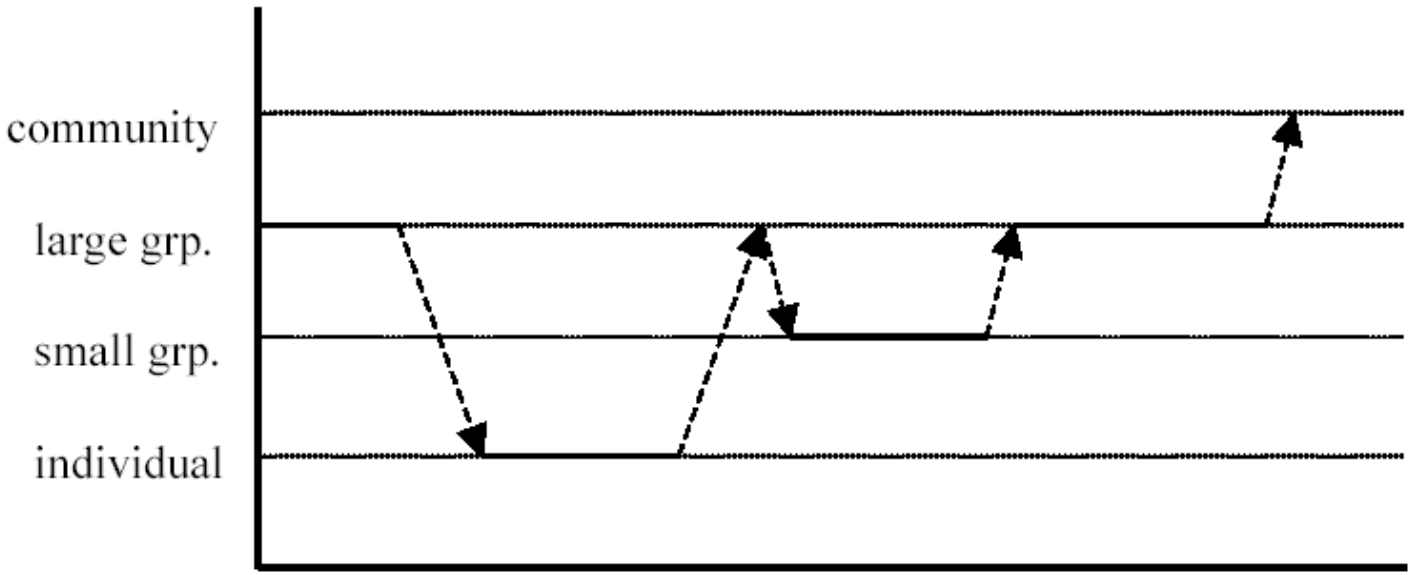
Collaboration modes

	individual	*small group*	*large group*	*community*
setting(s)	- homework - individual studies (e.g. in self-learning centre)	- group work (in school) - afternoon goups - museum user groups	- classes (f-t-f) - courses (also online) - bigger museum visitor groups	- trans-continental network of learners and institutions
knowledge building strategies	- indiv. inquiry and problem solving - reading - browsing	- group problem solving - smaller discussions - design meetings	- aggregation / comparison of small grp. and indiv. results - discussions - teacher presentation	- retrieval of others' learning objects - online SIGs - FAQs
cooperation mechanisms	no (instead: access to archives at all levels)	- workspace sharing - group archives	- result sharing using big screen - classroom archives	- indirect exchange of learning objects through archives

CSCL integration challenge

How to support the integration of / interoperability between different scales in cooperative learning?

-> support for **"educational workflow"** or **"learning flow"**



Central hypothesis

It is possible to initiate and to maintain
an exchange of learning results and
social interaction through "thematic objects"
in a virtual community made up of
subgroups with face-to-face interaction
based on learning challenges
in the form of non-standard problems!

Partners and Profiles

Partner 1: COLLIDE Group at U. Duisburg

- *CSCL design and analysis*
- *Theories of collab. learning and Activity Theory*
- *Synchronous shared workspace systems (collab. visual languages)*
- *Ubiquitous computing in learning environments*
- *Visualisation & modelling in local scenarios, esp. models of human perception (co-developer & user)*
- *Remote scenarios (user)*
- *Undergraduate academics (comp. science, comm. and media)*
- *Secondary high school (physics)*

Partners and Profiles

Partner 2: Universidad de Chile, Santiago

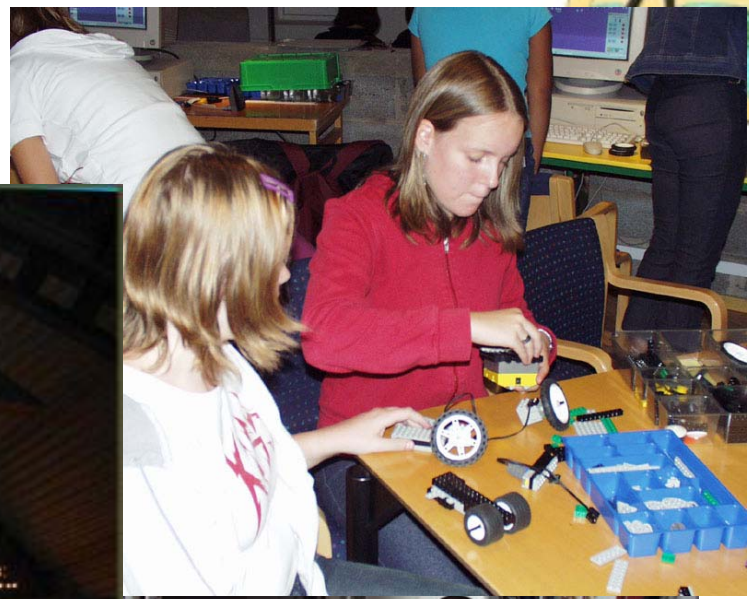
- *Telecommunication technologies (-> ACCESS-NOVA)*
- *Distributed classroom technology (CiC)*
- *Remote scenarios (developer & user)*
- *Local scenarios (co-developer & user)*
- *Undergraduate academics (physics, mech. eng.);*
- *High schools (ENLACES network)*

Partners and Profiles

Partner 3: Växjö University, Sweden

- *Scientific modelling – system dynamics*
- *Ethnographic studies in education*
- *Participatory educational design with teachers*
- *Local scenarios, esp. environmental studies and biodiversity (co-developer)*
- *Remote scenarios (user)*
- *Secondary high schools + regional teacher network*
- *Association of "Xperiment Huset" (science centre)*

Växjö: Xperiment Huset



Xperiment Huset

Innovative projects/exhibits

- *spaceship environment as a portal to "space themes"*
- *construction and design of robots etc.*
- *bio-sphere environment*

.... testbed for a variety of learning challenges!

Partners and Profiles

Partner 4: U. of Saarland (D)

- *VRML and other 3D modelling languages*
- *Web languages and tools*
- *Programming languages*
- *remote scenarios (co-developer)*
- *Local scenarios (co-developer, esp. 3D modelling tools)*

Partners and Profiles

Partner 5: UNED, Madrid

- *Analysis of collab. Learning (asynchronous)*
- *Activity Theory in educational design*
- *Document structuring and electronic archives*
- *Educational networking*
- *Local scenarios, esp. environmental aspects (co-developer & user)*
- *Remote scenarios (user)*
- *Academic distance education (chemistry)*

Partners and Profiles

Partner 6: U. Politécnica de Madrid

- W*eb-based learning environments for engineering*
- *Remote control of experiments*
- *Visualisation & modelling*
- *Remote scenarios (developer & user)*
- *Local scenarios (user)*
- *Undergraduate academics (mech. eng.)*

Partners and Profiles

Partner 7: INESC, Lisboa

- *Animated software agents (incl. VR models)*
- *Agent models of perception and interaction*
- *Intelligent support*
- *Local scenarios, esp. models of human perception (developer)*

Partners and Profiles

Partner 8: U. Católica del Norte, Antofagasta

- *Remote scenarios (co-developer, provider)*
- *Potential user (undergraduate acad.),*
- *Link to schools in OUS*

Scientific Achievements

First IEEE Workshop on Mobile and Wireless Technologies in Education (WMTE 2002)
Växjö, August 2002 -> JCAL special issue + paper

ICALT 2003
- paper on "conceptual change in scientific inquiry"

CSCL 2003
interactive event ("earthquakes and probabilities")

AIED 2003
- paper on "learning object repository"
- interactive event on collaborative mind tools
- poster

ICCE 2003
- paper on "model-based reasoning"

Scientific Achievements

CAEPIA 2003/2004 (selected papers)

- paper on LOR and ontology support
- workshop on CSCL using Coldex examples

ICLS 2004

poster on seismo scenario (UCH - UDUI)

Second IEEE Workshop on Mobile and Wireless Technologies in Education (WMTE 2004, Taiwan)

- paper on "maze" scenario (UDUI) -> journal paper invitation
- joint paper (UDUI - VXU) on "educational workflow around digitally enhanced experiments"

IEEE-ICALT 2004

- workshop on modelling tools in science education
- poster on astro scenario

SWEL (at "Adaptive Hypermedia 2004")

paper on using task/tool context for indexing and retrieval

Dissemination & Exploitation

Learntec 2003 (Karlsruhe)
- Coldex presented as part of EU stand

European Science Week + "School foresight"
-> Athens (November) **...**

IST conference (The Hague, NL)

MEADE (leading telescope manufacturer)
- joint popular article
- provision of learning supplements based on COLDEX tools (under negotiation)

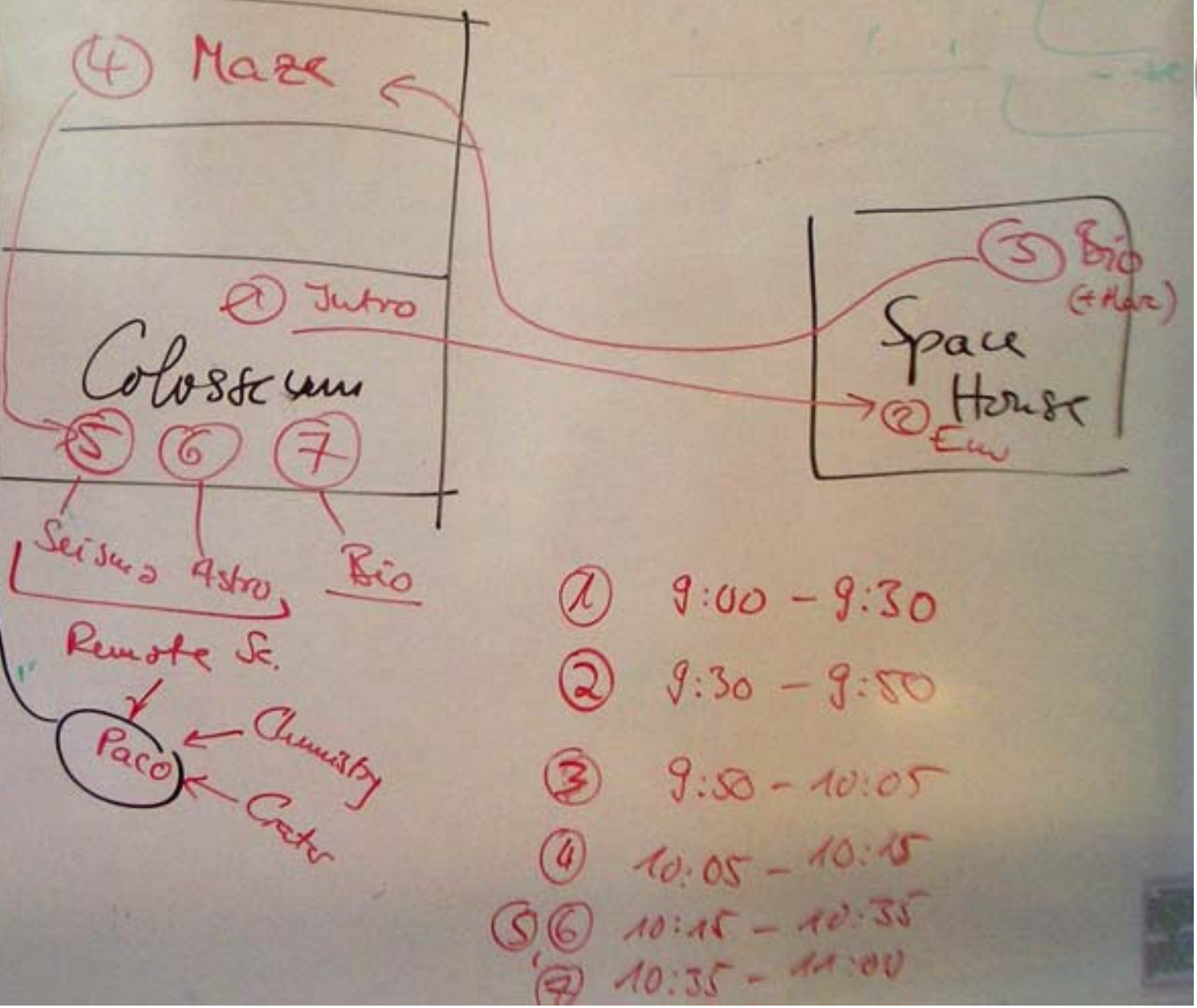
Riesmuseum Nördlingen (Germany)
- incorporation of crater simulation as exhibit

... more in the context of OUS (Latin America)

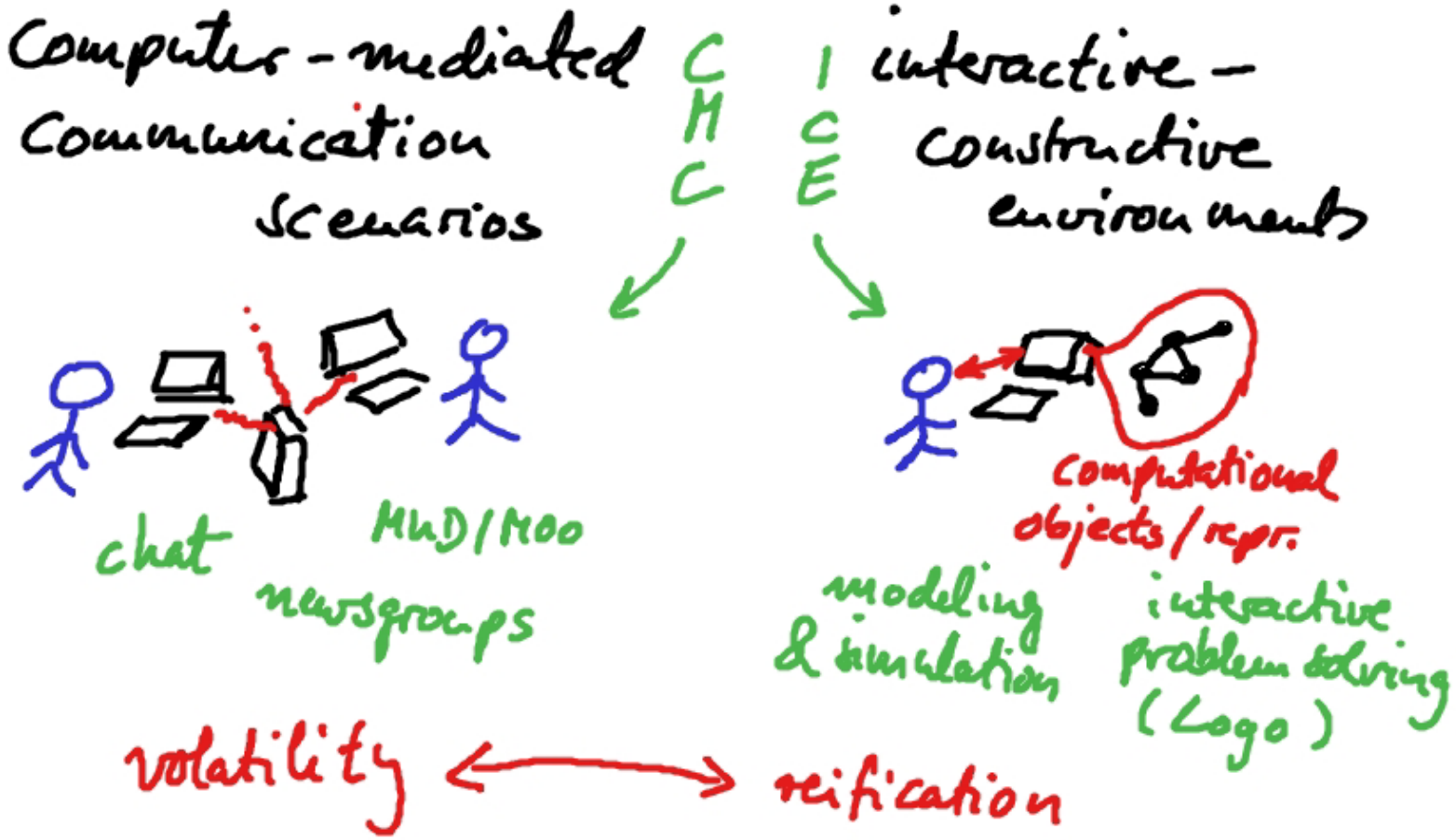
Please prepare for the

SPACE WALK .....

-> “map”


4 Maze
1 Intro
Colosseum
5
6
7
Seismo
Astro
Bio
Remote Sc.
Paco
Chemistry
Crater
5 Bio (+Mars)
Space House
2 Eur
1 9:00 - 9:30
2 9:30 - 9:50
3 9:50 - 10:05
4 10:05 - 10:15
5 6 10:15 - 10:35
7 10:35 -

Scientific background (CSCL)



The current challenge