

Laboratoire d'Informatique et de Robotique de Montpellier
LIRMM

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Empowering human connected communities

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November 27th, 2012
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Page 1
19/12/09

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Outline #0

1. What to do and why to do it?
2. How to do it ?
3. Ongoing projects

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Outline #1: What and why?

1. Human communities
 - « isolation »: My own team in space and time
 - « empowerment » Di Castrì, Rio 1992 -> Rio 2012
2. Aphorisms : teaching, learning, science, technology
3. Serendipity
4. Mass learning

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Outline #2: How ?

1. AGORA 2005
 - The Shared Desktop
2. Content is often there !
3. Conversational processes and enhanced presence
4. AGORA 2008 – 2012

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Outline #3: Ongoing projects
sharing the ideas

- human Discovery
 - (in science: chemistry)
 - (in science: ecology)
 - (in science: biomedicine)
- human Learning
 - (in education: formal and informal)
- human Creativity
 - (in art: music)

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**« isolated » in space:
my team(s) in Jan 2009**

WORLD MAP IN MERCATOR PROJECTION

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Acknowledgments

- I. **Guillermo De Nêgro**, « Une approche dialectique à la formation de théories : aspects conceptuels, formels et pragmatiques dans le cadre de l'apprentissage humain » LIRMM PhD thesis, Un. Montpellier 2, 2005
- II. **André-Louis Ducquin**, « Movement, Interaction, Calculation as Primitives for Everywhere & Anytime Computing » LIRMM PhD thesis, Un. Montpellier 2, 2005
- III. **Yeh-Neha Singh Abdulali**, « Activity States: a theoretical framework for the analysis of actual human collaboration on the Web » LIRMM PhD thesis, Un. Montpellier 2, 2006
- IV. **Clément Jorquès**, « Dynamic Service Generation: Agent interactions for service exchange on the Grid » LIRMM PhD Thesis, Un. Montpellier 2, Nov. 2006
- V. **Philippe Lemoine**, « Collaborative theory construction: towards a conversational abstract machine » LIRMM PhD thesis, Un. Montpellier 2, Dec. 2006 <http://www.lirmm.fr/theses>
- VI. **Patrice Dupont**, « Espaces collaboratifs ubiquitaires sur une infrastructure à ressources distribuées » LIRMM PhD Thesis, Un. Montpellier 2, Dec. 2007 <http://www.lirmm.fr/theses>
- VII. **Maria Augusta Oliveira Netto Nunes**, « Recommender Systems based on Personality Traits » LIRMM PhD Thesis, Un. Montpellier 2, Dec. 2008

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Google maps

**« isolated » in time:
my professional life**

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Page 8
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**« isolated » in space-time :
my team(s) in Nov 2012**

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Francesco Di Castri
Noale, Venezia, 1930 – Montpellier, 2005



local empowerment of isolated communities is enabled by bidirectional access to Information with a champion playing a catalytic role.



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The teacher as a champion

- The first principle of true teaching is that nothing can be taught. The teacher is not an instructor or taskmaster, he is a helper and guide. His business is to suggest and not to impose.
- Sri Aurobindo
 - Calcutta 1872, Pondichery 1950
 - in: « The Human Mind, 1910 »
 - (courtesy of my student Namrata Patel)

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Learners do learn

- The greatest sign of success for a teacher is to be able to say, « The children are now working as if I did not exist. »
- Maria Montessori
 - Chiaravalle, Ancona, Italy, 1870 Noordwijk aan Zee, the Netherlands, 1952

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Innovation is within us

- The best way to predict the future is to invent it.
- http://en.wikiquote.org/wiki/Alan_Kay

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Science: from chaos to cosmos

- All science is either physics or stamp collecting.
 - Ernest Rutherford, physicist
 - 1871, Nelson, New Zealand; 1937, Cambridge, England
 - 1908 Nobel prize in Chemistry
- All scientific process moves from stamp collecting to physics as it was the case in Biology

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Collaborative innovation and pull economy

- John Seely Brown
 - <http://www.johnseelybrown.com/>

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Serendipity in scientific discovery

- a "happy accident" or « pleasant surprise »
- the accident of finding something good or useful while not specifically searching for it.
- Persian fairy tale *The Three Princes of Serendip*, whose heroes « were always making discoveries, by accidents and sagacity, of things they were not in quest of »
- Serendip, an old name for [Sri Lanka](#) (aka Ceylon)

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Di Castri, 2003 : a champion in presence

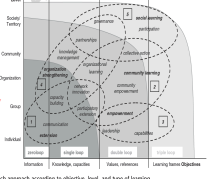


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Mass Learning: levels and objectives



Learning in rural and development studies
105 papers in 85 journals reviewed
action learning theory

courtesy of :
P. Lemoisson, JP Touzeau et al.

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The right questions
(from Tonneau et al)

- Who are the **actors** asking for the learning system?
- Why do they need/want to **change**? What is the main issue at stake?
- What are the **changes** desired by the actors? Do they have a **project**?

The same as Di Castri's empowerment

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The answers

- 5 different **approaches**:
 - Extension, organizational capacity building, community learning, empowerment, social learning
- main issue: guaranteeing that the **actors are able** to develop the appropriate learning for their needs
- not the methods and approaches that are new, **but the situations** the actors are faced with
- important: to enable them to build tools and understanding that will enable them to **adapt** to these situations
- increasing reflexivity testifies to the challenges of the construction of a 'Learning society' in which **knowledge creation and learning** are central elements

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Page 20
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Di Castri, 2003, EJENVIE
a champion in presence



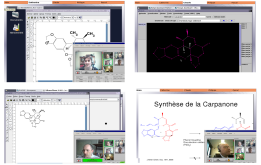
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Page 21
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GSD (the Grid Shared Desktop):
champions at a distance

ENCORE: Encyclopédie de Chimie Organique Electronique:
agreeing on a shared core ontology



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Page 22
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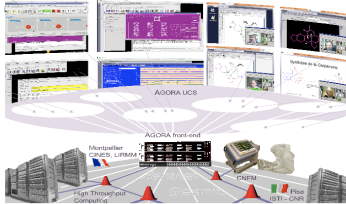
- AGORA 2005
- The Shared Desktop
- Conversational processes and enhanced presence
- AGORA 2008 – 2012

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Page 23
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AGORA in action:
scenarios in Microelectronics and Chemistry



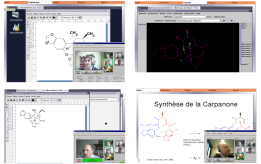
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GSD (the Grid Shared Desktop) in action:
champions at a distance

ENCORE: Encyclopédie de Chimie Organique Electronique:
agreeing on a shared core ontology



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... and the sources ?

- Champions know where sources are
- Champions know how to transform them
- Champions interact
- Champions motivate
- Champions help
- Champions suggest
- Champions look from behind the scene
- ...

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Sources are on the web !



MyEditedBooks from Amazon

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Sources are on the web !

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MyPapers from Google Scholar

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Freely available Learning Resources (courtesy of Beverly Woolf)

Universal access to education, Creative Commons

Examples:

- Curriki: 40,000 K-12 resources, Curriki for teachers, learners and education experts
- Connexions: 20,000 modules available in Connexions, a repository and collaborative platform that breaks down larger collections, e.g., textbooks and courses, into modules.
- flatworldknowledge: Free and openly licensed college textbooks

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More Examples (courtesy of Beverly Woolf)

- MIT OCW: 2,000 MIT courses; virtually all the MIT course content;
- Khan Academy: 3,000 instructional videos Khan Academy, algebra, chemistry, biology,
- CK-12: 90 textbooks U.S. K-12 available for free

PedConnect helps teachers identify resources –using metadata (Jihye Kim, ITS Workshop 2012)

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More (courtesy of myself)

- TED
- Google Tech
- Collège de France
- Open University LearningSpace : over 500 study units, 12 subject areas
- ... ???

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But: content is not enough

- Role of the teacher:
 - data -> information -> knowledge -> competence

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Presence ↔ distance

- Presence may be fundamental
 - E.g. for motivation:
 - champions => best practices => to emulate
- Distance may be even better:
 - « enhanced presence »

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Conversational Processes and Enhanced Presence (courtesy of Marc Eisenstadt et al)

- Snapshot of online multiparty conversations (Flashmeeting, KMI CNM, OU, UK)
- Flashmeeting ELeGI Memo 15 01 2005

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Enhanced Presence 1: BuddySpace

Goal: Find me the person who can really help me now

Found an expert

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Enhanced Presence 2

Goals:

- True multiparty
- zero install
- GRID power

July 26, 2006

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"Find me the person who can really help me now."

(Image Courtesy NASA Earthlights project)

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Page 40
181/208

"Find me the person who can really help me now."

- Who else is facing a similar problem?
- Where can I find complementary approaches?
- Has anyone solved a related problem?

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Views:
holistic analysis, co-adaptation, motivation

Holistic approach (Clancey's contribution)
W. J. Clancey, 2005 "Towards On-Line Services Based on a Holistic Analysis of Human Activities," in *Towards the Learning GRID: advances in Human Learning Services*, vol. 127, P. Rinaudo, C. Allison, S. A. Cerri, T. Dimitrakos, M. Gaeta, and S. Sakuma, Eds., Amsterdam, NL: IOS Press, pp. 8-16. (nice example of failures in services)

Co-adaptation (Scanlon's & O'Shea's)
Eileen Scanlon and Tim O'Shea (2007), "New educational technology models for social and personal computing," in *ICALT: Seventh IEEE International Conference on Advanced Learning Technologies* Tokyo: IEEE Computer Society, 2007. (co-adaptation in learning technologies)

Motivation (Eisenstadt's)
M. Eisenstadt (2007) "Does E-learning Have To Be So Awful? (Time to Mithras or Shangai)" in *ICALT: Seventh IEEE International Conference on Advanced Learning Technologies* Tokyo: IEEE Computer Society, 2007. (why motivation makes it)

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AGORA 2005

- Agents, Groups, Organisations, Resources, Activities
- Ubiquitous Collaborative Space (UCS)
- Awareness and Immanence
- The Grid Shared Desktop service
- Lightweight client
- Cloud architecture
- ~ 10⁴ users, multiple sites (Montpellier, Pisa, Brasília)

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Cloud architecture facilitating security and ubiquity : lightweight clients

Agora and Access Grid evaluation
Research report at CNR-ISTI, Pisa, Italy, 2008

Paolo Dagnone
August 8, 2008

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AGORA: Communication, Organisation

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Page 42
181/208

AGORA: essential functionalities

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AGORA: model + software services

Fig. 1 The AGORA conceptual model

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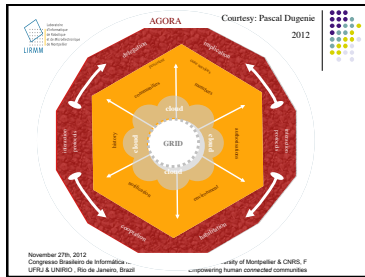
Page 44
181/208

AGORA (2008) : 4 layers of services

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Page 45
181/208



AGORA 2012 ==> ?

- Fundamental interaction protocols:
 - Delegation
 - Habilitation
 - Implication
 - Cooptation
- From stamp collecting to physics?
 - Primitives representing human social computation

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Page 47
10/2012