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## Empowering Human Connected Communities

Stefano A. Cerri

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 Laboratoire d'Informatique et de Robotique de Montpellier  
**Stefano A. Cerri**

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**Empowering human connected communities (part 2)**

[cerri@lirmm.fr](mailto:cerri@lirmm.fr)  
[www.lirmm.fr](http://www.lirmm.fr)

November 27th, 2012  
 Congresso Brasileiro de Informática na Educação UFPA & UNIRIO, Rio de Janeiro, Brazil

Stefano A. Cerri  
 LIRMM University of Montpellier & CNRS, F  
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Page 1 13/202



**Outline #0**

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

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 LIRMM University of Montpellier & CNRS, F  
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Page 2 13/202



**Outline #3: Ongoing projects sharing the ideas**

- human Discovery & Science construction
  - in science: **ENCORE**: chemistry -> done
  - in science: **CoObs** & **Viewpoints**: ecology
  - in science: **SIFR**: biomedicine
- human Learning
  - in education: **Didael KTS: Multimedia and Digital Technologies: Formal and Informal Learning**
- human Creativity
  - in art: **EMPIUJ**: music

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Page 3 13/202



**Projects are scenarios**

- Classification according to a viewpoint
- A **service oriented** view:
  - **Semantics**
  - **Agents**
    - autonomous + communicating;
    - **Human + artificial**
  - **Distributed**, concurrent
  - Processes and data

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Page 4 13/202


**CoObs (Courtesy of Philippe Lemoisson, CIRAD)**

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Page 5 13/202


**CoObs: (Courtesy of Philippe Lemoisson, CIRAD) the life cycle of "mass learning" for action**

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Page 6 13/202


**Viewpoints (Courtesy of Philippe Lemoisson, CIRAD)**

- Goal: to emerge actionable knowledge from digital multimedia and multilingual content, at the scale of a community
- Concept: a computer supported open, continuously evolving knowledge space populated by high level objects, rhetorical agents, artificial agents, multimedia and multilingual content, multilingual topic, ontological concepts.
- Collective intelligence will emerge from self-organization in this complex system.
- A set of protocols will rule the knowledge space. While the artificial agents will be in charge of mining, pre-translating, summarizing the textual documents and retrieving multimedia content, the institutional agents will tag the multimedia content, and express opinions, acceptance and feedback upon retrievals.
- continuous learning, i.e. adaptability to the evolution of semantics
- self-organization of knowledge, i.e. emergence of concepts and mainstreams
- resilience with respect to the evolution of knowledge
- scalability, i.e. full acceptance of the merging of communities
- transparency, i.e. no hidden arbitrations

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**Logics on top of Viewpoints**

contacts: [philippe.lemoisson@cirad.fr](mailto:philippe.lemoisson@cirad.fr), [cerri@lirmm.fr](mailto:cerri@lirmm.fr)

Goal: to compute formalized knowledge  
 A conversation between agents owning logical reasoning abilities

**3 speech acts:**

- assertives
- directives
- commissives

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**Semantic indexing of biomedical resources**

16.4 Billion Annotations

2.4M terms  
 200 ontologies  
 0.5M elements  
 22 sources


Courtesy of Clément Jonquet

### Enabling Translational Discoveries with Integration of Biomedical Data

In biomedicine, the wealth of publicly accessible biomedical data is beginning to enable cross-cutting integrative translational biomedical studies. **Translational scientific discoveries** could be made by mining and crossing biomedical resources.

Biomedical researchers have turned to **ontologies and terminologies** to structure and annotate their data (i.e., experimental data sets, diseases, experimental conditions, clinical trial descriptions, published papers) with ontology concepts for better search and retrieval.

LIRMM will continue and enhance an already existing collaboration with the **National Center for Biomedical Ontologies** at Stanford University which is developing the **Biological web ontology repository (<http://www.biomedical-ontology.org/>)**, a platform of ontology based services highly used in the biomedical community.




Courtesy of Clément Jonquet

### Annotation challenge

- Explosion of biomedical data: diverse, distributed, unstructured... not linked to ontologies
- Hard for biomedical researchers to find the data they need
  - Data integration problem
  - Translational discoveries are prevented
- Good examples
  - GO annotations
  - PubMed (biomedical literature) indexed with Mesh headings
- Annotate data with ontology concepts

Courtesy of Clément Jonquet



### Multimedia and Digital Tehnologies: Formal and Informal Learning



### The scenario of the future: innovation and technologies



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### Women & Technologies: a winning pair

Gianna Martiniago  
Manager and President of Women&Technologies Association



### EMPIU

EMPIU: EMIPIU Music Interactive Platform for Internet User

Courtesy of Goffredo Haus and Gianna Martiniago

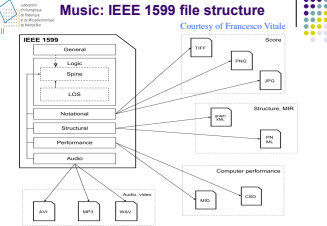
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Page 15  
13/12/09

### Music: IEEE 1599 file structure

Courtesy of Francesco Vitale



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Page 16  
13/12/09

### EMPIU

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Ave Maria (Gounod)  
Por una cabeza (Carlos Gardel)

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Page 17  
13/12/09

Obrigado Thank you Merci  
Grazie Danke

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[cerri@lirmm.fr](mailto:cerri@lirmm.fr)

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Page 18  
13/12/09

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Page 16  
12/166