



The European project ERRIC and the NCIT's activities

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NCIT Laboratories

- Distributed Systems and Grids
- CoLaborator
- Artificial Intelligence and Multi-Agent Systems
- Collaborative Computer-Based Knowledge Construction
- Academic Center for Distributed Informatics
- *E-Business Academy Laboratory (IBM)*
- *E-Government Laboratory (IBM)*
- *Innovation Center (Microsoft)*
- *Oracle Technologies and Solutions (Oracle)*
- *Computers Network Laboratory (CISCO, HP)*
- *Advanced Compiling Techniques Laboratory (Freescale)*

Home page <http://hpc.pub.ro>

NCIT EU Research Projects

- **EU-NCIT** leading to EU IST excellency FP6 "Integrating and Strengthening the European Research Area, Contract INCO-CT-2005-017101
- **CHANGE** - Enabling Innovation in the Internet Architecture through Flexible Flow-Processing Extensions, FP7- Project, 2010-2013
- **Sensei** - Integrating the Physical with the Digital World of the Network of the Future, FP7 Project, 2008-2011
- **TWISNet** - Trustworthy Wireless Industrial Sensor networks STREP, 258280, (TWISNet), FP7-ICT-2009-5
- CoExisting Short Range Radio by Advanced Ultra-WideBand Radio Technology – Enlarged European Union, 258066, CP, FP7-ICT-2009-5
- **P2P- Next** - Next Generation Peer-to-Peer Content Delivery Platform, FP7 NR 216217, 2008 – 2010

Projects (2)

- **EGEE III** - Enabling Grids for the e-Science in Europe, FP7-Infrastructures-2007-2
- **SEE GRID SCI** - South Eastern European GRid-enabled eInfrastructure Development SCI, FP7, 2008
- **HP-SEE** - High-Performance Computing Infrastructure for South East Europe's Research Communities, FP-7 "Research Infrastructures" action 2010
- **COOPER** - Collaborative Open Environment for Project-Centered Learning, Contract no. 027073, FP6, 2005 - 2008
- **LTFLL** - FP7 Language Technologies for Lifelong Learning, 2008 – 2011
- **ERRIC** - Empowering Romanian Research on Intelligent Information Technologies, FP7-REGPOT-2010-1, 2010 - 2013

NCIT Products

- MonALISA
- Monarc 2
- DIOGENES
- VNSim
- Traffic View
- SINTEC
- Mobile LOTO

Plan of the presentation

- ERRIC Project
- Empowering Research Skills
- Achieve two-ways secondments
- Participation of A&C staff to scientific events
- Hiring experienced researchers
- Organization of scientific events
- Research equipment

ERRIC Project

Empowering Romanian Research on Intelligent Information Technologies

Project number: **264207, FP7-REGPOT-2010-1**

- *FP7 Capacities Work Programme: **Research Potential***
- Funding scheme: **Coordination and support action**
- *Area: 4.1. **Unlocking and developing the Research Potential of research entities established in the EU's Convergence Regions and Outermost regions***
- Project duration: **36 months**
- Start date: 1 September 2010
- Total cost: 2,994,404 Euro
- EC contribution: 2,670,010.00 Euro

Partnering organizations

Kickoff Meeting Participants

- VU University Amsterdam, Netherlands, Department of Computer Science, Computer Systems (VUA/CS) group –**Prof. Maarten van Steen**
- University Pierre et Marie Curie, France, LIP6, Equipe Systèmes Multi-Agents –**Prof. Amal El Fallah Seghrouchni**
- Utrecht University, Germany, Department of Information and Computing Sciences, Intelligent Agents Group, **Prof. John-Jules Ch. Meyer**
- Université de Toulouse, France, Institut de Recherche en Informatique de Toulouse, Computer Science Research Lab of Toulouse –**Dr. Vincent Charvillat, Dr. Zouheir Hamrouni**

Partnering organizations

- University Stuttgart, Germany, High Performance Computing Center (HRLS) –**Dr. Stefan Wesner**
- Ecole Nationale Supérieure des Mines de Saint-Etienne, France, Centre Génie Industriel et Informatique, Département Systèmes Multi-Agents –**Prof. Olivier Boissier**
- Ecole d'Ingénieurs de l'Université de Nantes, France, Laboratoire Informatique de Nantes Atlantique, Equipe COD (COonnaissances et Décision) –**Prof. Fabrice Guillet**

Partnering organizations

- Tampere University of Technology, Finland, Department of Signal Processing –**Prof. Ioan Tabuş**
- Université des Sciences et Technologies de Lille, France, Laboratoire d’Automatique, Génie Informatique et Signal –**Prof. Nicolai Christov**
- University of Cassino, Italy, Laboratory of Robotics and Mechatronics –**Prof. Marco Ceccarelli**
- Université de Rennes, France, Institut National de Recherche en Informatique et en Automatique, KerData Team–**Prof. Luc Bougé**

ERRIC: Aim

- Leverage, support and further develop the existing research in selected areas of **Intelligent Information Technologies**:
 - ▶ large scale distributed system services
 - ▶ advanced grid technologies
 - ▶ agreement technologies
 - ▶ semantic and collaborative technologies for the web
 - ▶ adaptive intelligent control

Empowering Research Skills

Develop guidelines for future research and innovation

- Roadmap for A&C Research, Technology, Development and Innovation: directions for the next 5 - 10 years.
- ▶ **Prof. Marc Demage:** Research Manager in ERRIC
 - professor at ESSEC Business. School, Director of ESSEC Business School Romania Foundation in Bucharest

A&C Research Strategy

- 3 main axes
 - ▶ Providing support for a better research environment
 - ▶ Measuring the impact, evaluating the quality
 - ▶ Visibility of individual and collective research

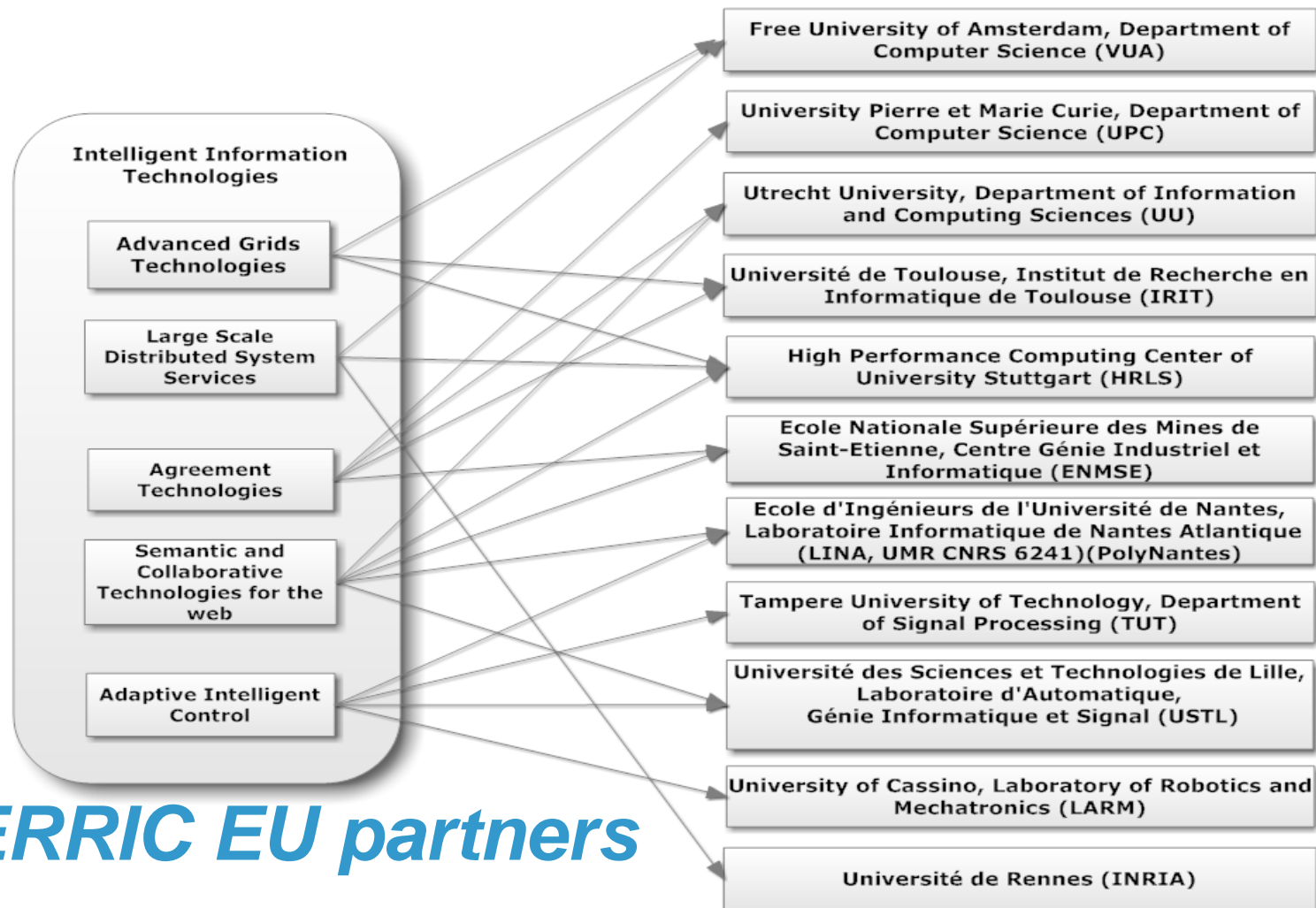
Survey in Intelligent Information Technologies

- Grid and Cloud Computing
- Semantic and Collaborative Technologies for the Web: Semantic Web, Web intelligence, Ontology Alignment, Web 3.0
- Intelligent agents for Ambient Intelligence
- Cognitive and Collaborative Robotics; Intelligent Manufacturing Systems

Achieve two-ways secondments EU partner organizations

ERRIC Areas of Research Excellence

EU Partnering Organisations of ERRIC



ERRIC EU partners

INRIA Rennes

- Started the DataCloud@Work INRIA "Associate Teams" Programme; Teams
 - ▶ Kerdata, Equipe-projet PARIS, NCIT

- Research direction
 - ▶ Autonomic Storage for Cloud Services
- Five papers published together
- FP-7 project proposal submitted
- Internships for PhD and MSc students
- Plan for double coordination PhD

VU Amsterdam

- Computer Science Dept
- Research direction
 - ▶ Cloud computing (resource provisioning)
- Common short track MSc program in PDCS running for 2 years
- Co-organization of CloudCP 2012 workshop
- Plan for double coordination PhD

University Pierre et Marie Curie

Laboratoire d'Informatique de Paris 6
Département «Equipe Système Multi-Agents»

- Started a common direction of research: Agents for Ambient Intelligence
- 2 double coordination PhD
- Cooperation agreement between universities signed
- 5 papers written together
- MASTS 2011 and MAST 2012 organized together

Utrecht University

Department of Information and Computing Sciences
Utrecht Institute for ICT Research
Intelligent Systems Group

- Started a common direction of research:
 - ▶ Modal logics for argumentation and argumentative agents
- 1 double coordination PhD
- 3 papers written together
- Preparation of a common EU project proposal under way

Ecole Nationale Supérieure des Mines de Saint-Etienne

- Laboratory for Information Sciences and Technologies, ISCOD Team
- Started a common direction of research:
 - ▶ Context, agents and fluid knowledge
- 2 double coordination PhD
- 2 papers written together
- Preparation of a common EU project proposal under way
- Preparation of a proposal for a Erasmus Mundus doctoral programme

Participation of A&C staff to scientific events

ISMIS 2011	Varsaw,Poland	Jan. 2011
Computer Supported Collab Learning , CSCL	Hong Kong,China	July 2011
IESM 2011	Metz,France	May 2011
EC-TEL 2011	Palermo, Italy	Sept. 2011
ICEMI 2012	Singapore	Feb. 2012
ICECT 2012	Kanyakumari,India	April. 2012
ICALT 2012	Roma, Italy	July. 2012
ITS-Intelligent Tutoring Systems	Chania, Grece	June. 2012
ROCOM'12	Rovaniemi, Finland	April 2012

Hiring international experienced researchers

Francesco Ciardiello, PhD (2006)

- Research Positions
 - ▶ 2008-2010 Post-Doctoral Position in Game Theory
University of Foggia, Italy.

- Awards, Grants and Scholarships
 - ▶ 2006 Frederick N. Andrews Fellowship, Krannert School
of Management Purdue University, US.
 - ▶ 2006 Admission M.S., Department of Mathematics London
School of Economics London, UK.

Hiring post docs

- 6 post doc positions available
Domains:
 - ▶ ambient intelligence, agents,
 - ▶ cloud computing,
 - ▶ intelligent traffic control,
 - ▶ intelligent robots,
 - ▶ rust in semantic alignments

see: <http://erric.eu/jobs/>

Organization of Scientific events

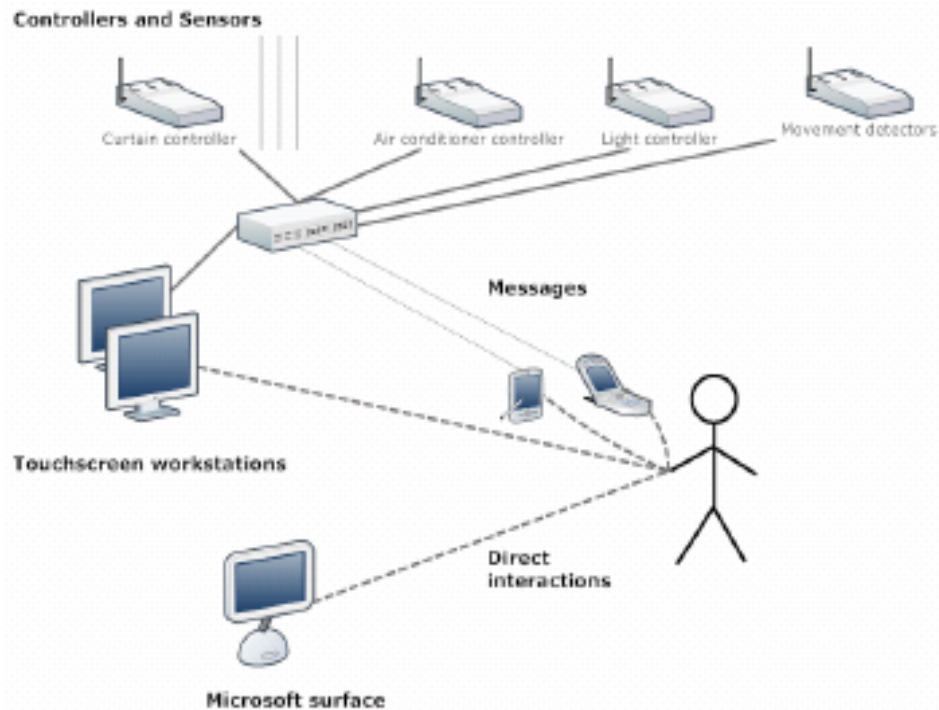
- **SOHOMA11**: 1st Workshop on "Service Orientation in Holonic and Multi-Agent Manufacturing Control", June 20-21, 2011, Paris, France
- **K-Teams 2011**: First International Workshop on Semantic and Collaborative Technologies for the Web. June 21-22, 2011, Bucharest, Romania
- **Masts 2011**: Third Workshop on Multi-Agent Systems Technology and Semantics. In conjunction with the 5th International Symposium on Intelligent Distributed Computing (IDC'2011). October 5-7, Delft, The Netherlands
- **HiPerGRID 2011**: High Performance Grid Middleware. Part of the ICCP 2011, the 2011 IEEE International Conference On Intelligent Computer Communication and Processing. August 25 - 27, 2011, Cluj-Napoca, Romania.

Organization of Scientific events (2)

- **MiDiS 2011** - International workshop on Middleware for large scale Distributed Systems (MiDiS). In conjunction with the 3PGCIC 2011 - Sixth International Conference on P2P, Parallel, Grid, Cloud and Internet Computing, Barcelona, Spain, October 26-28,2011
- **CloudCP 2012** - 2nd International Workshop on Cloud Computing Platforms, 10 April 2012, In conjunction with EuroSys 2012, Bern, Switzerland, April 9 – 13, 2012,.
- **INCoS 2012** - the 4th International Conference on Intelligent Networking and Collaborative Systems (INCoS 2012) in conjunction with the 3rd International Conference on Emerging Intelligent Data and Web Technologies (EIDWT-2012), Bucharest September 19-21, 2012.

Research equipment

- Develop, maintain and upgrade the research equipment
 - ▶ **upgrade the HPC resources** to a performance in benchmarking of 2 TFlops.
 - ▶ develop a new **Laboratory of Ambient Intelligence**



The NCIT Cluster

- Started back in 2001 with the creation of CoLaborator
- NCIT Cluster added in 2006
 - ▶ Result → a single cluster with various platforms
- Heterogeneous hardware platforms and operating/programming environments
 - ▶ Intel x86 Linux
 - ▶ Intel x86 64 Linux
 - ▶ Sun SPARC Solaris 4
 - ▶ Sun Intel x86 64 Solaris



<http://cluster.grid.pub.ro/>

The NCIT Cluster

- Includes ~1000 hardware cores
 - ▶ With a sustained installed capacity of 2 Tflops
- 36TB of storage
- 10 Gbps Ethernet and InfiniBand (40 Gbps) network
- Tools for software development
 - ▶ Sun Studio, OpenMP and OpenMPI
- Debugging
 - ▶ TotalView Debugger and Sun Studio
- Profiling and performance analysis
 - ▶ Sun Studio Performance Tools.

Supported activities

- Research projects for HPC and Cloud
 - ▶ Middleware solutions experimental evaluation
 - ▶ Parallel and Distributed Computing

- Support and consultancy for HPC application parallelization and optimization
 - ▶ Research projects in Physics, Chemistry, Meteo, Earthquake prediction, ...

- Inspiration for other research partners
 - ▶ The HPC Cluster of the Institute of Physical Chemistry

Training in HPC Programming

PhD and MSc programmes. Summer schools

- Batch System Howto
- MPI programming
- OpenMP programming
- Profiling & Debugging
- Cell programming → GPU Programming
- GRID computing
- Cloud computing
- ...

This summer

- **NCIT Summer School - 8th Edition - HPC & Embedded Systems Programming** June - July-2011
- **Location:**
Computer Science & Engineering Department
Faculty of Automatic Control and Computers
University Politehnica of Bucharest
- **Keynote Speech:** Prof. Dan Negrut - University of Wisconsin; Tuesday 14.06.2011 - 11AM
 - ▶ *Enabling High Performance Computational Dynamics in a Heterogenous Hardware Exccosystem*

ERRIC Management Team

- Prof. **Adina Magda Florea** – Project Coordinator & WP1 Leader
- Prof. **Valentin Cristea** – WP2 Leader
- Prof. **Radu Dobrescu** – WP3 Leader
- Prof. **Nicolae Țăpuș**– WP4 Leader & Head of the project Advisory Board
- Prof. **Florin Rădulescu** – WP5 Leader
- Prof. **Dumitru Popescu** – WP6 Leader
- Prof. **Theodor Borangiu** – Head of the Task Force Committee
- Prof. **Ștefan Traușan-Matu**– Scientific Coordinator
- Prof. **Marc Demage** – Marc Demage, professor at ESSEC Business School, Director of ESSEC Business School Romania Foundation in Bucharest – Research Manager
- Ec. **Dorina Adamescu** – Finance Officer
- Dr. **Doina Pătrășcoiu** – Project Administrator

Thanks !

Questions ?