

RESEARCH ACTIVITIES

The HPC Lab is a research group investigating various areas of High Performance Computing:

- Grid and P2P Systems
- Data and Web Mining
- Information Retrieval
- Distributed Search Engines

The group, composed of about 20 people, is actively involved in several important European projects as well as national projects.

The HPC Lab is very diverse and dynamic, with visitors in the last two years from Germany, France, Spain, Tunisia, Brazil, Chile, Israel. It has also very close ongoing collaborations and exchanges with outstanding international partners from both industry and academia.

The HPC Lab is part of the “Istituto di Scienza e Tecnologia dell’Informazione A. Faedo” (ISTI), the largest institute of the “Consiglio Nazionale delle Ricerche” (CNR) involved in ICT Research. The laboratory is located in a very enjoyable location in the CNR Research Area of Pisa, and is closely linked with the University of Pisa, home of the first PhD program in Computer Science in Italy.

The HPC Lab has currently openings for Post-Doc and Young Researcher positions.

People

Research Staff: Raffaele Perego (*Head*, raffaele.perego@isti.cnr.it), Ranieri Baraglia, Massimo Coppola, Patrizio Dazzi, Renato Ferrini, Domenico Laforenza, Claudio Lucchese, Fabrizio Silvestri, Nicola Tonellotto

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High Performance Computing Laboratory. <http://hpc.isti.cnr.it>.

High Performance Computing Lab



EUROPEAN PROJECTS



S-Cube (FP7 NOE)
Software Services and
Systems Network

(2008-2012). S-Cube aims to push the frontiers of research in Service Oriented Computing by creating a vigorous research agenda where knowledge from diverse research communities is meaningfully synthesized, integrated and applied. Its mission is to establish a research community which will shape the software service based Internet which will underpin the whole of our future society.



Sapir (FP6 STREP)
Search on Audio-visual
content using Peer-to-peer
Information Retrieval (2007-
2009). Sapir aims at

breaking this technological barrier by developing a large-scale, distributed P2P architecture that will make it possible to search audio-visual content using the query-by-example paradigm.



XtreemOs (FP6 IP)
Building and Promoting a
Linux-based Operating
System to Support Virtual
Organizations for Next

Generation Grids (2006-2010). The objective of the XtreemOS is the design, implementation, evaluation and distribution of an open source Grid operating system with native support for virtual organizations and capable of running on a wide range of underlying platforms, from clusters to mobiles. Grid capabilities will be fully integrated into the OS.



GridComp (FP6 STREP)
GRID programming with
COMPONENTS: an ad-
vanced component plat-

form for an effective invisible grid (2006-2009). GridComp goal is the design and implementation of a component based framework suitable to support the development of efficient grid applications. The framework will implement an "invisible grid" that will abstract all those specific grid related implementation details.



CoreGRID (FP6 NOE)
European Research

Network on Foundations, Software Infrastructures and Applications for large scale distributed, GRID and Peer-to-Peer Technologies (2004-2008). CoreGrid aims at strengthening and advancing scientific and technological excellence in the area of Grid and Peer-to-Peer technologies.



NextGrid (FP6 IP) The Next Generation
Grid (2004-2008). NextGrid addresses
the Grid Based Systems for Complex
Problem Solving activity within the IST

Work programme. It is designed to overcome present architectural and design limitations hampering the use and wider deployment of computing and knowledge Grids and to enrich its capabilities by including new functionalities required for complex problem solving.



CHALLENGERS

Challengers (FP6 SSA)
Support Action on
CHALLENGES in GGridS (2006-
2009). Challengers aims at

providing the organizational and administrative framework that will support the gathering and consultation work of a group of experts from the research and business community with well established experience and deep knowledge in the area of Grid technologies.

NATIONAL PROJECTS

Escogitare "Un'infrastruttura di E-Science per gli Istituti di Ricerca del settOre aGro-allmentARE" (2004-2008). Funded by Italian Ministry of Agricultural and Forestry Policy (MIPAF). Its aim is to provide a Grid-based infrastructure to the Italian Agricultural Research Council (CRA) Institutes in order to enable them share their knowledge and resources.

Resource Discovery in Large Collaborative Networks (CNR RSTL Project 2008-2009). It regards the study of large distributed collaborative environments in highly dynamic contexts, and studies how emerging P2P models and protocols can be used and extended to support the realization of novel discovery tools, with different mechanisms for different levels of dynamicity.



Insyeme (FIRB/PNR) The projects aims at investigating and experimenting novel tools and methodologies for the realization of systems for the prevention and management of emergencies in case of natural disasters, by exploiting a Mobile Grid Computing paradigm.