

Interactive European Grid

int.eu.grid

<http://www.interactive-grid.eu>

The main objective of the project is to deploy and operate **an interoperable production-level e-Infrastructure** for **demanding interactive applications** that will impact the daily work of researchers.

The project will promote the use of this grid-empowered European infrastructure based on powerful clusters connected through an advanced network, to support the collaborative work of researchers in areas like **biomedicine**, environment or physics, by providing:

- **Distributed Parallel (MPI) Interactive Computing and Storage at the Tera level**
- **User Friendly Access through a Grid Interactive Desktop with powerful visualization**
- **Support to Virtual Organizations at all levels: setup, collaborative environment, grid-enhancement of applications, execution and monitoring tools, discussion of results.**

Objectives

Context: the Interactive European Grid is based on the experience of a consortium including research and computing centers, with expertise on grid technology, and the dream of

“providing transparently the researcher’s desktop with the power of a supercomputer, using distributed resources”

The core participants worked in the successful European project CrossGrid, that developed tools and middleware to support interactive applications in the grid framework, and several are participants and stakeholders of the EGEE initiative. The Interactive European Grid will guarantee interoperability with EGEE infrastructure, and besides supporting the execution of batch jobs, will allow running interactive jobs immediately with higher priority.

Challenges: the project aims also to change the way researchers can use the available e-Infrastructure, exploiting the interactivity and collaboration possibilities. Researchers need to be convinced that they can:

- Transfer and process gigabytes of information in minutes
- Foresee more complex algorithms on larger statistics, test and tune them, use more powerful visualization techniques
- Collaborate across the network in a rewarding mode, from sharing information to discussing and presenting remotely through enhanced videoconference environments.

Solutions: based on two key points,

- Consolidation of available technology
- Provision of a high quality operation support

Project Description

Activities: the Integrated Infrastructure Initiative (I3) will address:

- Setup and operation of a computing infrastructure with more than 500 processors available for interactive parallel use, including high performance clusters, large shared memory machines, and significant data storage
- Integration of support for the interactive use of MPI from a user friendly grid-aware desktop interface with powerful visualization, prioritization mechanisms and active security.
- Dissemination to researchers and support for the setup of their Virtual Organizations

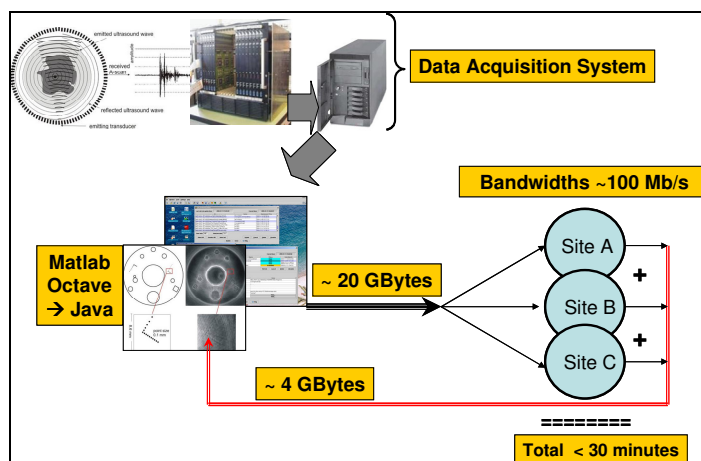


Expected Results & Impact

The impact of the project will show in new research applications profiting from the Interactive Grid Infrastructure.

In the biomedical field two applications will address challenging research topics:

Ultrasound Computer Tomography (USCT) research at FZK implements a new method of medical imaging based on the reconstruction by numerical techniques of an image, using as input the data measured by a scanner of ultrasounds which surrounds the object of interest. The application requires analyzing about 20 Gb of data, which would take order of one month in a workstation. Being developed as a helping tool for hospitals, time is critical. Using the Interactive Grid the computing time will be reduced to 10-30 minutes.



Research for Study of Brain at Hospital Marqués de Valdecilla includes abnormality detection, based on cranial CT scans, 3D aneurisms simulation and planning for neurosurgery, exploiting the results obtained at the CrossGrid project.

In addition medical researchers will be introduced to an integrated advanced collaborative environment for development of applications, submission, execution, monitoring, visualization of output and interaction, and also for discussion of results:

- Portal based development repository
- Grid Desktop
- 3D Visualization Setup
- Access Grid (including videoconference)

Keywords		
Grids	MPI	Ultrasound
e-Science	Interactivity	Computer
Healthgrid	Grid Desktop	Tomography
	EGEE interop	Aneurisms



Interactive European Grid

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LIP (Portugal)	
PSNC (Poland)	
FZK (Germany)	
UAB (Spain)	Universitat Autònoma de Barcelona
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Instrument: **I3**

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