



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



Interactive European Grid Project

Interactive: because researchers need answers in seconds, not in hours.

Grid: easy, intuitive, transparent BUT distributed, powerful, open.

For e-Science: Collaboration.



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

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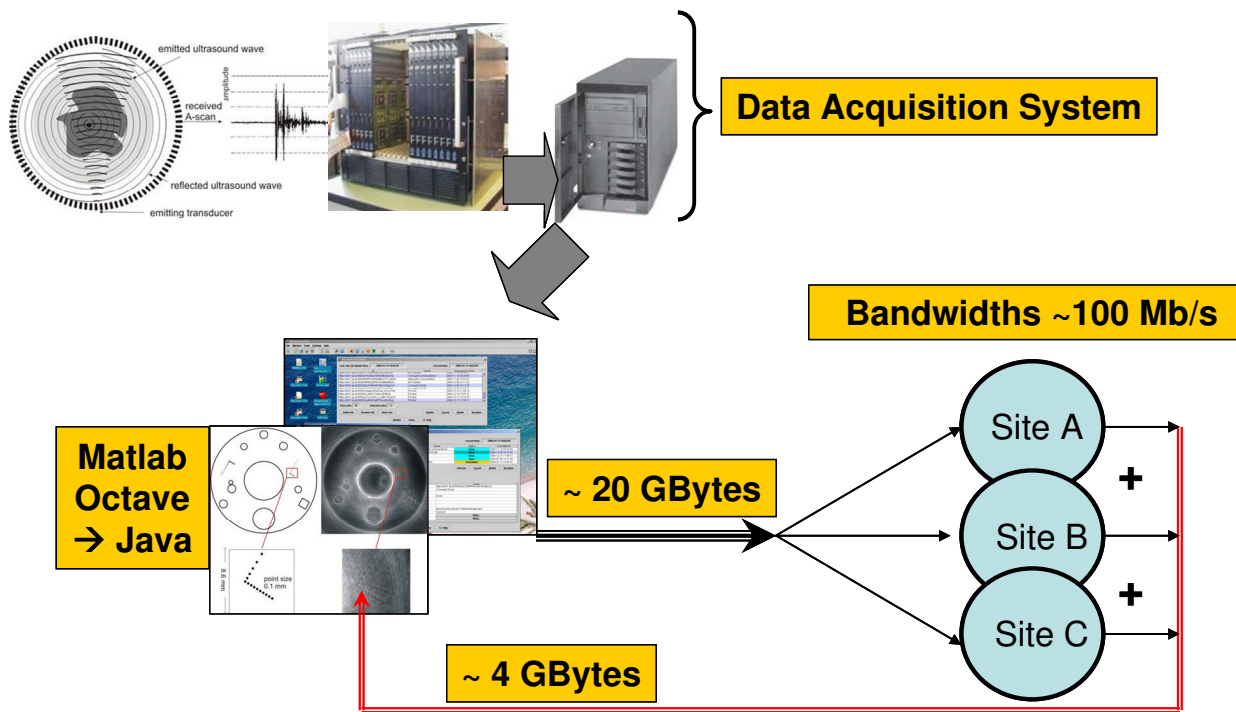
PARTNERS:

													
CSIC-IFCA Coord - Spain	LIP Portugal	PSNC Poland	FEK Germany	UAB Spain	CYFRONET Poland	GUP Austria	TCD Ireland	CESGA Spain	II SAS Slovakia	ICM Poland	BIFI Spain	HLRS Germany	

Researchers need computing resources



Example: Ultrasound Computer Tomography (USCT) research at FZK
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...



The **Interactive** European Grid Vision



“An interoperable production-level e-Infrastructure for **demanding interactive applications that will impact the daily work of **researchers**”**

- ⊕ **Distributed Parallel (MPI) Interactive Computing & Storage at the **Tera level****
- ⊕ **User Friendly Access**
 - ❖ **Grid Interactive Desktop** with powerful visualization
 - ❖ **Supporting & disseminating know-how** through user case analysis
- ⊕ **Supporting Virtual Organizations at all levels**
 - ❖ Setup
 - ❖ Collaborative environment application oriented
 - ❖ Grid-enhancement of applications
 - ❖ Execution and monitoring

A Powerful Distributed Infrastructure...



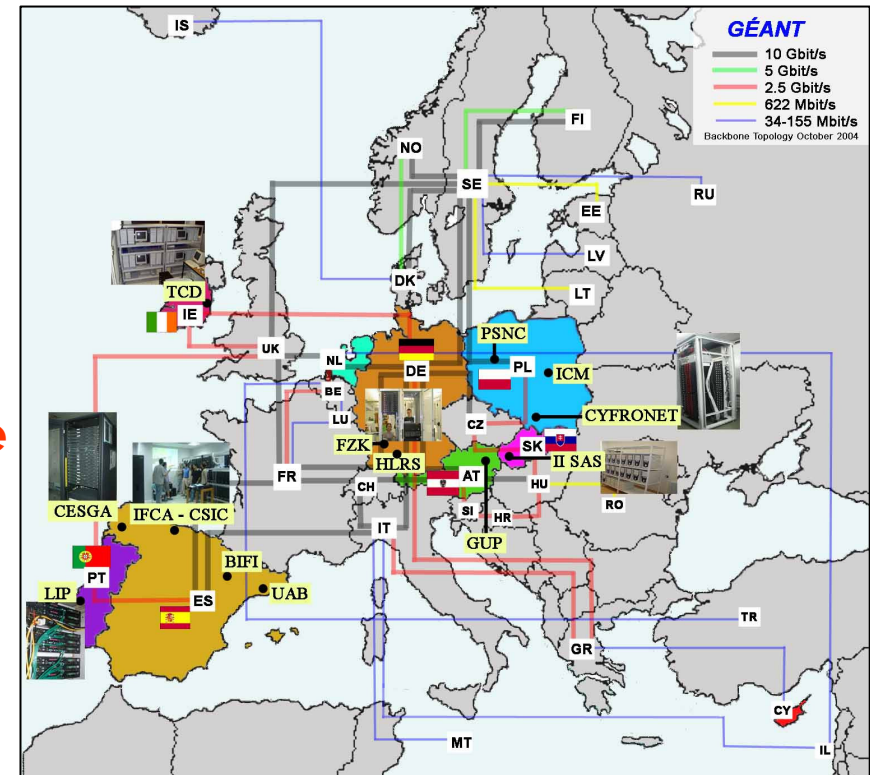
Grid-empowered Infrastructure

- Initial core: 12 sites in Europe
 - linked through GEANT
- Computers
 - Clusters with 10-100 Pentium CPUs
 - but also Itanium, Opteron, Power5
 - 4 processors nodes, large RAM,...

Total: equivalent of 1 Terahertz machine

Interoperable

- EGEE batch jobs will be able to execute in background mode

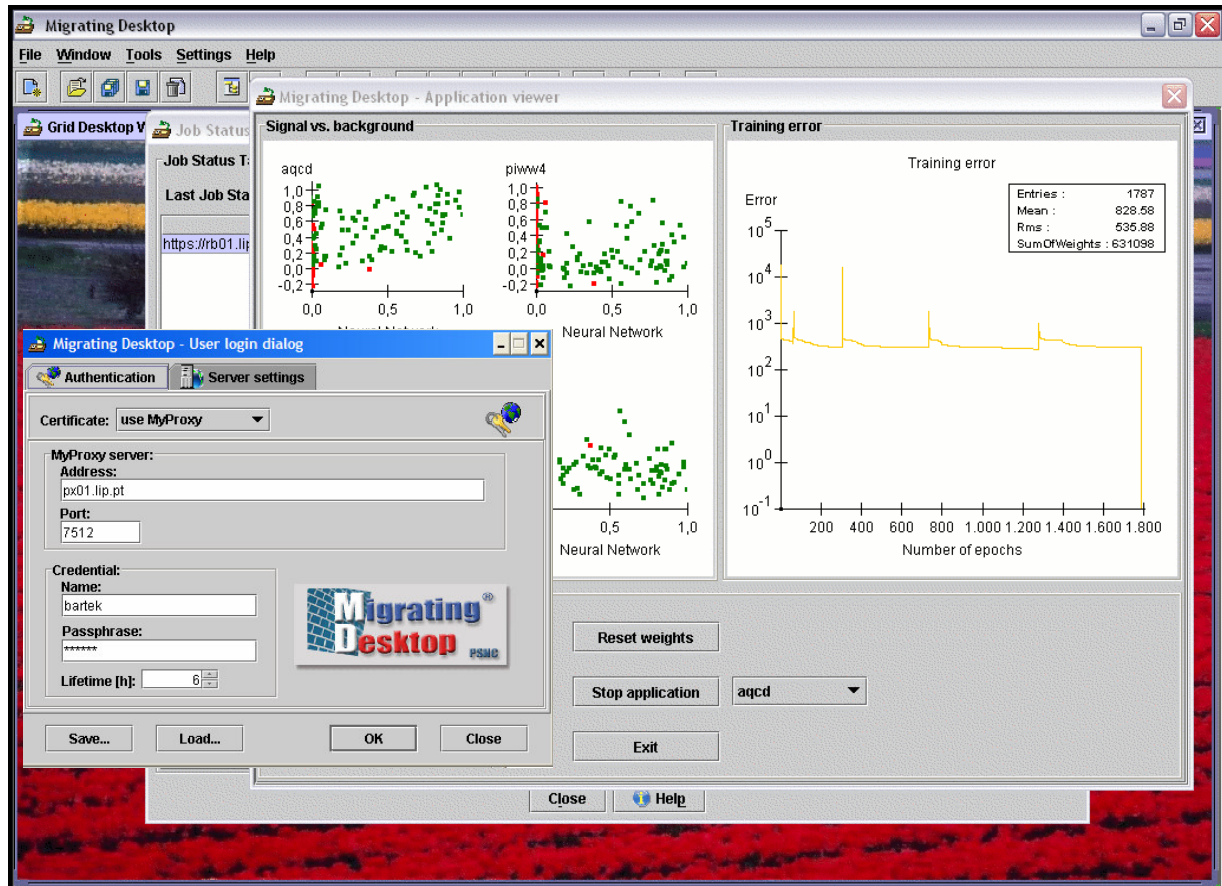


Accessible through a friendly interface...



Migrating Desktop

- Single sign-on / authorisation
- Platform independent
- Batch jobs
- MPI jobs
- Running interactive applications using java plugins or VNC
- Monitoring grid applications
- Flexible Application framework
- User profile management
- Easy application add on
- Local and grid file management



Desktop tools:

- Job Wizard
- Job Monitor
- Application Container and Plugin

- GridFTP Commander
- User Profile Manager
- Private Storage Management
- VNC/SSH console

Possible thanks to Innovation



- The CrossGrid project demonstrated the feasibility of an interactive Grid framework showing applications running in a testbed using middleware developed on top of EDG/LCG services.
- **int.eu.grid** will provide a **production quality service** supporting **MPI and interactivity on top of EGEE services**
 - **Web Services approach** followed (gLite as underlying middleware)
- **MPI support based on PACX-MPI +/- OpenMPI**
 - *European MPI software (HLRS support)*
 - *MPI across sites without the need for public IP on WNs*
- **Interactivity support integrating:**
 - *User friendly interface to the infrastructure*
 - *Powerful visualization capabilities*

A Real Challenge:



- ✦ the **int.eu.grid** project aims 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.

