



Interactive European Grid

The i2g Services Toolkit

by

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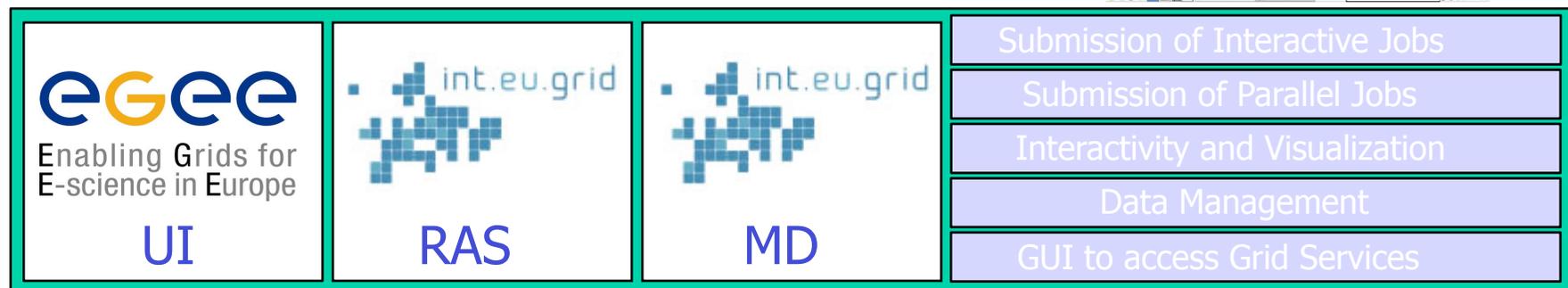
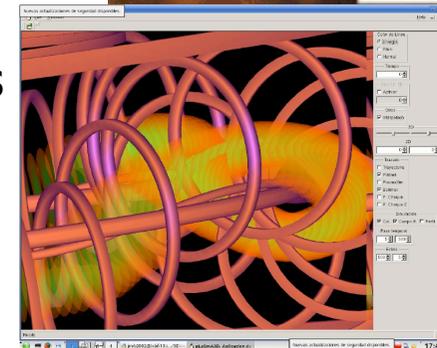
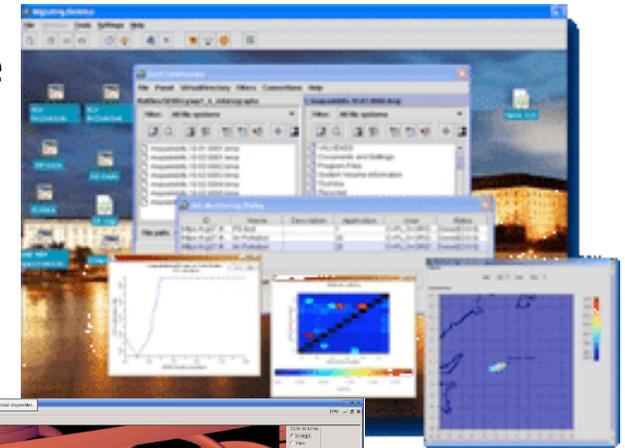
i2g Service Toolkit description

❑ Advanced Support to Scientific Communities

- ▶ Definition of the requirements and possibilities for each application considered in direct contact with the user/developers
 - **Batch / Interactive Grid usage**
 - **Serial / Parallel MPI support**
 - **Visualization requirements**
- ▶ Setup of Virtual Organization support in coordination with the infrastructure teams
- ▶ Design of *ad-hoc user tools* to enhance application deployment and productivity
 - **Cross Architecture job submission (Grid & HPC)**
 - **Data Management**
- ▶ Adaptation and integration requirements, in coordination with Middleware activities

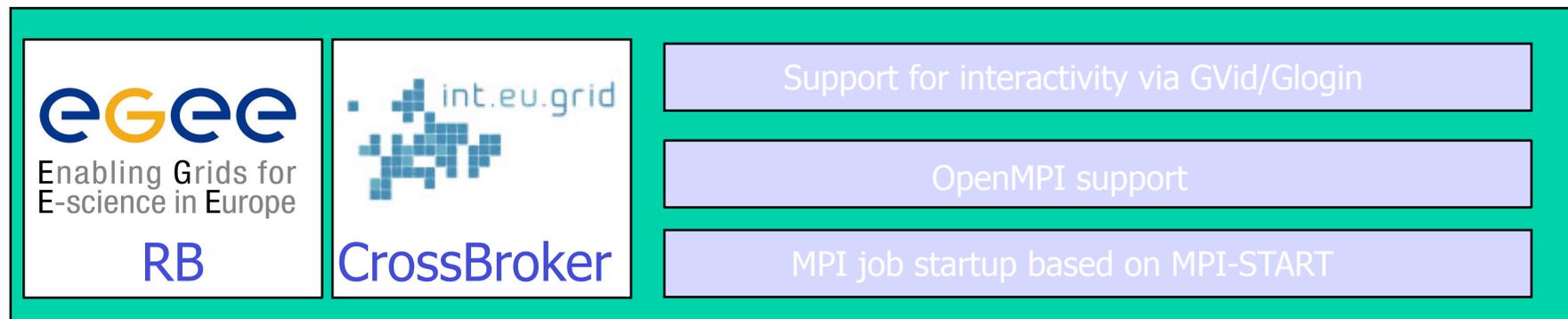
Migrating Desktop and RAS (respect)

- ❑ Migrating Desktop (MD): User Friendly Grid Access
 - ▶ Java based GUI that hides the details of the grid infrastructure
 - ▶ Enables user-friendly access to the grid services
 - ▶ Provides interactivity and visualization features
 - Gvid enables interactivity for OpenGL and X applications
 - Visualization of graphical output
 - ▶ Allows to log-in in the GRID independently from
 - where you are (laptop, desktop, everywhere ...)
 - what kind of Computer/OS you are using (Windows, Linux)
- ❑ Roaming Access Server (RAS): Gateway for Grid Access
 - ▶ Used by the Migrating Desktop
 - ▶ Performs actions on the grid on behalf of the MD
 - ▶ Supports Workflows in mixed infrastructures Grid/HPC



□ CrossBroker: i2g meta-scheduler

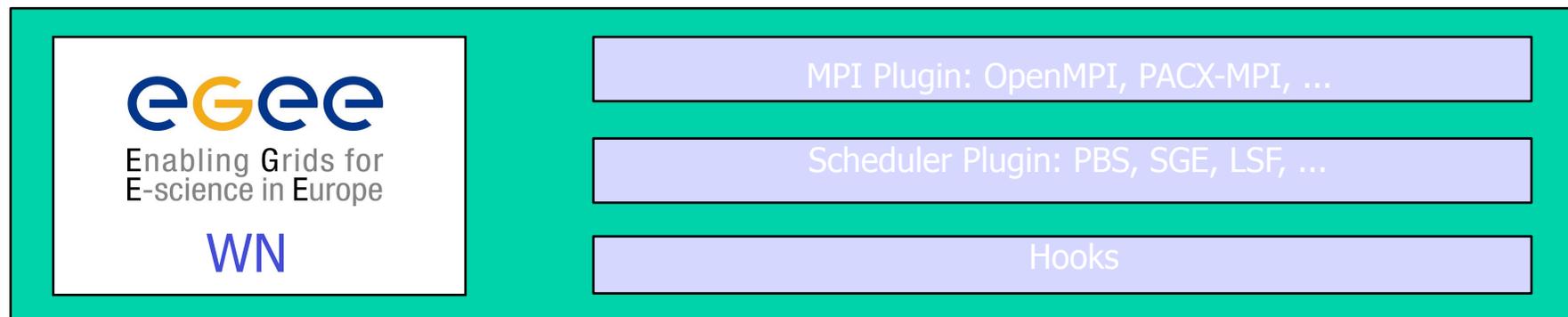
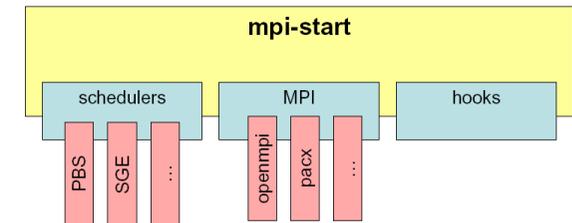
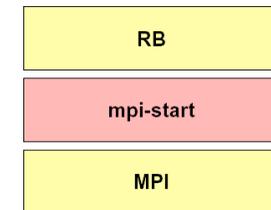
- ▶ Offers the same functionalities as the EGEE Resource Broker
- ▶ Can be access from/to any glite enabled cluster
- ▶ Support to workflows in combination with **RAS**
- ▶ Plus:
 - Support for Interactive Applications via GVid/Glogin
 - Full support for Parallel Applications
 - OpenMPI
 - Flexible MPI job startup based on MPI-START



MPI_START

(respect)

- ❑ MPI_START: Abstraction layer for MPI jobs
 - ▶ Sits between CrossBroker, LRMS schedulers and MPI implementations
 - ▶ Hides MPI job start details
 - ▶ Provides a uniform method to start jobs independently of:
 - LRMS (PBS/Torque, SGE, ...)
 - MPI implementation (OpenMPI, PACX-MPI, MPICH, ...)
 - ▶ Hides local infrastructure details
 - Shared/not shared home directories
 - Location of MPI libraries and other local specificities



MPI support

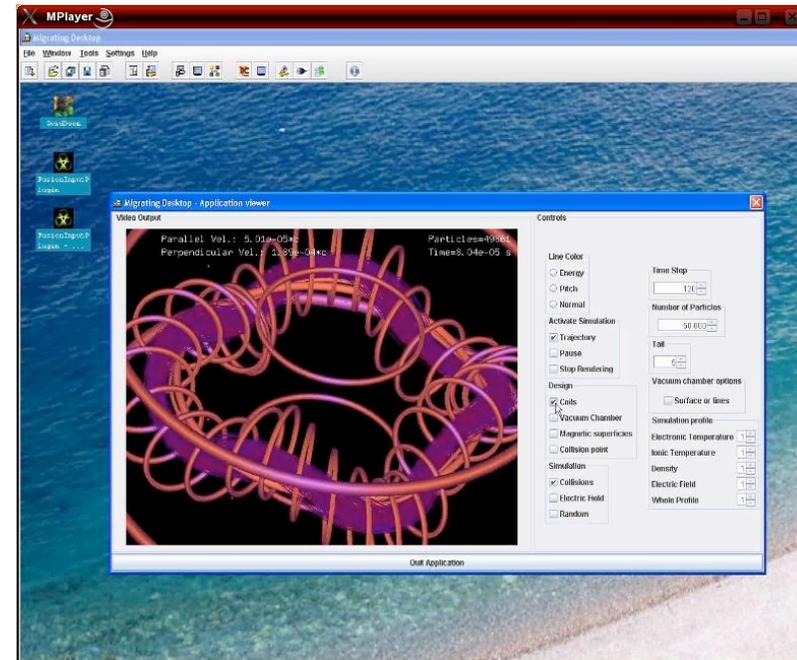
- Two levels of support for MPI applications
 - ▶ Support to already existing MPI applications
 - Compiler support issues (GNU, Intel, Portland)
 - Infrastructure oriented services: **support to Infiniband interconnects**
 - Application specific issues (data handling)
 - ▶ Modify serial applications to be used in the grid environment
 - Parametric simulations (sweeping over parameter spaces)

- Developing effort inside the *glite consortium* (**CSIC and TCD**)
 - *mpi-start* and related tools for site configuration (yaim modules, quattor configuration)



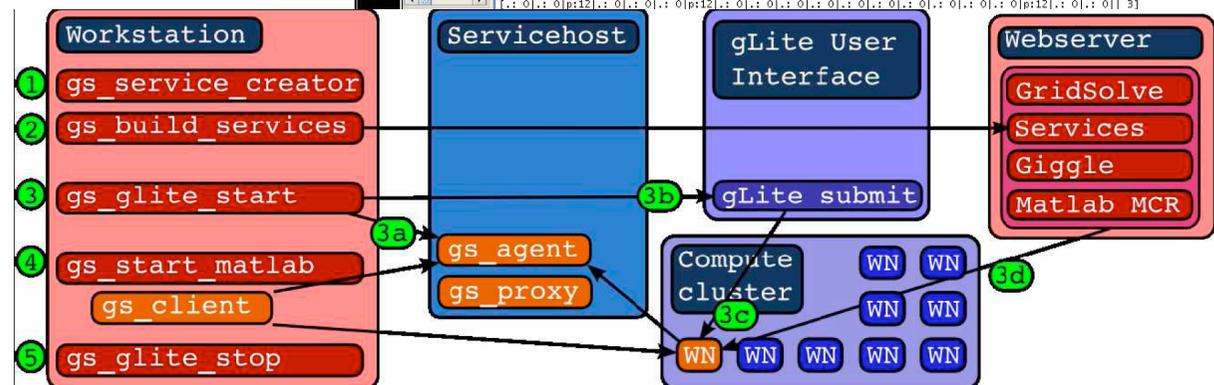
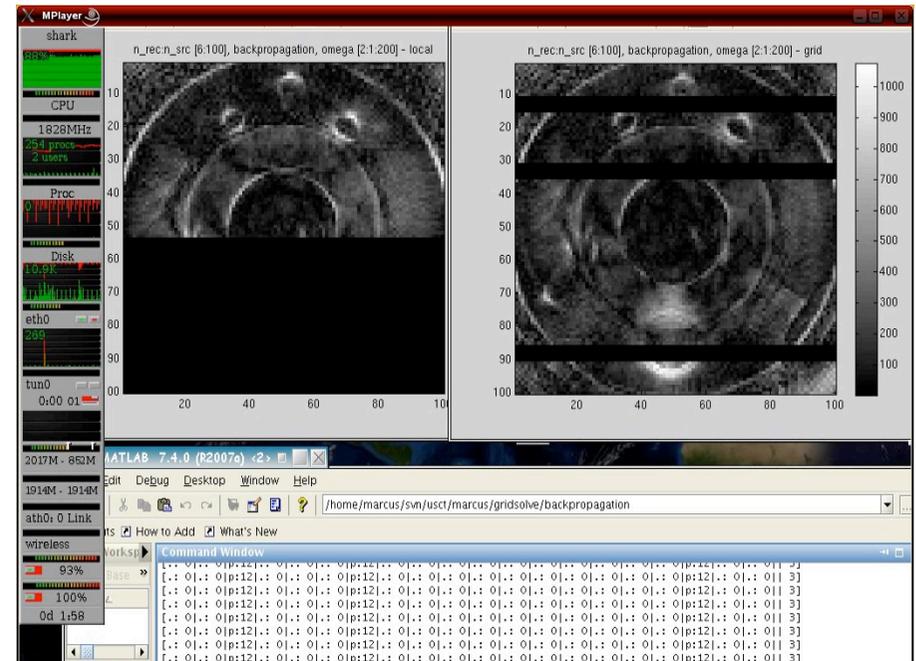
Support to interactivity using *i2glogin* (respect)

- ❑ In Grid computing batch processing has so far been the dominant working strategy
 - ▶ Grid Middleware is shipped with support for batch processing only
- ❑ *i2glogin* provides a bidirectional way of communication between the grid job and the interface of the user
 - ▶ Tool for **direct debugging** on the Grid
 - ▶ Even **very demanding applications** have been tested:
 - **GVID Realtime** output video encoding on the Worker Node
 - **Streaming of video** + steering data via stdin/stdout
- ❑ **Realtime visualization on Windows/MAC/UNIX laptop**



Support to Interactivity with Gridsolve

- ❑ **Using Matlab on the Grid**
 - ❑ Gridsolve agents accept tasks on WNs
 - ❑ Integrated with Migrating Desktop
- ❑ **Ultrasound Computing Tomography**
 - ▶ Method for breast cancer detection
 - ▶ Data are taken by an Ultrasound scanner
 - ▶ The method is based on image reconstruction from the data



and more...

Supporting Application Porting for many years in projects like:

- **EGEE**
- **CrossGrid**
- **Interactive European Grid**
- **Baltic Grid**
- **EUFORIA:** fusion and ITER
- **DORII:** Remote Instrumentation

...now at the core of the NGIs

- **Spain:** CSIC NGI coordinator
- **Portugal:** LIP NGI coordinator
- **Germany:** KIT (Gauss Alliance)
- **Poland:** PSNC NGI deputy



User oriented services: Autobuild

Autobuilding codes

□ Method

- ▶ Retrieve code from a repository (CVS/SVN)
- ▶ Run autobuild.h (to be provided by the developer)
- ▶ Publish the output on a web page

□ Benefit

- ▶ Standardized build environment
- ▶ One Admin only
- ▶ Clear versioning

Continuous Automatic Builder (continuous) 

Modules by name | Modules by group | Modules by repository | ISO

Images | Builder status

Overall status: success

Date:	Wed Dec 17 2008
Start Time:	14:57:02 UTC 15:57:02 CET
Cycle Duration:	00h 00m 33s
Build Counter:	1229525822
Build Timestamp:	1229525822

Module: EIRENE-Grid-trilinhex

SCM checkout status:	success
Build status:	cached
Logs:	SCM checkout (670 b) Build output (35.00 KB)
SCM checkout time:	00h 00m 09s
Build time:	00h 01m 13s
Links:	EIRENE Bugtracker EIRENE SVN
Artifacts:	README

Generated packages

Packages: Scientific Linux SL release 4.5 (Beryllium)

Filename	Size	MD5 Sum
eirene-trilinhex-ver-144.tar.gz	6.12 MB	2b3cbb1ff18bce27ec40d225fcad6bbf
eirene-trilinhex-ver-144.zip	6.12 MB	f6562be040228452b253bc6d2b260d45

Changes since last build

Changelist	User	Date
144	root	Tue Dec 9 2008 17:57:08 UTC

Description: Just taken from grid-parallel branch and adjusted the name of the branch

Files: A /branches/eirene-trilinhex/autobuild.sh

Fusion, Astrophysics, Earth Sciences, Quantum Chemistry

