

Operational Grid Demo

IBERGRID, Santiago de Compostela, May 2007

Carlos Fernández, CESGA



Largest Production Grid Infrastructure

- 177 Sites
- 45 countries
 - Europe + America + Asia + Australia
- 27,671 CPUs
- 13,979 TB disk storage
- High Throughput >10,000 jobs/day
- 188 VOs (17 active)
- >2000 users (600 active)



BBC NEWS | Technology | Grid searches for avian flu cure - Mozilla Firefox

http://news.bbc.co.uk/1/hi/technology/4977150.stm

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NEWS **BBC News 24** News services Your news when you want it

Last Updated: Friday, 5 May 2006, 13:26 GMT 14:26 UK
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Grid searches for avian flu cure

A cure for bird flu is being sought by computers that usually search for the fundamental elements of matter.

In April, the UK grid of computers that crunches data from particle physics experiments was used by scientists to study the avian H5N1 virus.

The grid simulated the reactions of 300,000 chemical compounds to find which ones might combat the bug.

The project aims to make grids available to scientists that need to call on lots of computer power.

Drug trials

Computer grids tie together ranks of low-powered machines to create a virtual supercomputer.

For this project, computers at 11 British universities and research labs were used to search through candidate compounds that might help combat H5N1.

Before now, the grid of computers was organised as the GridPP project, which harnessed machines to comb through the data generated by physics experiments.

"GridPP has been developed to help answer questions about the conditions in the Universe just after the Big Bang," said Professor Keith Mason, head of the Particle Physics and Astronomy Research Council (PPARC).

"But the same resources and techniques can be exploited by other sciences with a more direct benefit to society."

During April, 2000 machines from the GridPP project were used, and they generated more than 600 gigabytes of data. On a single computer, it would take about 100 years to carry out the same amount of analysis.

BIRD FLU: SPECIAL REPORT

KEY STORIES

- Poultry giant takes back 32 staff
- Suffolk bird flu measures lifted
- Food passed through bird flu site
- Bernard Matthews fronts ad push
- Poultry firm lays off more staff
- Anti-viral drugs for bird workers

FEATURES AND BACKGROUND

- Hungarians resist blame
- How turkey farms work
- Bird flu: Your questions
- Timeline: Bird flu in the UK
- Bird flu: The basics
- Wild birds 'wrongly blamed'

GLOBAL PICTURE

Bird flu journey
Watch how the lethal virus has spread

• Map: Global impact

HAVE YOUR SAY

- Your reaction to bird flu

VIDEO AND AUDIO

- WATCH TV reports
- VIDEO What is Bird Flu?

RELATED INTERNET LINKS:

- Particle Physics and Astronomy Research Council
- GridPP Project

The BBC is not responsible for the content of external internet sites

TOP TECHNOLOGY STORIES

- Mobile TV predicted to be a hit
- Second Life 'child abuse' claim
- Spore game 'delayed until 2008'

News feeds



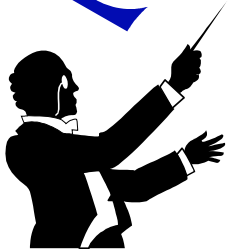
User Interface (UI):

The place where users access the Grid



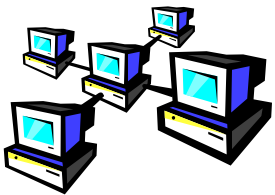
Information System:

collection information about the resource
Characteristics and status of CE and SE



Resource Broker (RB):

Matches the user requirements with the available resources on the Grid



Computing Element (CE):

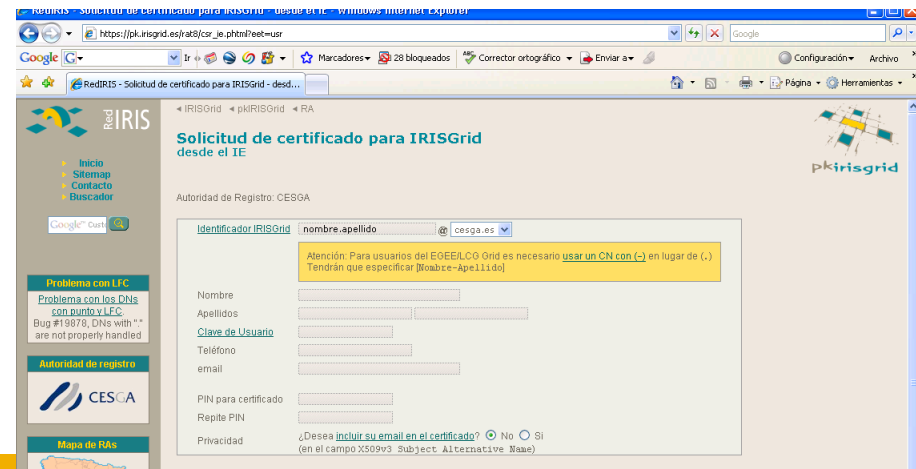
A batch queue on a site's computers where the user's job is executed



Storage Element (SE):

provides (large-scale) storage for files

- **Ask user account to your nearest UI**
 - or install Gilda UI PnP from <https://gilda.ct.infn.it/UIPnP/>
 - Gilda Virtual Services UI <https://gilda.ct.infn.it/VirtualServices.html>
 - EGEE Grid Walkthrough <http://www.eu-egee.org/try-the-grid>
- **Ask user certificate**
 - Spain: IRISGRID (<http://www.irisgrid.es/pki>)
 - Portugal: LIPCA (<http://ca.lip.pt>)
- **Install certificate in User Interface**
- **Join one (or more) Virtual Organization**
 - VO specific procedure
 - Usually fill a web form
- **... ready to submit jobs**





Enabling Grids for E-science

Hello World example



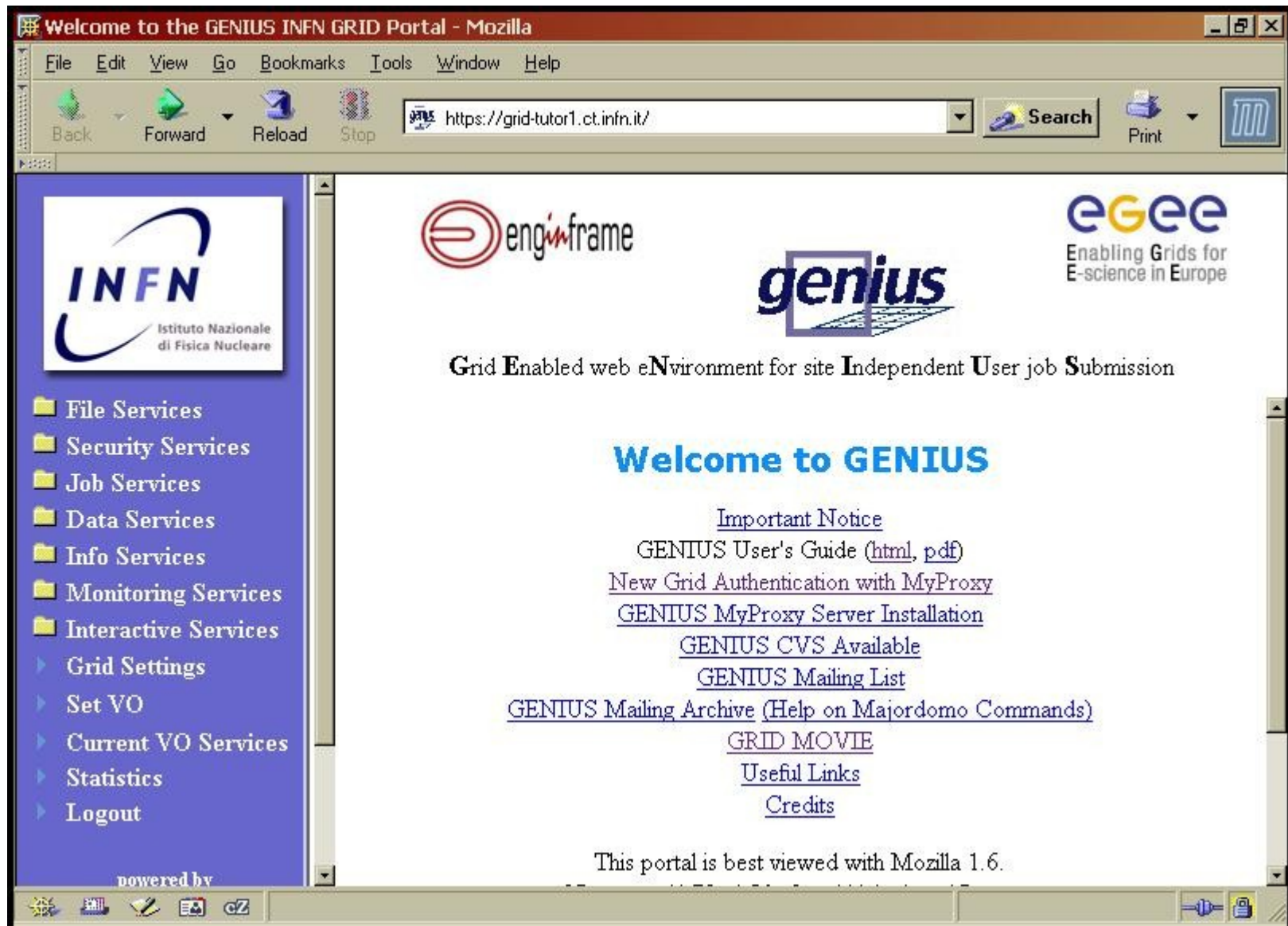
Enabling Grids for E-science

Gaussian example



- How to concentrate on **my own research** if the tool I would like to use is in continuous change?
- How can I learn and understand **the usage of the Grid?**
- How can I **develop Grid applications?**
- How can I **execute grid applications?**
- How to **tackle performance issues?**
- How to **use several Grids at the same time?**
- How to **migrate my application** from one grid to another?
- How can I **collaborate with fellow researchers?**

Many solutions (growing number of interfaces and apps. over grid Middleware)



Welcome to the GENIUS INFN GRID Portal - Mozilla

File Edit View Go Bookmarks Tools Window Help

Back Forward Reload Stop <https://grid-tutor1.ct.infn.it/> Search Print

INFN
Istituto Nazionale di Fisica Nucleare

enginframe

genius

EGEE
Enabling Grids for E-science in Europe

Grid Enabled web eNvironment for site Independent User job Submission

Welcome to GENIUS

[Important Notice](#)
[GENIUS User's Guide \(html, pdf\)](#)
[New Grid Authentication with MyProxy](#)
[GENIUS MyProxy Server Installation](#)
[GENIUS CVS Available](#)
[GENIUS Mailing List](#)
[GENIUS Mailing Archive \(Help on Majordomo Commands\)](#)
[GRID MOVIE](#)
[Useful Links](#)
[Credits](#)

This portal is best viewed with Mozilla 1.6.

powered by

the GILDA Testbed: a series of sites and services (Resource Broker, Information Index, Data Managers, Monitoring tool, Computing Elements, and Storage Elements) spread all over Italy and the rest of the world on which the latest version of the [INFN Grid](#) middle-ware (fully compatible with [glite](#)) is installed;
- [the Grid Demonstrator](#): a customized version of the full [GENIUS web portal](#), jointly developed by INFN and [NICE](#), from where **everybody** can submit a pre-defined set of applications to the GILDA Testbed;
- [the GILDA Certification Authority](#): a fully functional Certification Authority which issues 14-days X.509 certificates to everybody wanting to experience grid computing on the GILDA Testbed;
- [the GILDA Virtual Organization](#): a Virtual Organization gathering all people wanting to experience grid computing on the GILDA Testbed; the GILDA Virtual Organization is based on the Virtual Organization Membership Service (VOMS) developed by INFN;
- [the Grid Tutor](#): based on a full version of the [GENIUS web portal](#), to be used only during [grid tutorials](#);
- [the GILDA P-GRADE Portal](#): a Grid workflow developer and executor environment based on the latest release of the [P-GRADE Grid Portal](#) provided by [MTA SZTAKI](#);
- [the monitoring systems](#): several tools monitoring the status of the GILDA Testbed and the availability of its grid services;
- [the GILDA mailing lists](#): gilda-sitemanagers@ct.infn.it, for system administrators (both lists are restricted to members only). A web form to subscribe/unsubscribe to/from the lists is available [here](#).

 GILDA is an activity of the Italian [Istituto Nazionale di Fisica Nucleare \(INFN\)](#) carried on in the context of the following Projects:

- [INFN GRID](#)
- [EGEE](#) (Enabling Grids For E-science)
- [BEInGRID](#)
- [BioinfoGRID](#) (Bioinformatics Grid Applications for Life science)
- [CoreGRID](#)
- [ICEAGE](#)
- [MBRACE Grid](#) (Network of excellence)
- [euchinaGrid](#)

 The browser window also shows a sidebar with navigation links: News, List of Tutorials, Request a Tutorial, Posters, Video Tutorials, User Interface PnP, Virtual Services, Instructions for Users, Instructions for Sites, Training Material (wiki), GILDA Forge, Support System, Useful Links, Sponsors, Usage Statistics, and Old Usage Statistics. The browser status bar at the bottom shows 'Internet' and '100%' zoom level." data-bbox="71 126 975 911"/>

- General purpose, **workflow-oriented computational Grid portal**. **Supports the development and execution of workflow-based Grid applications – a tool for Grid orchestration**
- **Based on** GridSphere-2
 - Easy to expand with new portlets (e.g. application-specific portlets)
 - Easy to tailor to end-user needs
- **Grid services supported by the portal:**

Service	EGEE grids	Globus grids
Job execution	Computing Element	GRAM
File storage	Storage Element	GridFTP server
Certificate management	MyProxy	
Information system	BDII	MDS-2, MDS-4
Brokering	Workload Management System	GTbroker
Job monitoring	Mercury	
Workflow & job visualization	PROVE	

Solves Grid interoperability problem at the workflow level

- **Radiotherapy planning**

- **Check the Int.eu.grid stand**
- **Has won demo contest in recent OGF**

- **EGEE is the largest production grid infrastructure in the world**
- **Tools to submit, monitor and debug jobs exist**
- **Originally intended for HTC applications missing MPI support (but improving)**
- **Middleware is mature**
- **Still needs better VO support**