

New GENIUS and GILDA services for gLite

Giuseppe La Rocca INFN Catania Retreat between GILDA and ESR VO on gLite Bratislava, 27-30.06.2005





www.eu-egee.org





- Introduction
- Architecture and Implementation:

Enabling Grids for E-sciencE

- The GENIUS hourglass model
- Genius : How it works
- Genius Services
- Genius Installation
- FAQs





- Grid computing vision brings the idea that enormous and heterogeneous computing resources, distribuited world-wide and "linked" by large bandwidth networks, can be connected by an <u>intelligent series of services</u> (the Grid middleware) and behave as a single machine.
- Within this paradigm, an easy way to access and share computing resources is to provided large communities (VO) where scientists and researchers could work together to solve complex problem.
- Grids must provide a secure access to distribuited resources which must be presented in term of applications and not of complex protocols.



- Actually the services provided by the grid-middleware are currently exposed through Command Line Interfaces (CLI)
- As solution to overcome this problem the Italian INFN Grid Project and the Italian web technology company NICE S.r.l. start a collaboration (beginning of 2002) which bring to the develop of the GENIUS Grid Portal
- Thanks to GENIUS scientists and researchers can execute and monitor their applications on the Grid just using a simple web browser.

A grid portal: why and how (1)

- It can be accessed from everywhere and by "everything" (desktop, laptop, PDA, cell phone).
- It can keep the same interface to several backends.
- It must be redundantly "secure" at all levels:
 - 1) secure for web transactions
 - 2) secure for user credentials
 - 3) secure for user authentication
 - 4) secure at VO/VOMS level.

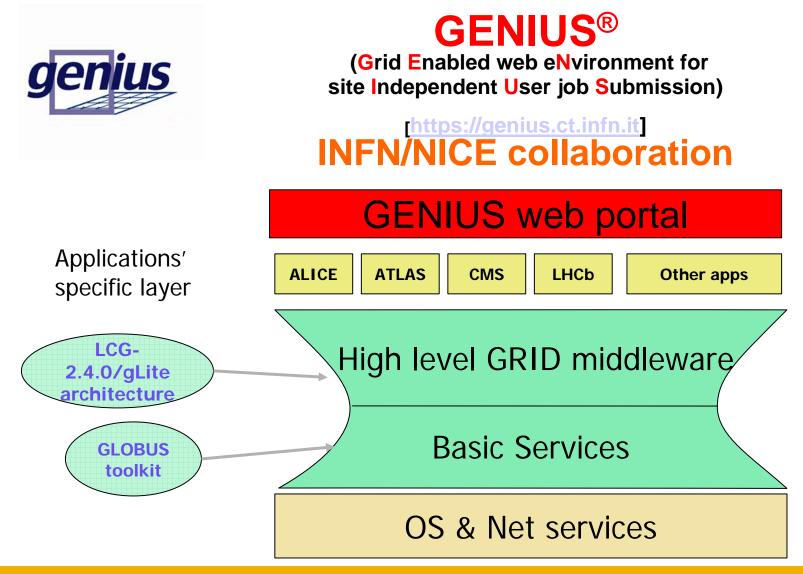
EXAMPLE A Grid portal: why and how (2)

- All available grid services must be incorporated in a logic way, just "one mouse click away".
- Layout used is very easy to understand and user friendly.



The GENIUS hourglass model

Enabling Grids for E-sciencE

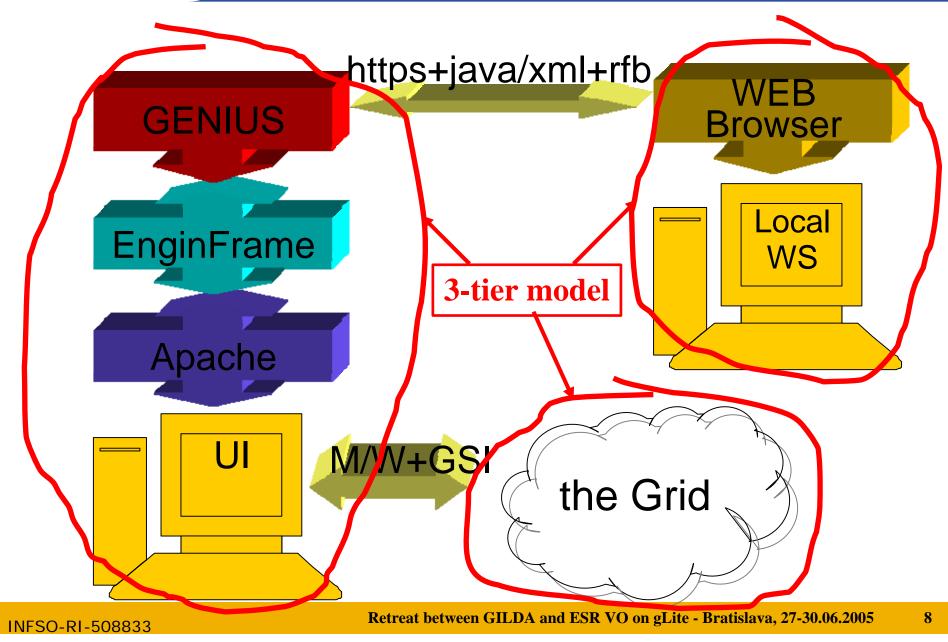


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GENIUS: how it works

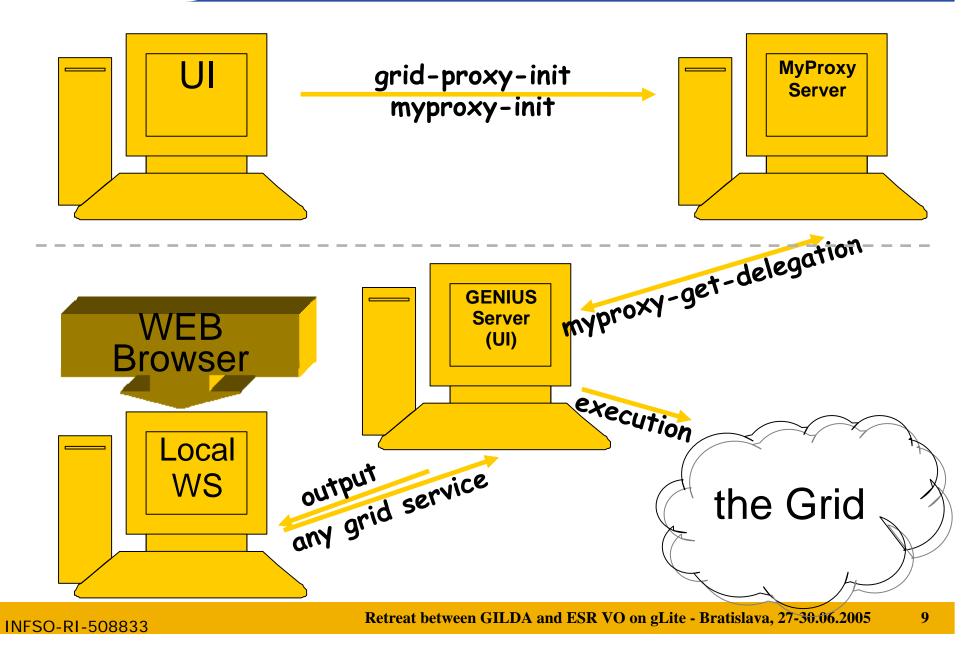
Enabling Grids for E-sciencE

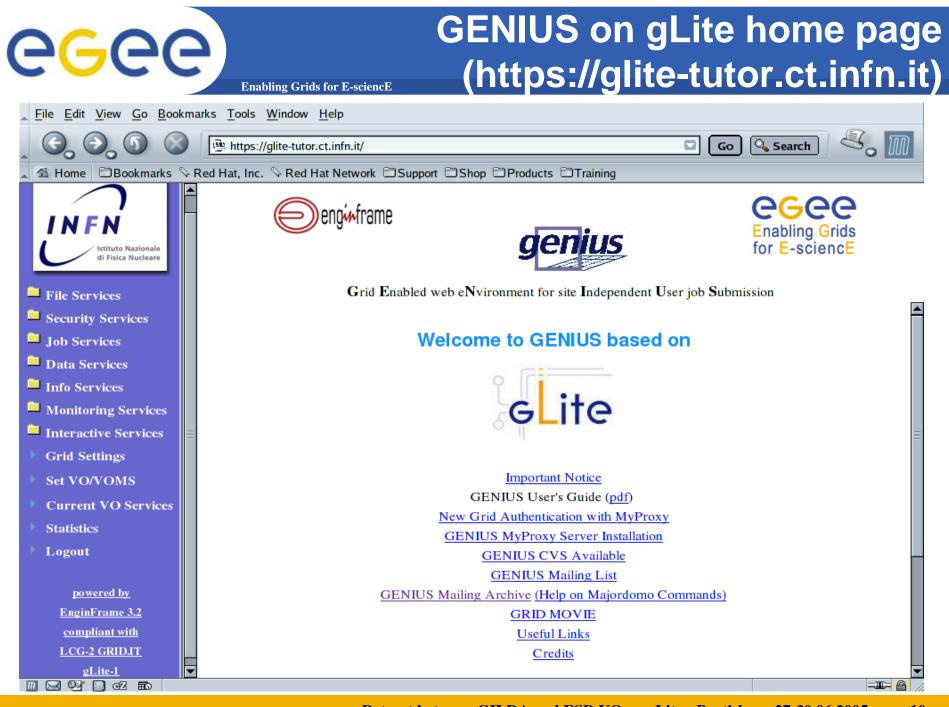


Grid authentication with MyProxy

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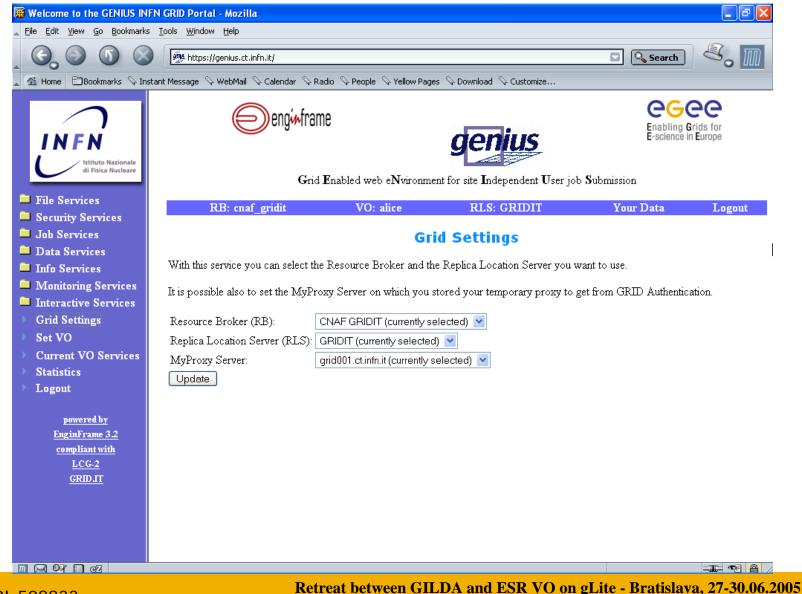
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GENIUS grid settings (1/2)

Enabling Grids for E-sciencE



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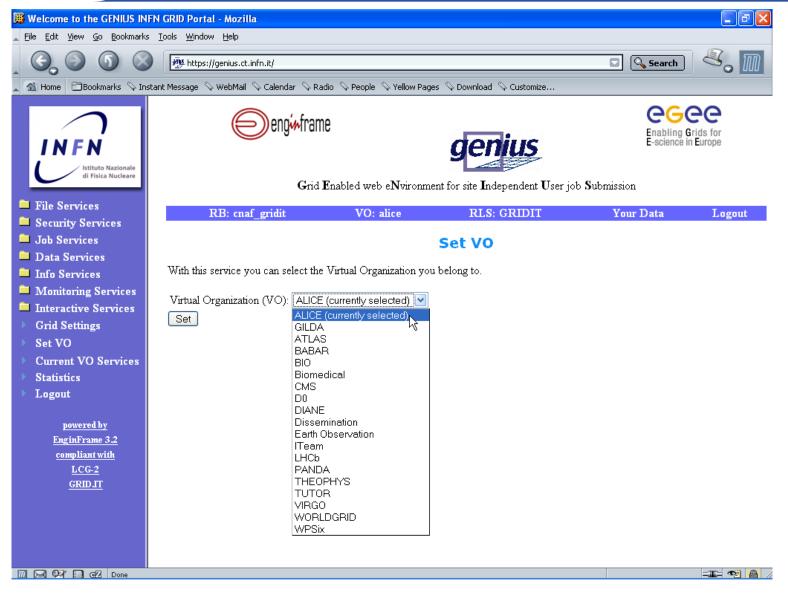
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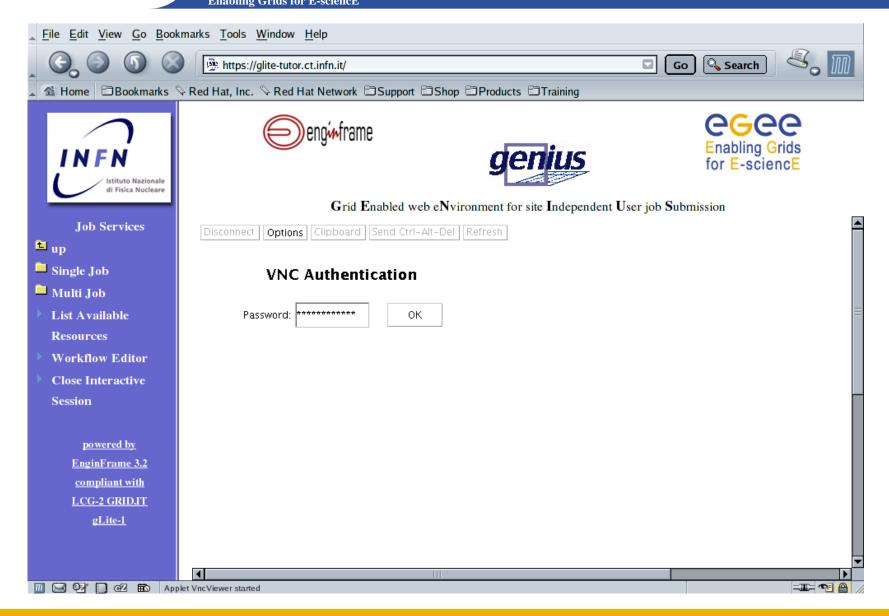
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GENIUS VO selection

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GENIUS graphic workflow editor (integration with TRIANA from GridLab Project)

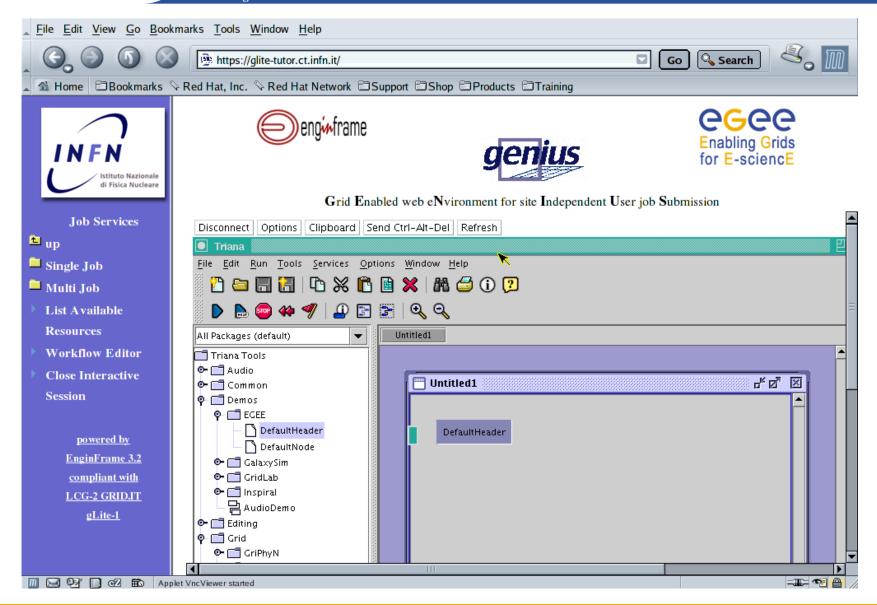


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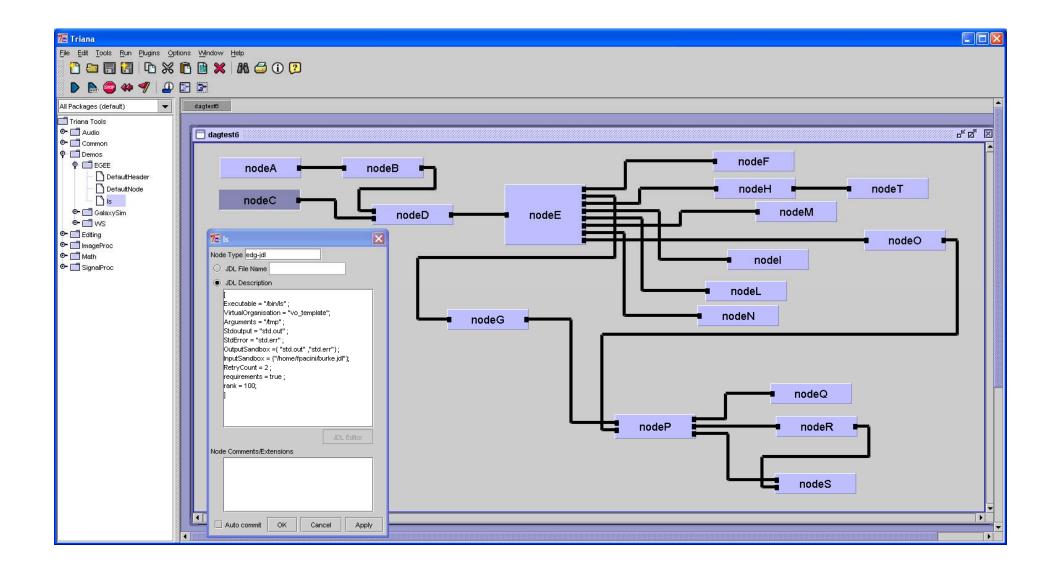
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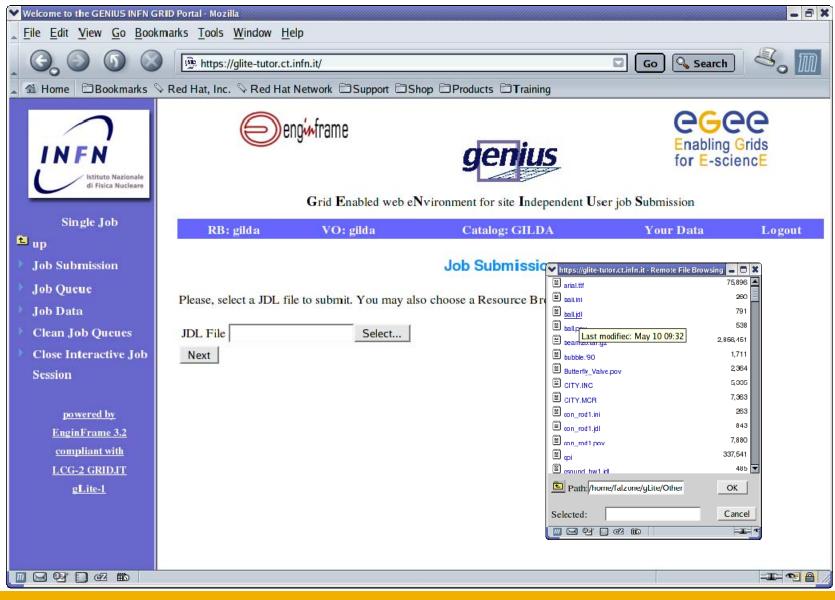
GENIUS graphic workflow editor (integration with TRIANA from GridLab Project)



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GENIUS gLite single job submission

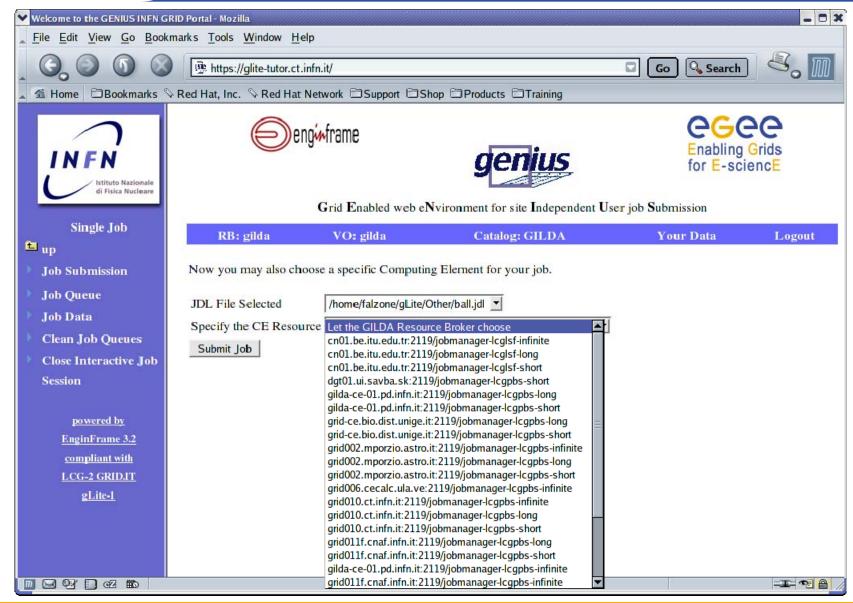
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GENIUS gLite single job submission

Enabling Grids for E-sciencE

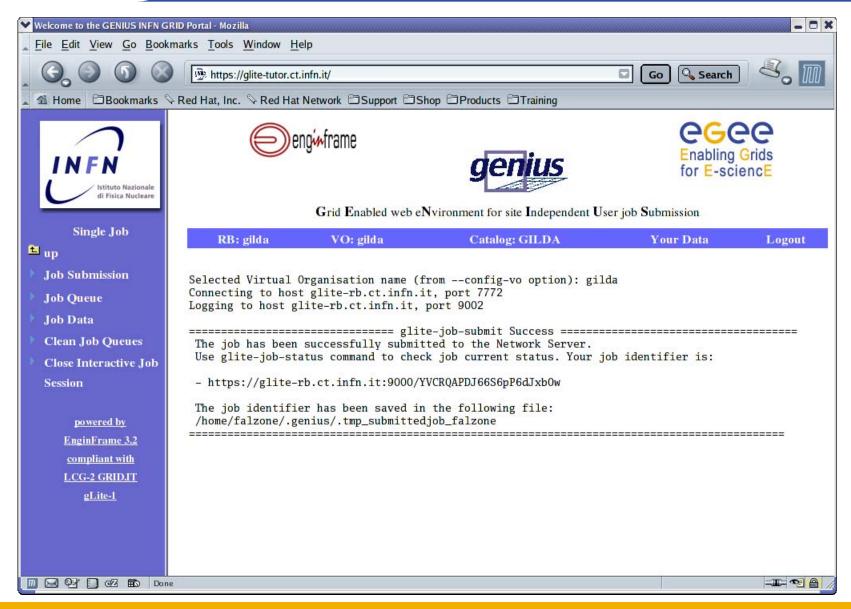


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GENIUS gLite single job submission

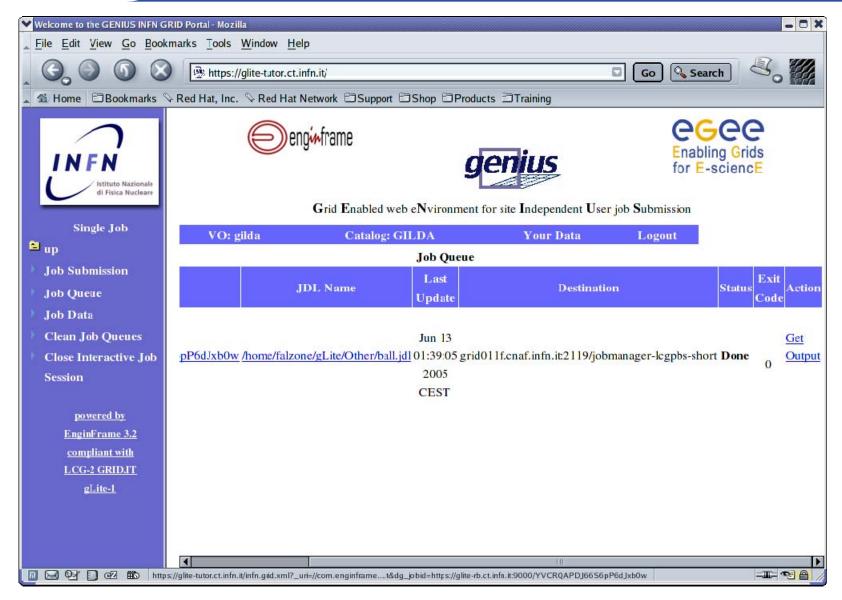
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GENIUS single job queue

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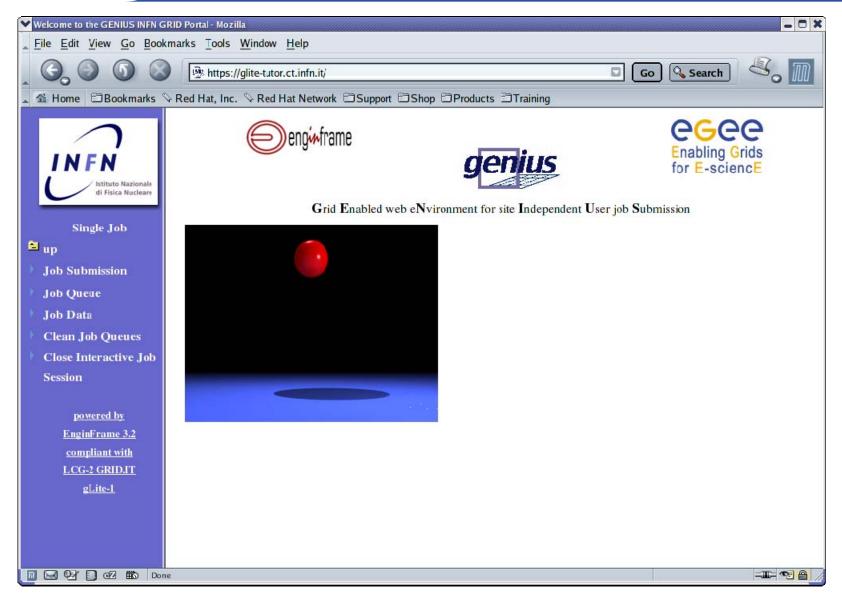


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GENIUS job output

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GENIUS data spooler (1/2)

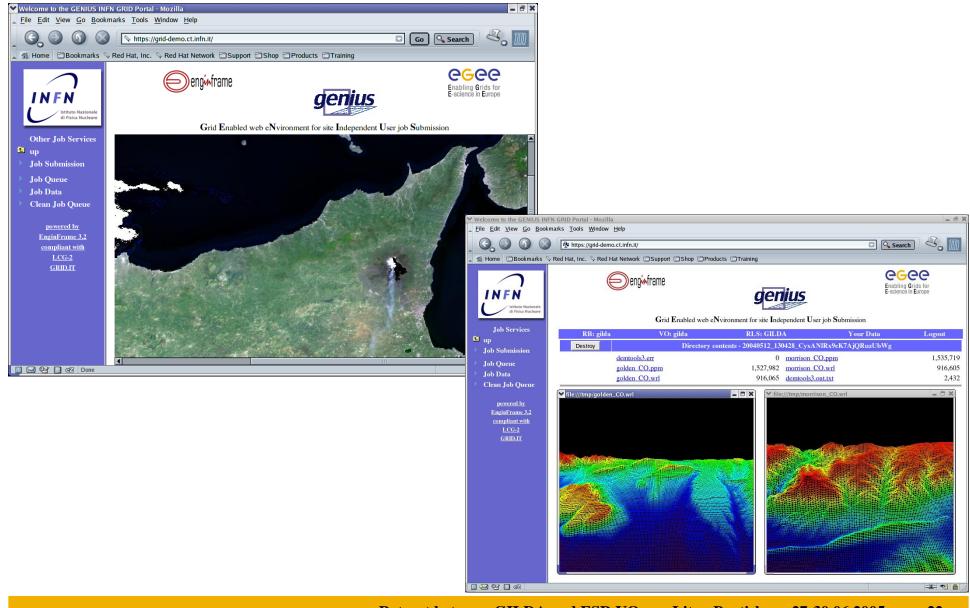
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GENIUS data spooler (2/2)

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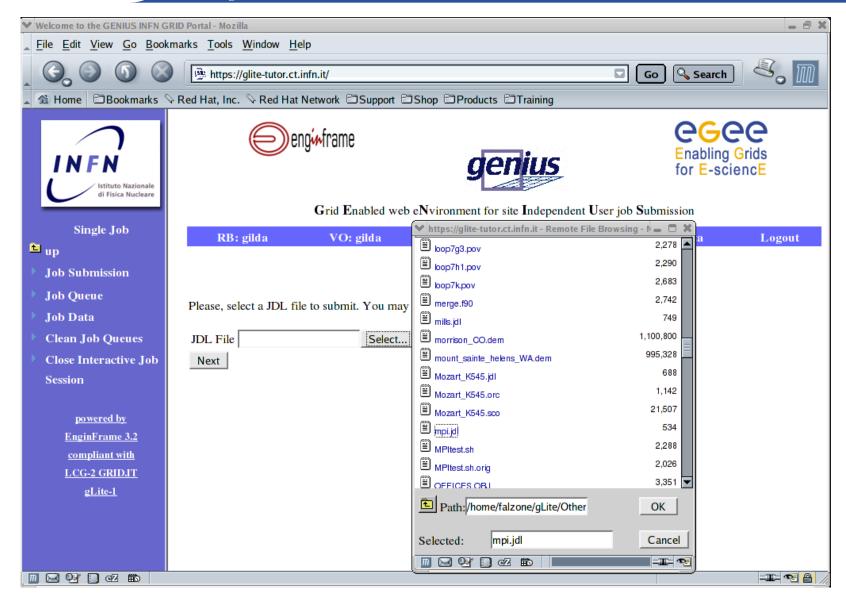
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MPI Jobs (1/7)

Enabling Grids for E-sciencE

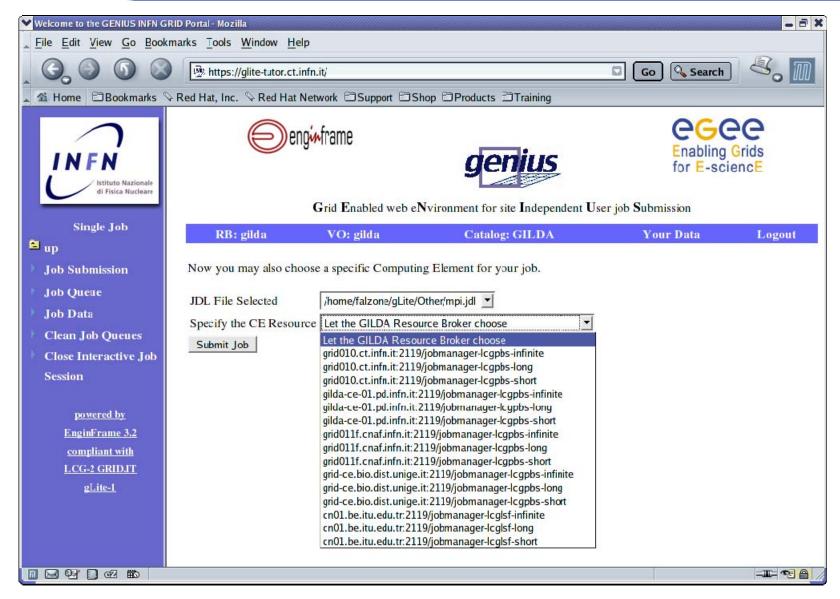


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MPI Jobs (2/7)

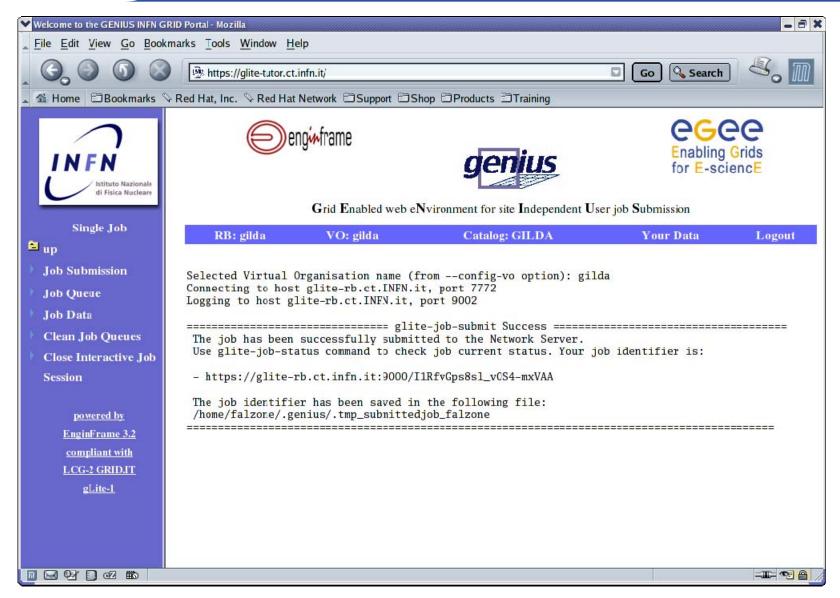
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MPI Jobs (3/7)

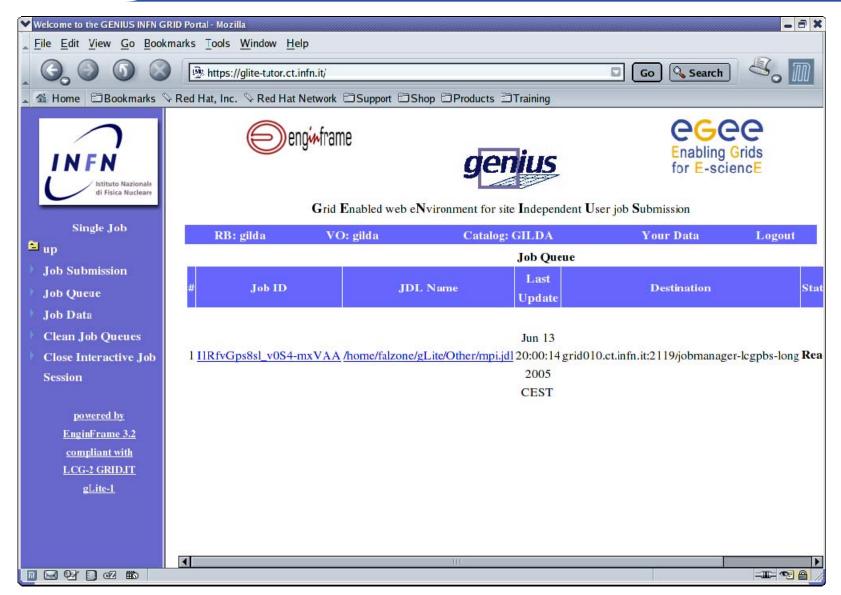
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MPI Jobs (4/7)

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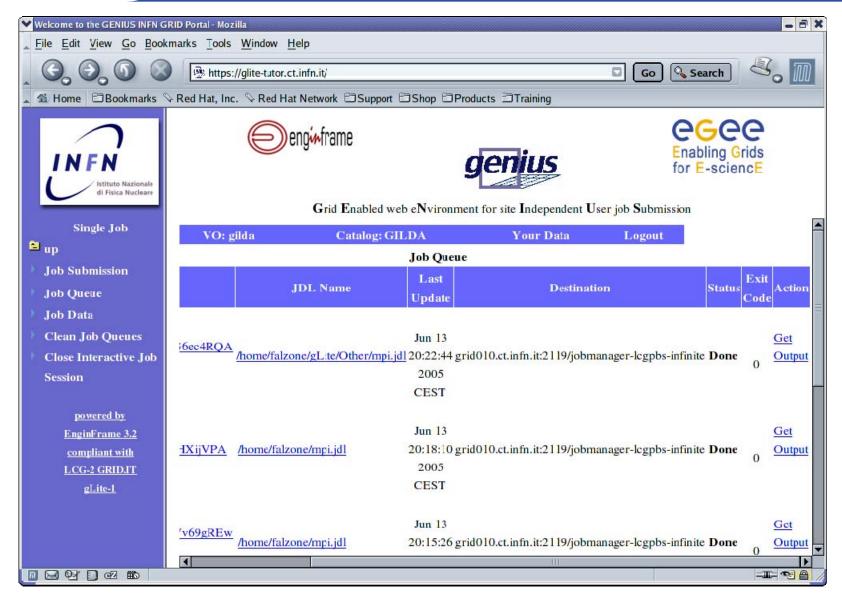


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MPI Jobs (5/7)

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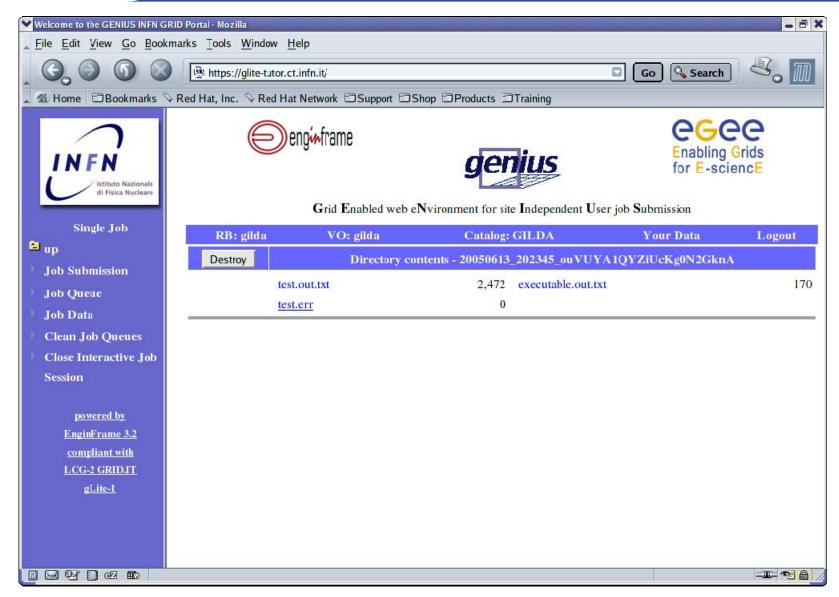


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MPI Jobs (6/7)

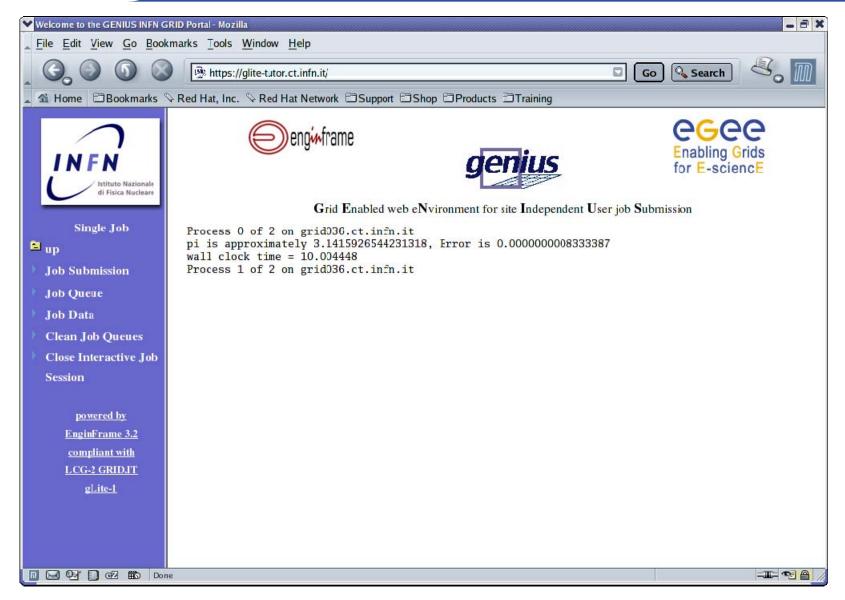
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MPI Jobs (7/7)

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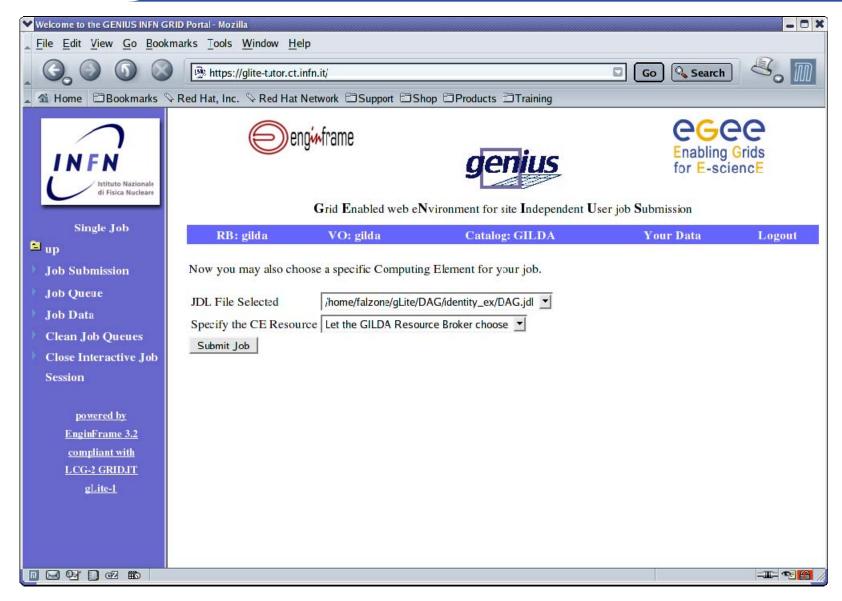
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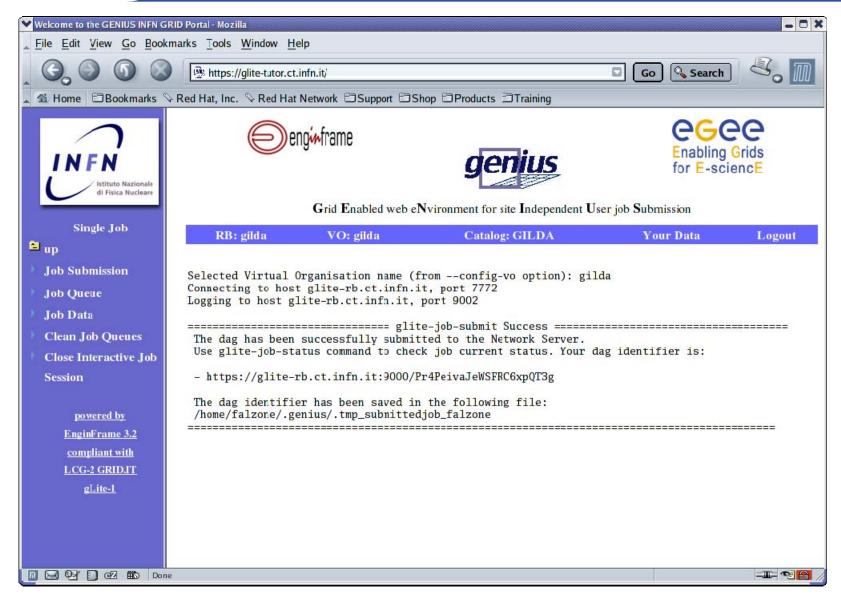
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DAG Jobs (3/12)

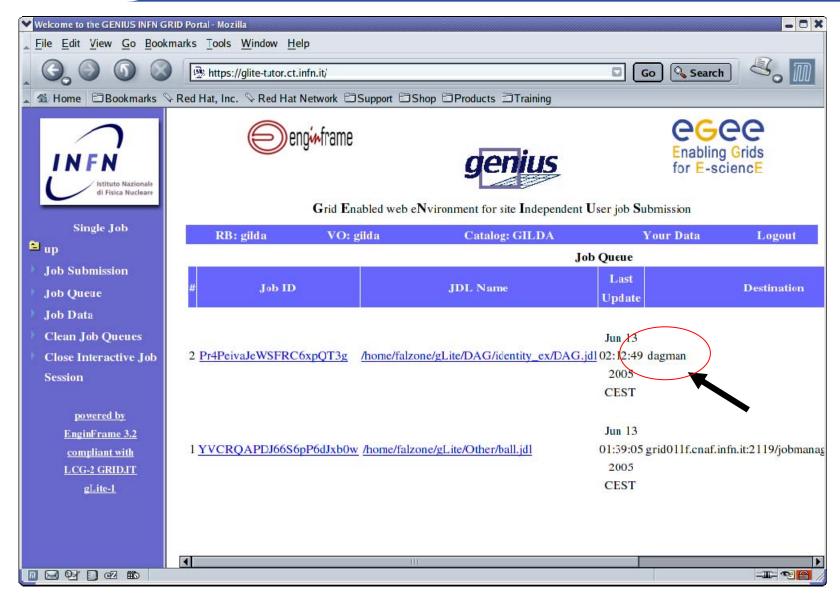
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DAG Jobs (4/12)

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DAG Jobs (5/12)

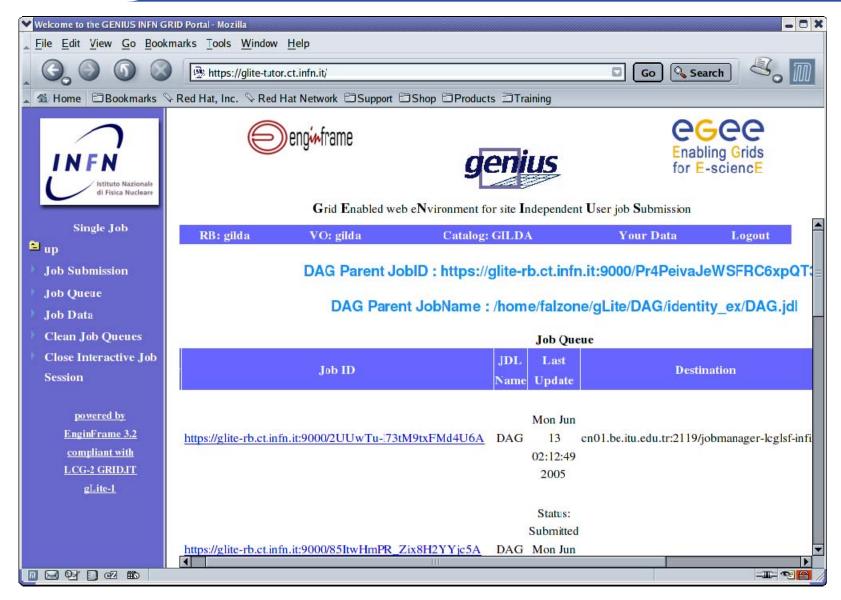
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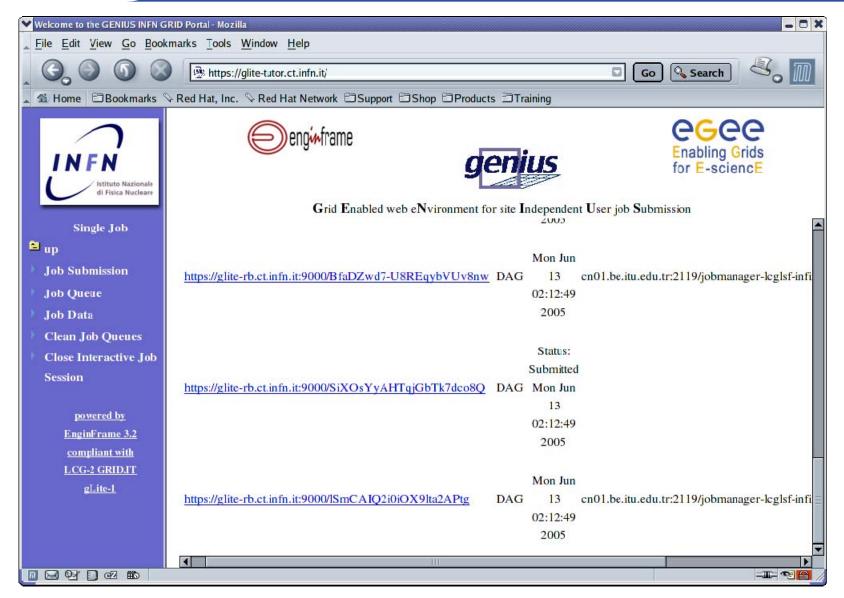
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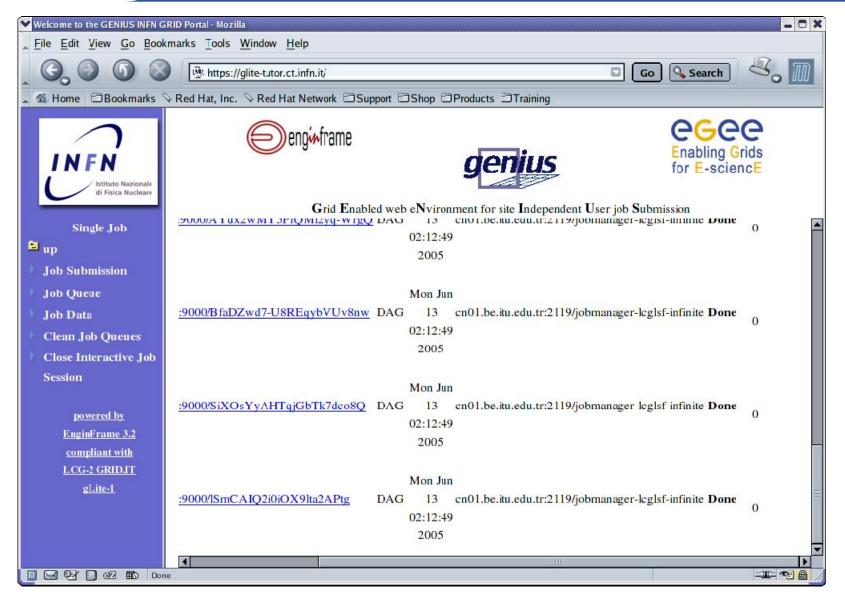
DAG Jobs (7/12)

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DAG Jobs (8/12)

Enabling Grids for E-sciencE

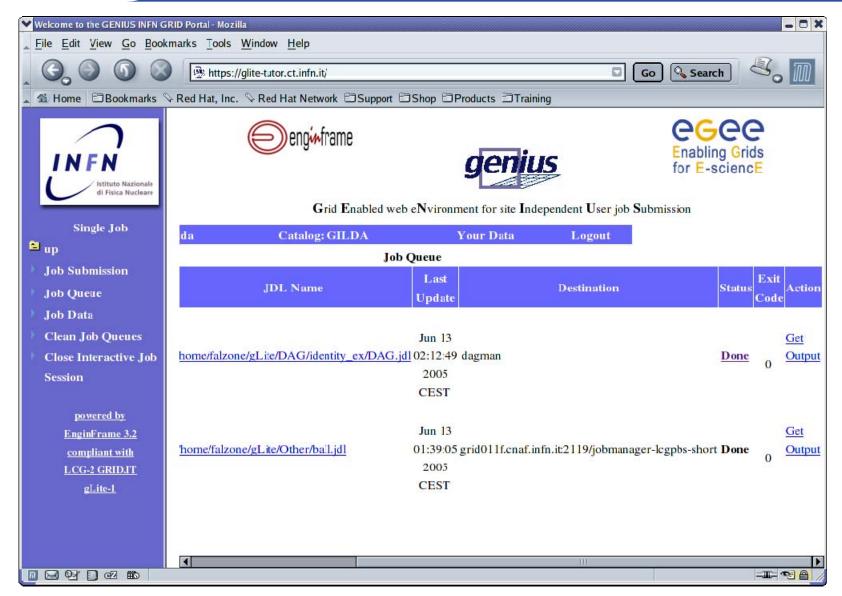


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DAG Jobs (9/12)

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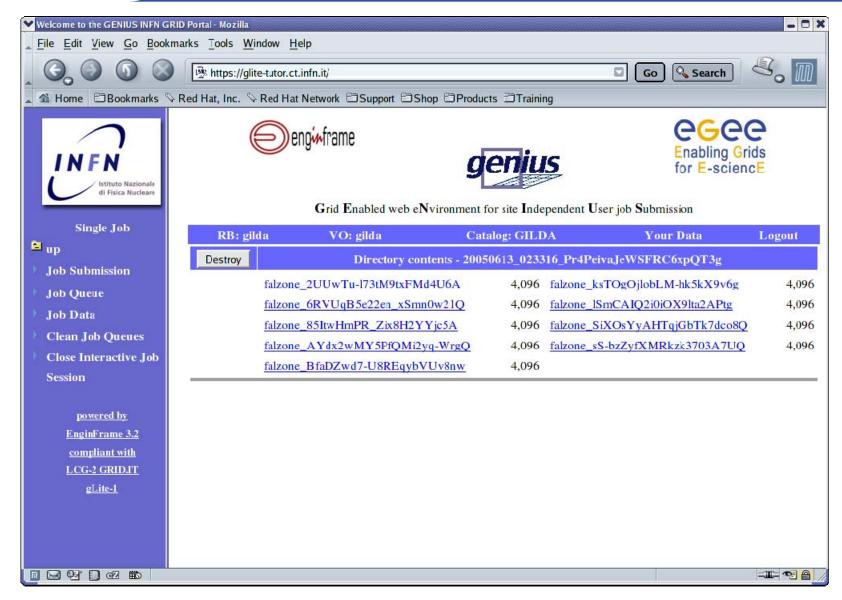


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DAG Jobs (10/12)

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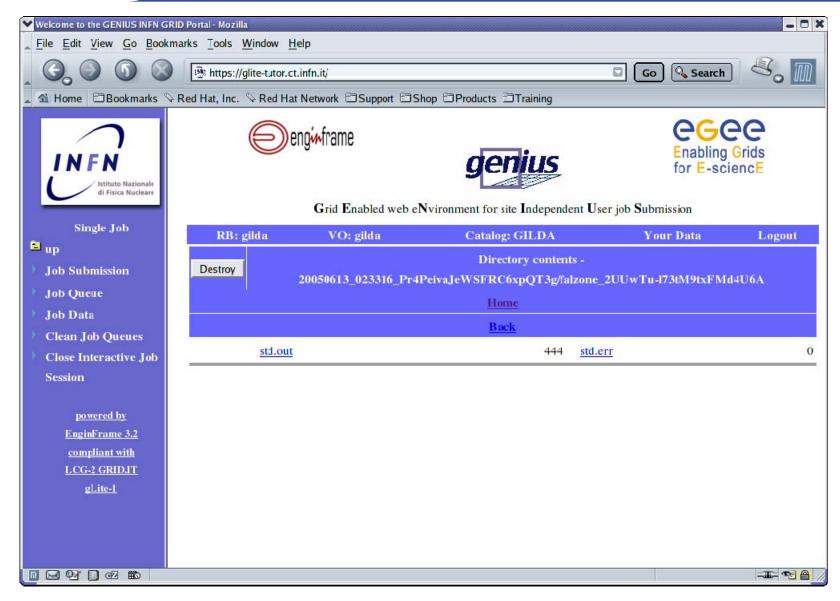


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DAG Jobs (11/12)

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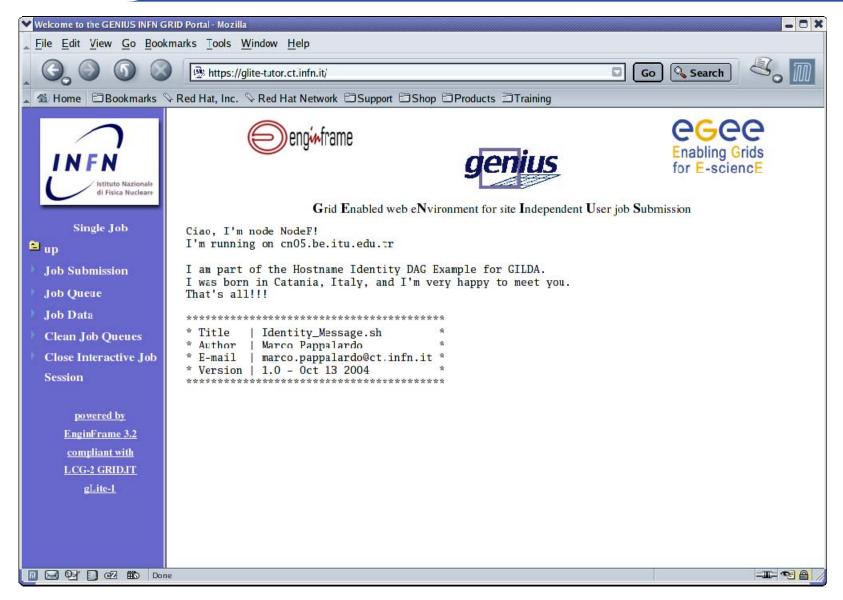


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DAG Jobs (12/12)

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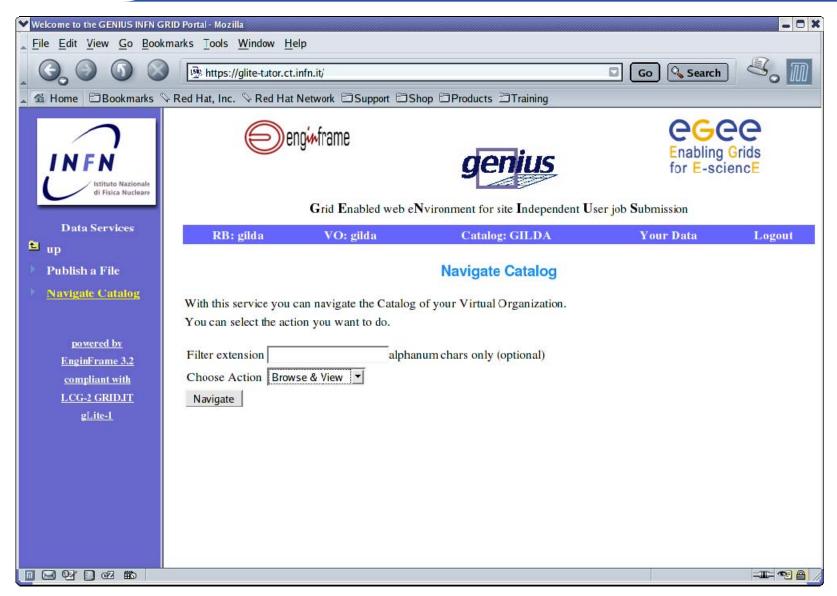


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GENIUS Catalog browsing (1/4)

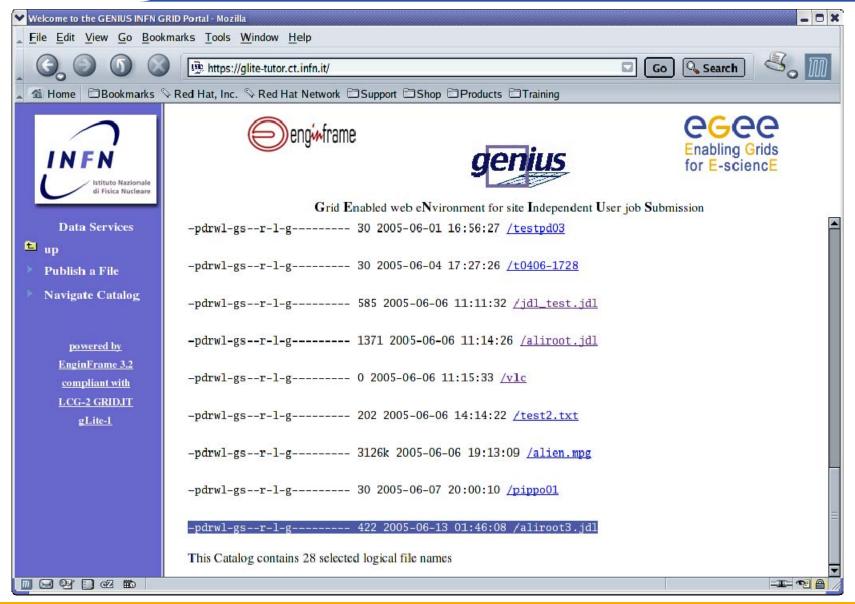
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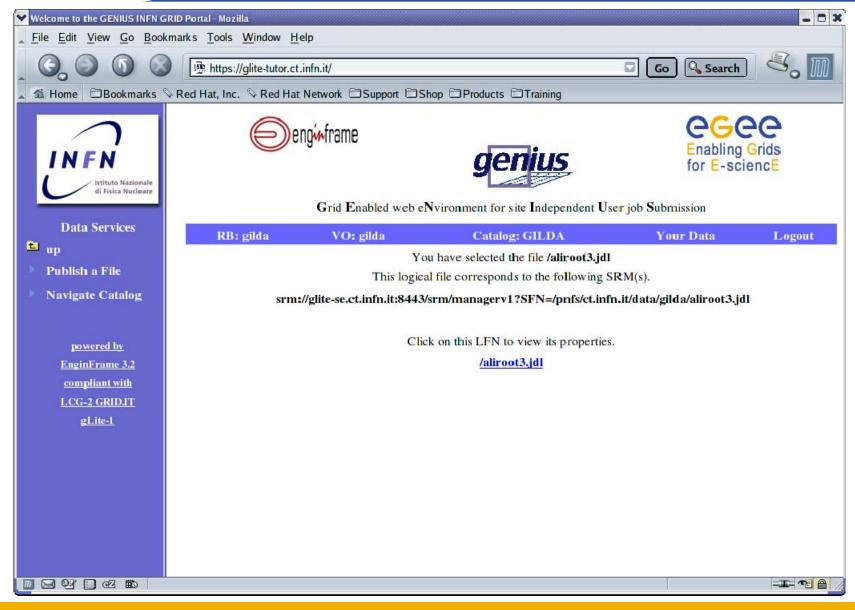
GENIUS Catalog browsing (2/4)

Enabling Grids for E-sciencE



GENIUS Catalog browsing (3/4)

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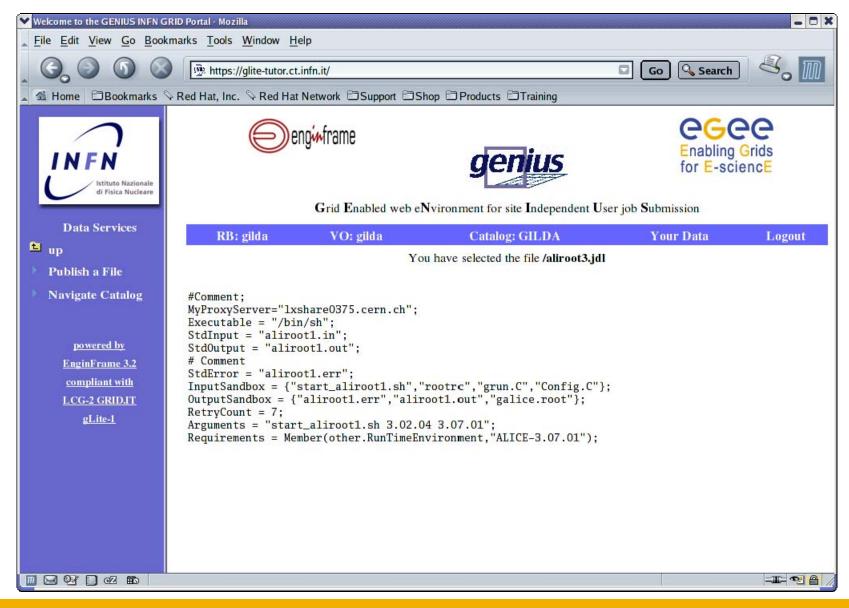


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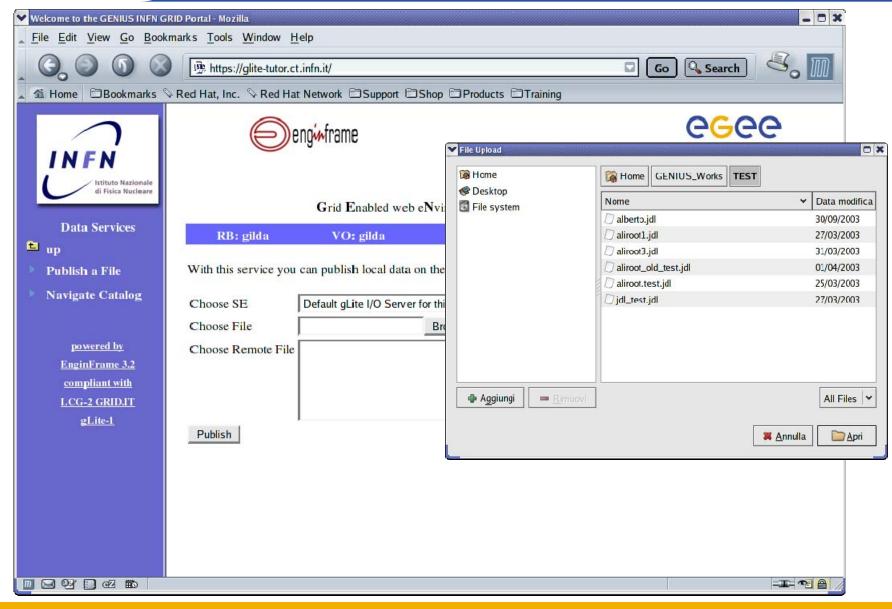
GENIUS Catalog browsing (4/4)

Enabling Grids for E-sciencE



GENIUS gLite data publication (1/2)

Enabling Grids for E-sciencE

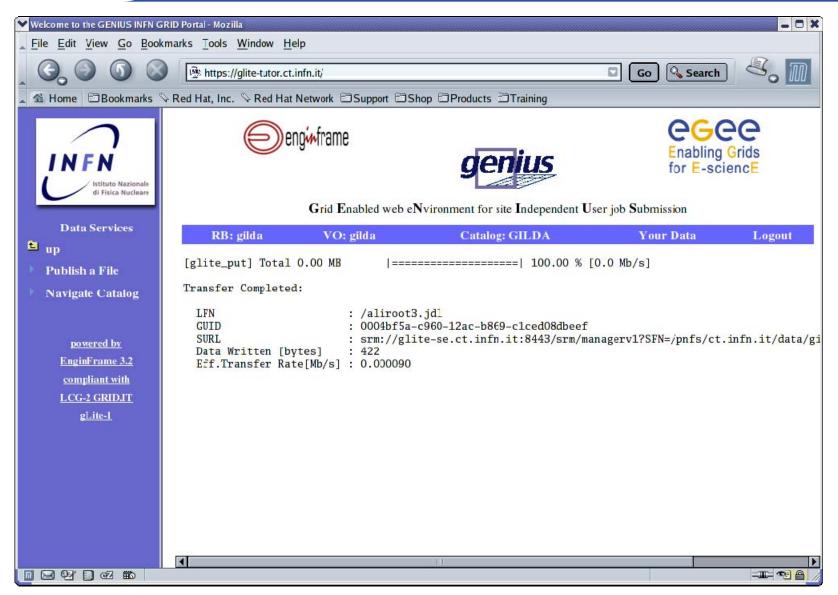


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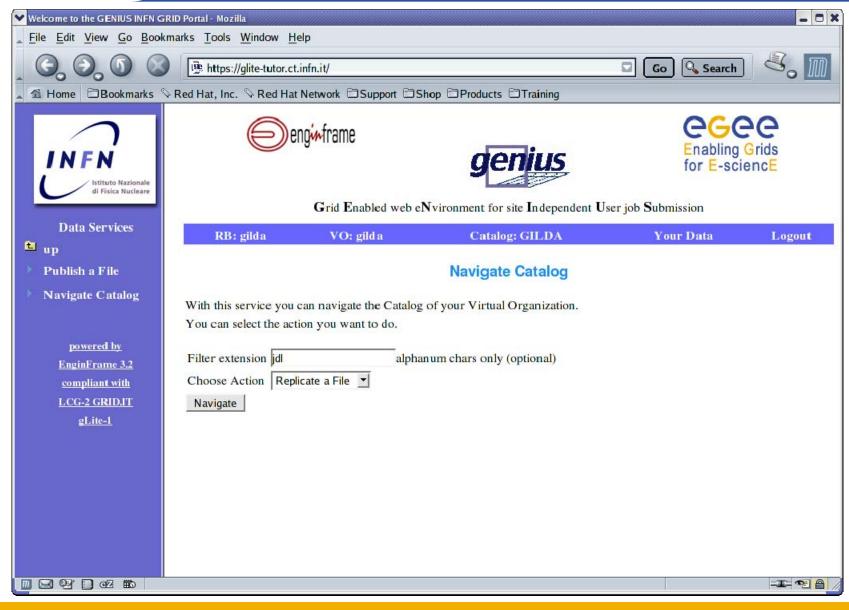
GENIUS gLite data publication (2/2)

Enabling Grids for E-sciencE



GENIUS gLite data replication (1/5)

Enabling Grids for E-sciencE

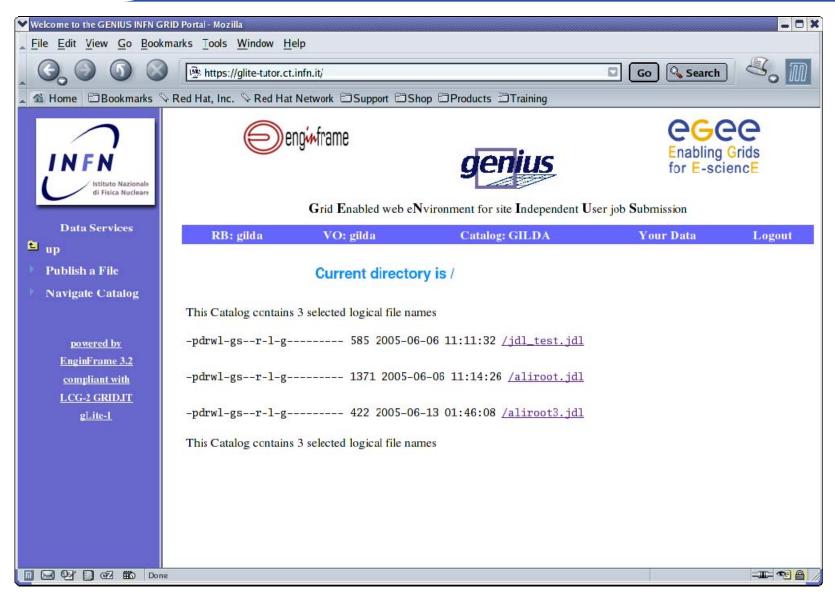


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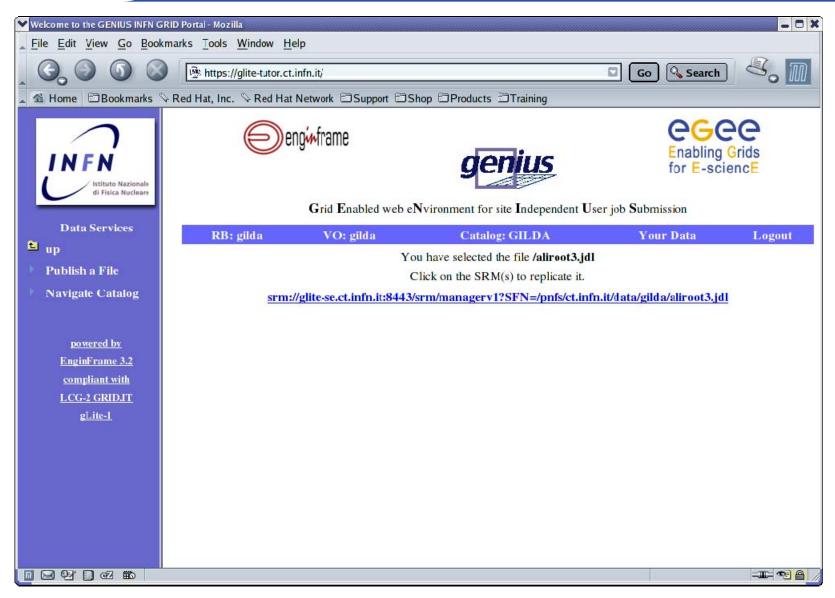
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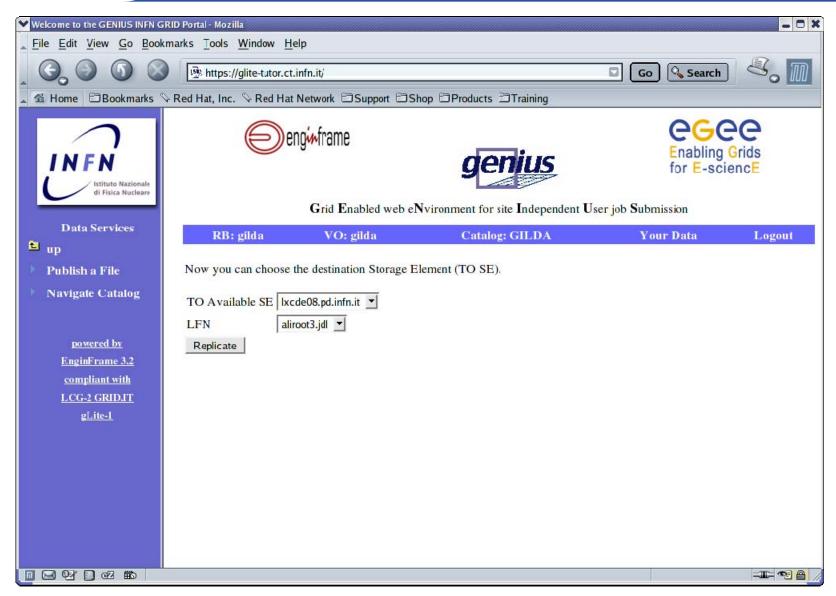
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Enabling Grids for E-sciencE



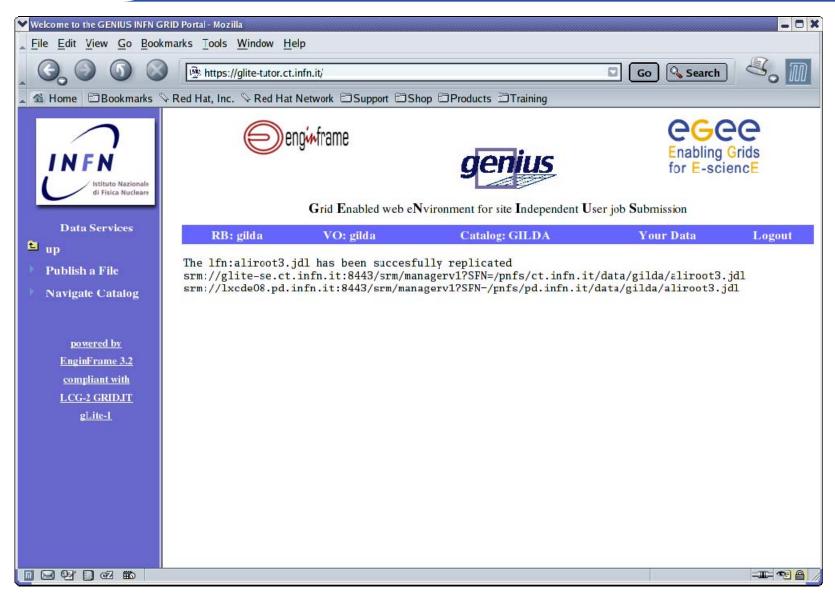
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Enabling Grids for E-sciencE



GENIUS gLite data replication (5/5)

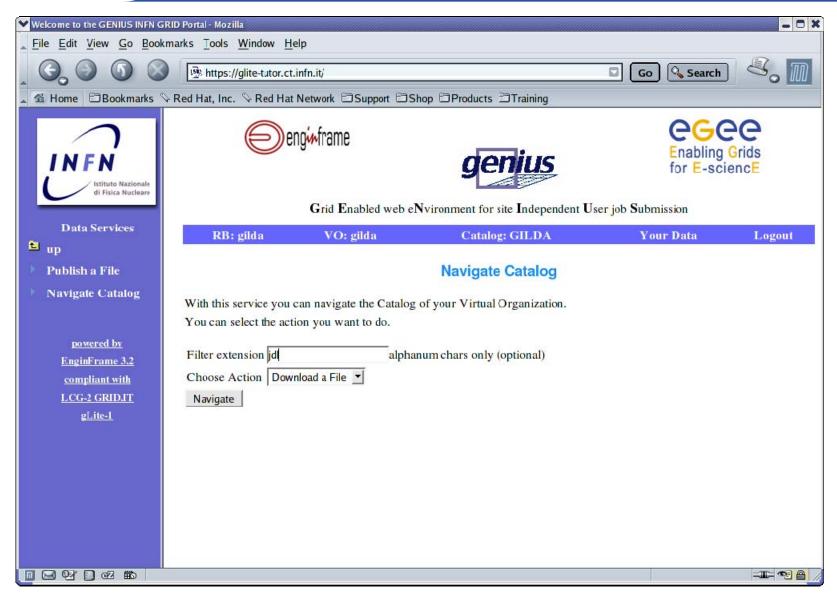
Enabling Grids for E-sciencE



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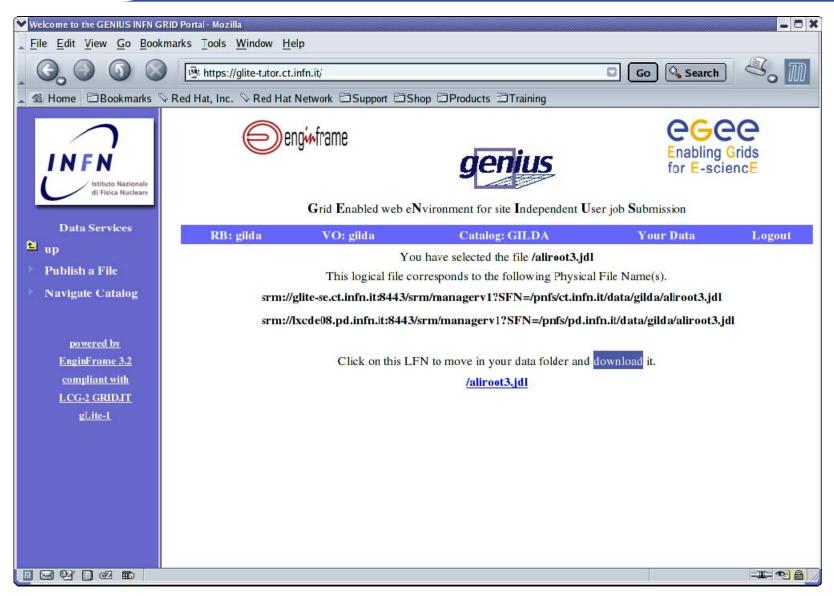
GENIUS gLite data download (1/4)

Enabling Grids for E-sciencE



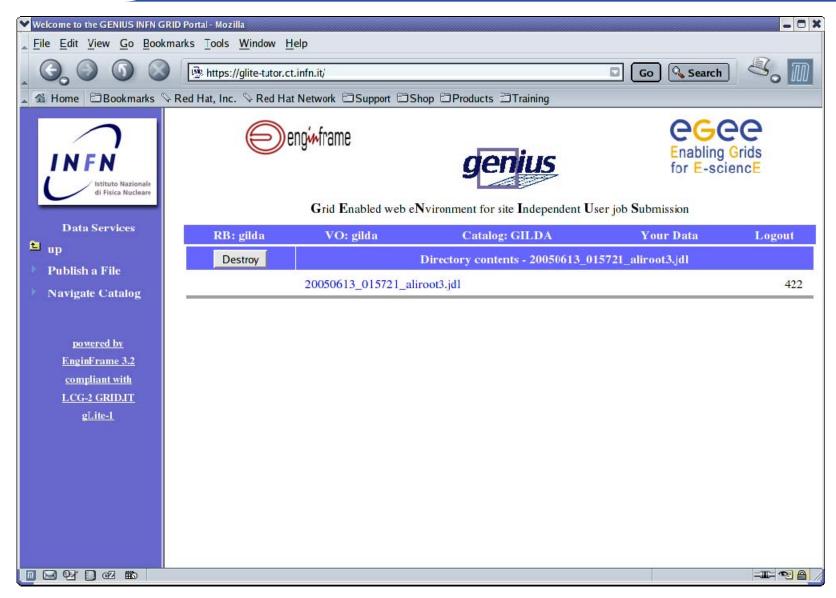
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Enabling Grids for E-sciencE



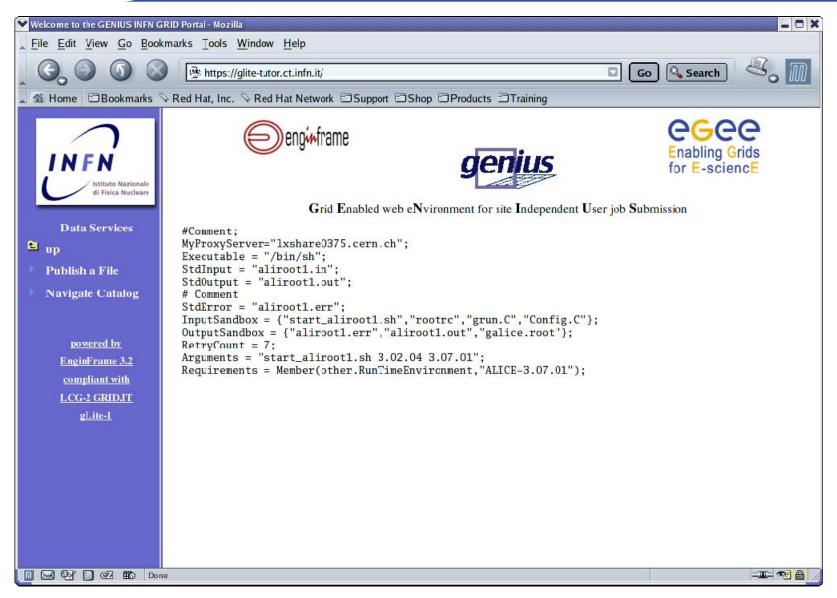
GENIUS gLite data download (3/4)

Enabling Grids for E-sciencE



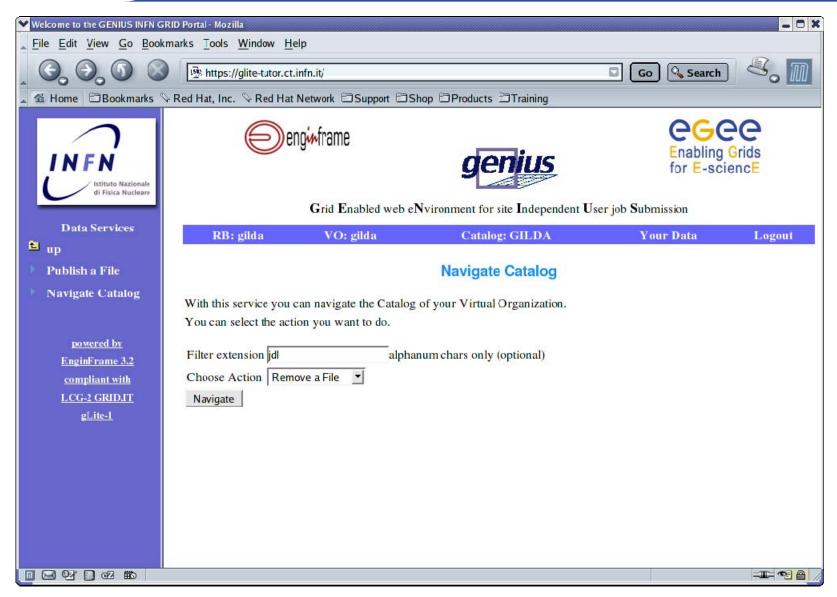
GENIUS gLite data download (4/4)

Enabling Grids for E-sciencE



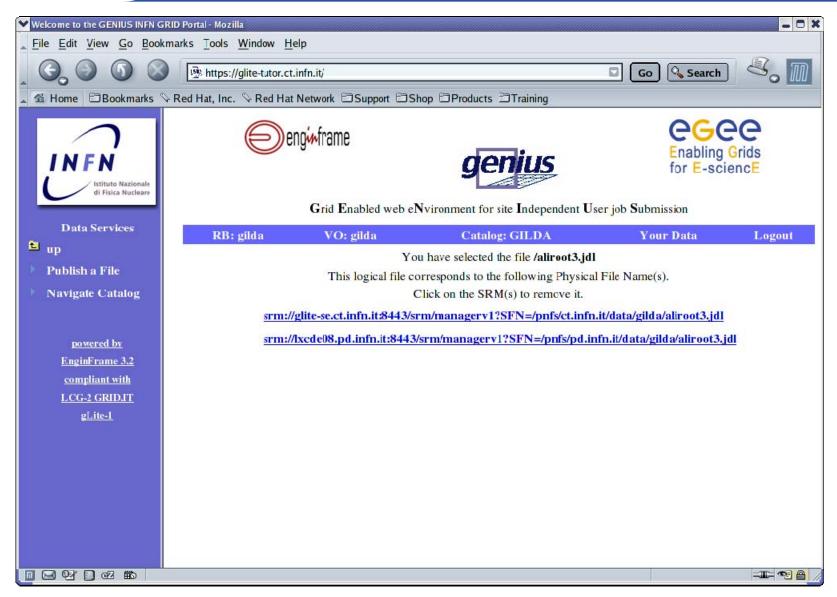
GENIUS gLite data removing (1/4)

Enabling Grids for E-sciencE



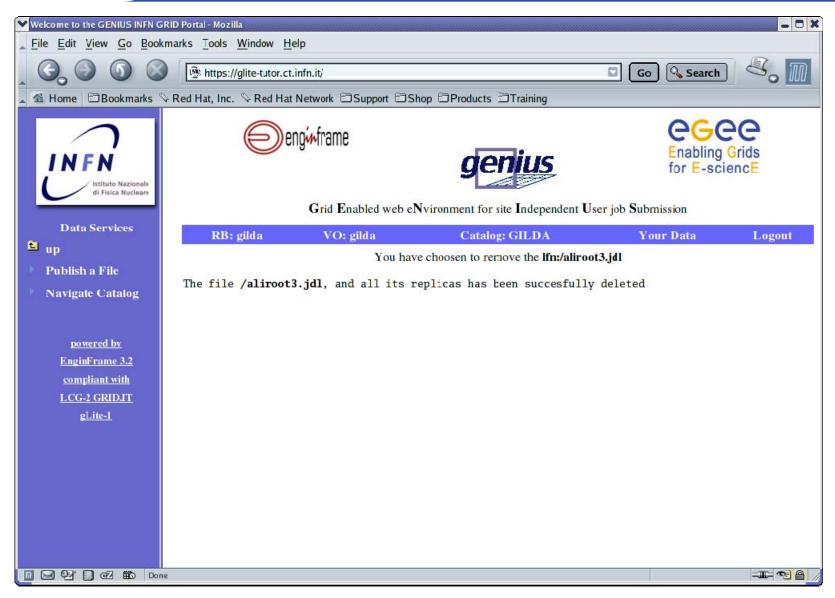
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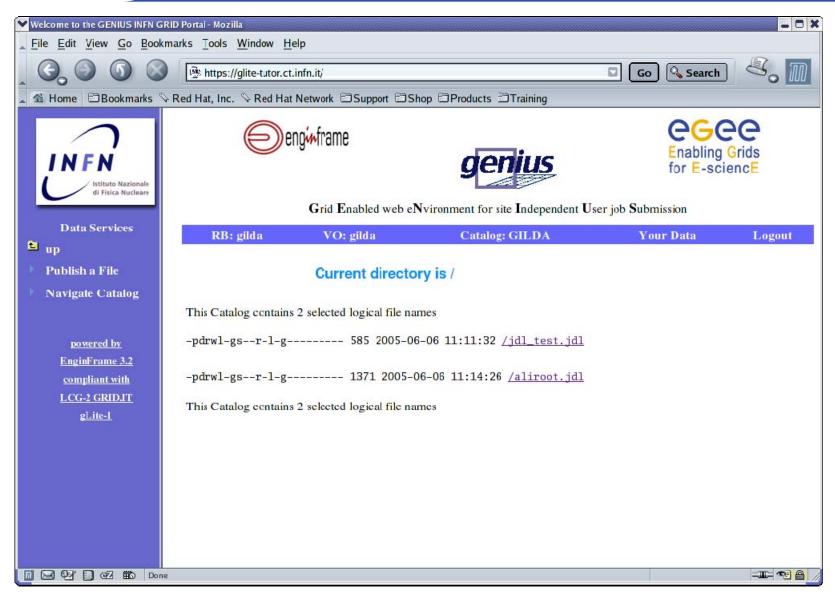
GENIUS gLite data removing (3/4)

Enabling Grids for E-sciencE



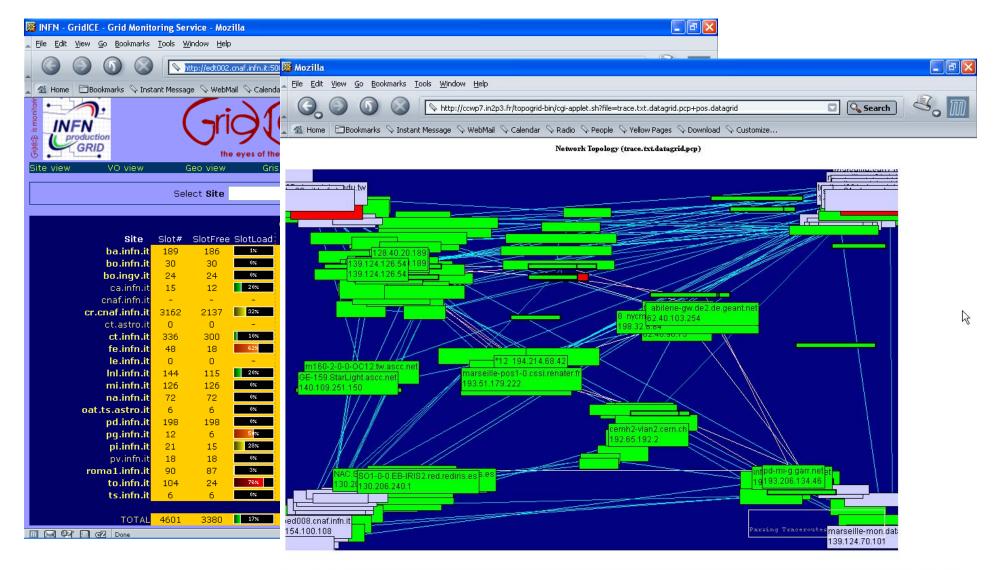
GENIUS gLite data removing (4/4)

Enabling Grids for E-sciencE



GENIUS monitoring services

Enabling Grids for E-sciencE

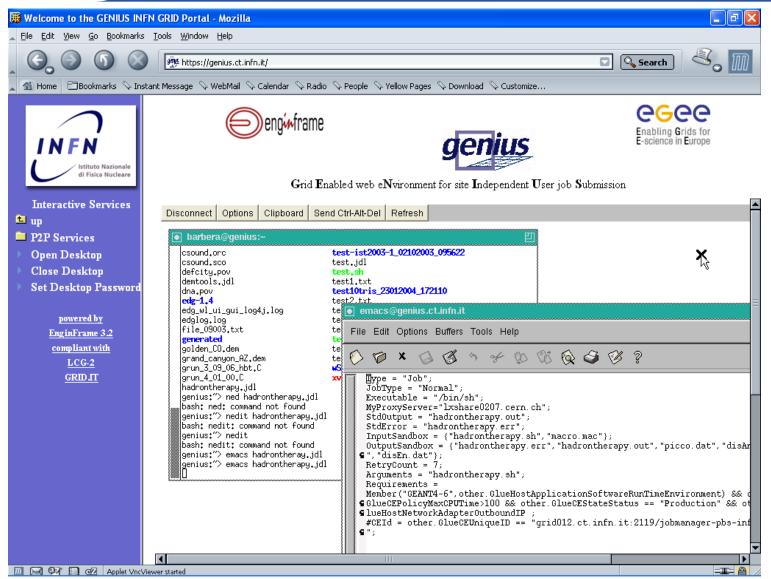


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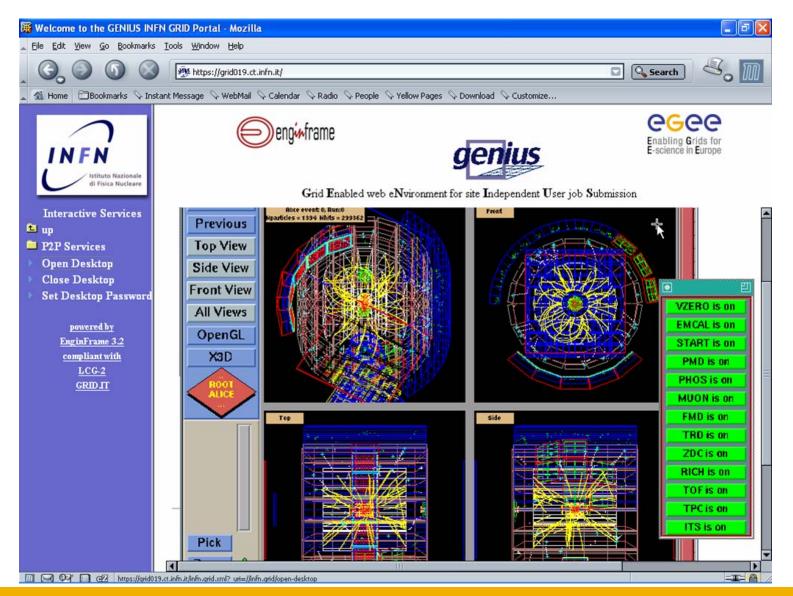
GENIUS interactive services (1/2)

Enabling Grids for E-sciencE



GENIUS interactive services (2/2)

Enabling Grids for E-sciencE



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Retreat between GILDA and ESR VO on gLite - Bratislava, 27-30.06.200563



- To install GENIUS on an User Interface machine you need a server certificate (in order to sign https connection) and a EnginFrame license
- The efadmin user must be present in the system
- **GENIUS is downloaded from a SSH CVS server**
- GENIUS should be installed under /opt/genius



- Install UI Server certificate under /opt/genius/apache/conf
- GENIUS installs with /opt/genius/genius_install.sh (just one command!)
- GENIUS starts/stops with the command /etc/rc.d/init.d/genius start|stop



GENIUS installation (3/3)

- Configuration files
 - Iopt/genius/etc
- XML files
 - /opt/genius/apache/htdocs
- Action procedures (shell scripts, etc.)
 - Iopt/genius/ef/plugins/infngrid/bin

GENIUS FAQ's...and answers (1/2)

- **Q:** I want to use GENIUS. Do I have to pay for it?
- <u>A:</u> No. GENIUS is "open source" and the underlying portal framework EnginFrame is <u>free</u> for education and research communities.
- <u>Q:</u> I want to use GENIUS. Do I need any software running on my laptop ?
- <u>A:</u> No client software needs to be installed apart from the web browser. GENIUS can really be accessed from everywhere.
- Q: Do I have to be afraid about cached password sent over the web ?
- <u>A:</u> Access passwords are securely "streamed" only when needed and then destroyed. Only temporary sessions are possible.
- **Q:** Can new authentication methods implemented into GENIUS?
- <u>A:</u> Of course. Kerberos V is a good example. EnginFrame is compliant with Kerberos authentication and GENIUS with AFS.

GENIUS FAQ's...and answers (2/2) Enabling Grids for E-science

- <u>Q:</u> I want to add a new VO to GENIUS and customize new services for that VO. How can I do that ?
- <u>A:</u> A new VO can be added to GENIUS in just minutes. New VO specific services can be added just modifying only two files: an XML file and a shell script.
- **Q:** Can I use GENIUS to interface other m/w's?
- <u>A:</u> Yes. Although GENIUS is currently based on the LCG/gLite middleware, it can be very easily interfaced to others.
- **Q:** How can I start downloading/using GENIUS?
- <u>A:</u> Go to the reference site <u>https://genius.ct.infn.it</u>, click on "GENIUS CVS available" and follow the instructions.