Introduction on Science Gateway

Understanding access and functionalities

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Outline

- What is a Science Gateway?
- Science Gateways
  - General Architecture
  - Authentication, Authorisation and Roles
  - CTSG Framework
- Use Case:
  - The GARR Science Gateway
  - The Africa GRID Science Gateway
- Training and collaborations
Some barriers limit grid adoption(*)

The eResearch2020 report
http://www.eresearch2020.eu/
Catania Science Gateway Framework architecture

- **Embedded Services**
  - App. 1
  - App. 2
  - MyCloud

- **Grid/Cloud Engine**
  - (based on SAGA)

- **Orchestrator**
  - (based on OCCI)

- **Catania Science Gateway**
  - Cloud #1
  - Cloud #2
  - Cloud #n

- **HPC Clusters**
  - Grids

- **Users belonging to Identity Federations**

- **Single logical domain**

- **Administrator(s)**
  - Scientists
  - Cloud tenants
Science Gateway’s Requirements

- **Authentication and Authorisation**
  - SAML, LDAP
- **Application e-Infrastructure independent**
  - jSAGA, SAGA, OCCI
- **Standard Java Technology**
  - JSR 168/286
- **Web Technology**
  - Web CMS
  - Wiki, Blog, Messages Board, Vconf, Adobe Connect
- **Portal Framework**
  - Liferay portlet container
  - Liferay Service Builder
Catania Science Gateway Framework

- Authentication & Authorisation
- Job Management
- e-Infrastructure Service & Data Service
- Cloud
AuthN/AuthZ Schema

1. Try to login
2. Forwarded to the IdP
3. Identity attributes
4. Check authorisations

Science Gateway

Sync user roles
Retrieve e-Infrastructure credentials

OpenLDAP

Federation

e-Infrastructures

VAMP Workshop 2013 – Helsinki, 30/9-1/10/2013
Authentication request on Africa GRID SGW
Mobile Authentication

Web views

Native apps
Applications accessing grid services

- 12 applications developed among 5 different countries and 3 continents (Europe, Latin America and Asia);
- 4 scientific domains:
  - Life Science;
  - Mathematics & Computer Science;
  - High Energy Physics;
  - Cultural Heritage.
Catania Science Gateway Framework

- Authentication & Authorisation
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Job Submission

The sequential "Hello World!" application just outputs the name of the machine where the job has been executed.

Your job has been successfully submitted; you may get reference to it with identifier: Hello World Sequential job ...

Have a look on MyJobs area to get more information about all your submitted jobs.

Insert below your Hello World Sequential job

Run a new application

Press the Run a new application button to start another job submission
Job Submission

The iort Project

Iort_Therapy Input Form

Display Settings

Worldwide Software Distribution

See with the Google Map API where the software has been successfully installed. Select the GPS location of the grid resource where you want to run your demo OR, BETTER, let the Science Gateway choose the best one for you! This option is NOT SUPPORTED if more than one infrastructure is enabled!

Legend
- Split close sites
- Unsplit close sites
- Computing resource

Map

Satellite

Specify your Input Settings

- Upload macro
  - Choose file: no file selected
- Insert macro
- Description
  - Please, insert here a description for your job
- Notification
- Number of GEANT4 jobs to be submitted: 1
My Workspace – Active Job List

The table below shows the status of your jobs. Statuses are automatically updated every 15 minutes so there is no need to reload this page more frequently. However, if you don’t see your jobs in the table within a reasonable amount of time (a couple of hours at most), click on Help in the MyWorkspace portlet and notify us the problem.

Once your jobs have finished, you have 96 hours to retrieve their output. Beyond that time, the output of your jobs will automatically be deleted from the Science Gateway in order not to fill its storage with undesired stuff.

<table>
<thead>
<tr>
<th>Application Name</th>
<th>User Description</th>
<th>Started on (UTC)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequential</td>
<td>Hello World Sequential job ...</td>
<td>2012-12-04 20:34:40.0</td>
<td>RUNNING</td>
</tr>
<tr>
<td>Sequential</td>
<td>Hello World Sequential job ...</td>
<td>2012-12-04 20:11:49.0</td>
<td>RUNNING</td>
</tr>
<tr>
<td>Sequential</td>
<td>Hello World Sequential job ...</td>
<td>2012-12-04 19:35:36.0</td>
<td>RUNNING</td>
</tr>
<tr>
<td>GROMACS</td>
<td>Gromacs analysis ...</td>
<td>2012-12-04 19:33:48.0</td>
<td></td>
</tr>
<tr>
<td>Sequential</td>
<td>Hello World Sequential job ...</td>
<td>2012-12-04 19:27:26.0</td>
<td></td>
</tr>
<tr>
<td>GROMACS</td>
<td>Gromacs analysis ...</td>
<td>2012-12-04 18:45:02.0</td>
<td></td>
</tr>
<tr>
<td>GROMACS</td>
<td>Gromacs analysis ...</td>
<td>2012-12-04 18:41:09.0</td>
<td></td>
</tr>
<tr>
<td>Sequential</td>
<td>Hello World Sequential job ...</td>
<td>2012-12-04 18:38:34.0</td>
<td></td>
</tr>
<tr>
<td>Sequential</td>
<td>Hello World Sequential job ...</td>
<td>2012-12-04 18:38:32.0</td>
<td></td>
</tr>
</tbody>
</table>
Catania Science Gateway Framework

- Authentication & Authorisation
- Job Management
- e-Infrastructure Service & Data Service
- Cloud
My Data

Files

<table>
<thead>
<tr>
<th>File Name</th>
<th>File Size</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>file-grid-test1.txt</td>
<td>33</td>
<td>Wed Dec 11 16:45:50 CET 2013</td>
</tr>
</tbody>
</table>
Web-course summary information

- Home page:
  - [http://agenda.ct.infn.it/event/vespa-sg-dev](http://agenda.ct.infn.it/event/vespa-sg-dev)

- All presentations will be uploaded

- Links are provided both to watch and **download** recordings of all the webinars
Training material

- Training material page (short URL): https://gilda.ct.infn.it/wikimain

- Available sections
  - SG plugin as portlets accessing e-Infrastructure services;
  - Multi federation discovery service
  - Identity Provider installation and configuration
Our code on sourceforge

The Catania Science Gateway Framework on Sourceforge:
- [http://sourceforge.net/projects/ctscienceegtwys/](http://sourceforge.net/projects/ctscienceegtwys/)
- Wiki
- Tickets
- Discussion
- Code is open source, feel free to join and contribute
- For more info contact to [sg-licence@ct.infn.it](mailto:sg-licence@ct.infn.it)
A unique entry point

- The Catania Science Gateway Framework on the web:
  - [http://www.catania-science-gateways.it](http://www.catania-science-gateways.it)
The Science Gateway Market Place

1. Users/VRCs

2. SG Dev.

3. Place

4. Market

5. Score

Ex.: Africa Grid Science Gateway
The list of available applications

Market Place

The Catania Science Gateway Market Place is meant as a virtual environment where to match the needs of Virtual Research Communities wanting to integrate their applications in one of the Catania Science Gateways and the availability of skilled Catania Science Gateway Developers.

If you are a member of a Virtual Research Community and would like to propose an application to be integrated in one of the Catania Science Gateways, fill this survey.

If you are one of the already registered Catania Science Gateway Developers, Sign In (following the link provided at the bottom right of this page) and book one of the applications listed in the table below that are still "to be ported".

If, instead, you are not yet registered as a Catania Science Gateway Developers but would like to be, please follow this link.

Applications

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Domain</th>
<th>Institution</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAGOSIM</td>
<td>Physics</td>
<td>UIS</td>
<td>to be ported</td>
</tr>
<tr>
<td>BioMA Model Layer</td>
<td>High-Energy Physics</td>
<td>CRA</td>
<td>to be ported</td>
</tr>
<tr>
<td>CORSIKA</td>
<td>Physics</td>
<td>UIS</td>
<td>to be assigned</td>
</tr>
<tr>
<td>Geant4</td>
<td>Physics</td>
<td>UIS</td>
<td>to be assigned</td>
</tr>
<tr>
<td>OpenFOAM</td>
<td>Life Sciences</td>
<td>UIS</td>
<td>to be assigned</td>
</tr>
<tr>
<td>ROOT</td>
<td>Physics</td>
<td>UIS</td>
<td>to be assigned</td>
</tr>
<tr>
<td>SNS</td>
<td>0-5 Mb</td>
<td>UdeA</td>
<td>to be assigned</td>
</tr>
<tr>
<td>WRF</td>
<td>High-Energy Physics</td>
<td>CoCalcUlia</td>
<td>to be ported</td>
</tr>
</tbody>
</table>
To propose new applications

http://www.catania-science-gateways.it/survey
To port new applications

- Register as a Catania Science Gateway Developer:
  - [http://www.catania-science-gateways.it/port-app](http://www.catania-science-gateways.it/port-app)
- Sign In and book an application «to be ported»

Once your booking is accepted, you have 30 days to create the needed portlet(s) for the application (the sooner the better)
- After that time the access to our VPN will be denied

Once you are registered you can also port the applications YOU proposed