Adopting SAGA standard in Science Gateways

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Diego Scardaci – INFN Catania

(diego.scardaci@ct.infn.it)

Outline

- **A Simple API for Grid Applications (SAGA):**
  - The OGF Standard;
  - JSAGA: a Java implementation of SAGA;
- **A generic Grid Engine for Science Gateways based on SAGA;**
  - Grid Engine based on JSAGA;
  - EGI Portal Policy & Grid Security Traceability;
- **Use cases & references.**

A Simple API for Grid Applications (SAGA)

- **SAGA is an API that provides the basic functionality required to build distributed applications, tools and frameworks;**
- **It is independent of the details of the underlying**
- **SAGA is an EGI Technological Provider (MoU signed on 11 April 2011)**
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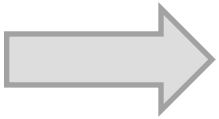
  - A C++ and a Java implementation developed at the Louisiana State University / CCT and Vrije Universiteit Amsterdam (http://saga.cct.lsu.edu);
  - A Java implementation developed at CCIN2P3 (http://grid.in2p3.fr/jsaga/);
  - A Python implementation based on those above.

A Simple API for Grid Applications (SAGA)

- SAGA is made of:
  - SAGA Core Libraries: contain the SAGA base system, the runtime and the API packages (job management, data management, etc.);
  - SAGA Adaptors: provide access to the underlying grid infrastructure (adaptors are available for gLite, ARC, Globus, UNICORE and other middleware);
- SAGA defines a standard  We then need an implementation!

JSAGA

- **JSAGA is a Java implementation of SAGA developed at CCIN2P3;**

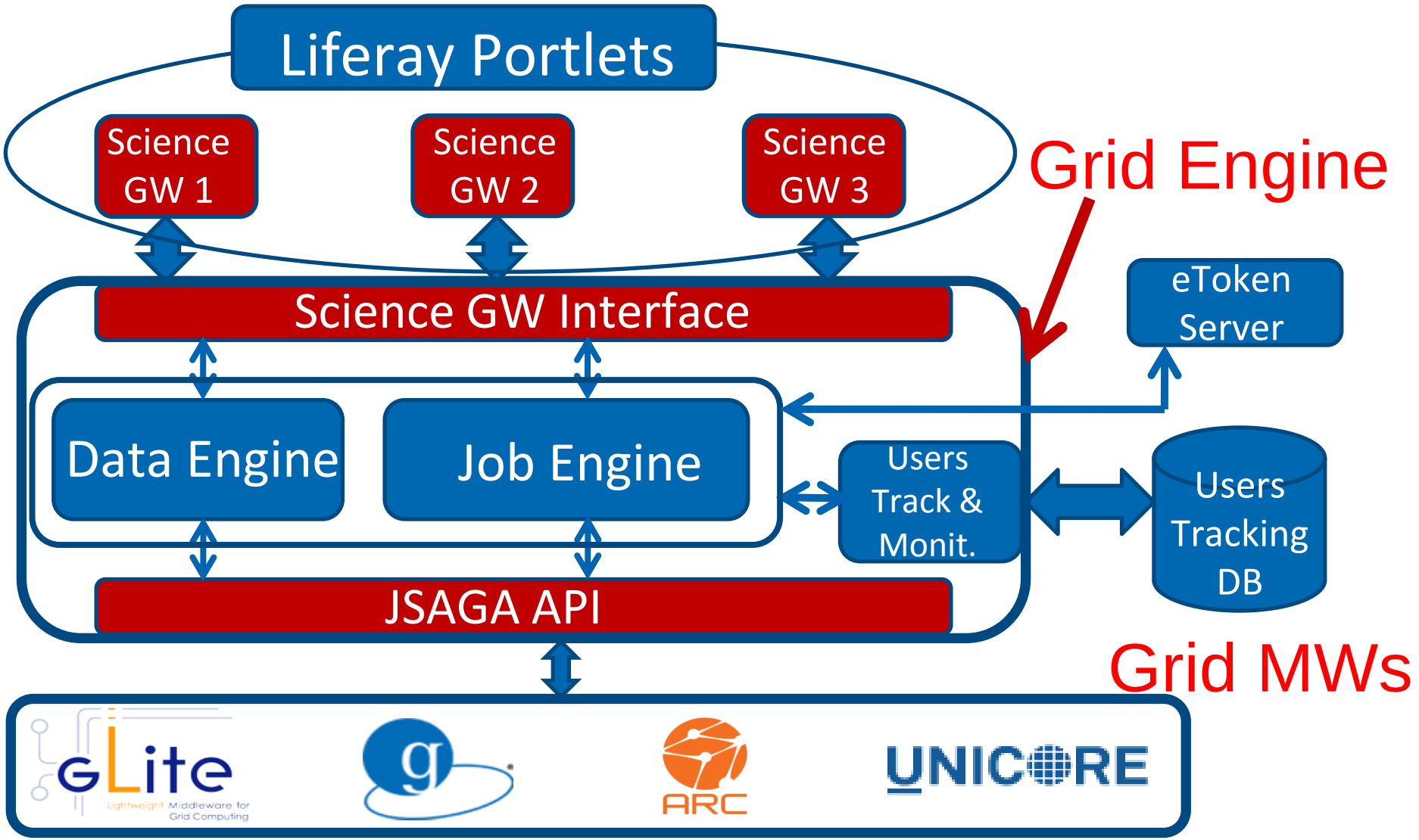
- **JSAGA:**
  - Enables uniform data and job management across different grid infrastructures/middleware;
  - Makes extensions easy: adaptor interfaces are designed to minimize coding effort for integrating support of new technologies/middleware;
  - Is OS independent: most of the provided adaptors are written in full Java and they are tested both on Windows and Linux.

JSAGA Adaptors

Module	Description	License
Adaptor for accessing clusters via SSH	This module provides support for accessing cluster systems through ssh.	GNU Lesser General Public License
Adaptor for BES	This module provides generic support for BES (Basic Execution Standard). It cannot be used on its own.	GNU Lesser General Public License
Adaptors for classic protocols	This module provides support for classic; security mechanisms (X509 certificates, Java Keystore), data management protocols (HTTP, HTTPS, local, ZIP), execution management technologies (fork).	GNU Lesser General Public License
Adaptors for gLite-CREAM	This m… Manag…	
Adaptors for gLite-WMS	This m…	
Adaptors for Globus Toolkit v2	This m… Globus… manag…	
Adaptors for Globus WS-GRAM	This m…	
Adaptors for iRODS and SRB	This module provides support for iRODS and SRB data management protocols.	GNU Lesser General Public License
Adaptors for LFC	This module provides support for gLite Logical File Catalog (LFC).	GNU Lesser General Public License
Adaptors for NAREGI	This module provides support for NAREGI execution management technologies (Super Scheduler).	GNU Lesser General Public License
Adaptors for SRM	This module provides support for version 2.2 of the data management protocol SRM (Storage Resource Manager).	GNU Lesser General Public License
Adaptors for SSH	This module provides support for SSH components; security mecanism (SSH asymmetric keys), data management protocol (SFTP), execution management technology (SSH).	GNU Lesser General Public License
Adaptors for Unicore 6	This module provides support for Unicore 6 components: data management protocol (RByte-IO), execution management technology (Unicore Gateway).	GNU Lesser General Public License
Adaptors for Unix/Linux file systems	This module provides complete support for protocol 'file' on Unix and Linux file systems.	GNU Lesser General Public License
Adaptors for VOMS	This module provides support for VOMS (Virtual Organization Membership Service) security mechanism.	GNU Lesser General Public License
jsaga-adaptor-arc	This module provides support for A-REX service provided by ARC middleware	GNU Lesser General Public License
jsaga-adaptor-bes-unicore6	This module provides support for Unicore6 via BES (Basic Execution Service) interface	GNU Lesser General Public License

JSAGA supports gLite, Globus, ARC, UNICORE, etc.

A Generic Grid Engine for Science Gateways based on JSAGA



EGI Portal Policy & VO Portal Policy (1/2)

Identified Web User

Portal Classes			
Portal Class	**Executable**	**Parameters**	**Input**
Simple one-click	provided by portal	provided by portal	provided by portal
Parameter	provided by portal	chosen from enumerable and limited set	chosen from repository vetted by the portal
Data processing	provided by portal	chosen from enumerable and limited set	provided by user
Job management	provided by user	provided by user	provided by user

EGI Portal Policy & VO Portal Policy (2/2)

- The Portal, the VO the Portal is associated to, and the Portal manager are all individually and collectively responsible and accountable for all interactions with the Grid;
- The Portal must be capable of limiting the job submission rate;
- The Portal must keep audit logs for all interactions with the Grid as defined in the Traceability and Logging Policy (minimum 90 days);
- The Portal manager and operators must assist in security incident investigations;
- Where relevant, private keys associated with (proxy) certificates must not be transferred across a network, not even in encrypted form.

Two Tables: one for active Jobs and File Transfers and one for the finished ones.

Example of entry in the Users Tracking DB

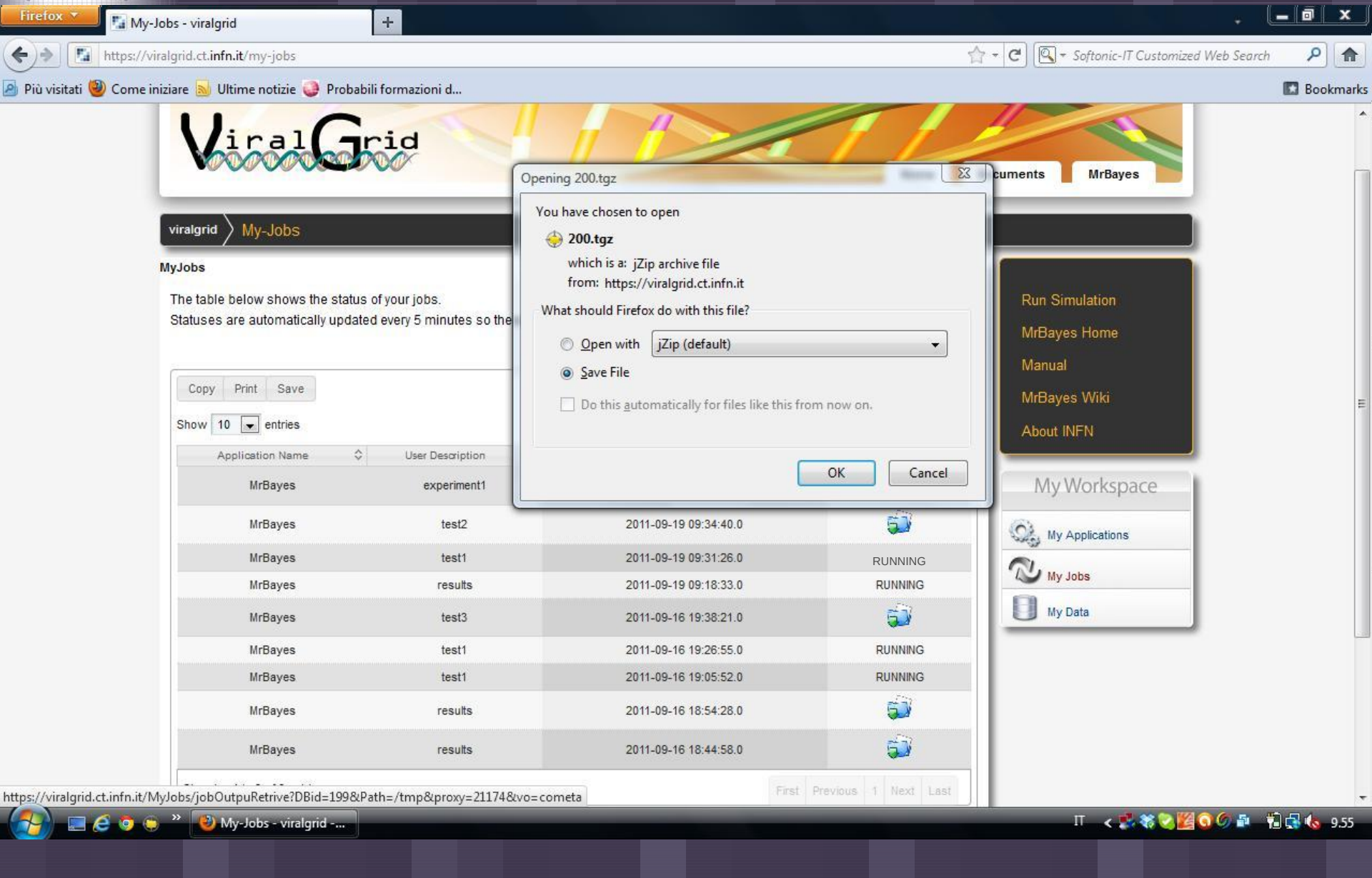
Common Name	Portal User Name as stored in LDAP
IP + Port	IP address and TCP port used by the requester

ID	**70**
Common Name	**fpistagna**
IP + TCP Port	**193.206.208.183:8162**
Timestamp	**2011-07-06 14:16:29**
Grid Interaction	**1**
Grid ID	**[wms://infn-wms-01.ct.pi2s2.it:7443/glite_wms_wmproxy_server]-[https://infn-lb-01.ct.pi2s2.it:9000/7rQ458xozactEEjoXMlxQg]**
Robot Certificate	**/C=IT/O=INFN/OU=Robot/L=COMETA/CN=Robot: ViralGrid Science Gateway - Roberto Barbera**
Virtual Organisation	**cometa**

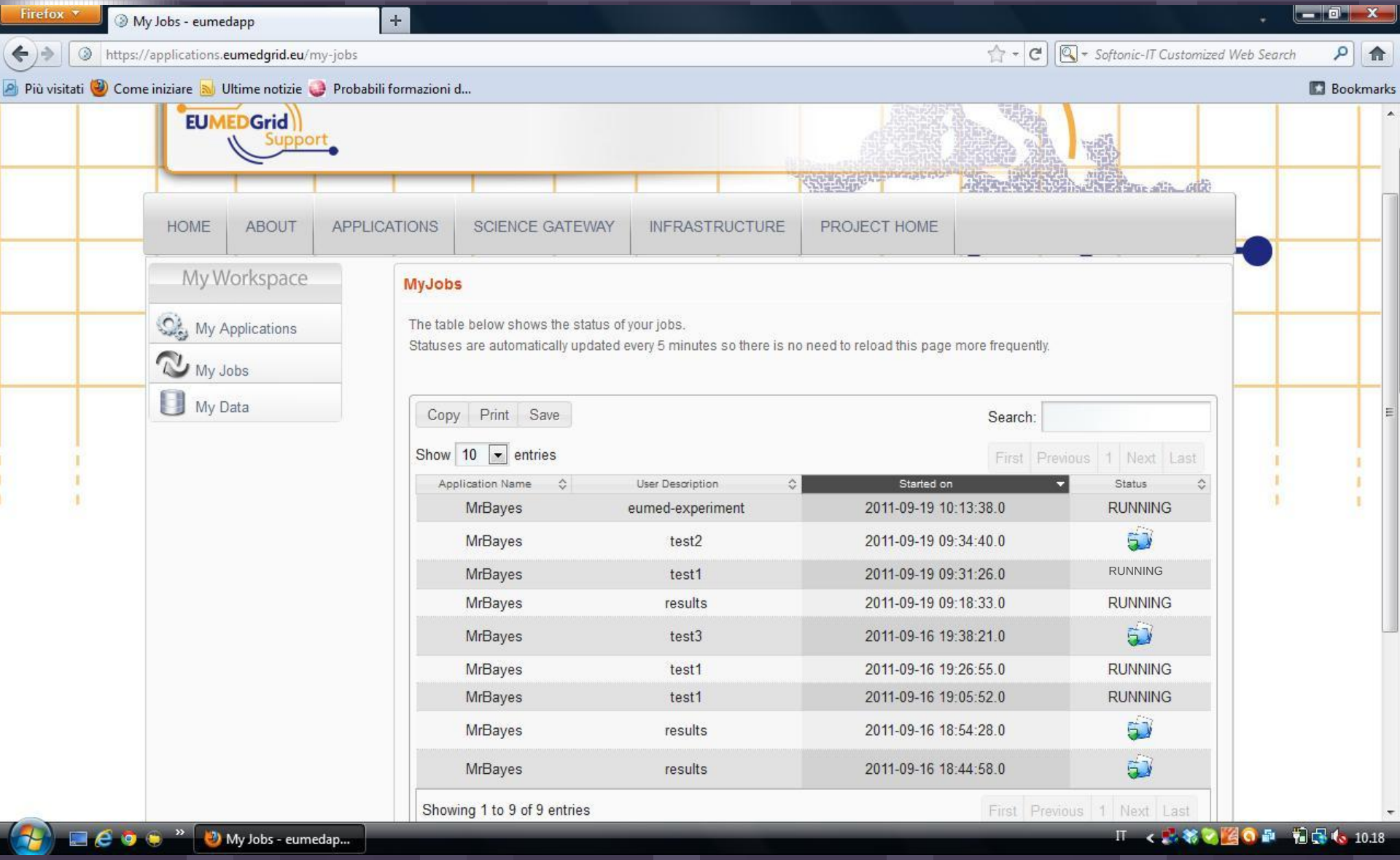
Science Gateways adopting the Grid Engine based on SAGA

- **The Grid Engine described here has already been adopted by the following Science Gateways:**
  - ViralGrid: viralgrid.ct.infn.it
  - EUMEDGRID-Support: applications.eumedgrid.eu
- **Work is in progress for the following ones:**
  - CHAIN: www.chain-project.eu
  - DECIDE: applications.eu-decide.eu
  - INDICATE: indicate-gw.consorzio-cometa.it
  - GISELA: applications.gisela-grid.eu
- **The Grid Engine described in this presentation is not bound to any of the Science Gateways using it and can be easily adopted by other portals**

Viral Grid


Firefox
My-Jobs - viralgrid
https://viralgrid.ct.infn.it/my-jobs
Softonic-IT Customized Web Search
Più visitati
Come iniziare
Ultime notizie
Probabili formazioni d...
Bookmarks
ViralGrid
MrBayes
viralgrid
My-Jobs
MyJobs
The table below shows the status of your jobs.
Statuses are automatically updated every 5 minutes so the
Opening 200.tgz
You have chosen to open
200.tgz
which is a: jZip archive file
from: https://viralgrid.ct.infn.it
What should Firefox do with this file?
Open with
jZip (default)
Save File
Do this automatically for files like this from now on.
OK
Cancel
Copy
Print
Save
Show 10 entries
Application Name
User Description
MrBayes experiment1
MrBayes test2 2011-09-19 09:34:40.0
MrBayes test1 2011-09-19 09:31:26.0 RUNNING
MrBayes results 2011-09-19 09:18:33.0 RUNNING
MrBayes test3 2011-09-16 19:38:21.0
MrBayes test1 2011-09-16 19:26:55.0 RUNNING
MrBayes test1 2011-09-16 19:05:52.0 RUNNING
MrBayes results 2011-09-16 18:54:28.0
MrBayes results 2011-09-16 18:44:58.0
First
Previous
1
Next
Last
Run Simulation
MrBayes Home
Manual
MrBayes Wiki
About INFN
My Workspace
My Applications
My Jobs
My Data
https://viralgrid.ct.infn.it/MyJobs/jobOutpuRetrive?DBid=199&Path=/tmp&proxy=21174&vo=cometa
My-Jobs - viralgrid -...
IT
9.55

EUMEDGRID-Support



References

- **A Simple API for Grid Applications (SAGA):**
  - http://www.gridforum.org/documents/GFD.90.pdf;
- **JSAGA:**
  - http://grid.in2p3.fr/jsaga/;
- **Other SAGA Implementations:**
  - The C++ implementation developed at the Louisiana State University/CCT: http://saga.cct.lsu.edu/;
  - The Java implementation developed at the Vrije Universiteit Amsterdam: http://saga.cct.lsu.edu/documentation/java.

Credits

- Valeria Ardizzone (COMETA);
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