



## Widening the number of e- Infrastructure users with Science Gateways and Identity Federations (access for success)

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*Univ. of Catania & INFN & Consorzio COMETA*

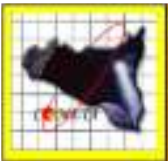
*UbuntuNet Connect 2011*

*Nairobi, 25.11.2011*





- **Driving considerations**
- **The Science Gateway paradigm:**
  - Architecture
  - Authentication and Authorisation
  - Access workflow
  - The «Grid Engine»
- **Science Gateways in action**
- **Summary and conclusions**



# e-Infrastructure at «global» scale

**eGEE**  
Enabling Grids  
for E-science

>340 sites in 57 countries  
~337,000 CPU cores  
>220 PB of storage  
~1 million jobs/day  
~20,000 users in ~280 VOs

Scheduled = 21539  
Running = 25374

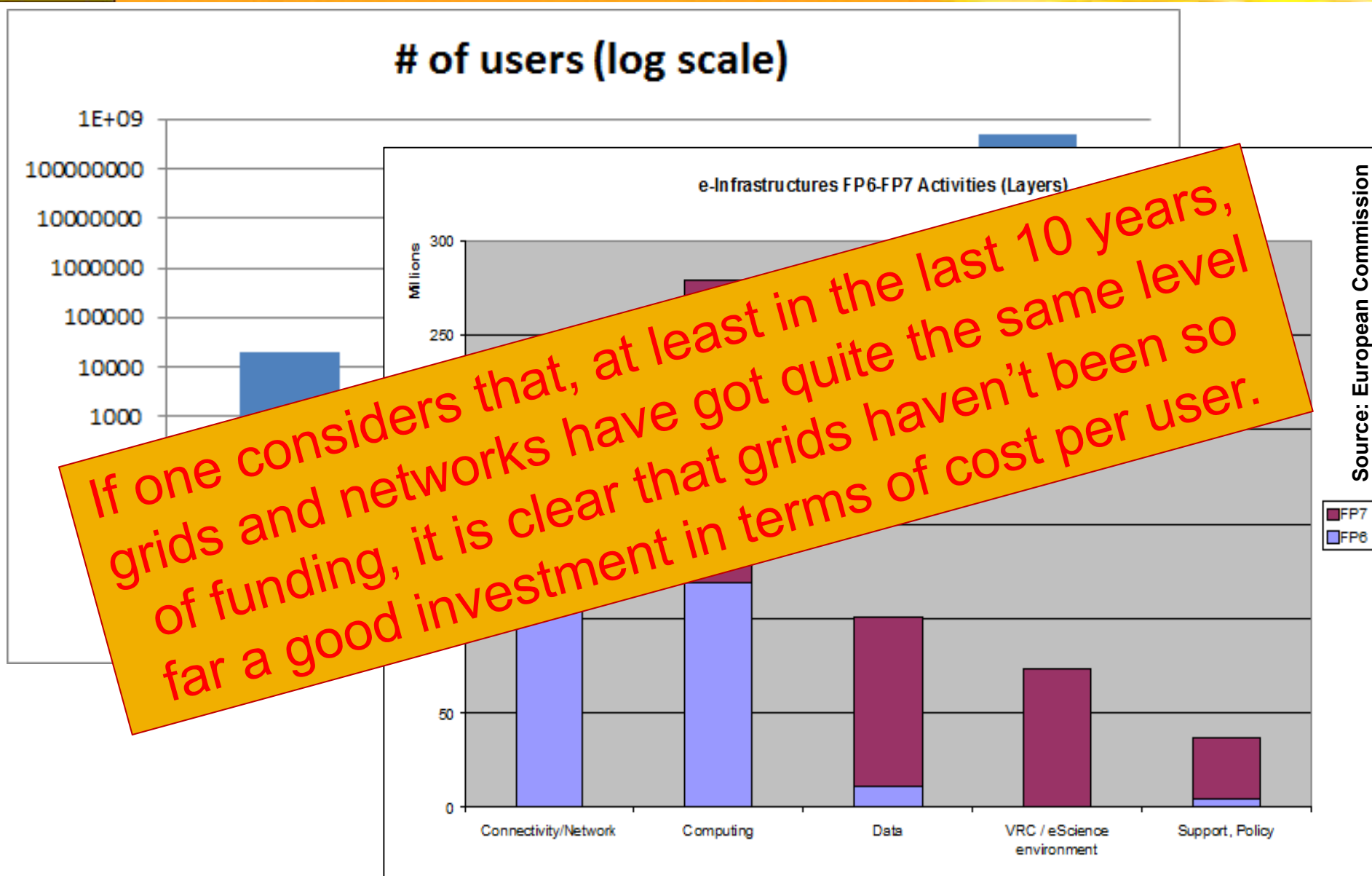
**Are 20,000 users a big number ?**

21:13:50 UTC

 **GridPP**  
UK Computing for Particle Physics



# Some interesting figures







## Another consideration...

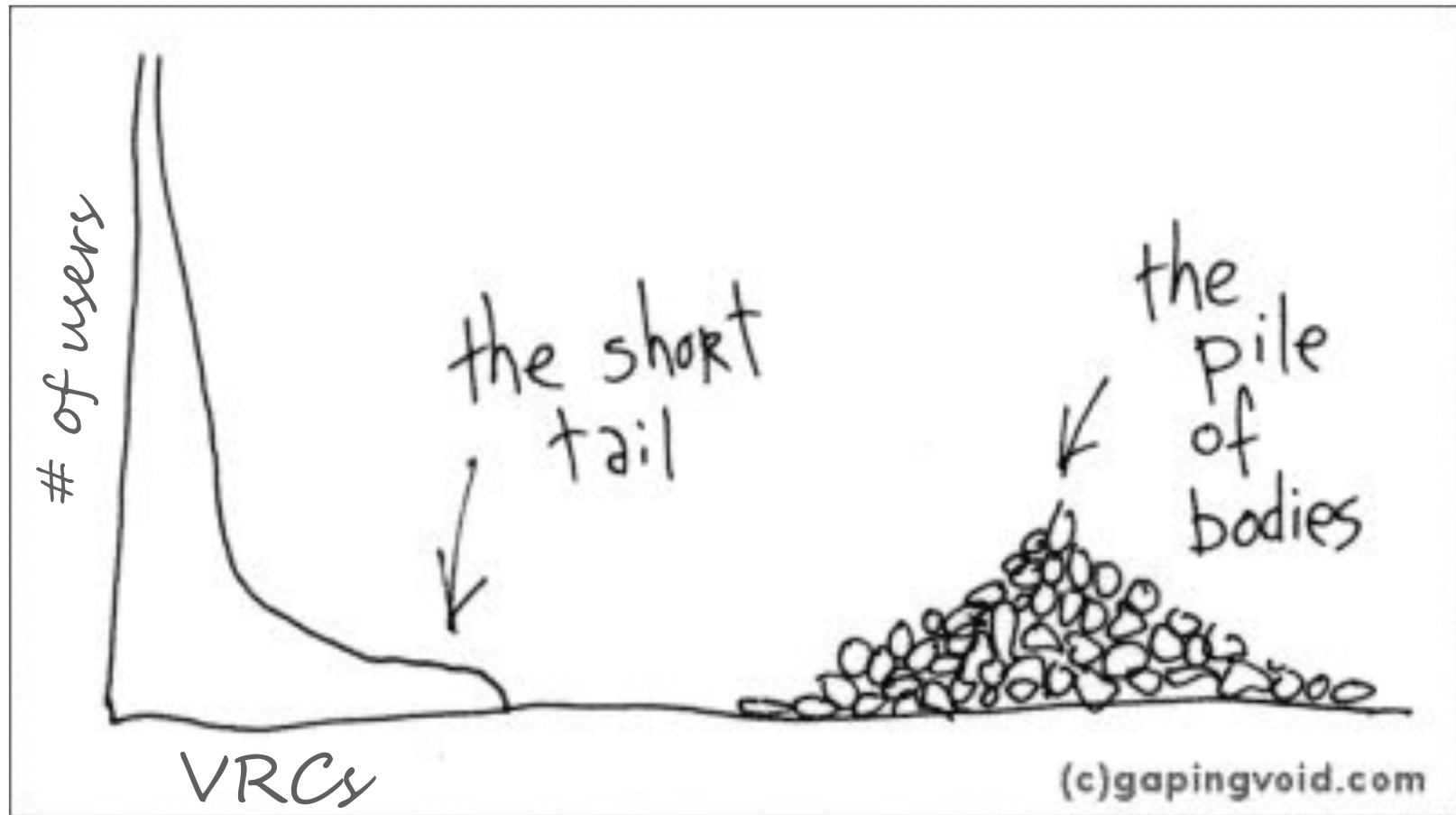


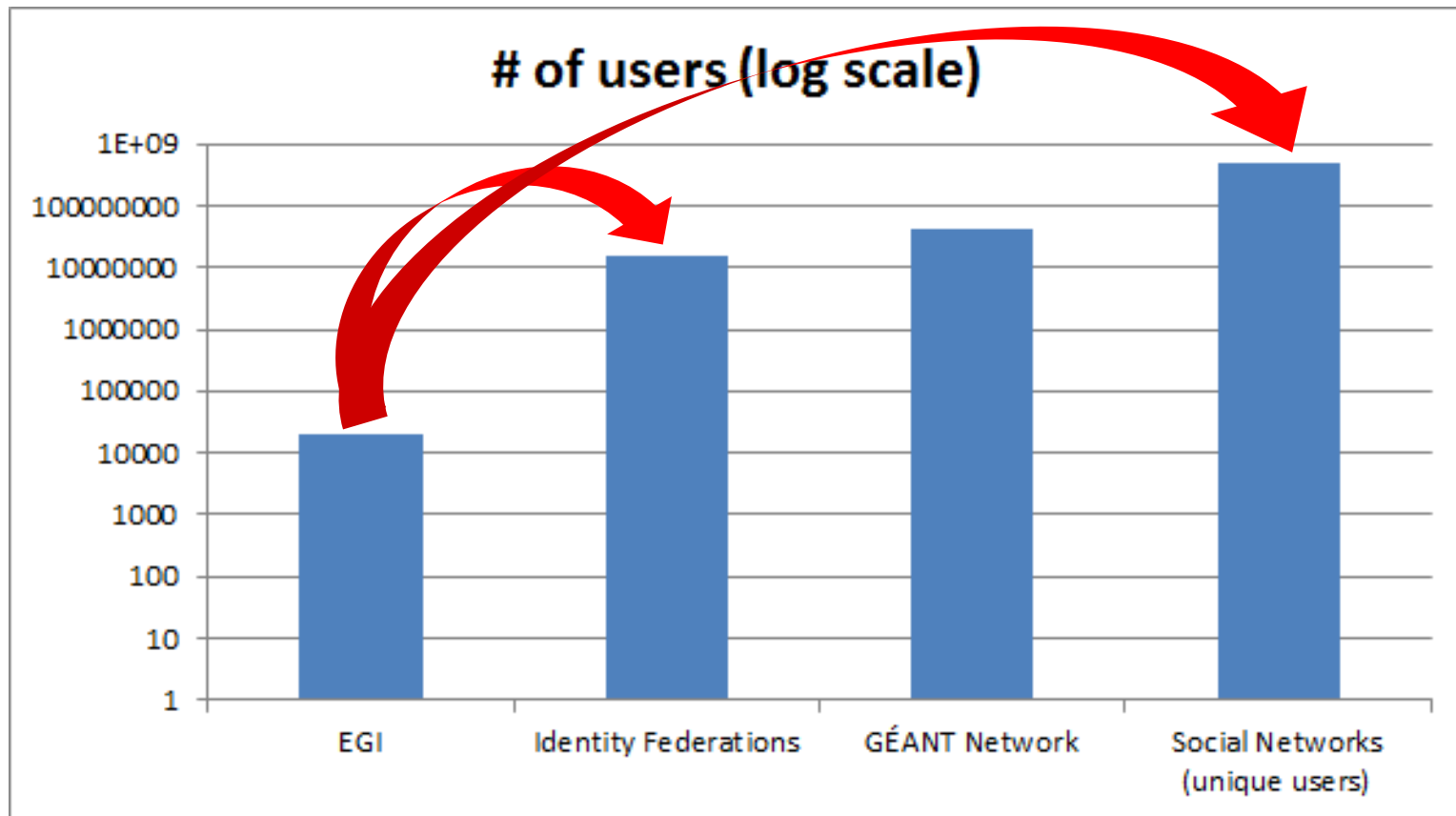
Figure «stolen» to B. Becker

There is a huge number of non IT-experts out there who do not belong to any constituted Virtual Research Community.

**How can we attract them ?**



# I have a dream...



Can we increase the number of potential grid users by a factor of 1,000...  
... or even by a factor of 25,000 and more ?



# A new paradigm: the Science Gateway

*“A Science Gateway is a community-developed set of tools, applications, and data that is integrated via a portal or a suite of applications, usually in a graphical user interface, that is further customized to meet the needs of a specific community.”*

**Teragrid**

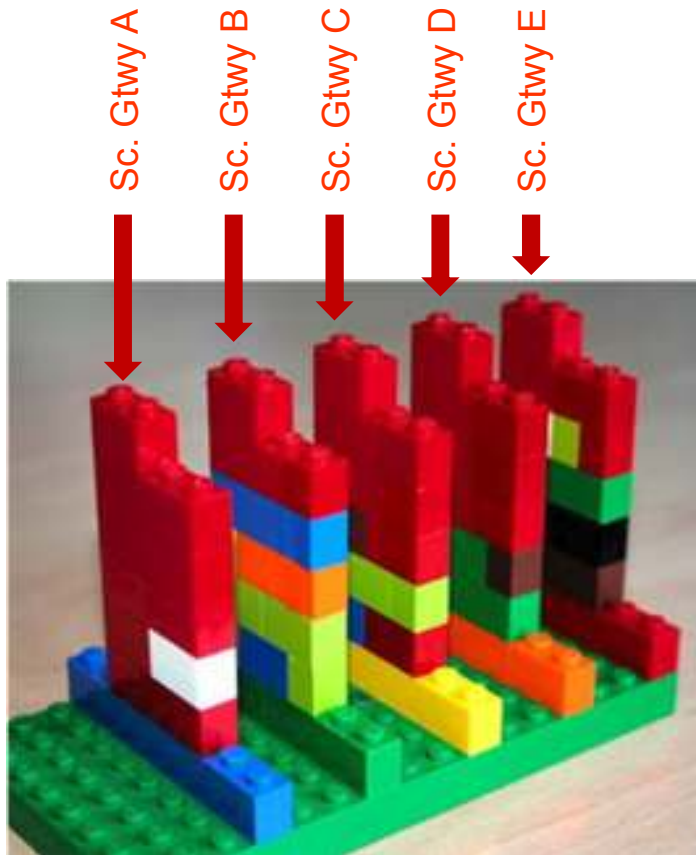
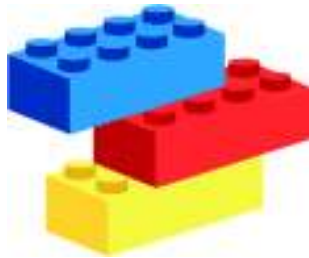




# Primary requirement: building Science Gateways should be like playing with

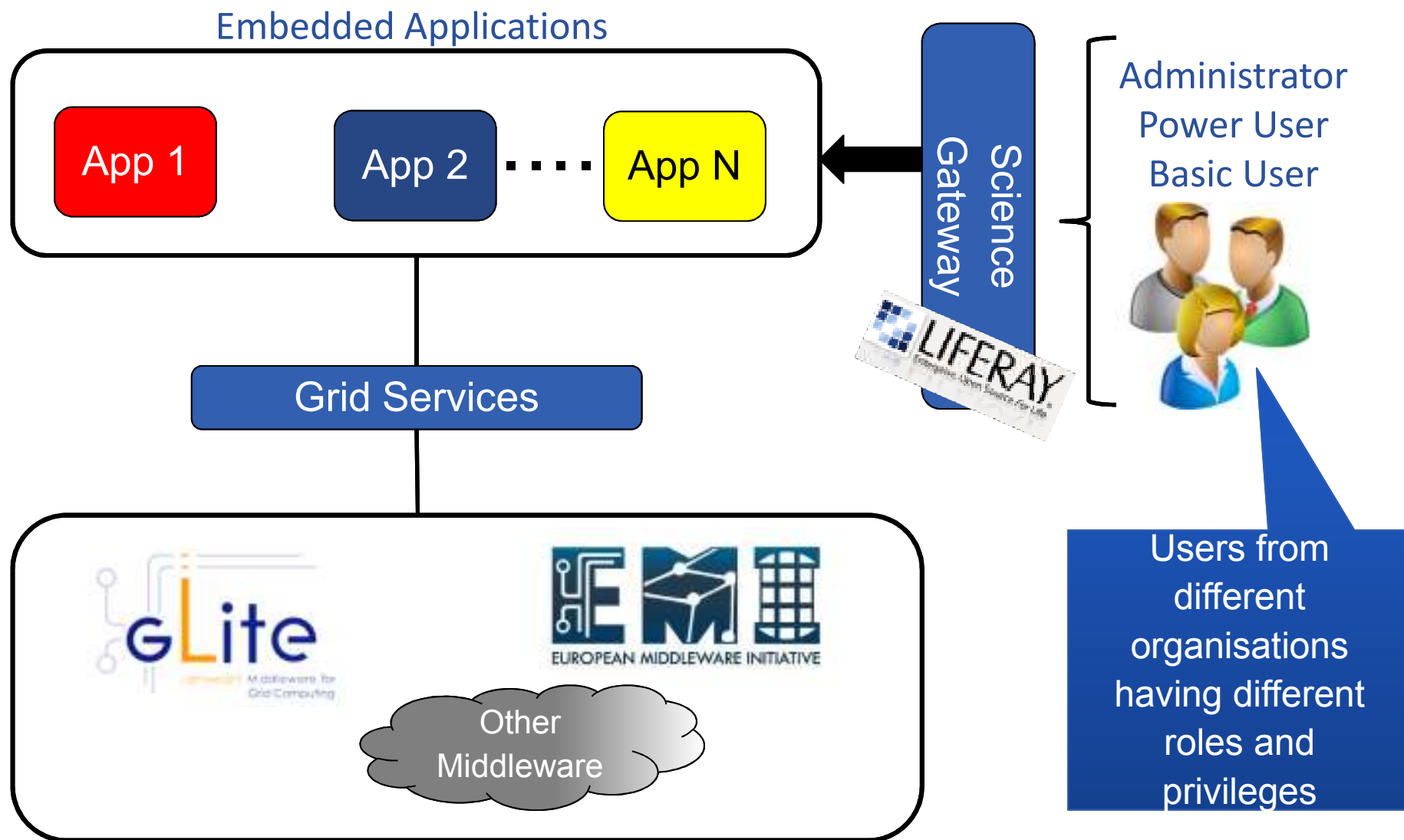


- Standards
- Simplicity
- Easiness of use
- Re-usability





# Our reference model



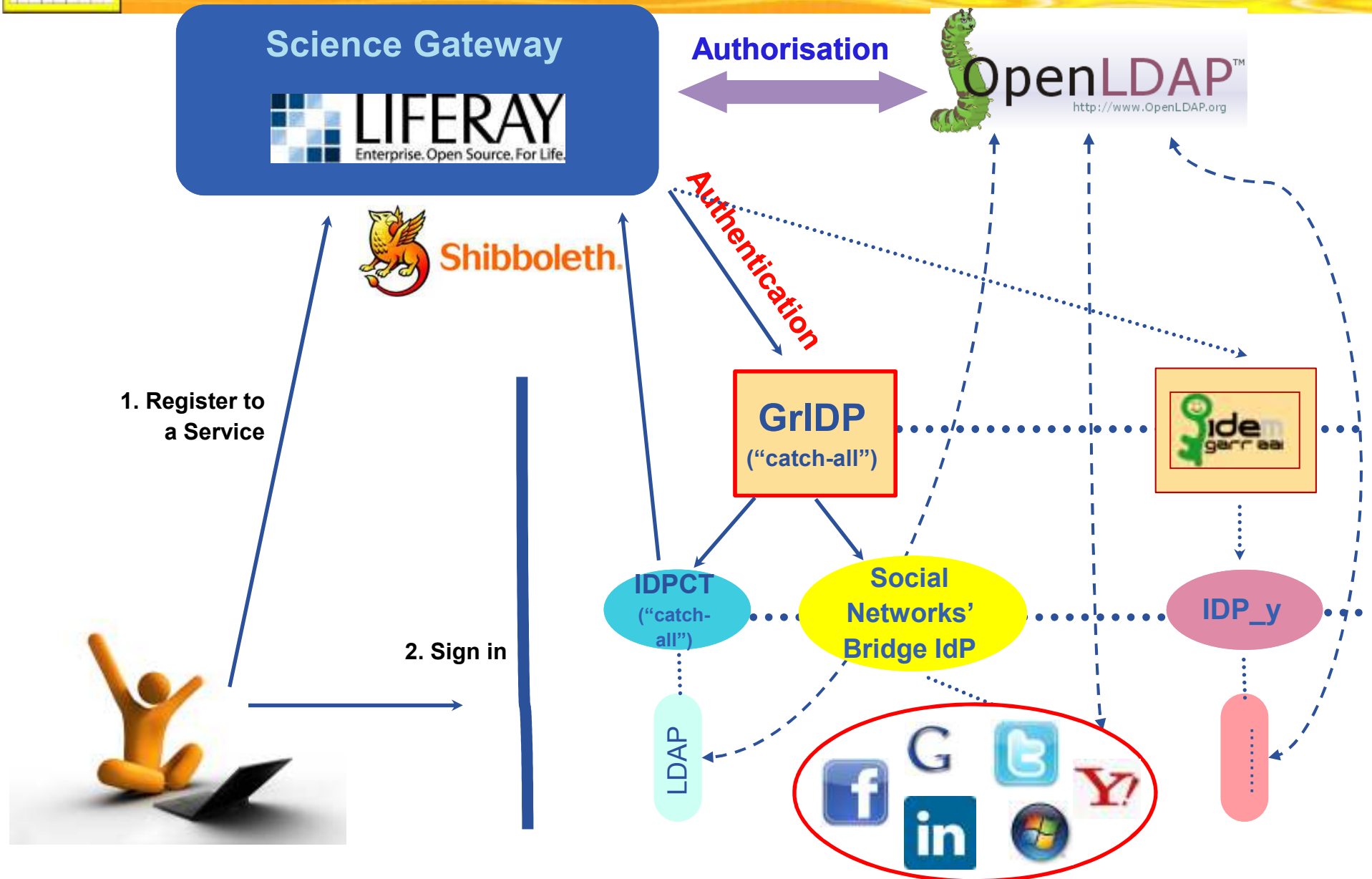




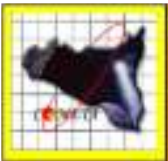
- Award winning, highly-configurable, scalable, open source portal framework;
- Compatible with JSR 168/286 standards and based on modern web 2.0 technologies;
- Examples of Liferay services:
  - Portal;
  - CMS;
  - eCollaboration and “social” software.



# AuthN & AuthZ Schema





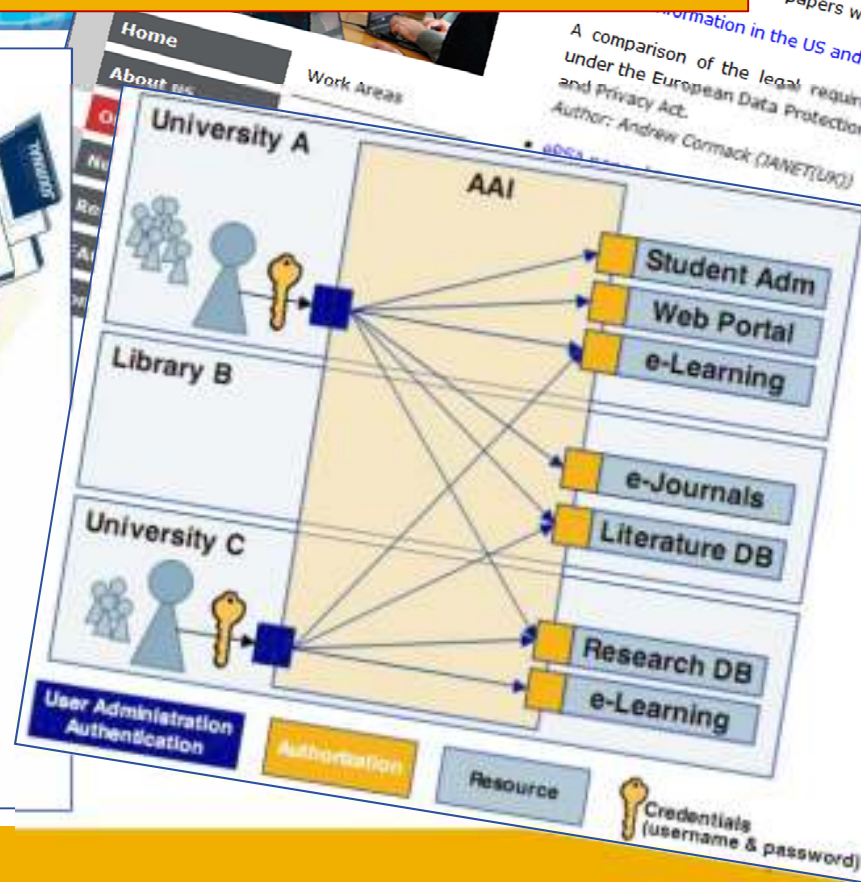
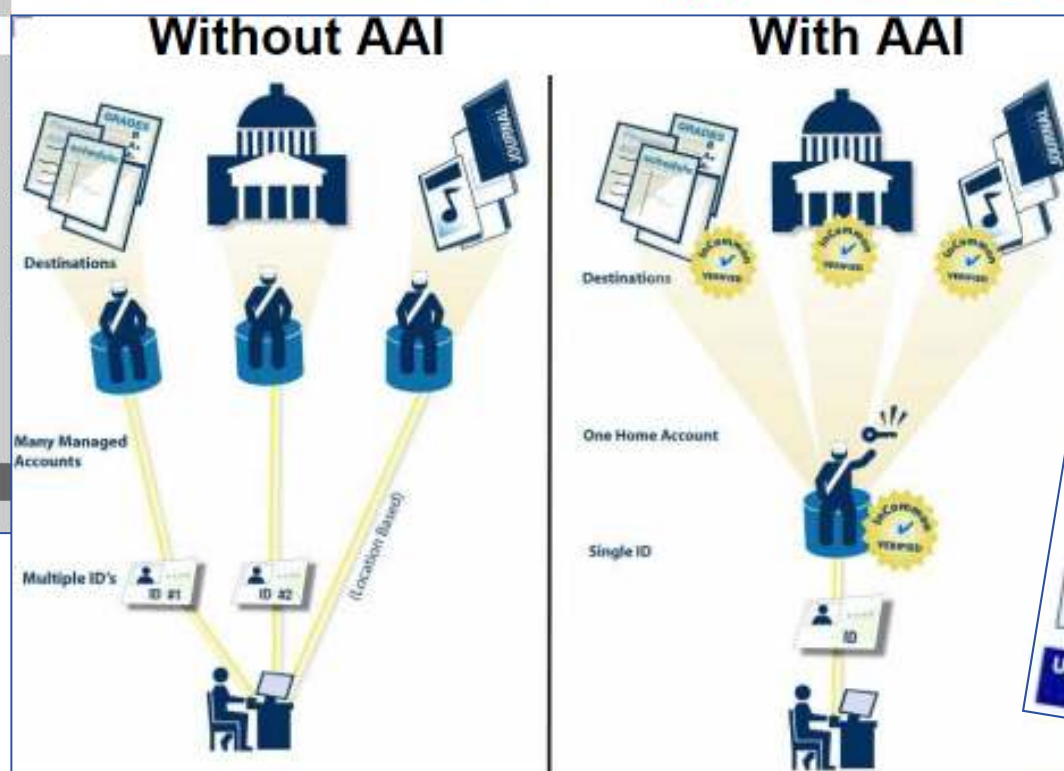


# Wanna get started with Identity Federations ?

(<https://refeds.org>)

An Identity Federation consists of “[...] the agreements, standards, and technologies that make identity and entitlements portable across autonomous domains.”

**Burton Group**





## Just a use case: eduroam (<http://www.eduroam>)

**eduroam** (education roaming) is the secure, world-wide roaming access service developed for the international research and education community.



**eduroam** allows students, researchers and staff from participating institutions to obtain Internet connectivity across campus and when visiting other participating institutions by simply opening their laptop.



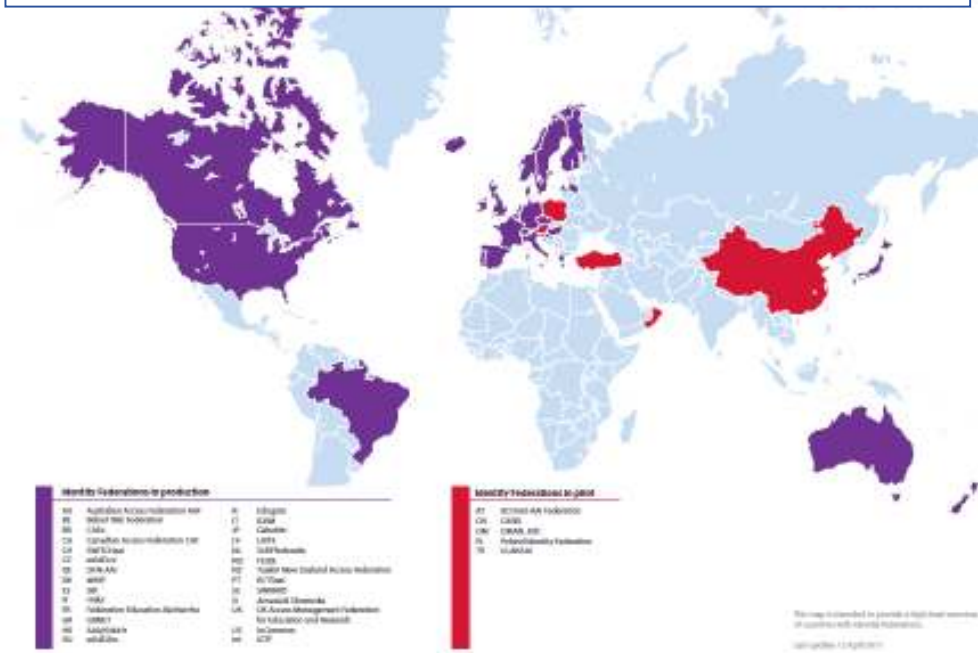
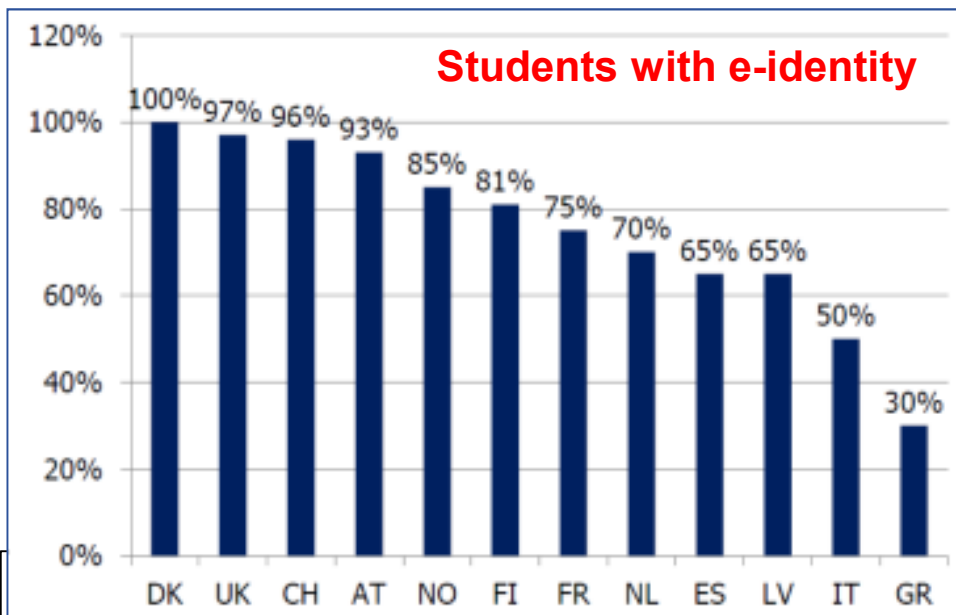
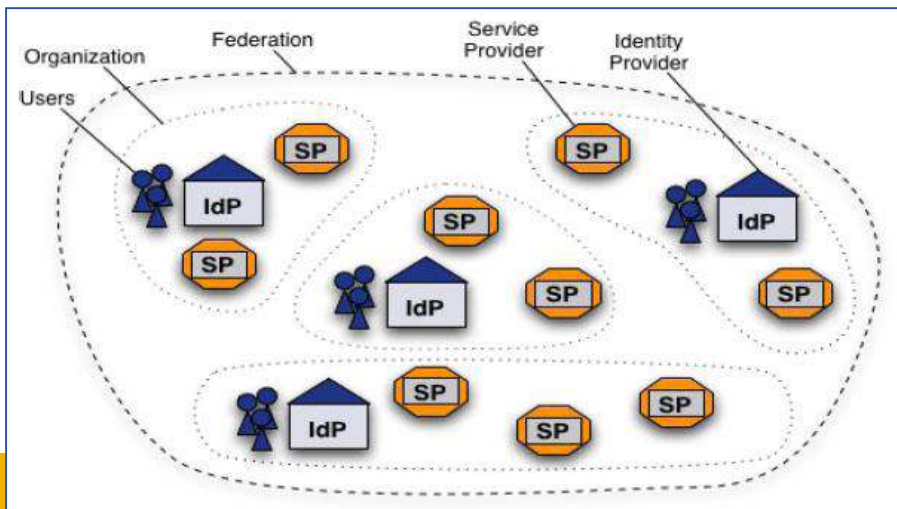


# IDEM Identity Federation in Italy

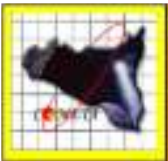
([www.idem.garr.it](http://www.idem.garr.it))

## IDEM figures:

- 33 Members (INFN and COMETA are two of them);
- 9 Partners;
- **38 Identity Providers;**
- **35 Services Providers**
- ~3,000,000 end users;
- ~50% of the Italian higher education & research community







# The Grid IDentity Pool (GrIDP)

(<http://gridp.ct.infn.it>)

This is a "catch-all" Identity Federation

Navigation: About Identity Providers Service Providers Documentation Contacts

# GrIDP

## Grid IDentity Pool

### About

The Grid IDentity Pool (GrIDP) is an Identity Federation supporting cross-members. Through GrIDP, users can access high-level services, such as using the credentials provided by the organisations they belong to.

The GrIDP Identity Federation comprises members of the academic, research and industry sectors.

- Identity Providers (IdP): the entities (e.g. academic and research institutions) providing identities.
- Service Providers (SP): the entities providing services to the federation purpose of authentication and provision of personalized services.

The participation of an Identity Provider to GrIDP provides multiple benefits:

- logging into a federated service is performed using the user's existing credentials.
- the user's identity, position and affiliation are only optionally transferred to the service.

Accordingly, a Service Provider may benefit from joining GrIDP by being able to authenticate users without the need for "ad hoc" user authentication methods.

Navigation: About Identity Providers Service Providers Documentation

# GrIDP

## Grid IDentity Pool

### Identity Providers

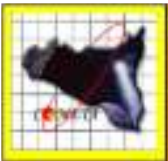
The GrIDP Identity Federation currently comprises the following Identity Providers:

- INFN Catania and COMETA (IDPCT) - this is a "catch-all" Identity Provider
- Istituto Nazionale di Fisica Nucleare (INFN-AAI) - Italy
- INFN - France
- Social Networks' Bridge Identity Provider

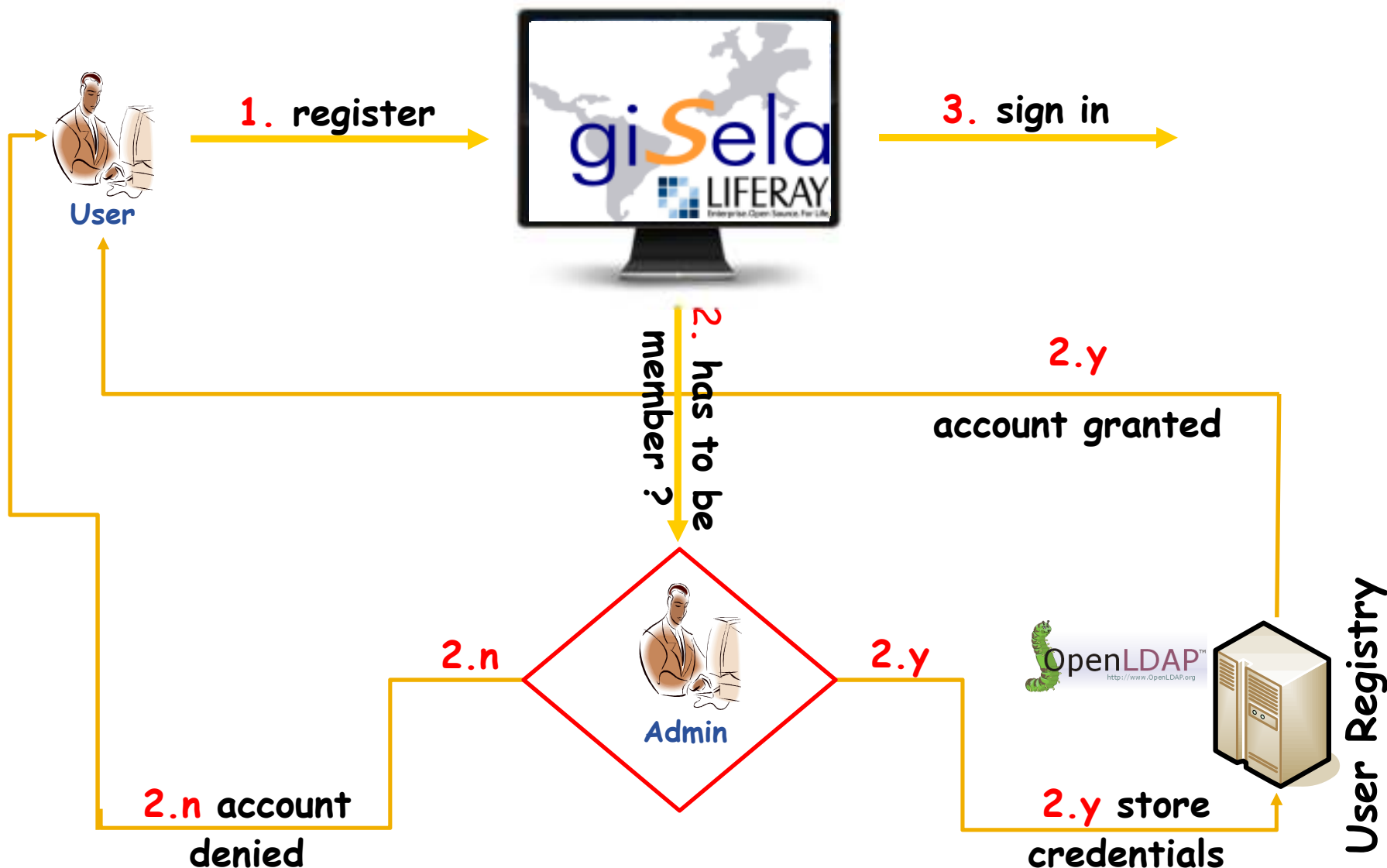
(this is a special Identity Provider to authenticate people with the credentials they have with the most common and populated social networks)

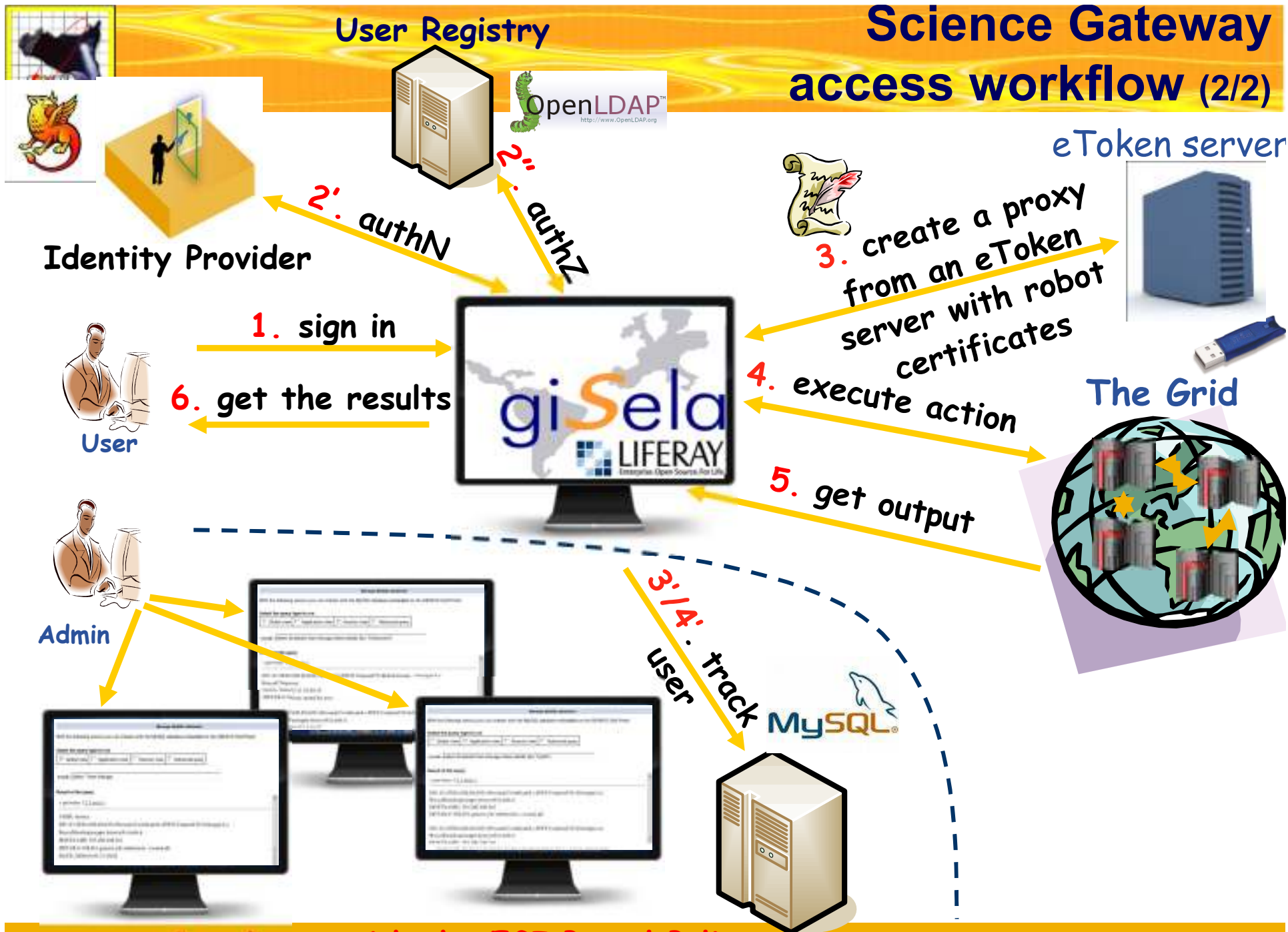
Logos: INFN, INAF, INFN





# Science Gateway access workflow (1/2)








# 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 infrastructure** (e.g., the middleware);
- SAGA is an **Open Grid Forum standard**:  
<http://www.gridforum.org/documents/GFD.90.pdf>
- Several **implementations** are available:
  - 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 is a **Java implementation of SAGA** developed at CCIN2P3 Lyon (France);
- 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		General Public
Adaptors for classic protocols		General Public
Adaptors for gLite-CREAM		General Public
Adaptors for gLite-WMS		General Public
Adaptors for Globus Toolkit v2		General Public
Adaptors for Globus WS-GRAM		General Public
Adaptors for iRODS SRB		General Public
Adaptors for LFC		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		General Public
Adaptors for SSH		General Public
Adaptors for Unicore		General Public
Adaptors for Unix file systems		General Public
Adaptors for VOMS		General Public
jsaga-adaptor-arc		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 several middleware:  
gLite, Globus, ARC, UNICORE, etc.

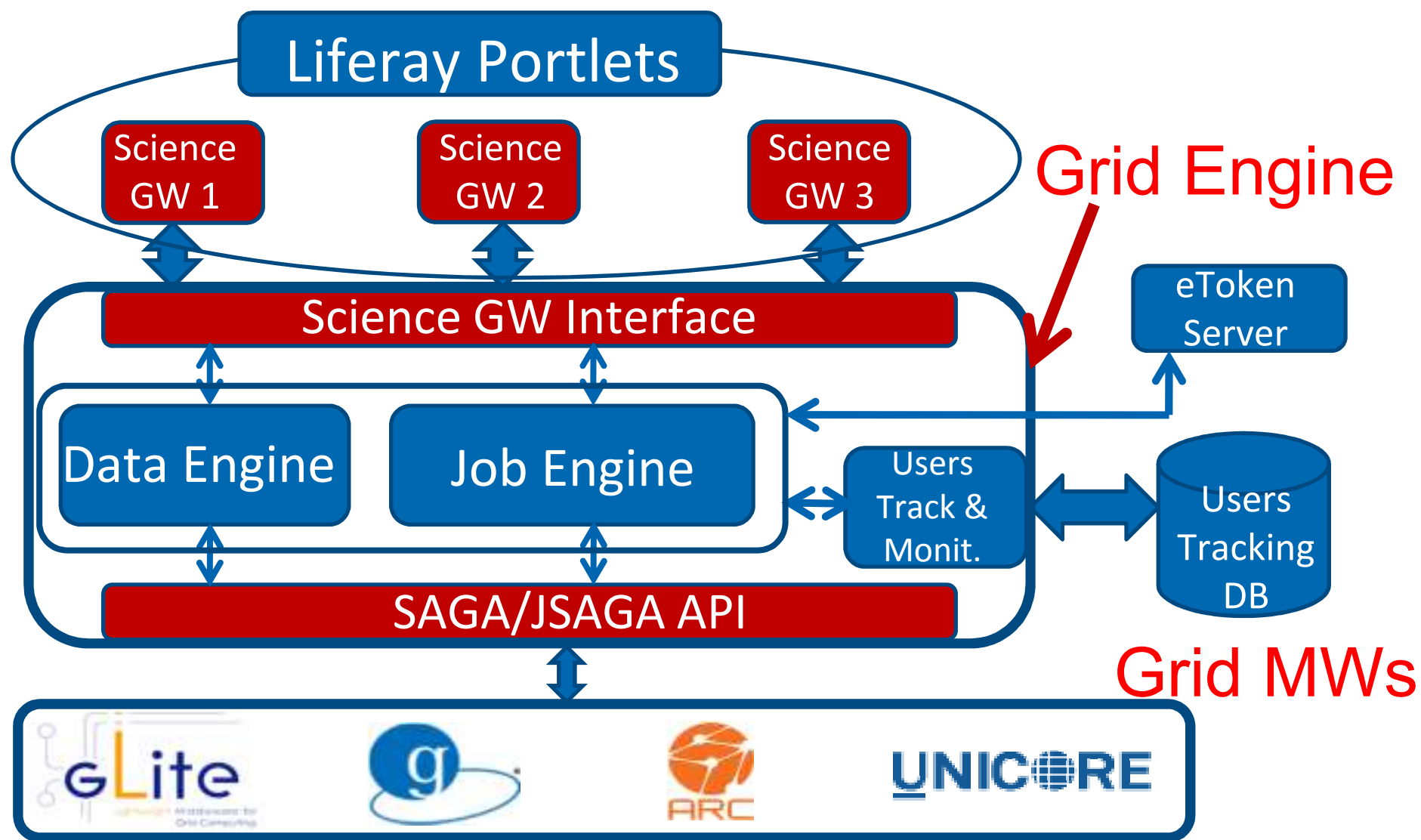
SAGA is an EGI.eu Technology Provider

(MoU signed on 11 April 2011)

This means sustainability!



# A Generic Grid Engine for Science Gateways based on SAGA/JSAGA



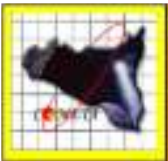


# EGI Portal Policy & Security Policy (1/2)

## 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 & Security 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

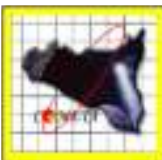
Common Name

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 developed at Catania

(<http://gridp.ct.infn.it>)

[About](#)[Identity Providers](#)[Service Providers](#)[Documentation](#)[Contacts](#)

Grid  
IDentity  
Pool

## Service Providers

The GrIDP Identity Federation currently comprises the following Service Providers:

1. The CHAIN portal
2. The DECIDE Science Gateway
3. The EUMEDGRID Science Gateway
4. The GILDA t-Infrastructure portal
5. The GISELA Science Gateway (under construction)
6. The INDICATE e-Culture Science Gateway
7. The RICEVI portal (in italian)
8. The SPECIAL portal
9. The ViralGrid Science Gateway

Some of the GrIDP Service Providers are also resources of other Identity Federations. In particular:

- The CHAIN portal is a resource of GRNET-AAI
- The DECIDE Science Gateway is a resource of IDEM
- The EUMEDGRID Science Gateway is a resource of GRNET-AAI and IDEM
- The INDICATE e-Culture Science Gateway is a resource of CARSI, GRNET-AAI and IDEM
- The RICEVI portal is a resource of IDEM





# The Social Networks' Bridge Identity Provider

(<https://idpsocial.ct.infn.it>)

About How it works



## Social Networks' Bridge Identity Provider

**About**

The Social Networks' Bridge Identity Provider is a SAML standard based service powered by SimpleSAMLphp that allows the credentials they have with the most common and populated social networks. The Social Networks' Bridge Identity Provider provides hundreds of millions the number of potential users who can login on an access-controlled web service without the need of a separate login system.

Facebook, Google and Windows Live networks are currently supported while LinkedIn, Twitter and Yahoo! ones will be added soon.

If you are interested either in using the Social Networks' Bridge Identity Provider to authenticate people on your website or of your Identity Federation(s), please contact [credentials-admin@ct.infn.it](mailto:credentials-admin@ct.infn.it)

Facebook, Google and Windows Live  
already integrated and working

LinkedIn, Twitter and Yahoo!  
will be added soon



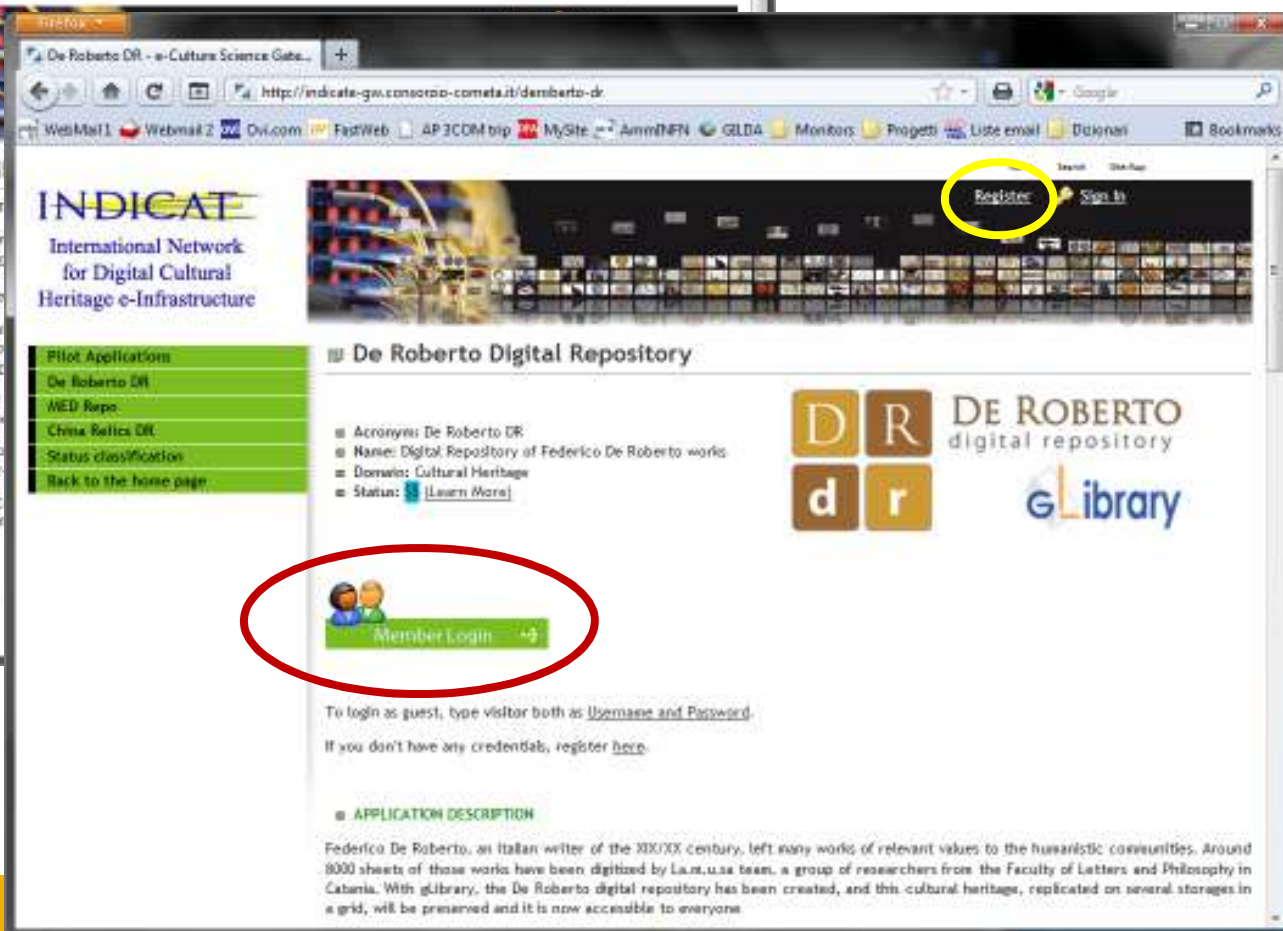


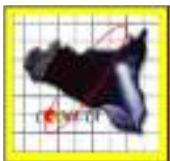


# The INDICATE e-Culture Science Gateway

<http://www.indicate-project.eu>

<http://indicate-gw.consortio-cometa.it>





# The INDICATE e-Culture Science Gateway

Register - INDICATE e-Culture Science Gateway

indicate-gw.computer-science.it: request-account

Webmail 1 Webmail 2 Civi.com MySite Calendar AmmNPN GLOA Monitor Progetti Liste email Dizionario

Home Search Site Map

**INDICATE**  
International Network  
for Digital Cultural  
Heritage e-Infrastructure

[Pilot Applications](#)  
[Instructions to Register and Sign In](#)  
[Dr Roberto DR](#)  
[RED Reps](#)  
[China Reps DR](#)  
[Status classification](#)  
[Back to the home page](#)

## Register

Please, enter your data

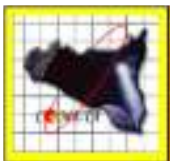
Title <input type="text"/>	Organization* <input type="text" value="University of Catania"/>
Name* <input type="text" value="Roberto"/>	Address <input type="text"/>
Surname* <input type="text" value="Barbieri"/>	Country <input type="text"/>
Skype Contact <input type="text"/>	Telephone <input type="text"/>

E-mail\*  
 If you are already a member of an Identity Federation, please specify the "same" email address you are registered with in the Federation

If you are a member of one of the Identity Federations listed below, you can register to this portal using the same credentials you already have. If you do not belong to any of them, leave "(none)".

Identity Federations

- (none)
- (none)
- CARS
- GRID**
- GRNET-RA
- GRNET



# The Authentication Procedure

## Select an Identity Provider

The Service you are trying to reach requires that you get authenticated. Please, choose from the list below the Federation and the Organisation you belong to.

Federation	Organisation
GrDP	IDPCT (INFN Catania and COMETA)
GARR-IDEM	Istituto Nazionale di Fisica Nucleare
CARSI	maatG
GRNET-AAI	Social Networks' Bridge IdP
All Sites	

In case of problems, please send an email to [credentials-admin@ct.infn.it](mailto:credentials-admin@ct.infn.it)  
Do not bookmark this page! After login you will be redirected to use.

## Identity Federations' discovery service

## Login Page

In order to access the portal <https://indicate-gw.consortio-cometa.it>, please enter your IDPCT credentials.

### Lost/forgotten Credentials

In case of lost or forgotten credentials, please send an email to: [credentials-admin@ct.infn.it](mailto:credentials-admin@ct.infn.it)

**Do not bookmark this page!**

After login you will be redirected to the portal you wanted to use.

This service is powered by Shibboleth.

## Identity Provider Catania

**«catch-all» Identity Provider**

User

Password

## Shibboleth Identity Provider Login to Service Provider <https://indicate-gw.consortio-cometa.it/shibboleth>

Existing Session: false  
Requested Authentication Methods: []  
Attempting Authentication Method: urn:oasis:names:tc:SAML:2.0:ac:classes:PasswordProtectedTransport  
Is Forced Authentication: false

Username:   
Password:

This service is powered by





# The Social Networks' Bridge Identity Provider

(<https://idpsocial.ct.infn.it>)

## Select an Identity Provider

The Service you are trying to reach requires that you get authenticated. Please, choose from the list below the Federation and the Organisation you belong to.

### Identity Federations' discovery service

#### Federation

GrDP  
GARR-IDEM  
CARSI  
GRNET-AAI  
All Sites

#### Organisation

IDPCT (INFN Catania and COMETA)  
Istituto Nazionale di Fisica Nucleare  
maatG  
Social Networks' Bridge IdP

Select

Remember for session

In case of problems, please send an email to [credentials-admin@ct.infn.it](mailto:credentials-admin@ct.infn.it).  
Do not bookmark this page! After login you will be redirected to the service you use.

## Social Networks' Bridge Identity Provider

In order to use this service of the portal <https://indicate-gw.conorzio-cometa.it>, please sign in using your account on the same social network you specified when you registered.



email to [credentials-admin@ct.infn.it](mailto:credentials-admin@ct.infn.it) with their description.  
login you will be redirected to the web page containing the service of the portal you

facebook

Sign Up

Facebook helps you connect and share with the people in your life.

### Facebook Login

Log in to use your Facebook account with Social Networks' Bridge Identity Provider.

Email address:

Password:

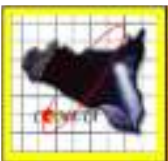
☐ Keep me logged in

or [Sign up for Facebook](#)

[Forgotten your password?](#)

Italiano English (US) Español Português (Brasil) Français (France) Deutsch العربية 中文(简体) 日本語





# The INDICATE e-Culture Science Gateway

Browse - e-Culture Science Gateway of the INDICATE Project - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://indicate-gw.consortio-cometa.it/digital-library

WebMail1 Webmail 2 OVI Ovi.com FastWeb AP 3COM trip MySite AmmINFN GILDA Monitors Progetti Liste email Dizionari

Browse - e-Culture Science Gateway ...

Select the replica to download...

INDICATE International for Digital Heritage e-In

Pilot Application De Roberto DR Browse MED R Browse Status c Back to the hor

Basato sulle API REST di gLibrary

Usa l'interfaccia HTTPS degli Storage Element

UNIPA

Download

INAF

DMI UNICT

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

© 2011 Cnes/Spot Image

36°59'45.71"N 15°01'22.85"E elev 0 m

Alt 600.18 km

Google

Termini e condizioni d'uso

014\_la\_lupa.tif

Done

Search Site Map

palermo 1919; altre  
oto, tipografia rosario  
tobre 1932; conservato  
biblioteca di storia patria  
ia orientale

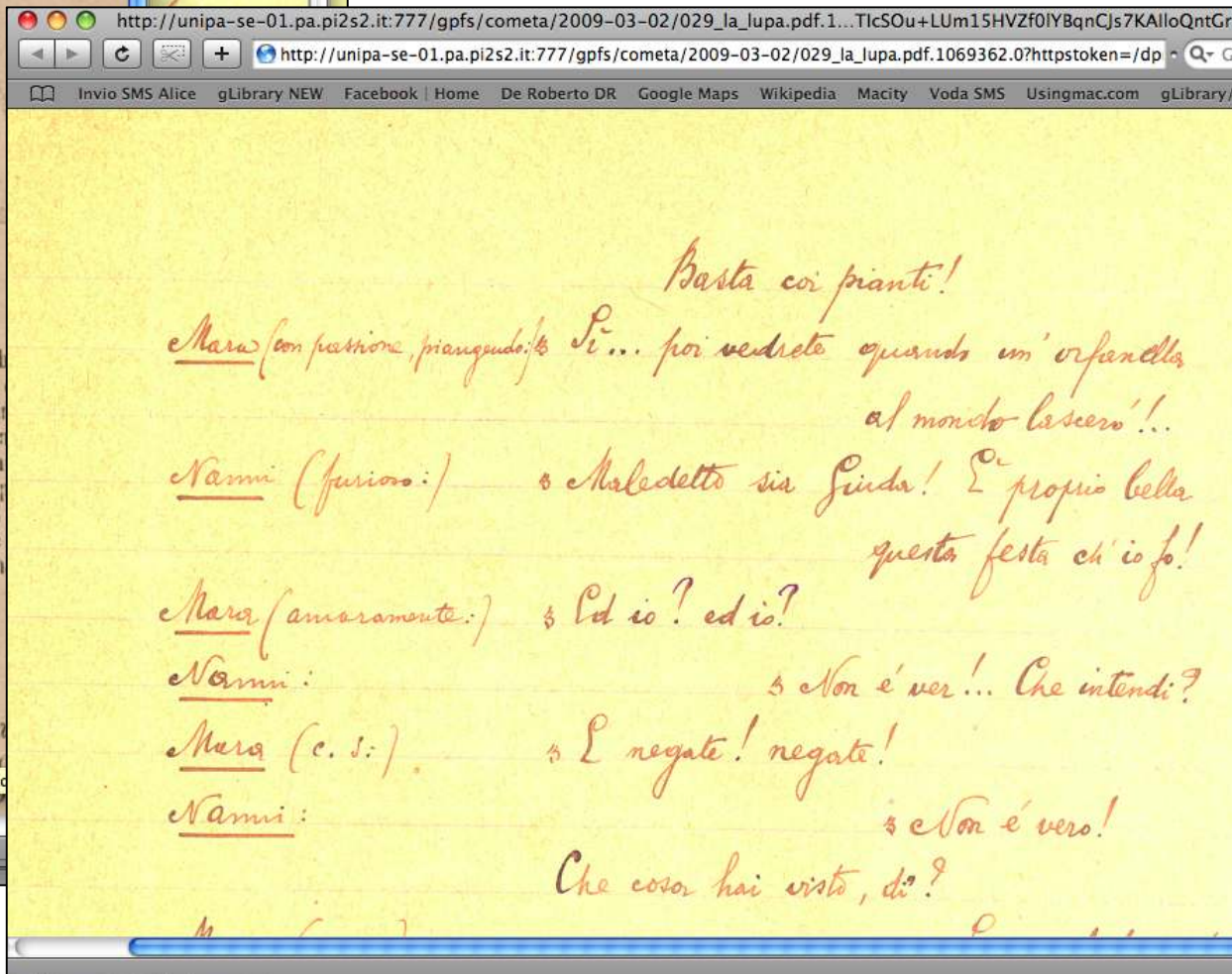
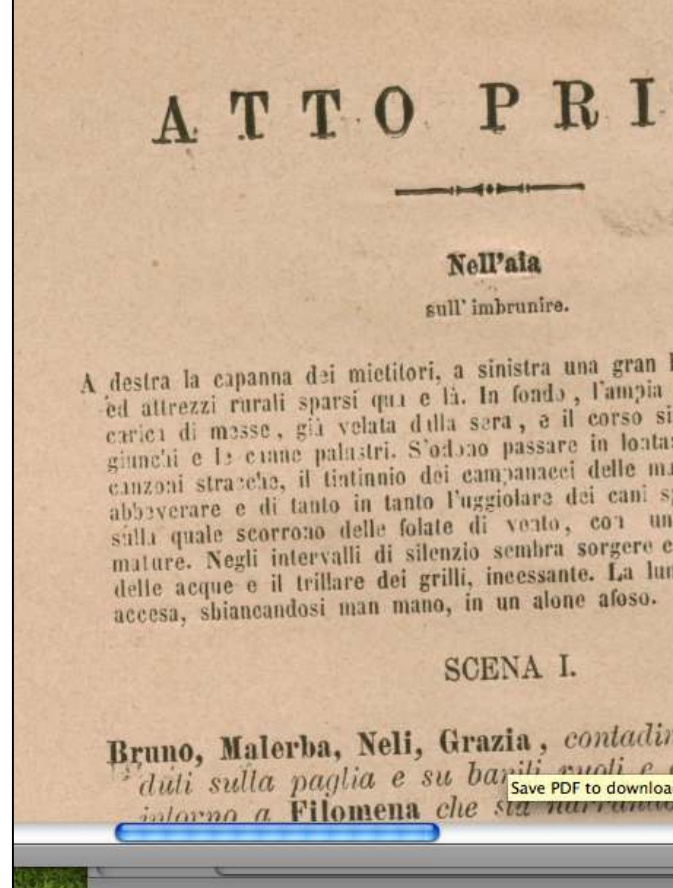
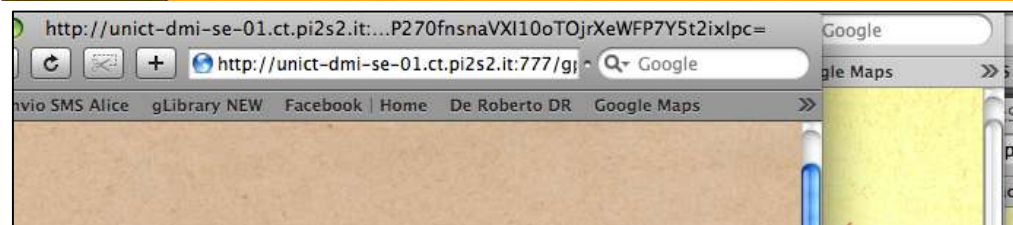
o della tragedia lirica in  
musicata da pierantonio  
blicata da officine  
igrafiche barravecchia e  
palermo 1919; altre  
oto, tipografia rosario  
tobre 1932; conservato  
biblioteca di storia patria  
ia orientale

manoscritto della tragedia lirica in  
due atti, musicata da pierantonio  
tasca, pubblicata da officine  
tipo-litografiche barravecchia e  
balestrini, palermo 1919; altre





# The INDICATE e-Culture Science Gateway







# The INDICATE e-Culture Science Gateway

Grazie alla collaborazione con



INDICATE  
International Network  
for Digital Cultural  
Heritage e-Infrastructure

Pilot Applications:  
Da Roberto DR.  
Browse  
MED Repo  
Browse  
China Relics DR  
Browse  
Status classification  
Back to the home page

### China Relics Digital Repository

Thumb	numb	name
	1	仕女图
	2	唐安公主墓男侍图
	3	高思恭墓男侍图
	4	马球图
	5	李凤墓侍女图



# Science Gateways in action: GATE @ EUMEDGRID



**Science Gateway**

- Instructions to Register and Sign In
- GATE
  - Run**
- Phylogenetics

**My Workspace**

- My Jobs
- My Data
- My Help

**GATE**

Please fill the following form and then press 'SUBMIT' button to launch GATE application.

Requested inputs are:

- GATE Macro file (.mac)
- GATE Material Database (.db)
- ROOT C source code for post processing data analysis

Pressing the 'Demo' Button input fields will be filled with Demo values  
Pressing the 'Reset' Button all input fields will be initialized.

GATE Macro file

```
#####
# Visualisation #
#####

#####
# Mandatory fGate #
#####

/gate/geometry/setMaterialDatabase

/gate/world/geometry/setXLength 200
/gate/world/geometry/setYLength 300
/gate/world/geometry/setZLength 200
/gate/world/setMaterial Vacuum

/gate/world/daughters/name target
/gate/world/daughters/insert box
/gate/target/setMaterial Aluminium
```

```
{
float energy;
float x, y, z;
float dx, dy, dz;
float weight;
char volumeName[64];
char particleName[64];
char procName[64];

TChain * T = new TChain("PhaseSpace");

T->Add("phsp.root");

T->SetBranchAddresses("ParticleName", &particleName);
T->SetBranchAddresses("ProductionVolume", &volumeName);
T->SetBranchAddresses("ProductionProcess", &procName);
T->SetBranchAddresses("Ekin", &energy);
T->SetBranchAddresses("X", &x);
T->SetBranchAddresses("Y", &y);
T->SetBranchAddresses("Z", &z);
T->SetBranchAddresses("dX", &dx);
```

Insert below your experiment identifier

GATE DEMO Simulation of: 8/10/2011 - 14:37:59





# Science Gateways in action: MrBayes @ GISELA

Science Gateways

- Home
- Life Sciences
  - Phylogenetics
    - Run

My Workspace

- My Jobs
- My Data
- My Help

MrBayes - Set Parameters

Input Parameters

Alignment File (Nexus Format)  Browse... Description: results

Likelihood model (list)

number of substitution types (nst): 6 (GTR)

	A	C	G	T
A		$\gamma_1$	$\alpha_1$	$\beta_1$
C	$\gamma_1$		$\beta_2$	$\alpha_2$
G	$\alpha_1$	$\beta_2$		$\gamma_2$
T	$\beta_1$	$\alpha_2$	$\gamma_2$	

form of the nucleotide substitution model (nucmodel): 4by4 (standard model of DNA substitution)

enforces use of a particular genetic code (code): universal code (only relevant if nucmodel: codon)

rate variation across sites (rates): gamma-distributed rates across sites

rate number of gamma rate categories (ngammecat): do a reasonable job of approximating the continuous gamma (default)

Set outgroup (outgroup)

assigns a taxon to the outgroup: 1 (enter taxon number or (outgroup)matrix)

Summary results (sumt)

how often to attempt swaps of states between chains (swapfreq): 1

sample a tree every 100 generations (samplefreq)

print to screen every 100 generations (printfreq)

number of chains (nchains): four

save tree branch lengths (savebrlens): yes

should taxa should be ordered before printing trees to file? (ordertaxa): no

discard first 100 trees sampled (burnin) (100 for publication)

consensus tree type (contype): majority rule with all compatible partitions

should tree probabilities print to screen? (showtreeprob): no

Reset to default values Run MrBayes Simulation

https://info-01.ct.pl2s2.it:7801 - laroocca's desktop - Mozilla Firefox

HyPhy

File Edit View Help

Applet VncViewer started

https://glite-tutor1.ct.info.it:7801 - laroocca's desktop - Mozilla Firefox

HyPhy

File Edit View Help

Applet VncViewer started



# Science Gateways in action: GridEEG @ DECIDE

Diagnostic Enhancement of Confidence by  
an International Distributed Environment

**DECIDE Science Gateway**

- Home
- Applications
  - GridEEG**
    - Run
    - Manage Repository
  - GridMPP
  - GridSP
- Grid Services
- User Support

**GridEEG**

GridEEG is an application connected with porting of the EEG algorithms to the Grid environment, in particular algorithms for spectral coherences (SC) (ordinary, partial and multiple) and Directed Transfer Functions (DTF). These estimators give information about connectivity between brain regions. The values of SC and DTF in the biomarkers differentiating healthy from impaired groups will be...

GridEEG application consists of the following tools:

- GridEEGDATA (Gridified Database of EEG data);

PSD (dB)

Delta Theta Alpha Beta Gamma

Statistical distance

AD

Nold

**DECIDE Science Gateway**

**My Jobs**

The table below shows the status of your jobs. Statuses are automatically updated every 5 minutes.

Application Name	User Description	Started on (UTC)	Status
GridEEG	GridEEG Job 2011-11-08-151652	2011-11-08 14:16:58.0	

Showing 1 to 1 of 1 entries

**DECIDE Science Gateway**

**My Workspace**

- My Jobs
- My Data
- My Help

You have chosen to open

40.tgz  
which is a: Gnu ZIPed Tape Archive  
from: <https://applications.eu-decide.eu>

What should Firefox do with this file?

- ☐ Open with: Stuffit Expander (default)
- ☒ Save File
- ☐ Do this automatically for files like this

Cancel OK



# Science Gateways in action: DataManager @ DECIDE

**Data are anonymised,  
encrypted and replicated**

DECIDE Science Gateway | DECIDE Home | Project | Documents | Technical Wiki

**DECIDE**  
Diagnostic Enhancement of Confidence by  
an International Distributed Environment

DECIDE Science Gateway

- > Home
- > Applications
  - > GridEEG
    - > Run
    - > Manage Repository
      - > MCI
      - > NOLD
      - > AD
    - > GridMRISeg
    - > GridSPM
  - > Grid Services
  - > User Support

My Workspace

Manage Repository

Select from the list below the database you want to manage:

- > MCI (Mild Cognitive Impairment)
- > NOLD (Normal eLderly subjects)
- > AD (Alzheimer's Disease)

DECIDE Science Gateway | DECIDE Home | Project | Documents | Technical Wiki

**DECIDE**  
Diagnostic Enhancement of Confidence by  
an International Distributed Environment

DECIDE Science Gateway

DECIDE > DECIDE Science Gateway > Applications > GridEEG > Manage Repository > NOLD

GridEEG\_NOLD repository Manager

Upload files | Edit Metadata

FileName	SubmissionDate
Nold_002.zip	2011-10-03 18:46:00
Nold_003.zip	2011-10-03 18:46:00
Nold_001.zip	2011-10-04 00:00:00

Metadata Editor

FileName: Nold\_001.zip

Size: 278189

id: 10

StudyName: PharmaCOG

AvailData:

Sex:

Pathology:

CI dementiaRating:

MachineModel:

SubmissionDate: Oct 4 2011

FileType: zip

siteID: 1

StudyDescription:

Type:

Age: 35

MMSE:

MachineBrand:

Viscode:

FileFormat:





# Science Gateways in action: e-Collaboration & e-Learning @ RICEVI

**COLLABORAZIONE**  
**COLLABORATION**

**SHARING**  
**CONDIVISIONE**

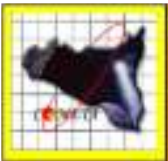
**DISSEMINAZIONE**  
**DISSEMINATION**

**TRAINING**  
**FORMAZIONE**

FILE SUPPORTATI: SUPPORTED FILES:

PDF, MP3, MP4, MOV, HTML, Cp, PPT, DOC, PNG





## Summary and conclusions

- Science Gateways, Identity Federations and Social Networks, can revolutionize the way Grid infrastructures are used, hugely widening their potential user base;
- The adoption of standards (JSR 286, SAGA, SAML, etc.) represents a concrete investment towards sustainability;
- Now that millions of users can potentially access and use our Science Gateways, we need to develop new «marketing» and «communication» strategies and create a portfolio of «appealing» applications to attract them;
- **If you want to integrate your applications in our Science Gateways, or learn how to create your own Identity Federations and Science Gateways, please contact either me or [sg-licence@ct.infn.it](mailto:sg-licence@ct.infn.it)**



**Thank you for your kind attention !**

**Any questions ?**





# Credits & Acknowledgments

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