



Enabling Grids for
E-science in Europe

www.egee-see.org

Joining the GRID

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based on a presentation by

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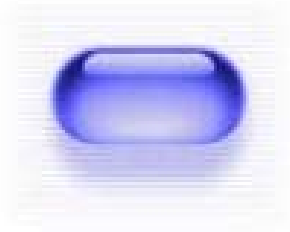


- How do I sign up for the EGEE Grid? Who can Join?
- What is a Virtual Organization? Which one do I belong to?
- What tools do I need and how can I obtain the?
- Where do I go for help?
- Where can I find learning material and manuals
- etc

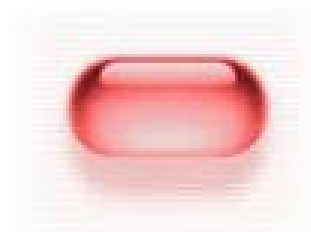


- In previous presentations we've seen what the Grid is, its philosophy and vision.
- We've seen what it does with some practical examples of how it is used and set up.
- Grid technologies appear quite promising and from the looks of it, it could help you in your work and your applications
- So, what will it be:

Enter the Grid?



YES PLEASE!



No Thanks!

Who Can Join?

- Basically, the whole scientific community:
 - Universities
 - Educational Technical Institutes
 - Research Centers

The Eligible (global) Grid User Community is defined to be people from:

- the academic research and education community;
- public funded bodies, institutes and research laboratories working in areas related to research and education;
- other bodies and organisations, such as commercial companies, who are collaborating on academic research and education with the above institutes.

EGEE Access Users Policy (AUP)

Types of Users

- **New Users** – Users that want to experiment with the technology and assess the benefits
- **Production Users** – They have acquired some basic experience with the technology and would like to use it. They have an application that already has been ported or will be ported to the Grid (Gridification)
- **Experienced users** – Users that, for example, belong to one of the CERN experiments.

What do I need to use the Grid? (In simple words)

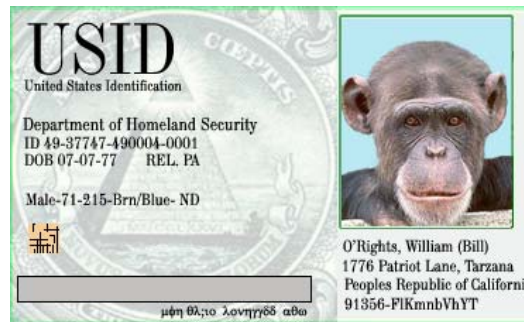
A computer with the
right software



A group that has
computational resources,
and will allow me to use them



Identification



What's required? (really)

- In order to become a user of the EGEE Grid Infrastructure you should:
 - Gain access to a **User Interface (UI)** machine which hosts the required client software for developing and running applications in the EGEE Grid
 - Acquire a **digital certificate** from your accredited National CA.
 - Join an existing **Virtual Organization (VO)** or apply for the introduction of a new VO
- **Note!** - There are some rules that apply in order to be an EGEE user. You can check if you are eligible by reading the [Access Usage Policy](#).

The User Interface (UI)

- A User Interface is nothing more and nothing less than a Linux box having installed all the required client software, APIs and tools for developing and running applications in the Grid.
- It provides the interface and the access point of a user to the Grid
- To use the Grid you will need to gain access to a UI machine
- The options are:
 - Install **your own UI**
 - Gain access to a **local UI that is set up at your organization**
 - Obtain an account on the **CY01 UI of HPCL**

How do I set up my own UI?

- In practice everyone can install and setup a UI with the required EGEE tools following the instructions in the [LCG-2 Installation Guide](#).
- Also the [Italian SA1 EGEE Activity](#) has made available a package called **UIPnP** which can be installed in any Linux machine and turn it into a User Interface (you can even install it as a regular non-root user). Note though that it is pre-configured for accessing the Italian EGEE sites and some manual configuration steps are required at the moment in order to be useful for EGEE-SEE users (for instructions see [How to customize UIPnP for SEE-VO](#)).

If I can't/dont want to set up my own UI?

- There is always a chance that your institute may already have setup a UI machine so you can ask from your local administrator to create an account for you there.
- If you don't have access to a User Interface or you can't (or don't want to) install your own UI, you may request from the HPCL for an account on our **UI** hosted in the UCY site*;
* Some terms and conditions apply :)

Virtual Organizations

- A VO is a group of users usually working on the same project and using the same application software on the Grid.
- **To be authorized to use the Grid and do useful work with it (e.g. submit jobs, transfer files etc) you have to enroll to a Virtual Organization (VO)**
- A list of existing EGEE VOs is available at https://lcg-registrar.cern.ch/virtual_organization.html
- If you are an experienced Grid user you are already familiar with the concept of VO and you may already belong to one of them. If you participate in one of the LHC experiments (like Atlas, CMS etc) there are already respective established VOs. If you want to join you should contact the appropriate VO manager. General information on how to register can be found at <http://lcg-registrar.cern.ch/>

- **ATLAS** is a particle physics experiment that will explore the fundamental nature of matter and the basic forces that shape our universe. The ATLAS detector will search for new discoveries in the head-on collisions of protons of extraordinarily high energy. ATLAS is the largest collaborative effort ever attempted in the physical sciences. There are 1800 physicists participating from more than 150 universities and laboratories in 34 countries.
- Home page: <http://atlas.web.cern.ch/Atlas/GROUPS/SOFTWARE/OO/>
- VO manager contact: project-lcg-vo-atlas-admin@cern.ch

- **CMS**, the **Compact Muon Solenoid** experiment under construction for LHC, is a 12000tons detector baser on a large, high field supraconductive magnet. CMS is designed to uncover the hypothetical **Higgs** boson and to test various currently unproven models of the ultimate structure of matter; it will also have the versatility necessary to uncover unexpected phenomena at LHC energies.
- Home page: <http://cms-project-ccs.web.cern.ch/cms-project-ccs/>
- VO manager contact: project-lcg-vo-cms-admin@cern.ch

- The **ALICE** Collaboration is building a dedicated heavy-ion detector to exploit the unique physics potential of nucleus-nucleus interactions at LHC energies. Its aim is to study the physics of strongly interacting matter at extreme energy densities, where the formation of a new phase of matter, the quark-gluon plasma, is expected.
- Home page: <http://aliweb.cern.ch/offline/>
- VO manager contact: project-lcg-vo-alice-admin@cern.ch

- **LHCb** is a High Energy Physics Experiment Studying CP Violation at CERN's Large Hadron Collider
- Home page: <http://lhcb-comp.web.cern.ch/lhcb-comp/>
- VO manager contact: project-lcg-vo-lhcb-admin@cern.ch

- The CERN Grid Deployment group is responsible for deploying and operating the LHC computing environment. The responsibilities of the group and its collaborators include: System support, Grid operations, User Support, Resource planning and scheduling.
- Home page: <http://it-div-gd.web.cern.ch/it-div-gd>
- VO Manager contact: project-lcg-vo-dteam-admin@cern.ch

- The EGEE biomedical applications group welcomes applications in the medical image processing, the bioinformatics, and more generally the biomedical data processing fields with a need for a grid infrastructure. This procedure concerns the integration of biomedical applications external to the EGEE project (i.e. not supported by the project partners). The selected applications are required to accept the EGEE resource usage policy and to follow EGEE training courses. The applications benefiting from the EGEE infrastructure will have to report on their activity and their use of resources. The application output will be evaluated by external reviewers.
- Home page: <http://egee-na4.ct.infn.it/biomed/>
- VO Manager contact: legre@clermont.in2p3.fr

- The **Earth Science Research VO** covers research in the fields of **Solid Earth, Ocean, Atmosphere** and their interfaces. A large variety of communities correspond to each domain, some of them covering several domains.
- Home page: <http://datagrid.nadc.nl/twiki/bin/view/ESR/WebHome>
- VO manager contact: project-egEE-vo-esr-admin@cern.ch

- **CompChem** (Computational Chemistry) VO - Originates from the collaboration between various research groups participating to the COST Chemistry initiative of the EU. Focuses on the development and deployment of a Grid-based European Molecular Simulator (GEMS). Appears to be not fully active yet.
- Home page: -
- VO manager contact: Osvaldo Gervasi osvaldo@unipg.it

- In order to make life easier for the regional users, speed up and simplify the process of new application induction, **EGEE-SEE has established its own VO** called (yes!) SEE-VO.
- This VO will be the most adequate for SEE users that do not fit in any of the existing EGEE VOs or are not able to create their own EGEE-wide VO.
- In order to request acceptance to the SEE-VO as a user you have to fill the following request form:
<https://www.grid.auth.gr/services/voms/SEE/request.php>.
- Please note that this page has to be visited using the browser on which you have already loaded your digital certificate otherwise the process cannot be completed.

How can I make my own VO

- Check to see if your experiment/group is already covered by an existing VO.
- Contact NA4 and OAG coordinators.
- Minimal resources required:
 - VO membership server (VOMS).
 - >1 resource centers which accept the VO.
 - Access to resource broker.
 - Access to file catalog.

How can I get more resources for the VO I belong to?

- How do I negotiate for more resources?
 - The OAG (Operations Advisory Group) helps negotiate for having more resources made available for a VO.
 - The process involves answering a questionnaire and going through an interview to understand in detail the needs of the applications.
 - The results are circulated to the ROCs and sites volunteer to support the application.
 - Normally part of the MoU process.

- Where can I see the resource consumption of my VO?
 - The APEL accounting system keeps track of resource utilisation on the grid.
 - Summaries of the usage can be found on the accounting site:
<http://goc.grid-support.ac.uk/gridsite/accounting/index.html>
- Where can I see the state of the grid?
 - The Grid Operations Centre (GOC) maintains a map with the overall state of the grid and links to various monitoring pages.
 - <http://goc.grid-support.ac.uk/gridsite/monitoring/>
 - <http://goc03.grid-support.ac.uk/googlemaps/lcg.html>
 - Our ROC also keeps track of the regional Grid resources
 - <http://goc.grid.sinica.edu.tw/gstat/SouthEasternEurope.html>
 - <http://mon.egee-see.org/gridice/site/site.php>
- Where can I see the resources available to my VO?
 - The CIC portal contains various views grid status and grid information.
 - <https://cic.in2p3.fr/index.php?id=endusers>

How will I install my application?

- At the time being a formal procedure for new application evaluation has not been established. The plan is to establish a small EGAAP-SEE that will assess new applications based on criteria followed by EGAAP but with relaxed requirements.
- Keep in mind that the applications that will be deployed in the SEE-VO will be able to run only in the SEE clusters.
- Also users registered to SEE-VO may be able to utilize only the SEE resources and not all of the EGEE testbed.

How will I install my own Grid Service?

- How do I incorporate a new service in the grid?
 - The architecture of the middleware is service-oriented. In general there is no problem to contact VO-specific services from jobs on the grid.
 - If the new service must interact with existing services, it is best to contact the middleware developers (JRA1) about how to achieve this.
 - VO-services at the site-level are very contentious and not advised.
- How do the developers know about my requirements?
 - Review the existing requirements in the requirements database:
<https://savannah.cern.ch/support/?group=egeeptf>
 - Ask the NA4 coordinators for write-access to the database to add new requirements.

How can I provide my own resources?

- How do I incorporate my resources into the grid?
 - The steps for creating a site in the EGEE infrastructure are documented at the links below.
<http://public.eu-egee.org/join/>
<http://lcg.web.cern.ch/LCG/Sites/site-start.html>
 - Process is handled by the Regional Operation Centres (ROCs).
Send mail to **Marios D. Dikaiakos** (mdd@ucy.ac.cy)

Where can I go for help?

- The official channel to report a problem and request for help is the [EGEE-SEE Helpdesk](#).
- Create an **account** at the **Helpdesk** and whenever you run into trouble, get stuck or feel that there is a bug in the software, visit the helpdesk and check the **knowledge base**; the problem may have appeared and resolved in the past. If you don't find anything relative open a **new trouble ticket**. Your request will be propagated to the appropriate support team that will get in contact with you in order to clarify the exact problem and help you resolve it.
- You may also visit the [top-level EGEE Helpdesk](#), known as **Global Grid User Support (GGUS)**, which keeps its own knowledge base of user (and operational) problems. Keep in mind though that if you open a ticket at GGUS it will be eventually forwarded to EGEE-SEE (yes there is no way to escape from us ;-))

Problems...?

- Who do I contact if my jobs fail?
 - GGUS system is the main user support framework.
<https://gus.fzk.de/pages/home.php>
 - Contact via email as well:
MyVO-user-support@ggus.org (MyVO=atlas, biomed, ...)
helpdesk@ggus.org

(More) FAQ

- How do I use the EGEE middleware?
 - LCG Users' Guide:
<http://lcg.web.cern.ch/LCG/users/support.html>
 - EGEE tutorials:
<http://www.egee.nesc.ac.uk/schedreg/index.html>
- How do I find documentation for the software?
 - Training material:
<http://www.egee.nesc.ac.uk/trgmat/index.html>
 - LCG:
<http://grid-deployment.web.cern.ch/grid-deployment/cgi-bin/index.cgi?var=eis/docs>
 - Glite
<http://glite.web.cern.ch/glite/documentation/>

Gridifying Applications

- How do I port my application to the grid?
 - GILDA team
<http://egee-na4.ct.infn.it/genapps/>
<https://gilda.ct.infn.it/>
 - Biomed Task Force
<http://egee-na4.ct.infn.it/biomed/index.php>
 - ARDA (**A Realisation of Distributed Analysis for LHC**)
<http://lcg.web.cern.ch/LCG/activities/arda/arda.html>
 - EIS - The mandate of the Experiment integration support Team (EIS/ECGI) is to help the experiments in integrating their software with the LCG middleware and in understanding the functionalities, and to provide support during the integration and testing process.
<http://grid-deployment.web.cern.ch/grid-deployment/cgi-bin/index.cgi?var=eis/homepage>

- How do I make my application available via a portal?
 - Talk with GENIUS developers.
GENIUS Portal: <https://genius.ct.infn.it/>
 - Also some portals deployed in biomedical community.

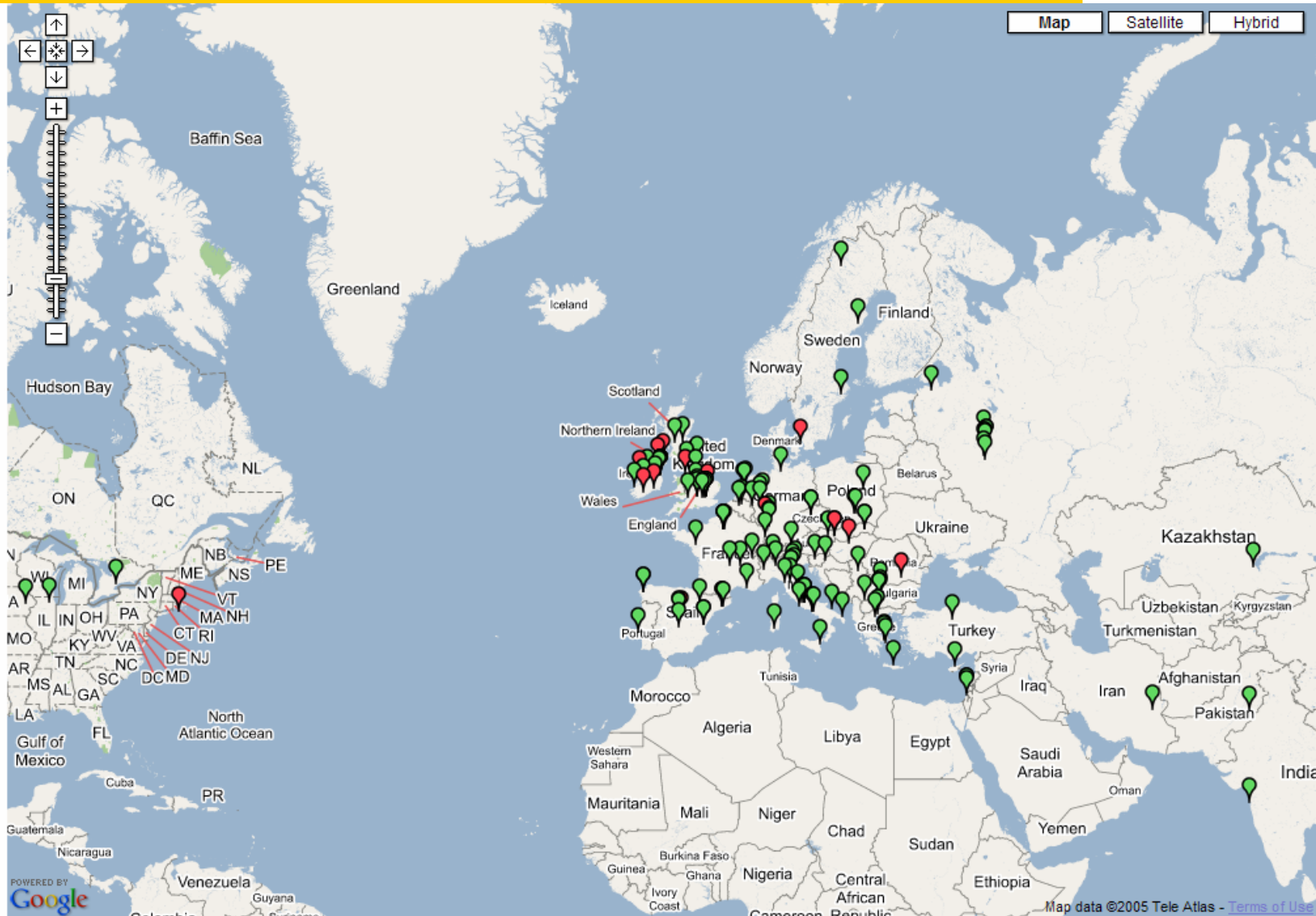
Where can I get more information

- For newcomers in Grid computing, a good place to start is CERN's [Grid Café](#). There you will find answers for basic questions like “*What is the Grid?*”, “*What the Grid can do for me?*” and so on.
- The *Global Grid User Support (GGUS)* site maintains a list of support documents produced within EGEE. You can find them at <https://gus.fzk.de/pages/docu.php>. Among them you should definitely have a look at the [LCGs User's Guide](#), the [LCG's FAQ](#) and the [Grid dictionary](#).
- If you are anxious to start using the Grid consult the [LCG-2 User Scenario](#). It provides a step-by-step explanation on how to submit your job and handle your data on the Grid.
- Also it is worth having a look at [these tutorials given at Clermont-Ferrand - FRANCE](#), which although are focused on the Biomed community, contain useful introductory material for every user of EGEE.

The end

Questions?

Too bad... you missed all the fun



Digital Certificate

- A **digital certificate** is your **electronic identity** to access the Grid.
- Every user has his/her own personal digital certificate
- Certificates are used in every **authentication** and **authorization** procedure. They also ensure the **confidentiality** and **integrity** of your data that travel on the net while you are working in the Grid.
- Digital Certificates are issued by accredited **Certification Authorities (CAs)**. There exists a CA in every participating country.

Digital Certificate (cont.)

- The EGEE middleware uses Public Key Cryptography – PKI for security, authentication and authorization
- The digital certificates follow the X.509v3 standard/
- In Cyprus the responsible party for inssuing certificates is the CYCA Certification authority

Important! Please keep in mind that **the Digital Certificate is strictly personal. Do not share your certificate's private keys. Also don't give away your certificate password.**

- In order to acquire a Digital Certificate you typically have to use the appropriate commands in a UI machine. During the procedure you generate a pair of **cryptographic keys**, a **private** and a **public**, and a **certificate request**.
- **Login** to your UI account and issue the command

```
$ grid-cert-request -int
```
- You will be asked to give a password that will protect your private key. Then you are prompted to complete your personal information

Βήματα απόκτησης πιστοποιητικού (2) Δημιουργία αίτησης

- Country Name (2 letter code) [CY]: (enter your country 2 letter code. Usually you will just have to press enter to accept the default value)
- Level 0 Organization [CyGridCA]: (again this depends on your country. For Cyprus it is CyGridCA)
- Level 0 Organizational Unit [isabella.grnet.gr]: (enter your Internet domain as it appears in your email e.g. di.uoa.gr)
- Name (e.g., John M. Smith) []: (enter your Full Name)
- After this step is completed a directory **.globus** is created under your **\$HOME** directory. In this directory you will find a file with your private key (**userkey.pem**) and a file with the certificate request (**user-cert-request.pem**). The later contains your public key together with the information you have entered previously bundled in a special format.

Αποστολή αίτησης και fax

- The **user-cert-request.pem** file has to be emailed to your HellasGrid-CA (hellasgrid-ca@physics.auth.gr).
- Also you have to send by fax a copy of your id card to the CA responsible.
- The CA signs the public key and generates your certificate.

Παραλαβή πιστοποιητικού

- After completing the formal identification step, the CA will issue your certificate and return it to you attached by email.
- Copy the certificate into **.globus** directory with the name **usercert.pem**.
- You are now ready to use the lcg/glite commands of the EGEE infrastructure.
- **BUT...** there is one final step...

Αποστολή Acceptance e-mail

- For the process to be complete you will have to send back to the CA a signed email stating that you accept the policies under which the certificate has been issued.

This final step always seems to trouble the newcomers!

- In order to send a signed email you should use an email application that supports S/MIME (Secure MIME) (Most well known mailers support this)
- Your private key and the certificate should be imported to the system from where you will send your mail. To be imported the two files that you have in your .globus directory have to be converted and combined in a single file which follows the so called PKCS#12 format.
- See the instructions at https://lcg-registrar.cern.ch/load_certificates.html

Διαδικασία Έκδοσης Πιστοποιητικού (Ανακεφαλαίωση)

