



Enabling Grids for E-science

An introduction to EGEE

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This presentation includes slides and information from many colleagues in EGEE, especially from the 1st project review in February 2005, including :

- Fabrizio Gagliardi (1st Review)
- Bob Jones (UK AHM 2004 talk)
- Ian Bird
- Frédéric Hemmer
- Roberto Barbera

EGEE: Enabling Grids for E-scienceE

- **EU perspective**
- **Goals**
- **Organisation**
- **(Some) activities and status**
- **FAQ**



- **Funded by the European Commission**
- **DECISION No 1513/2002/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 June 2002 concerning the **Sixth Framework Programme of the European Community** for research, technological development and demonstration activities, **contributing to the creation of the European Research Area** and to innovation (2002 to 2006)**
- **Structuring the European Research Area (ERA)**
http://europa.eu.int/comm/research/era/index_en.html
- **Area 3.2.3: Communication Network Development – Grids**
 - Instrument: Integrated Infrastructure Initiative (I3)
 - Call launched 17 Dec 2002, proposal submitted May 2003
- **Contract number:**
 - 508833
- **Began April 2004 for 2 years**

Strategic building blocks of *e*nfrastucture today

production quality grid,
20000 CPUs, ~5PB
storage, training, 27
countries, 71 partners,
HEP, Biomed..., int. links
(€32 M - CERN)

grid of 6 supercomputers
networked at 1 Gbps, focus on
global filing systems, >40
Tflop/s, several user communit.
(€15M - CNRS)

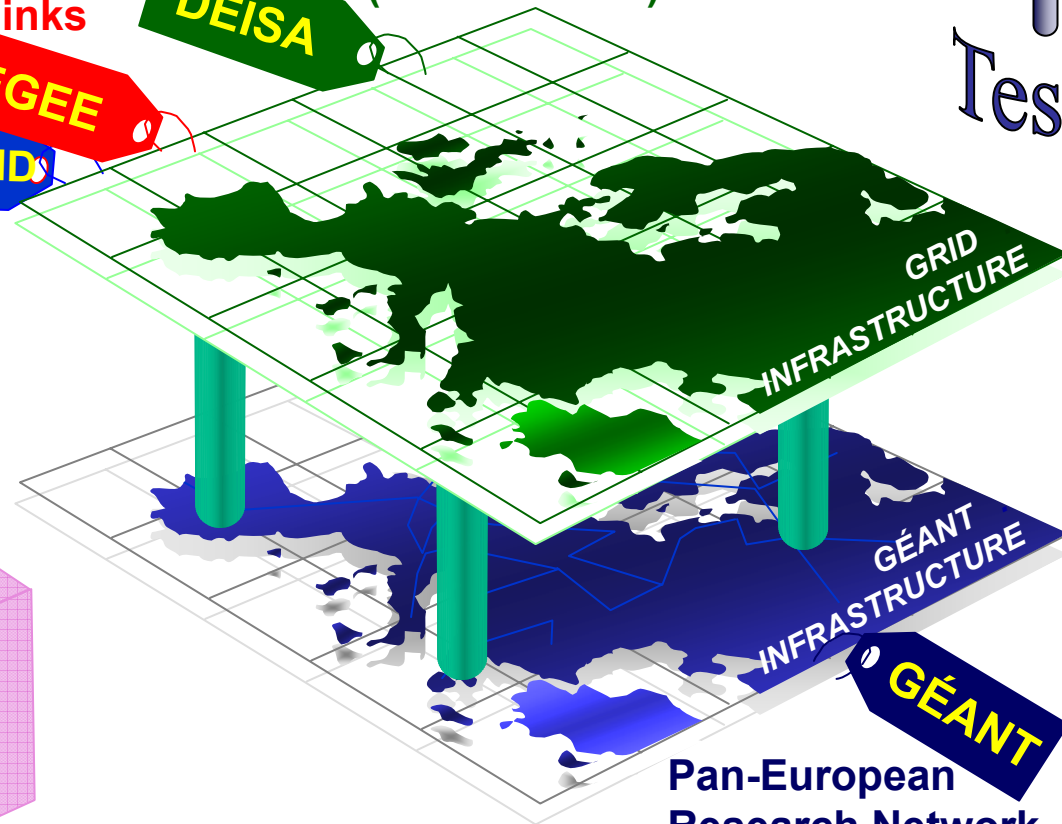
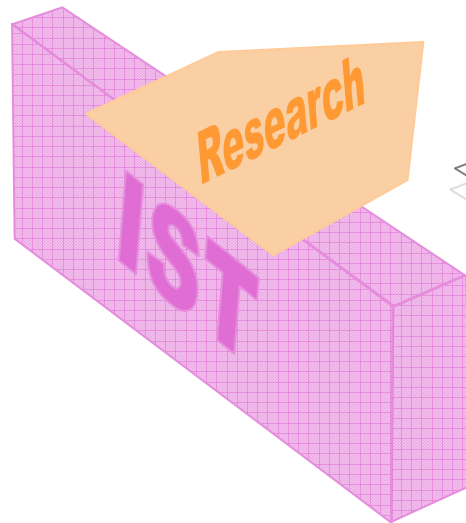
A Grid
infrastructure
for SE-Europe

SEE-GRID

EGEE

DEISA

Testbeds



Pan-European
Research Network,
IPv6 enabled
(93 M€ - DANTE)

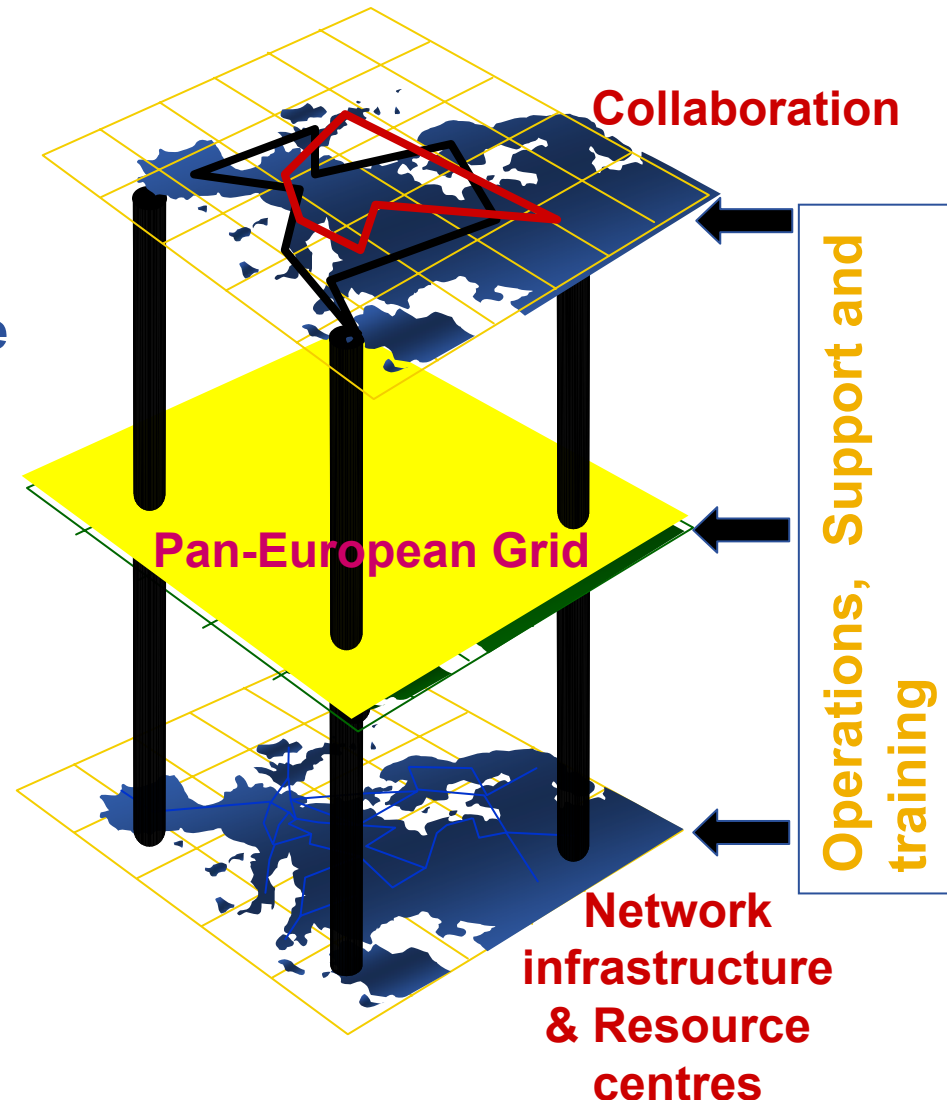
Kyriakos Baxevanidis

EGEE 3rd Conference, Athens, 18-22 April

2005

EGEE is building a large-scale production grid service to:

- Underpin research, technology and public service
- Link with and build on national, regional and international initiatives
- Foster international cooperation both in the creation and the use of the e-infrastructure

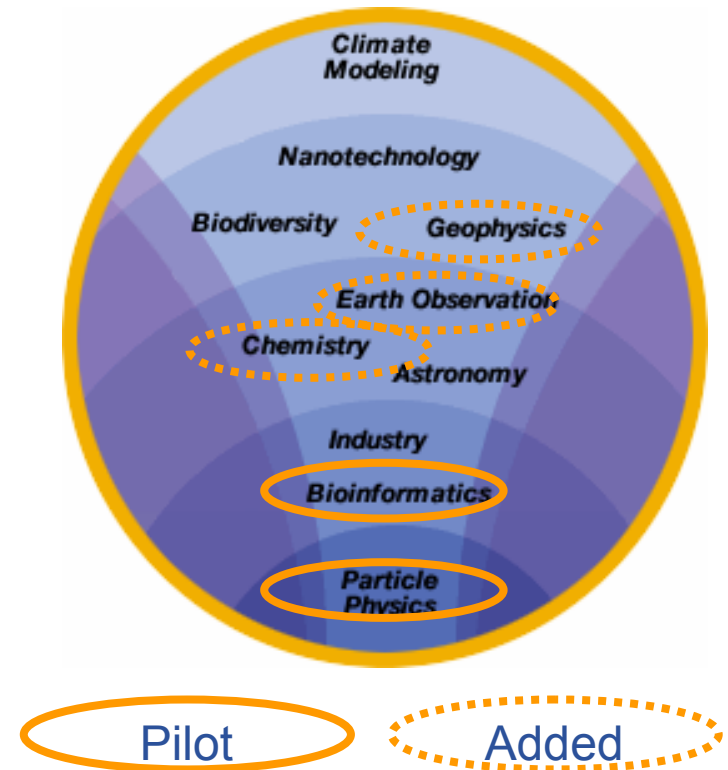


- **By 2003:**
 - Grid technology shown to be viable
 - Large amount of functional middleware
 - ...thanks to:
 - FP5 : DataGrid, DataTAG, CrossGrid, etc...
 - USA: VDT, Globus, Condor, etc.
 - ... and others
- **Next step - *major production infrastructure***
 - EGEE was proposed to the EU in 2003
- **2 year project began in April 2004, with a 4-year vision.**

- **Establish production quality sustained Grid services**
 - 3000 users from at least 5 disciplines
 - integrate 50 sites into a common infrastructure
 - offer 5 Petabytes (10^{15}) storage

- **Demonstrate a viable general process to bring other scientific communities on board**

- **Propose a second phase in mid 2005 to take over EGEE in early 2006**



- 70 leading institutions in 27 countries, federated in regional Grids
- ~32 M Euros EU funding for first 2 years starting April 2004 (matching funds from partners)
- Leveraging national and regional grid activities
- Promoting partnership outside EU



- **Network Activities**
 - NA1: **Project Management**
 - NA2: **Dissemination and Outreach**
 - NA3: **User Training and Induction**
 - NA4: **Application Identification and Support**
 - NA5: **Policy and International Cooperation**

- **Service Activities**
 - SA1: **Grid Support, Operation and Management**
 - SA2: **Network Resource Provision**

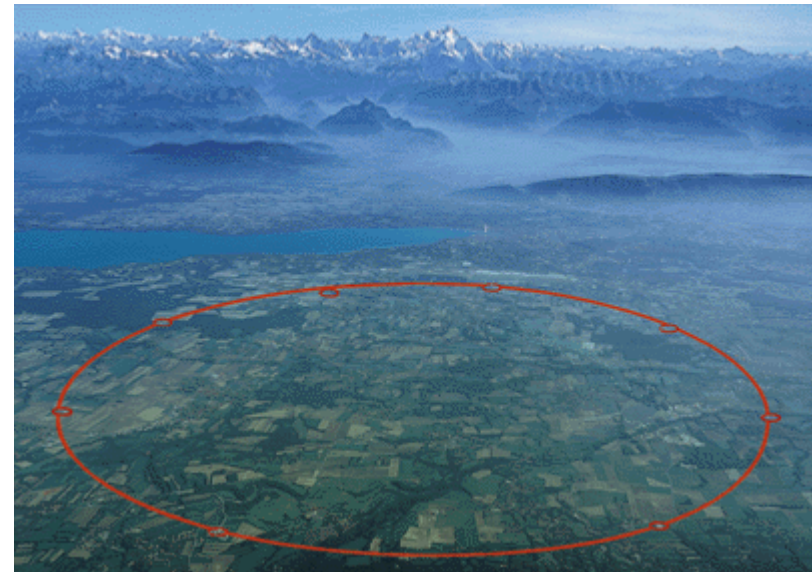
- **Joint Research Activities**
 - JRA1: **Middleware Reengineering + Integration**
 - JRA2: **Quality Assurance**
 - JRA3: **Security**
 - JRA4: **Network Services Development**



Emphasis in EGEE is on operating a production grid and supporting the end-users

- EGEE committed to “hit the ground running” in the proposal
- Current service (“LCG-2”) based on work done in LCG
- EGEE profits from the resources - no funded computing/data resources in EGEE
- LCG obtains additional production and operation efforts

LCG : Large Hadron Collider Compute Grid



more on Friday!

- **gLite 1.0 , released**
 - with key functionalities implemented
 - Moving towards Web Services

- **DJRA1.1 – EGEE Middleware Architecture (June 2004)**
 - <https://edms.cern.ch/document/476451/>

- **DJRA1.2 – EGEE Middleware Design (August 2004)**
 - <https://edms.cern.ch/document/487871/>

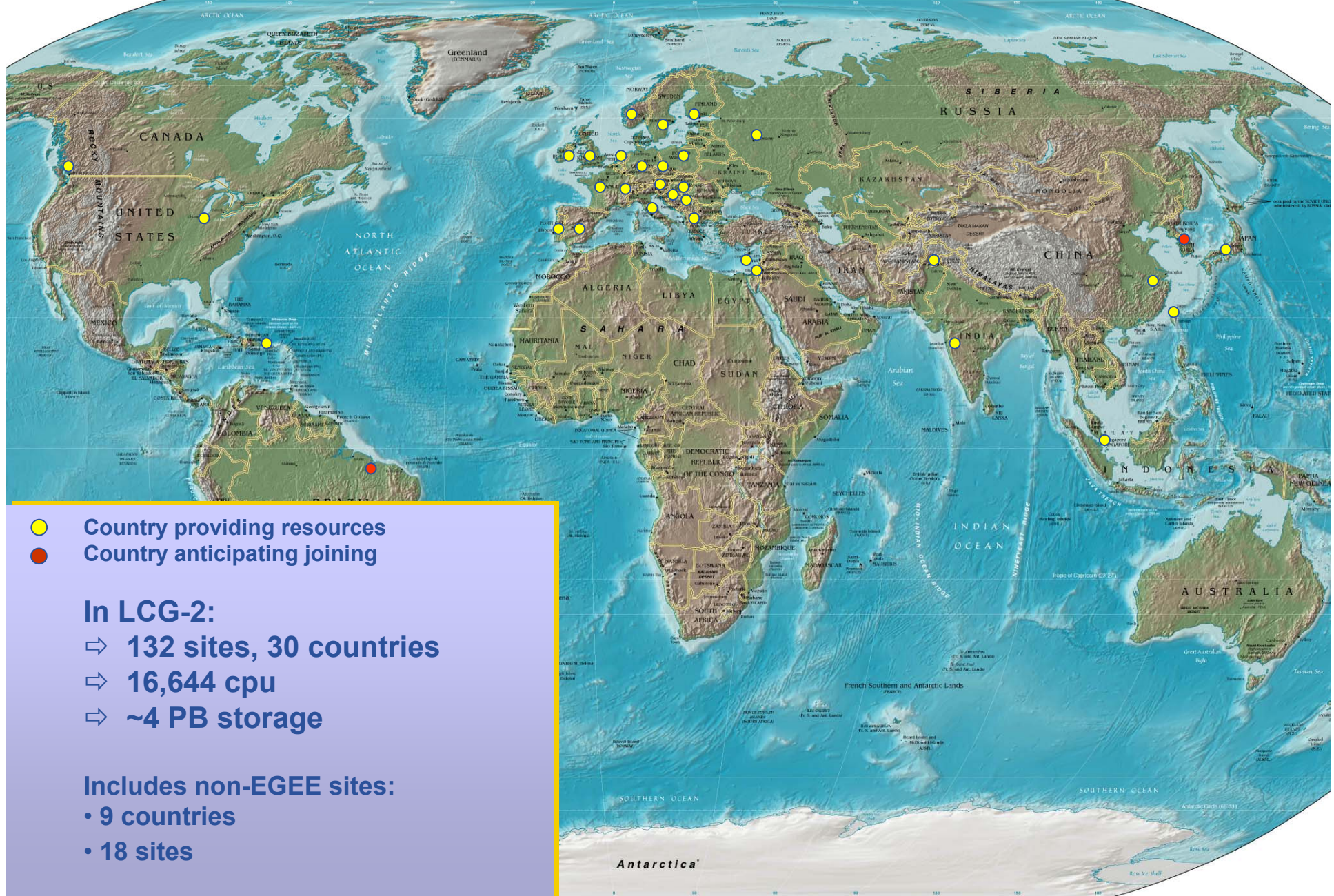
- <http://www.gLite.org/>
 - Links to documents

- **Support for security related software modules in gLite**
- **Continue work towards an agreed security infrastructure with other grid projects**
- **Revision of the security operational procedures**
- **Continuous evaluation of new CAs by EUGridPMA**
 - During this period it is expected that all EU member states involved in grid projects will have a national accredited Authority
- **Assessment of accounting infrastructure and analysis of what is missing to provide secure quota-based resource access**

- **Definition of standard interface for network performance monitoring based on GGF NM-WG schema**
- **Specification of high-level network monitoring and diagnostic tools**
- **Definition of end-to-end Service Level Agreements (SLAs) between EGEE sites and GEANT**
- **Development and testing of a prototype bandwidth reservation service**
- **Further training/dissemination on IPv6 issues**

- **Strategy has been to**
 - simplify as far as possible what is deployed, and to make that robust and useable.
 - In parallel construct the essential infrastructure needed to operate and maintain a grid infrastructure in a sustainable way.

- **Current service based on work done in LCG – culminating in the current service (“LCG-2”)**
 - Now at the point where in parallel we need to deploy and understand gLite – whilst maintaining a reliable production service.



- Country providing resources
- Country anticipating joining

In LCG-2:

- ⇒ 132 sites, 30 countries
- ⇒ 16,644 cpu
- ⇒ ~4 PB storage

Includes non-EGEE sites:

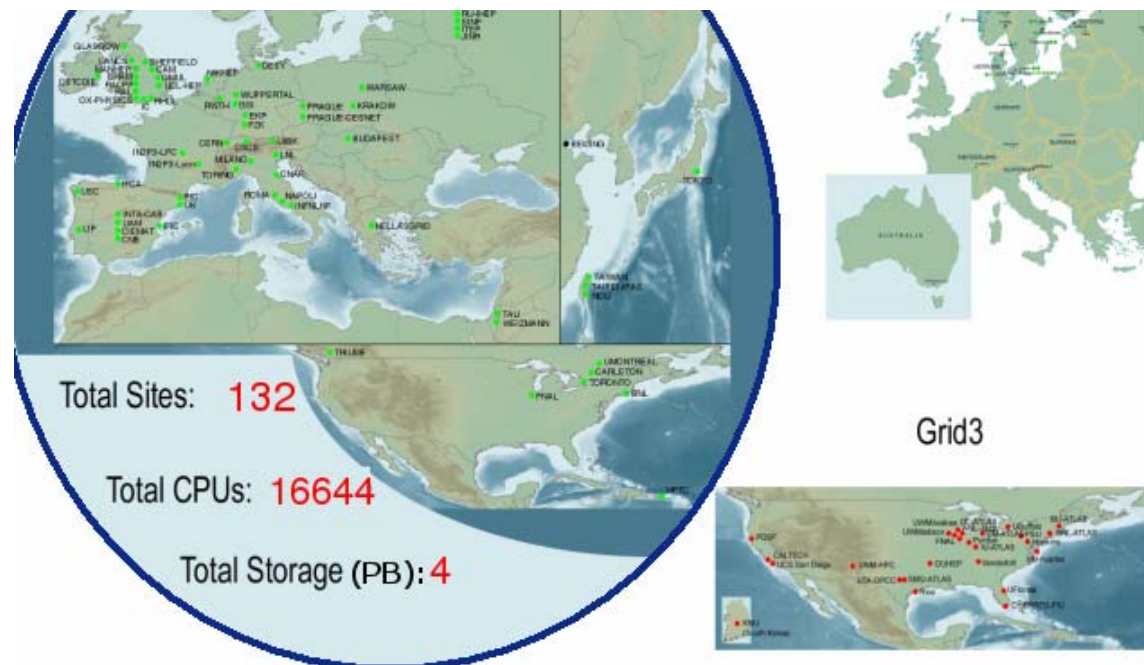
- 9 countries
- 18 sites

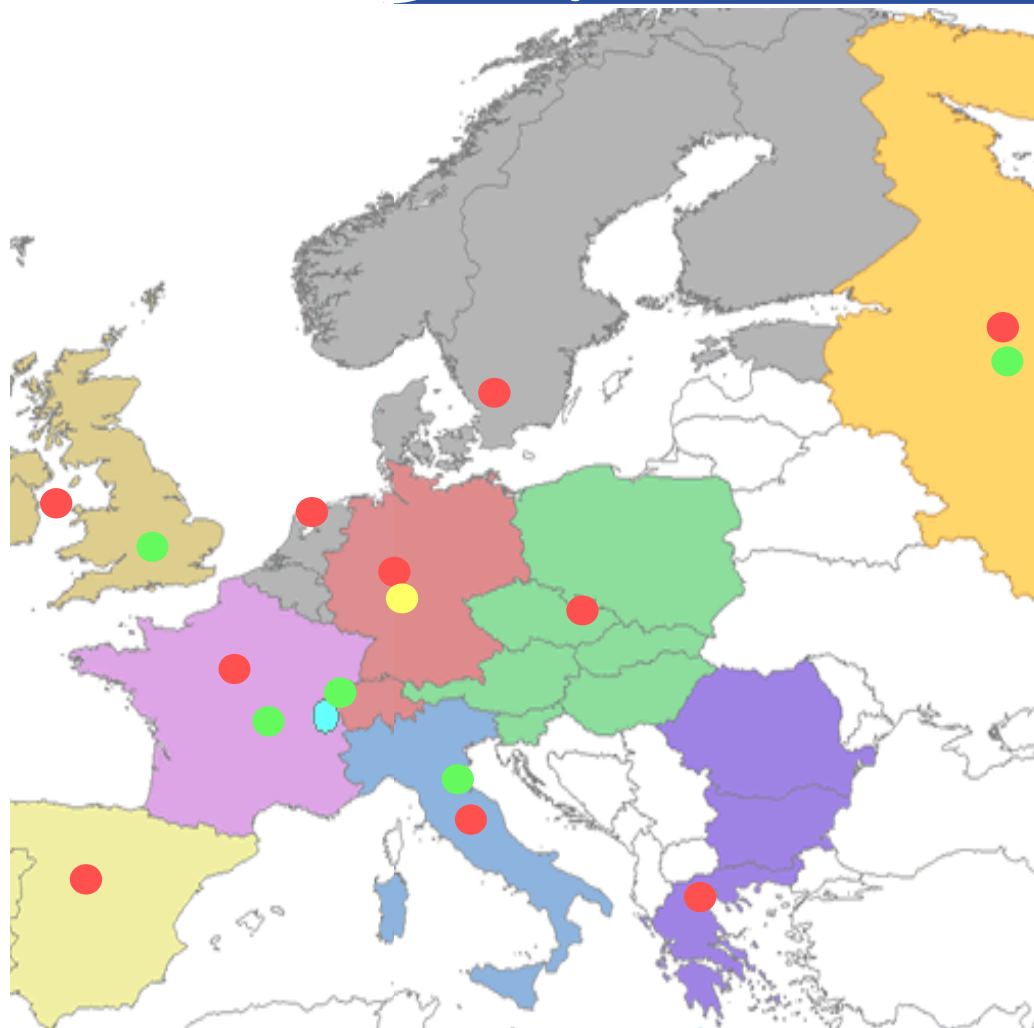
- **Real-time monitor**

- <http://www.hep.ph.ic.ac.uk/e-science/projects/demo/index.html>

- **Current status**

- <http://goc.grid-support.ac.uk/gridsite/monitoring/>





- **Operations Management Centre (OMC):**
 - At CERN – coordination etc
- **Core Infrastructure Centres (CIC)**
 - Manage daily grid operations – oversight, troubleshooting
 - Run essential infrastructure services
 - Provide 2nd level support to ROCs
 - UK/I, Fr, It, CERN, + Russia (M12)
 - Taipei also run a CIC
- **Regional Operations Centres (ROC)**
 - Act as front-line support for user and operations issues
 - Provide local knowledge and adaptations
 - One in each region – many distributed
- **User Support Centre (GGUS)**
 - single point of contact (service desk)

- **EGEE runs the largest and probably the only multi-disciplinary production grid infrastructure**
- **A process is in place for migrating new applications to the EGEE infrastructure**
- **A training programme is established**
<http://egee.nesc.ac.uk/>
- **gLite “*next generation*” middleware released**
- **Plans for a follow-on phase are being developed**



EGEE www.eu-egee.org

3rd EGEE conference proceedings

<http://indico.cern.ch/conferenceTimeTable.py?confId=0513>

gLite www.glite.org

LCG lcg.web.cern.ch/LCG/

The Grid Cafe www.gridcafe.org

• **More EU sites:**

• http://www.cordis.lu/ist/grids/fp6_grid_projects.htm

• http://www.gridstart.org/concertation_mtg.shtml

• “e-Infrastructures Reflection Group <http://www.e-irg.org>

• **NeSC** www.nesc.ac.uk