



Enabling Grids for E-scienceE

Overview of the EGEE project and middleware

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With thanks to EGEE colleagues for many of these slides

www.eu-egee.org



- **What is EGEE?**
 - The project
 - The infrastructure
- **gLite middleware**
- **EGEE applications**
- **Sources of further information**

- **Flagship European grid infrastructure project, now in 2nd phase with 91 partners in 32 countries**

- **Objectives**

- Large-scale, production-quality grid infrastructure for e-Science
- Attracting new resources and users from industry as well as science
- Maintain and further improve gLite Grid middleware

- **Structure**

EGEE: 1 April 2004 – 31 March 2006

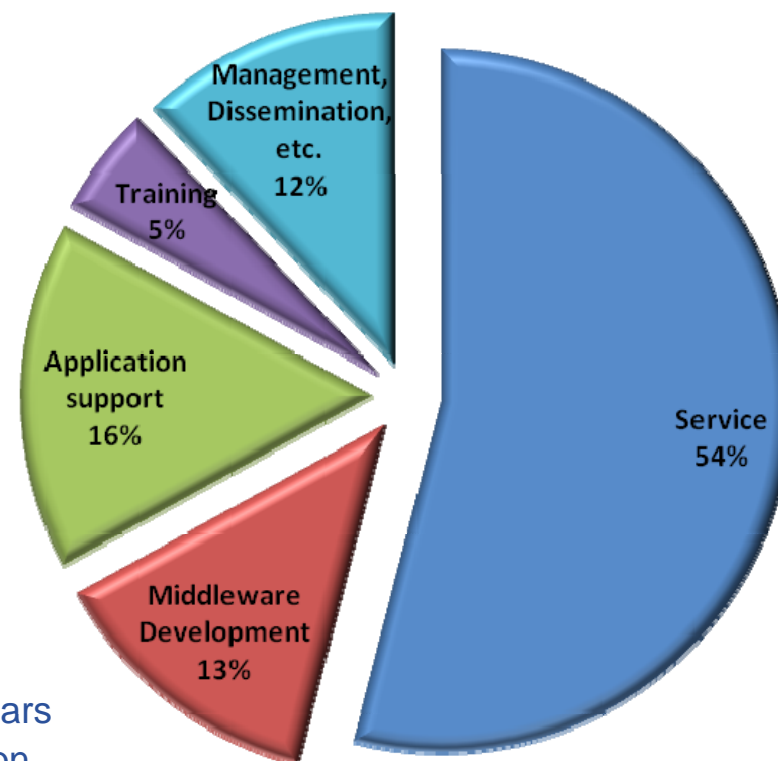
EGEE-II: 1 April 2006 – 31 March 2008

- Leveraging national and regional grid activities worldwide
- Funded by the EC at a level of ~37 M Euros for 2 years
- Support of related projects for infrastructure extension, application, specific services

- **EGEE-III**: 1 April 2008 – 31 March 2009

- Reaching self-sustainable state

EGEE Project Activities



- **From April 2006, natural continuation of EGEE**

- Expanded consortium (70 -> 90 partners)
- Emphasis on providing an infrastructure
 - increased support for applications
 - interoperate with other infrastructures
 - more involvement from Industry

SA: service activities

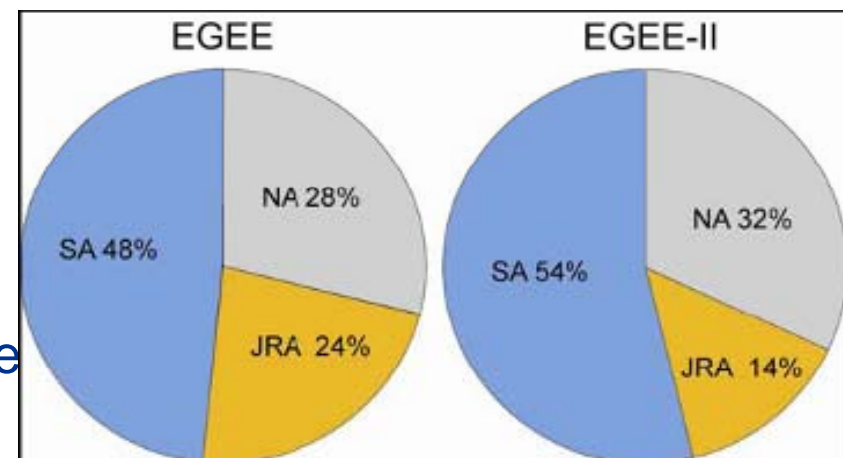
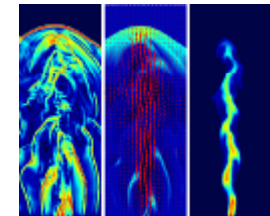
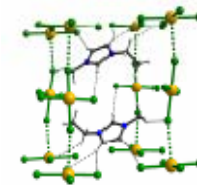
- establishing operations

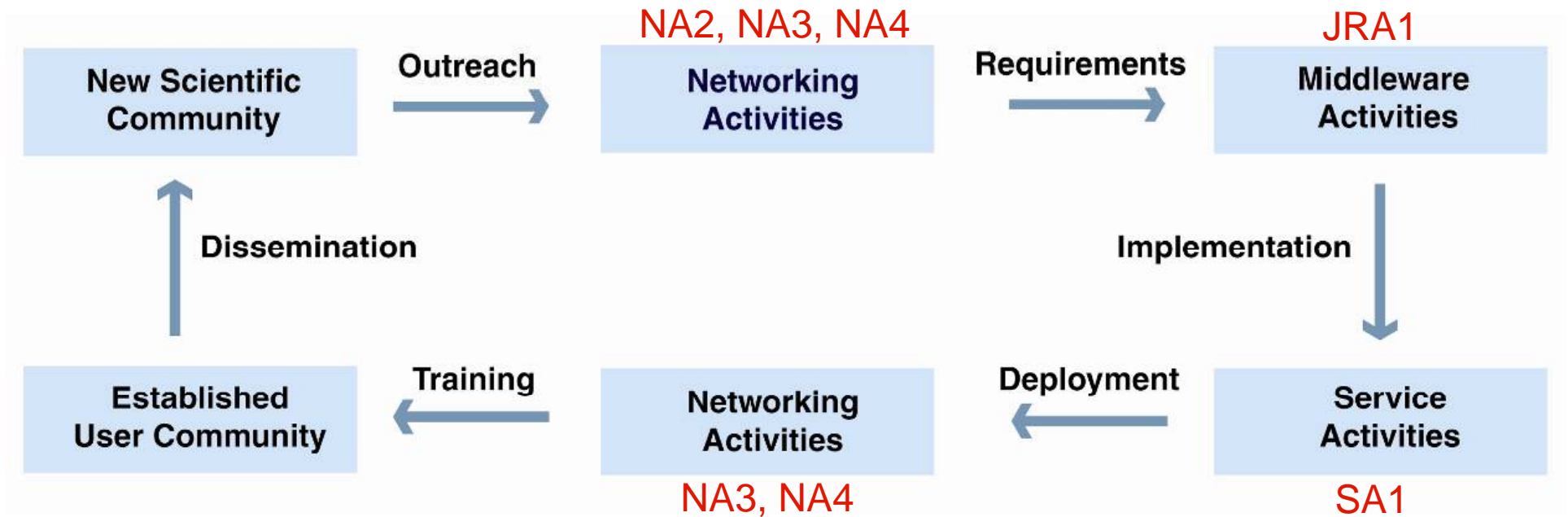
NA: network activities

- supporting VOs

JRA: “joint research activities”

- e.g. creating more robust middleware





Test-beds & Services

Certification testbeds (SA3)

Pre-production service

Production service

Infrastructure:

- Physical test-beds & services
- Support organisations & procedures
- Policy groups

Support Structures

Operations Coordination Centre

Regional Operations Centres

Global Grid User Support

EGEE Network Operations Centre (SA2)

Operational Security Coordination Team

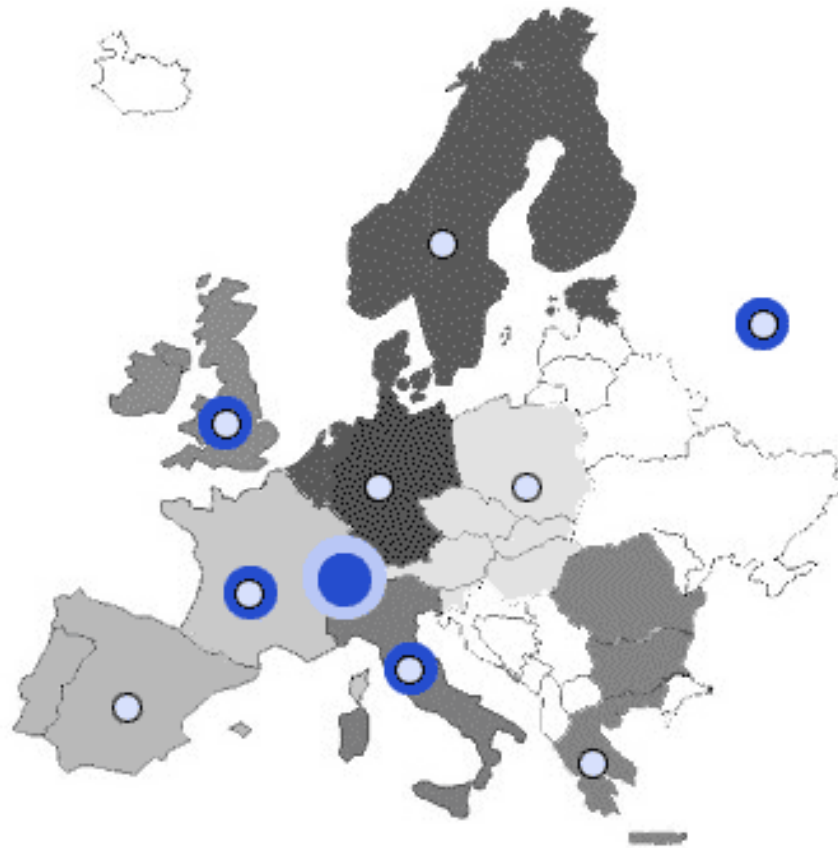
Security & Policy Groups




Joint Security Policy Group

EuGridPMA (& IGTF)

Grid Security Vulnerability Group

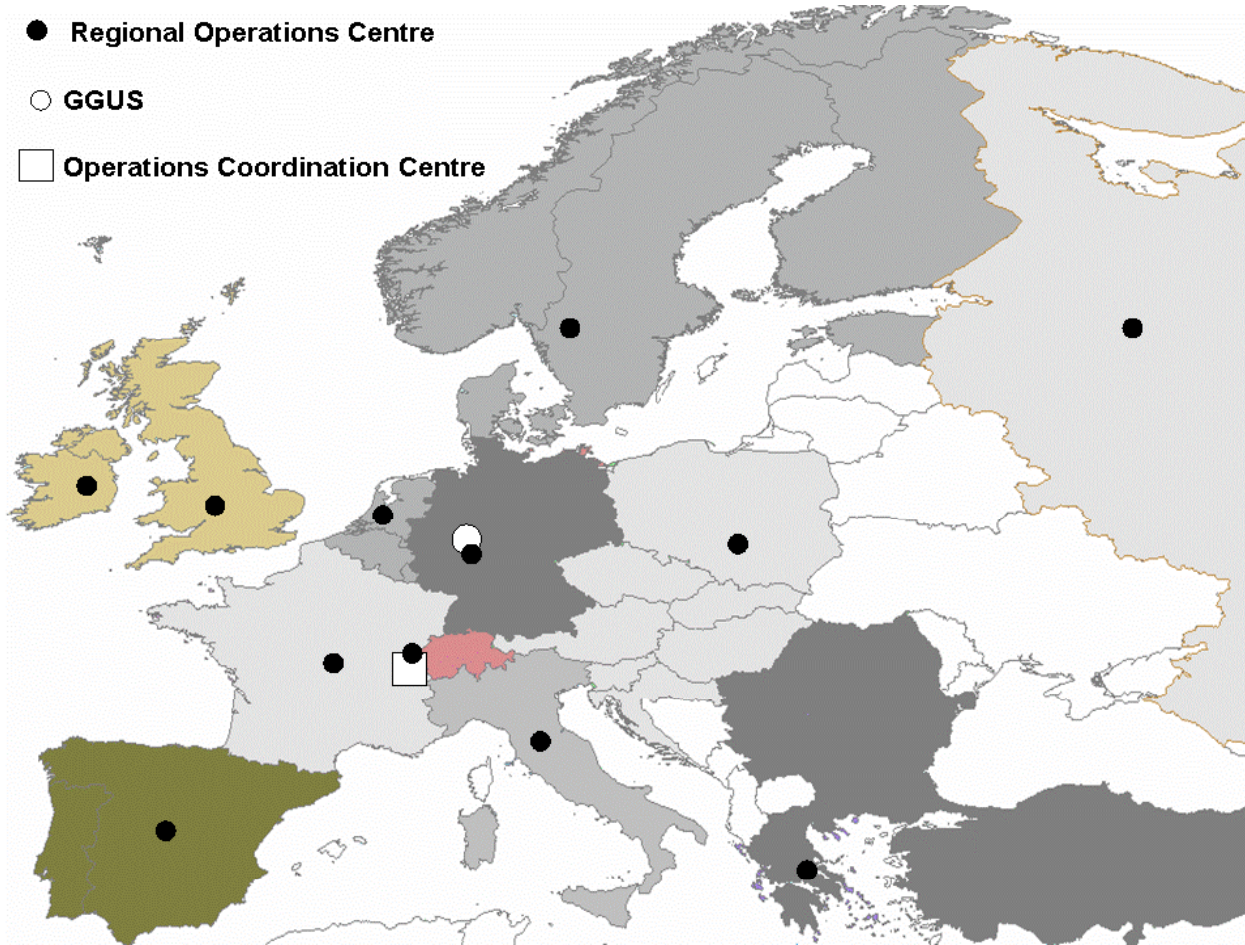
Operations Advisory Group (+NA4)



-  Operations Management Centre
-  Core Infrastructure Centre
-  Regional Operations Centre

- CERN (OMC, CIC)
- UK+Ireland (CIC,ROC)
- France (CIC, ROC)
- Italy (CIC, ROC)
- Germany+Switzerland (ROC)
- Northern Europe (ROC)
- South West Europe (ROC)
- South East Europe (ROC)
- Central Europe (ROC)
- Russia (CIC – M12, ROC)

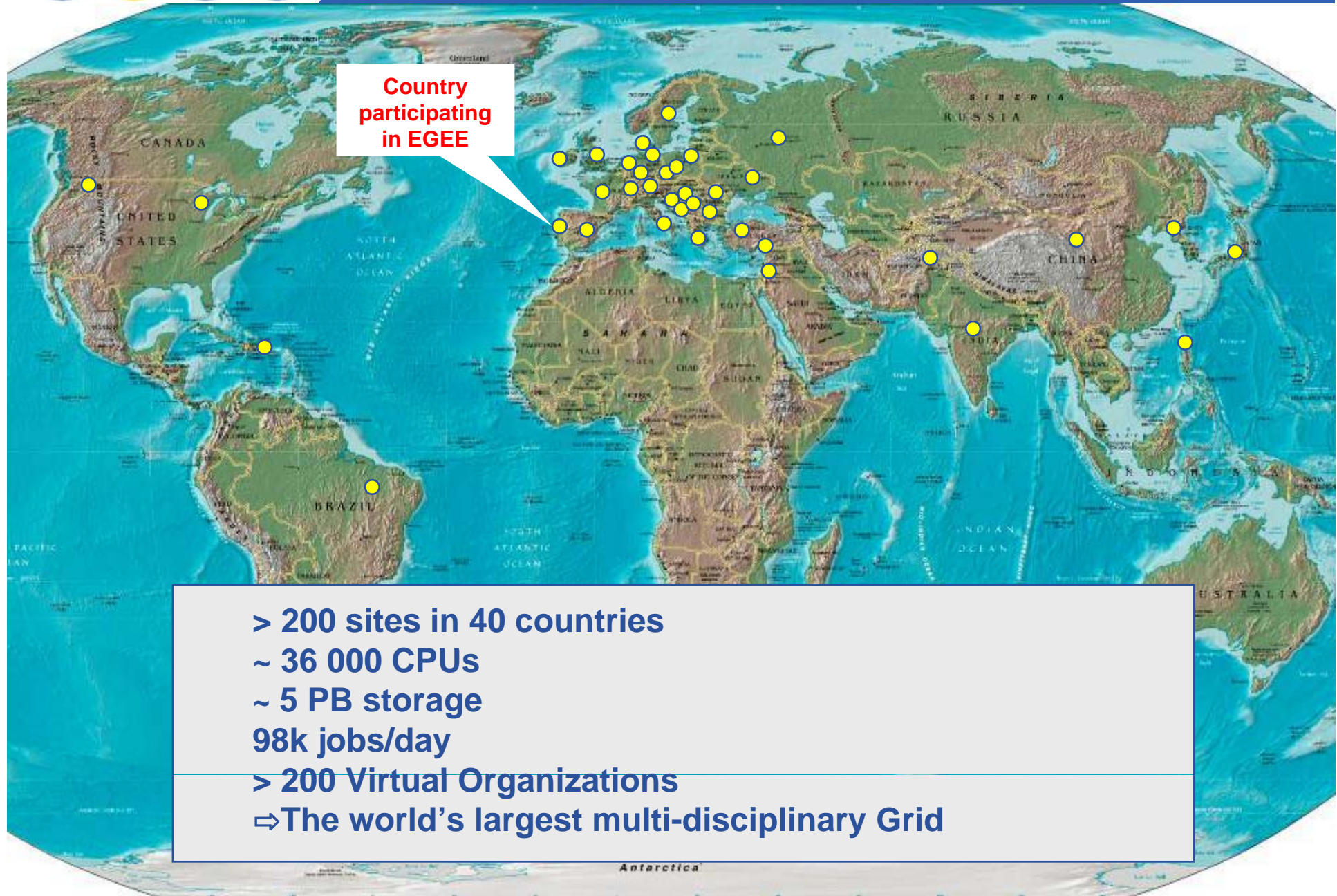
- Regional Operations Centre
- GGUS
- Operations Coordination Centre



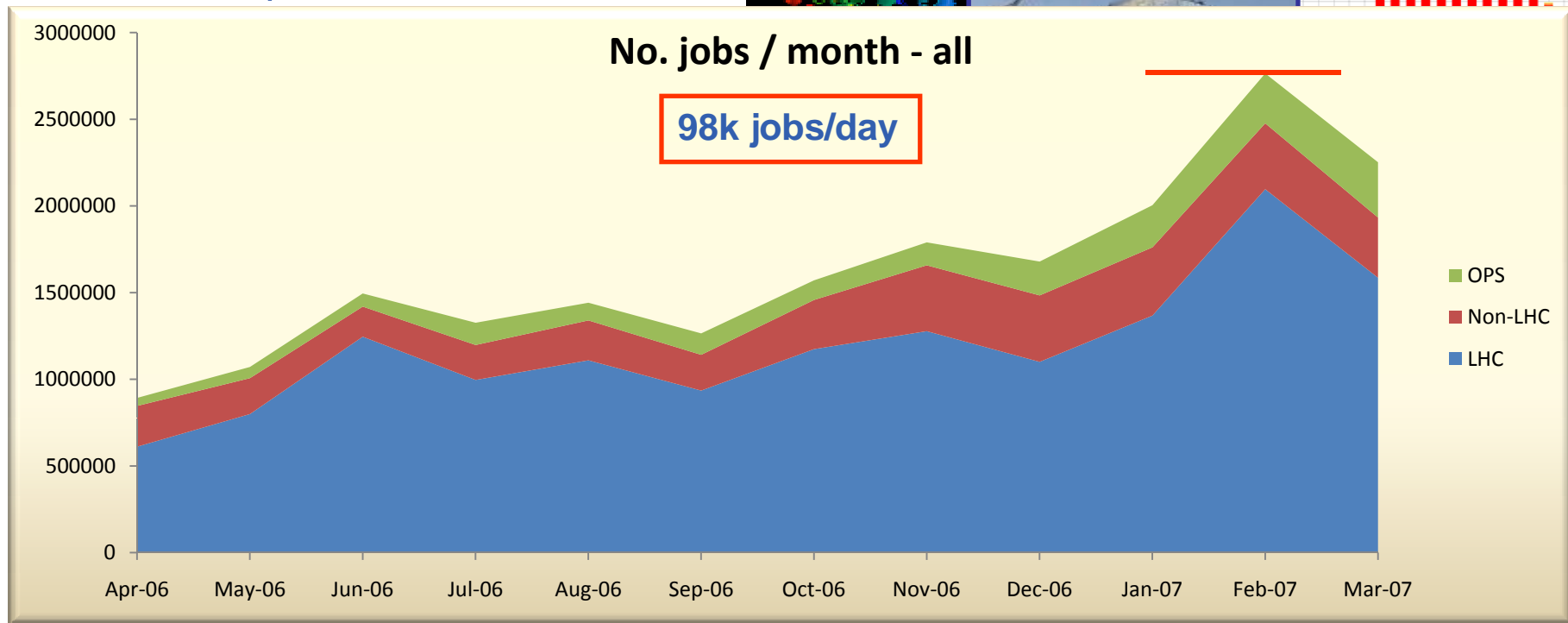
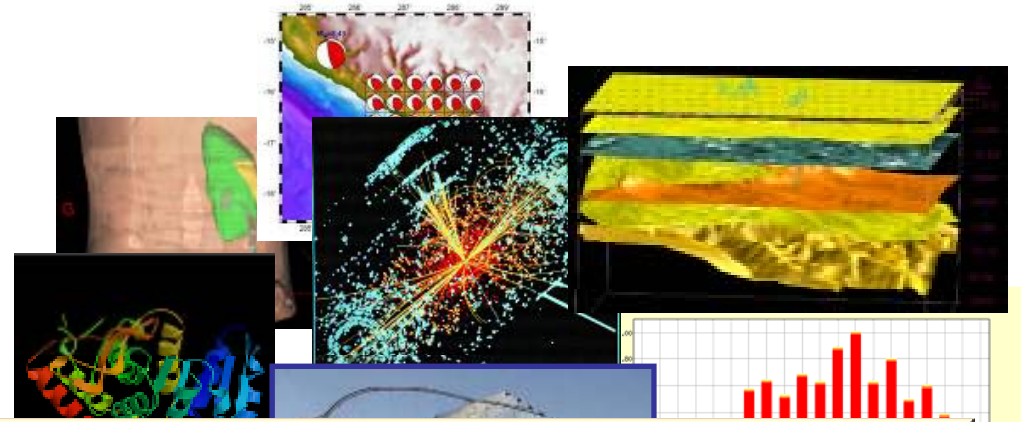
Grid User Support (GGUS)

At FZK, coordination and management of user support, single point of contact for users

- **Operations Coordination Centre (OCC)**
 - management, oversight of all operational and support activities
- **Regional Operations Centres (ROC)**
 - providing the core of the support infrastructure, each supporting a number of resource centres within its region
 - **Grid Operator on Duty**
- **Resource centres**
 - providing resources (computing, storage, network, etc.);



- >200 VOs from several scientific domains
 - Astronomy & Astrophysics
 - Computational Chemistry
 - Comp. Fluid Dynamics
 - Computer Science/Tools



- **Simulation**
 - Large number of similar, independent jobs – parameter study
- **Bulk Processing**
 - Widely-distributed input data, Sophisticated data management
- **Workflow**
 - Complex dependencies between individual tasks
- **Legacy Applications**
 - Licenses: control access to software on the grid
 - No recompilation \Rightarrow no direct use of grid APIs
- **Parallel Jobs**
 - Many CPUs needed simultaneously, Use of MPI libraries
 - *Limited support in gLite*: MPI configuration is not uniform
- **Responsive Apps.**
 - Short response time
 - *No real support in gLite* \rightarrow Interactive Grid FP6 project

- **EGEE digital library:** <http://egee.lib.ed.ac.uk/>
- **EGEE** www.eu-egee.org
- **gLite** <http://www.glite.org>

- **Permanent need for tutorials, demonstrations etc.**
- **Cannot disturb production system, or guaranteed pre-production**
- **Ideally need dedicated (small) service**
 - Kept in an operational state
 - Need sufficient resources to be available (another testbed!)
- **Currently fulfilled by GILDA service (via GENIUS and P-GRADE portal)**