



Enabling Grids for  
E-science in Europe

[www.eu-egee.org](http://www.eu-egee.org)

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# The EGEE Project

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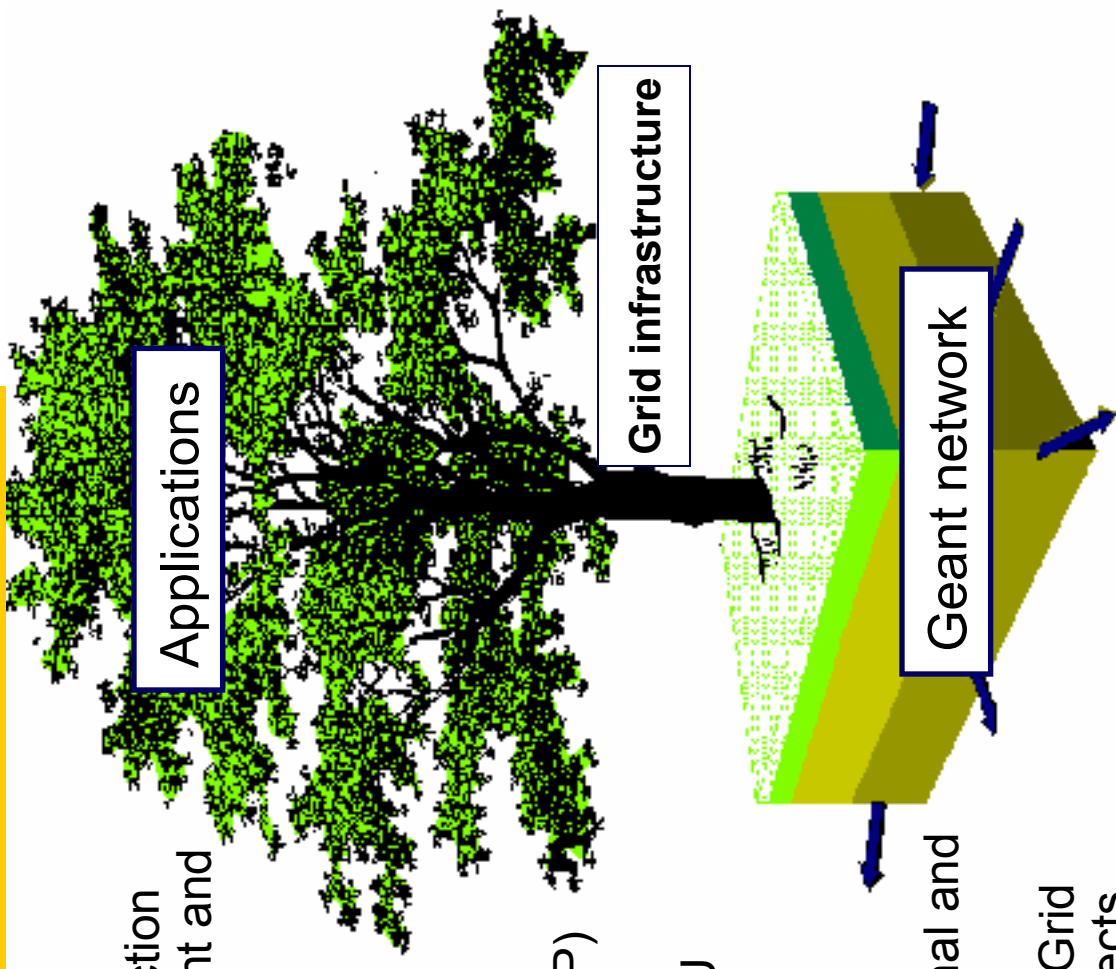
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# EGEE manifesto: Enabling Grids for E-science in Europe

- **Goal**
  - Create a wide European Grid production quality infrastructure on top of present and future EU RN infrastructure
- **Build On:**
  - EU and EU member states major investments in Grid Technology
  - International connections (US and AP)
  - Several pioneering prototype results
  - Large Grid development teams in EU require major EU funding effort



- **Approach**
  - Leverage current and planned national and regional Grid programmes
  - Work closely with relevant industrial Grid developers, NRENs and US-AP projects

# The EGEE challenges

- A large investment in a short time (32 M Euros/ 24 months):
  - The rationale is to mobilize the wider Grid community in Europe and elsewhere and be all inclusive
  - Demonstrate production quality sustained Grid services for a few relevant scientific communities (at least HEP and Bio-Medical)
  - 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
- Move from R&D Middleware and testbeds to industrial quality software and sustained production Grid infrastructure performance
- Implement a highly distributed software engineering process while maintaining efficiency and a fast release cycle (development clusters)
- Harmonize EGEE activities with national and international activities
- Cope with new FP6 rules and different and often conflicting EU Grid plans and activities

# LHC Computing Grid Project (LCG)

- **EGEE builds on the work of LCG to establish a grid operations service**
- **LCG:** a worldwide collaboration of
  - *The LHC experiments*
  - *The Regional Computing Centres*
  - *Physics institutes*
- **Mission:**
  - Prepare and deploy the computing environment that will be used by the experiments to analyse the LHC data
- **Strategy:**
  - Integrate with EGEE in SA1 (Grid services) and JRA1 (Middleware)
  - Coordinated management structure
- **Status:**
  - LCG service up and running with LCG-2 mware – successfully being used for LHC data challenges



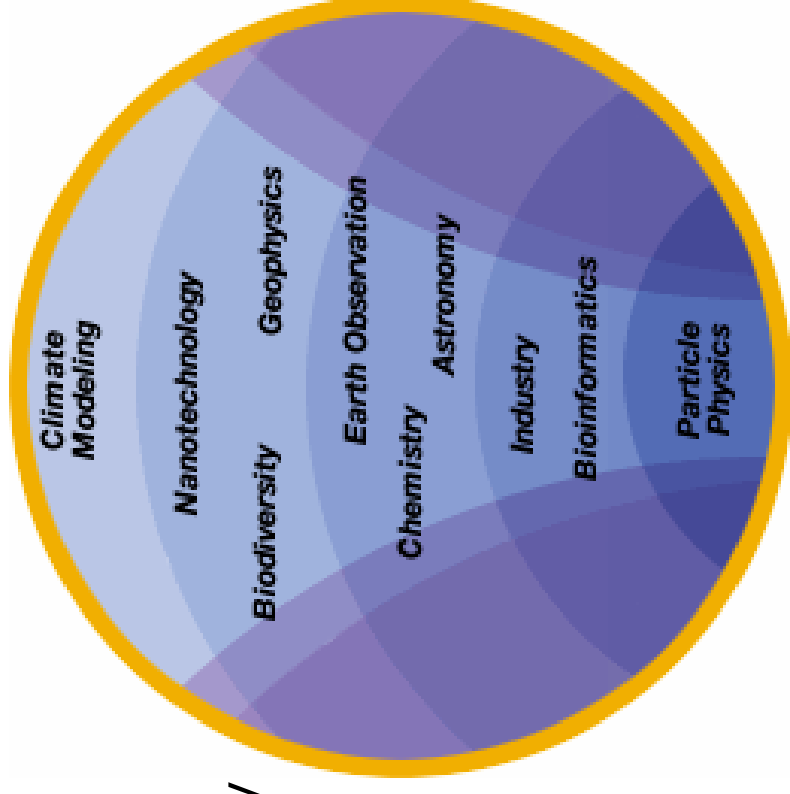
# EGEE Partners

- 70 leading institutions in 28 countries, federated in regional Grids
- Leverage national resources in a more effective way for broader European benefit



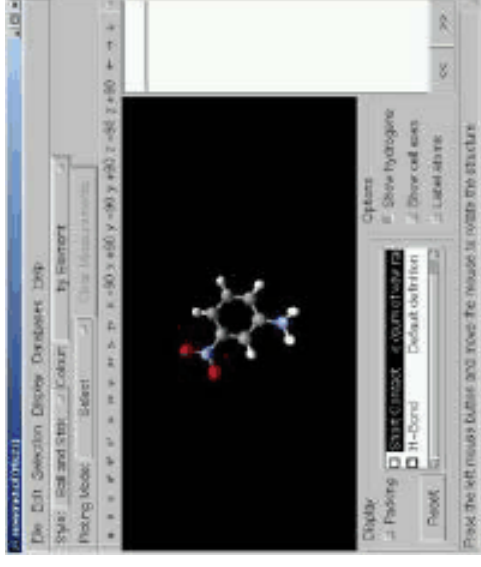
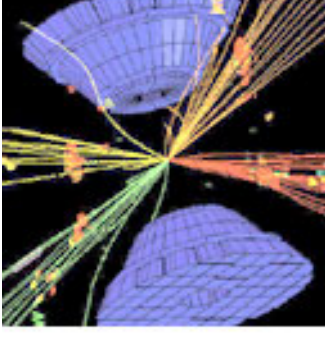
# From the EGEE proposal: Applications

- EGEE Scope : ALL-Inclusive for academic applications (open to industrial and socio-economic world as well)
- The major success criterion of EGEE: how many satisfied users from how many different domains ?
- 5000 users (3000 after year 2) from at least 5 disciplines
- Two pilot applications selected to guide the implementation and certify the performance and functionality of the evolving infrastructure: **Physics & Bioinformatics**



# The pilot applications

- **High Energy Physics** with LHC Computing Grid ([www.cern.ch/lcg](http://www.cern.ch/lcg)) relies on a Grid infrastructure to store and analyse Petabytes ( $10^{15}$  bytes) of real and simulated data. LCG is a major source of resources, requirements and hard deadlines with no conventional solution available
- In **Biomedics** several communities are facing equally daunting challenges to cope with the flood of bioinformatics and healthcare data. Need to access large and distributed non-homogeneous data and important on-demand computing requirements





# EGEE Related projects

- From the EGEE mandate, be open and play an infrastructure role:
  - **SEE-GRID**, South Eastern European Grid-enabled eInfrastructure development: extends EGEE to South East Europe  
<http://www.see-grid.org/>
  - **DEISA**, Distributed European Infrastructure for Supercomputing  
Applications: Supercomputing grid  
<http://www.deisa.org/>
  - **Diligent**: A Testbed Digital Library Infrastructure on Grid Enabled Technology: (in advanced negotiation) starts in September or October 2004
  - **GRID-CC** (in advanced negotiation): Real-time Grid applications
  - **US projects** (Trillium, GRID3, OSG etc.)
  - BioMedical and other EU projects from the current round of EU negotiation (will be known by June)
  - Other countries have expressed strong interest in the project: Korea, Taiwan, Egypt, Pakistan, India, Cuba, Chile, Iran...

# EGEE Project Structure

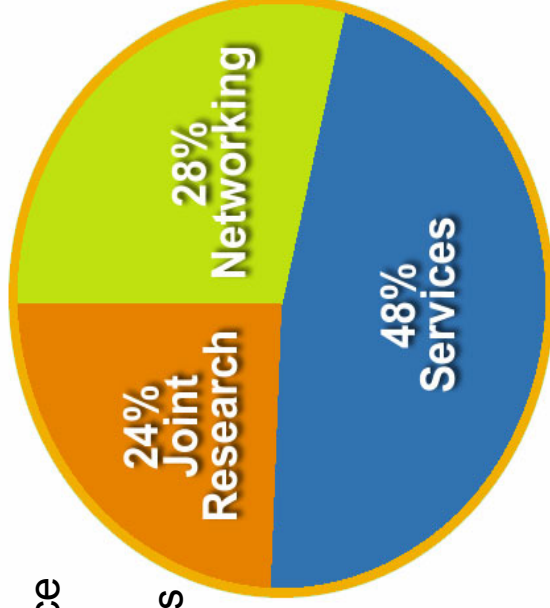
32 Million Euros EU funding over 2 years starting 1<sup>st</sup> April 2004

## 24% Joint Research

- JRA1:** Middleware Engineering and Integration
- JRA2:** Quality Assurance
- JRA3:** Security
- JRA4:** Network Services Development

## 28% Networking

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



## 48% Services

- SA1:** Grid Operations, Support and Management
- SA2:** Network Resource Provision

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