Future of EGEE and European Grid Initiative (EGI)

Ludek Matyska
CESNET, Czech Republic
EGEE & SEE-GRID Summer School
Budapest, Hungary
Outline

- EGEE-II recapitulation
- EGEE-III
  - Vision
  - Partners
  - Proposed activities
- EGI
  - National Grid Initiatives
- EGI Design Study
  - Vision
  - Partners
  - Workpackages
- Summary
• Large scale production infrastructure
• Large number of Virtual Organizations
  – More than 200 registered
• Many differing application domains
  – High Energy Physics still dominant
  – Strong bio- and life-sciences
  – Astronomy and astrophysics
  – Computational chemistry
  – Material science and many more
• Own middleware stack – gLite
  – Basic components (WMS, Data management, Information systems, Job tracking, …)
> 200 sites in 40 countries
> 36,000 CPUs
> 5 PB storage
> 98k jobs/day
> 200 Virtual Organizations
24 projects have registered as on February 2007

Registered Collaborating Projects

Infrastructures
- geographical or thematic coverage

Applications
- improved services for academia, industry and the public

Support Actions
- key complementary functions
Letters of support for proposed FP7 projects

Infrastructures
- geographical or thematic coverage
  - EDGeS
  - EELA-2
  - SeeGrid Sci
  - DORII
  - MEDIAN

Applications
- improved services for academia, industry and the public
  - BioMedGrid
  - EUFORIA
  - GEMMS
  - LifeWatch
  - ARGO ERC
  - UnosatMobileGrid
  - AGENA
  - E3Grid
  - eNMR
  - HEI

Support Actions
- key complementary functions
  - VERSATILE
  - YNIVERSUM
  - ICEAGE-2
  - OGF-EU Chapter
  - ETICS-2

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EGEE-II Perspective

- Still project based funding
- Many scientific activities are becoming dependent on the existence of EGEE Grid
  - LHC starting in some 6 months
  - Large scale collaboration formed in other disciplines, too
  - People are using EGEE Grid regularly for their scientific work
- EGEE II project will end in March 2008
  - What will happen after this date?
  - Is it safe to depend on EGEE (and in general, Grid) infrastructure?
- The community needs a longer term perspective
“...for Grids we would like to see the move towards long-term sustainable initiatives less dependent upon EU-funded project cycles”

Viviane Reding, Commissioner, European Commission, at the EGEE’06 Conference, September 25, 2006

A universal e-Infrastructure for research\(^{(1)}\)

“An environment where research resources (H/W, S/W & content) can be readily shared and accessed wherever this is necessary to promote better and more effective research”

Towards sustainable grid-empowered e-Infrastructures

Sustainable grid/data-based e-Infrastructures (utility model)

Production quality facilities

Broad scale test-beds

FP5

FP6

FP7

Slide courtesy of Kyriakos Baxevanidis, EC
Mid and long term solution

- Solution based on a combination of
  - A project: EGEE III
  - A study: EGI Design Study

- EGEE III
  - Extension of EGEE II for two year (till March 2010)
  - Taking care of immediate future
  - Guarantees continuation of production and development

- EGI Design Study
  - Answer to: What and how [to do] after EGEE III?

- Both are expected to run in parallel
- EGI_DS will prepare a transition
- And EGEE III will initialize it
• Preparation started in December 2006
• Work initiated and lead by the current EGEE II consortium
• The main vision of EGEE-III is to make a strong move towards a sustainable world-wide production quality Grid infrastructure by appropriate technical and organisational evolutions
  – No sharp edges between EGEE II and EGEE III
  – LHC will be active during the EGEE III
    ▪ Higher reliability required
  – Other application areas must not be endangered
    ▪ The goal is exactly opposite – to increase substantially other application presence on the EGEE III Grid
    ▪ Important as many resources will be permanently used by HEP
• The main vision of EGEE-III is to make a strong move towards a sustainable world-wide production quality Grid infrastructure by appropriate technical and organisational evolutions.

• The e-Infrastructure operated by EGEE-III must be capable of providing services to a rapidly increasing number of application areas, and make Grid technology easily accessible and usable for these communities.
• Proposal to be submitted in September 2007
• Currently draft project proposal available
  – Discussed within EGEE II PEB and PMB
  – Partners are biding against the project proposal
• Basic concepts:
  – National organization (JRUs)
  – Cluster of competence in some activities

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<thead>
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<th>Networking activities</th>
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Consortium structure

- **EGEE II has some 91 contractual partners**
  - Plus additional 48 members through JRUs

- **Better organization necessary**
  - Elimination of majority of partners against the vision
  - Organization must open door to sustainability

- **Taking into account National Grid Initiatives (NGI)**
  - New basic organization structure on countries
  - All academic institutions from a single country are expected to be represented by one “organization”
  - The JRU (Joint Research Unit) concept
<table>
<thead>
<tr>
<th>Country</th>
<th>Denmark</th>
<th>Ireland</th>
<th>Portugal</th>
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- Countries in which a JRU is in place
- Countries in which a JRU is planned and in progress
- Countries in which no JRU is planned (one partner)
### High Level Structure

- **27+ countries still too many for a direct management**
  - Adopting modified **Federation structure from EGEE II**
- **Federations:**
  - 13 different federations
  - All representing a geographic area

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<th>Central Europe</th>
<th>CERN</th>
<th>France</th>
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<td>Germany/</td>
<td>Italy</td>
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<td>South East Europe</td>
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### Networking activities

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EGEE-III will aim at a *total* effort of 10,000 Person Months and a duration of 2 years
  - Compared to 11,165 for EGEE-II with \(~\)37 Million € EU funding

EU contribution expected around 35 Million €
  - INFRA-2007-1.2.3 e-Science Grid infrastructures is likely to be \(~\)50 Million €

Partners will have to provide substantial co-financing (or other form of direct involvement)
• EGEE III still “just” a project
• More sustainable approach must be put in place
• As Grids are based on Networks, an organizational structure of networks in Europe has been examined
  – National Structure – NREN (National Research and Educational Networks)
  – International Organization – Dante
    ▪ NRENs are “shareholders”
• National Grid Initiatives (NGI)
  – Basic building blocks
  – Expected to operate national grid infrastructure
• EGI – collaboration among NGIs
  – How to?
EGI Goals

- **Ensure the** long-term sustainability of the European e-infrastructure
- **Coordinate the integration and interaction between** National Grid Infrastructures
- **Operate the European level of the production Grid infrastructure for a wide range of scientific disciplines to link** National Grid Infrastructures
National Grid Initiatives

• Expected (and already forming) national organizations to develop and manage the grid infrastructure at the national level
  – The ownership of resources much more complicated than in networks

• Not a single (prescribed) organizational and legal structure
  – However, NGI is expected to have official endorsement to be able to represent the country in Grid related activities
  – Just one per a country
    ▪ Based on an assumption of a “shared infrastructure”

• Currently forming as JRUs in many countries to fit the EGEE III requirements
  – But must go beyond the EGEE III participation
**EGI Design Study**

- **Project Proposal**, submitted to the European Commission for funding within FP7-INFRASTRUCTURES-2007-1, 1.2.1 Design Studies (May 2, 2007)

- **Partners (9):**
  - GUP Austria, leading partner (Dieter Kranzlmueller)
  - GRNET Greece, NREN
  - INFN Italy
  - CSC Finland
  - CESNET Czech Republic, NREN
  - CERN Switzerland
  - DFN Germany, NREN
  - STFC UK
  - CNRS France

- Collaboration with and contribution from all the NGIs and other organizations is expected (in fact, necessary)
• Project for the conceptual setup and operation of a new organizational model of a sustainable pan-European grid infrastructure

• Federated model bringing together NGIs to build a European organisation

• Responsibilities between NGIs and EGI are split to be federated and complimentary

To find how to organize sustainable international Grid, how to ensure funding, operation and further development
• Letter of support from all major players
  – 35 NGIs (27EU+8)
  – Asia
  – Latina America
  – USA
  – OGF-EU
  – PACE
  – ETICS

• EGI_DS work already underway
Enabling Grids for E-sciencE
EGEE-II INFSO-RI-031688

EGI – Workshops Organised

• 30-31 January 06, Thoiry (France) - EGEE Project Management Board;
• 10 March 06, Kassel, (Germany)
• 28 March 06, Barcelona (Spain)
  – France, Portugal, Spain
• 19 April 06, Athens (Greece)
  – Bulgaria, Cyprus, Greece, Israel, Romania, Serbia, Turkey;
• 26 April 06, Vilnius (Lithuania)
  – Estonia, Finland, Latvia, Lithuania, Poland, Sweden
• 28 April 06, Paris (France)
  – TERENA NREN-Grid workshop
• 29 April 06, Lisbon (Portugal)
• 26 September 07, Geneva (Switzerland)
  – NGI workshop @ EGEE06 conference
• 12 January 07, Oslo (Norway)
  – Norway, Sweden, Finland, Denmark
• 19 January 07, Reading (UK)
• 16 February 07, Amsterdam (Netherlands)
  – Netherlands, Belgium, Luxemburg
• 27 February 07, Munich (Germany)
  – EGI workshop

Presentations also made at European Commission events, eIRG workshops as well as in Asia (Taipei) and US (Seattle & San Diego),
• 27 months
• Expected starting date: September 1\textsuperscript{st}, 2007
  – However, contract probably signed in November
• 6 Workpackages
  – Collection of requirements (GRNET)
  – Functional and organizational structure proposal (INFN)
  – Legal issues (CNRS)
  – EGI implementation (CERN)
  – Plus Management (GUP) and Relation with other partners and dissemination (CSC)
• Initial work based on the EGEE II NA5 results
  – 2\textsuperscript{nd} round of use case collection under preparation
One of the main goals of EGEE-III is to enable the transition to EGI by evolving the existing technical and organisational structures.

- This will be complex since EGEE-III must in parallel ensure the continuous availability of the production infrastructure to an ever increasing number of diverse user communities.
Conclusion

• **EGEE III with two faces**
  – Continuation of EGEE II
  – Final step towards EGI

• **Project under preparation and discussion**
  – However, the discussions must converge quickly
  – Series of PEB and PMB meetings (next one July 5&6) to ensure the convergence
    ▪ Lot of work *behind the scenes*

• **EGI_DS to look for sustainable organization of Grids**

• **EGI as the long term goal**
  – Hopefully no need for EGEE IV

• **Serious steps taken to make grid infrastructure permanent**