European Grid Infrastructure: Enabling European Research

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Infrastructure (Wikipedia)

Infrastructure is the *basic physical and organisational structures needed for the operation of a society or enterprise*, or the services and facilities necessary for an economy to function.

Applying these concepts to your Research and Research Infrastructures in general

European Strategy Forum on Research Infrastructures

- Roadmap u
- Preparatory
- Big push in
- 44 projects
  - Social Sciences and Humanities
  - Environmental Sciences
  - Energy
  - Biological and Medical Sciences
  - Materials and Analytical Facilities
  - Physical Sciences and Engineering
  - e-Infrastructures

- Data Intensive Science
- National commitments in European context
- Global collaboration and shared access
- Long lifetime (10-20+ years)

EGEE: State of the Art

17,000 users

139,000 LCPUs (cores)

25Pb disk

39Pb tape

12 million jobs/month

+45% in a year

268 sites

+5% in a year

48 countries

+10% in a year

162 Virtual Organisations

+29% in a year

Over 20 active communities in 112 VOs

Imperial College London

GridPP

UK Computing for Particle Physics

What will EGI initially focus on?

- Continue providing a secure reliable generic infrastructure
  - Integrate resources based on gLite, UNICORE, ARC, Globus, ...
  - Leverage new technologies to provide more flexibility to users
- Support the user communities using the infrastructure
  - Assist and support the current user communities
  - Engage and support new structured user communities
    - **e.g. ESFRI**
- Improve the efficiency of the infrastructure
  - The number of jobs, users & data continue to increase
  - Utilisation and effectiveness of the resources needs to match

Explore the use of new technologies to move technology decisions closer to the end-user

EGI means Innovation

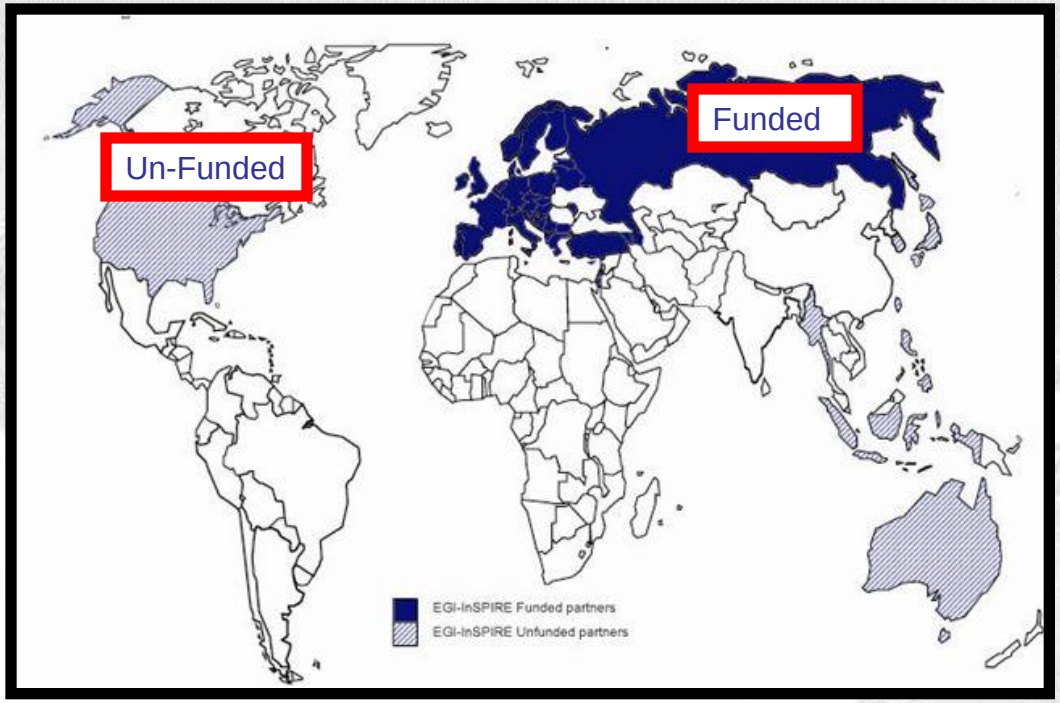
- Deploy Technology Innovation
  - Distributed Computing continues to evolve
    - **Grids → Desktops → Virtualisation → Clouds →?**
- Enable Software Innovation
  - Provide reliable persistent technology platform
    - **Community tools built on the deployed technology**
- Support Research Innovation
  - Infrastructure for data intensive science
    - **Support for international research (e.g. ESFRI)**

The EGI-InSPIRE Project

Integrated Sustainable Pan-European Infrastructure for Researchers in Europe

- A 4 year project with €25M EC contribution
  - Project cost €69M
  - Total Effort ~€330M
  - Effort: 9261

Project Partners (51)
- EGI.eu, 40 NGIs, 2 EIROs
- Asia Pacific (8 partners)



The EGI Organisation

- EGI built from resource providers across Europe
  - NGIs: National Grid Infrastructures
  - EIRO: European International Research Organisations
  - … but any ‘thing’ can join!
- Coordination for European DCI resources through EGI.eu
  - Roadmap to integrate HTC, HPC, Data, Instruments, ...
  - Policy & services needed to run a production infrastructure
- EGI.eu governed and owned by its stakeholders
  - EGI Council fees proportional to votes
  - Builds on resources from within its stakeholders
- Located in the Amsterdam Science Park
  - Distributed staff (~45) with a core (~50%) in Amsterdam
    - **Human coordination in Amsterdam**
    - **Technical coordination with a few partners across Europe**

Getting Engaged

- What do you want to do?
  - How is your data generated & distributed?
  - How do you & your international partners analyse data?
- What resources to you need to use?
  - Data? HPC? HTC? Desktop Grids?
  - Who provides them for you?
    - **Integrate these into a European network**
- Federation of national infrastructure providers
  - ‘Local’ offices all over Europe that can help you!
- See previous work: www.euEarthScienceGrid.org

Sustainability

‘Europe as a hub for sustainable e-science and continuous service innovation’

- Reduce barriers for collaborative data intensive science
  - Integration with GEANT provides unique offering
  - Support to ESFRI projects and new communities
    - **Flexibility to run the services and software they need**
- Open global collaboration of e-infrastructures providers
  - Domain driven collaboration with other infrastructures
  - Open standardised interfaces to avoid vendor lock in
  - Add value where we can and outsource where we can’t

Summary

- EGEE:
  - Demonstrated a production e-infrastructure
- EGI:
  - Provide a sustainable production e-infrastructure
- EGI.eu is now a legal entity based in Amsterdam
  - Supported transition for 4 years through EGI-InSPIRE
- Contact: director@egi.eu

EGI Technical Forum

14-17th September 2010 in Amsterdam