The EGI – a sustainable European grid infrastructure

Michael Wilson

STFC RAL

EU Ministers

- “The Council emphasises the essential role of e-infrastructures as an integrating mechanism between Member States, regions as well as different scientific disciplines, also contributing to overcoming digital divides.”

Competitiveness Council,
29/30 May 2008, Brussels

A UK Vision …

- for a universal e-Infrastructure for research(1)

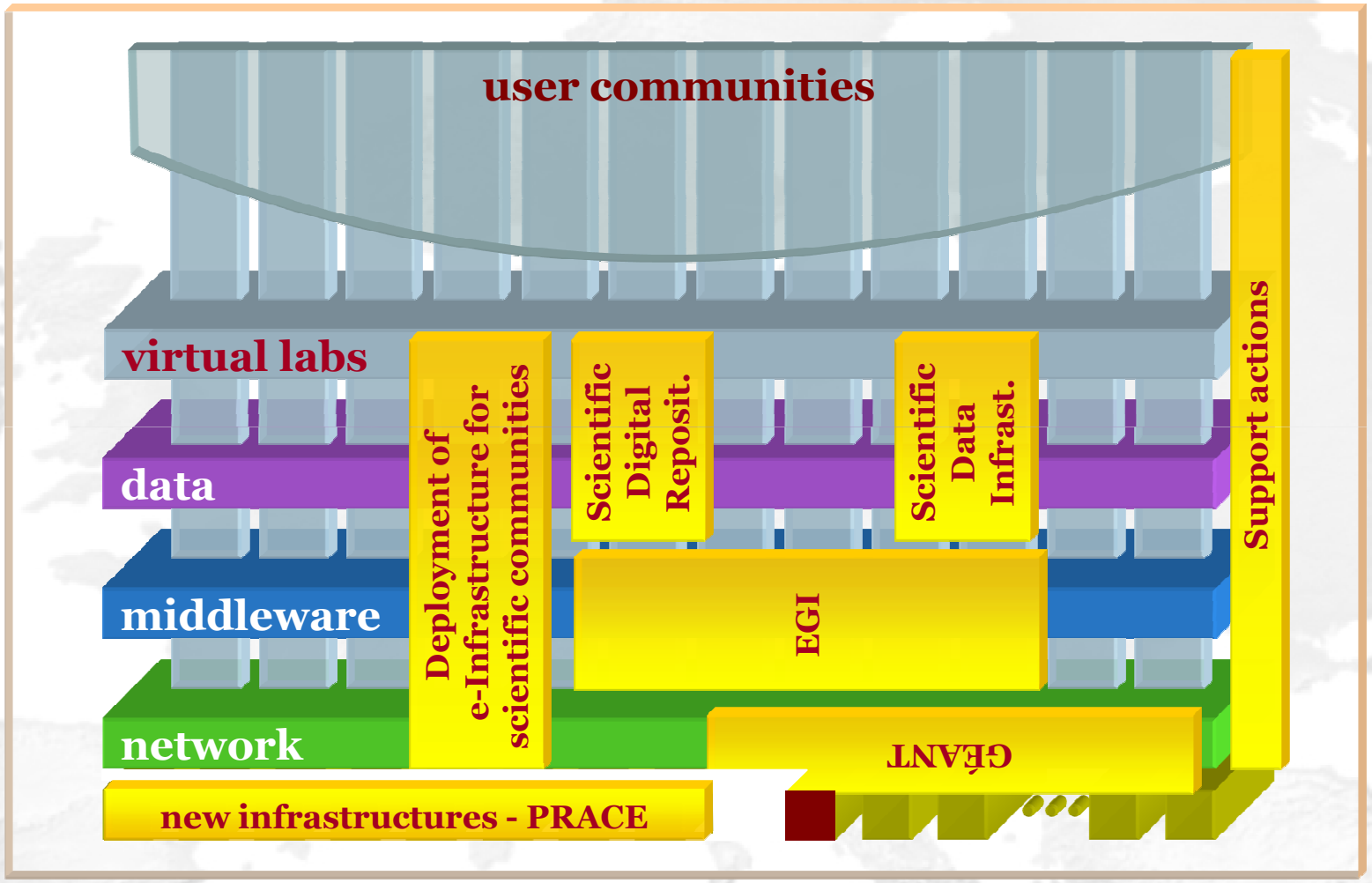
  "*An environment where research resources (H/W, S/W & content) can be readily shared and accessed wherever this is necessary to promote better and more effective research*"

(1) Malcolm Read (Ed.) http://www.e-irg.org/meetings/2005-UK/A_European_vision_for_a_Universal_e-Infrastructure_for_Research.pdf

Business Case for EGI

- To enable the ICT of international research projects to interoperate
- Avoid each project or discipline establishing its own collaborative technologies
- Cost saving at national level, not at project or facility level
- Audience for argument – National Funding Body, EiroForum lab. Council member

Integration of the e-Infrastructure



European Grid Initiative

Goal:

- Long-term sustainability of grid infrastructures in Europe

Approach:

- Establishment of a new federated model bringing together National Grid Initiatives to build the EGI Organisation

EGI Organisation:

- Coordination and operation of a common multi-national, multi-disciplinary Grid infrastructure
  - To enable and support international Grid-based collaboration
  - To provide support to NGIs
  - To liaise with corresponding infrastructures outside Europe

EGI Objectives:

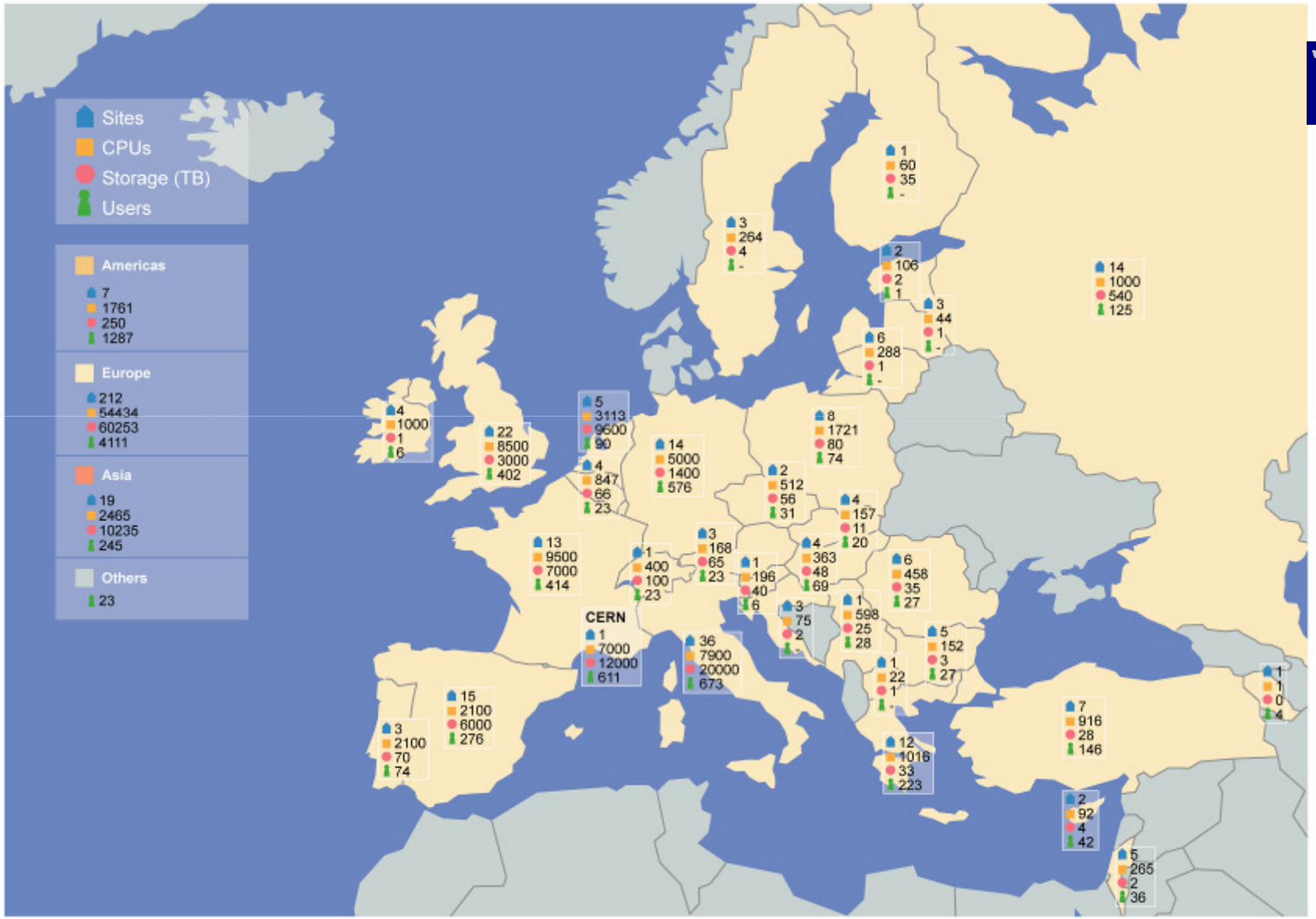
- Ensure the long-term sustainability of the European e-infrastructure
- Coordinate the integration and interaction between National Grid Infrastructures
- Operate the European level of the production Grid infrastructure for a wide range of scientific disciplines to link National Grid Infrastructures

EGI Vision:

Researchers collaborating in international projects can interoperate resources:

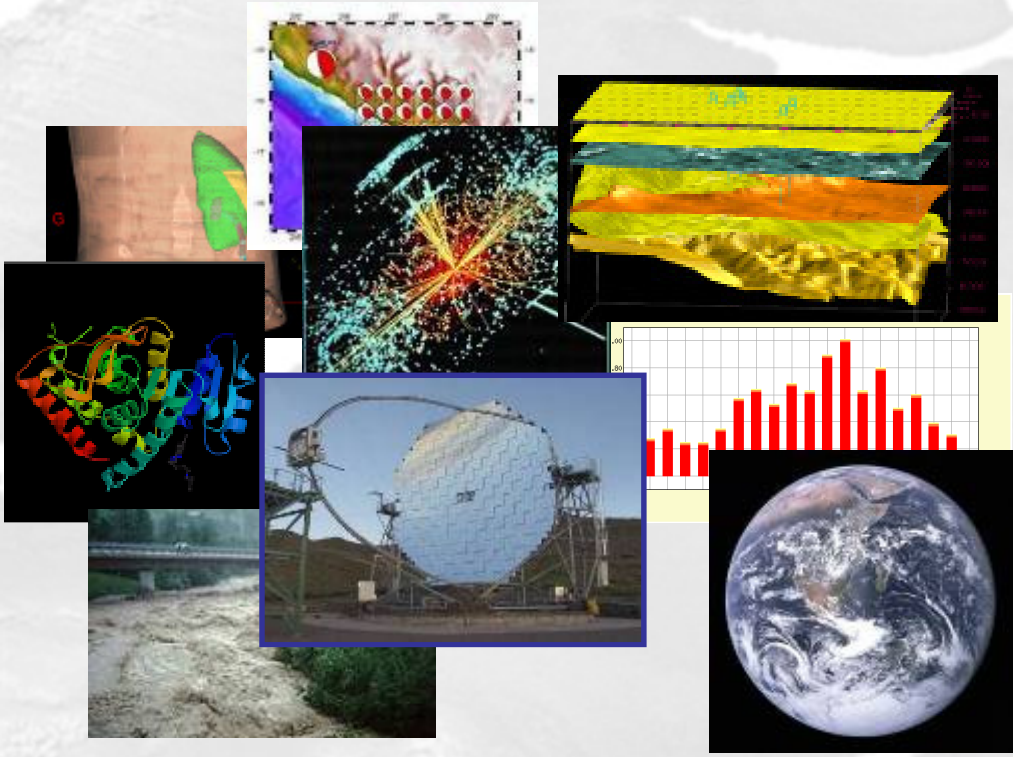
- **processing (capacity, HPC, commodity),**
- **data,**
- **facilities (EiroForum, ERF, ESFRI)**

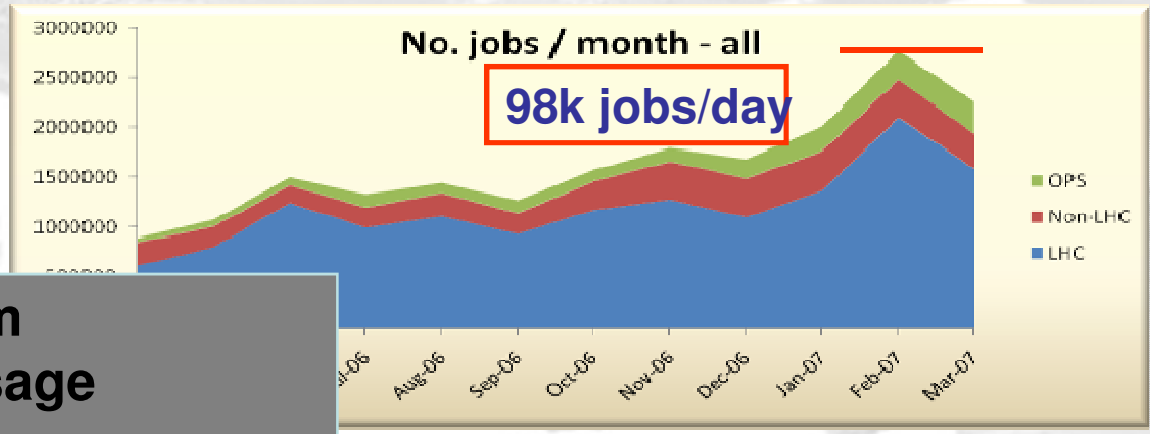
EGEE – existing collaboration



EGEE-III - Wide range of disciplines

- >200 VOs from several scientific domains
  - Astronomy & Astrophysics
  - Civil Protection
  - Computational Chemistry
  - Comp. Fluid Dynamics
  - Computer Science/Tools
  - Condensed Matter Physics
  - Earth Sciences
  - Fusion
  - High Energy Physics
  - Life Sciences
- 40% non-HEP





Applications have moved from testing to routine and daily usage

~80-90% efficiency

Sustainable organisational scheme

- Central organisation EGI.org
- Co-ordinating NGI for international collaboration
- Different from EGEE
  - EGI.org will not collaborate with resource providers directly
  - No 2 year project funding cycle

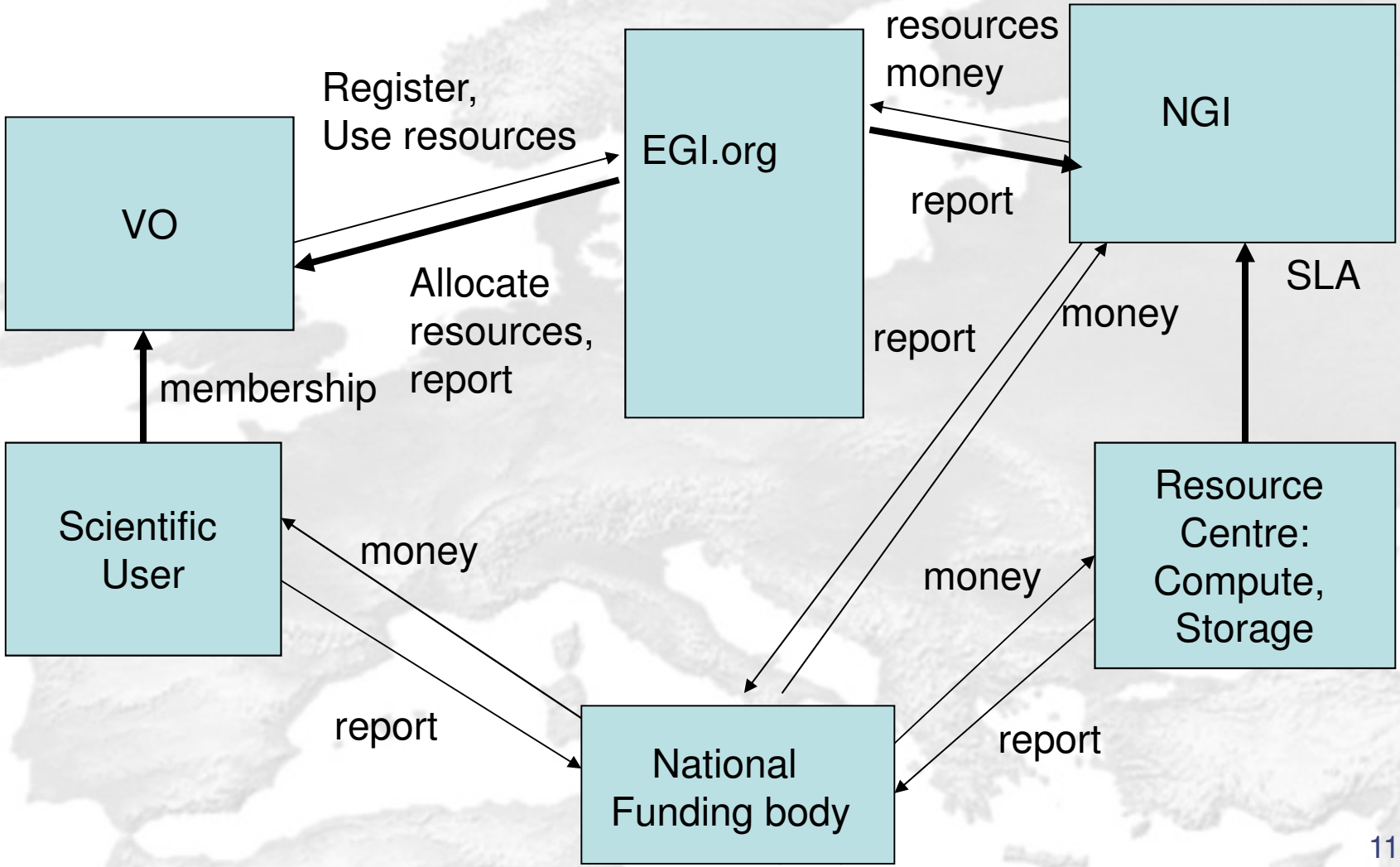
Characteristics of NGIs

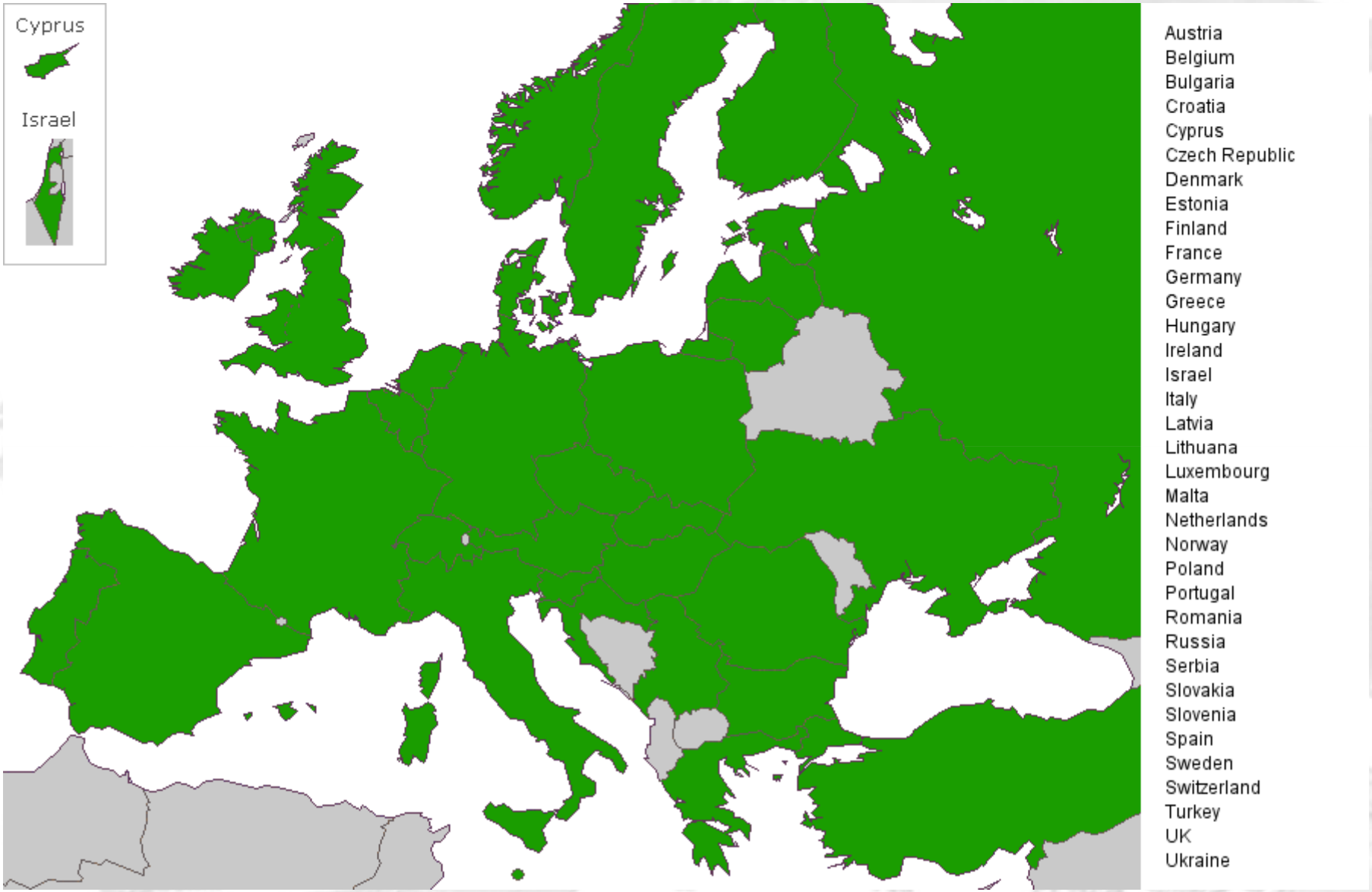
Each NGI

- … should be a recognized national body with a **single point-of-contact**
- … should mobilise national funding and resources
- … should operate the national e-Infrastructure
- … should supports user communities (application independent, and open to new user communities and resource providers)
- … should contribute and adhere to international standards and policies

Responsibilities between NGIs and EGI are split to be federated and complementary

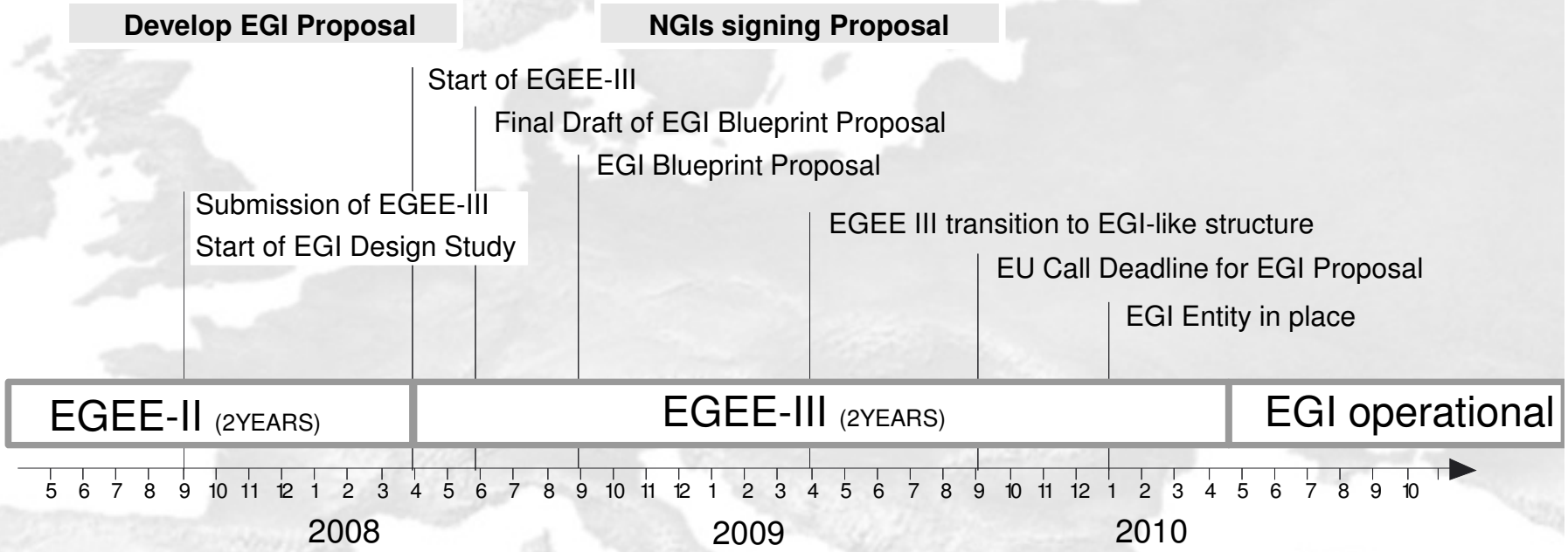
EGI Funding & Reporting Cycle




Cyprus
Israel
Austria
Belgium
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Israel
Italy
Latvia
Lithuana
Luxembourg
Malta
Netherlands
Norway
Poland
Portugal
Romania
Russia
Serbia
Slovakia
Slovenia
Spain
Sweden
Switzerland
Turkey
UK
Ukraine

EGI_DS Schedule

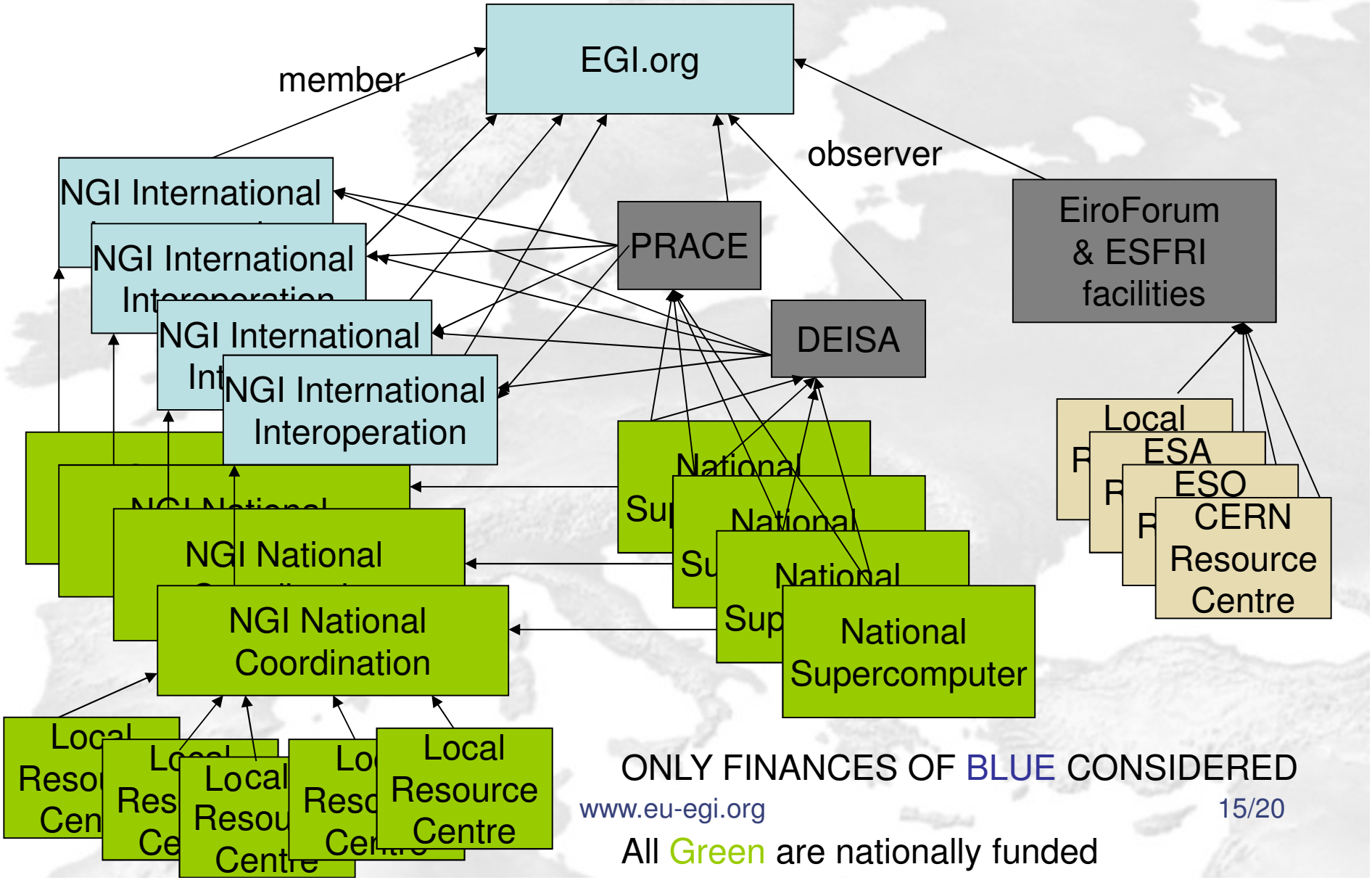
27 months:



www.eu-egi.org

contact@eu-egi.org

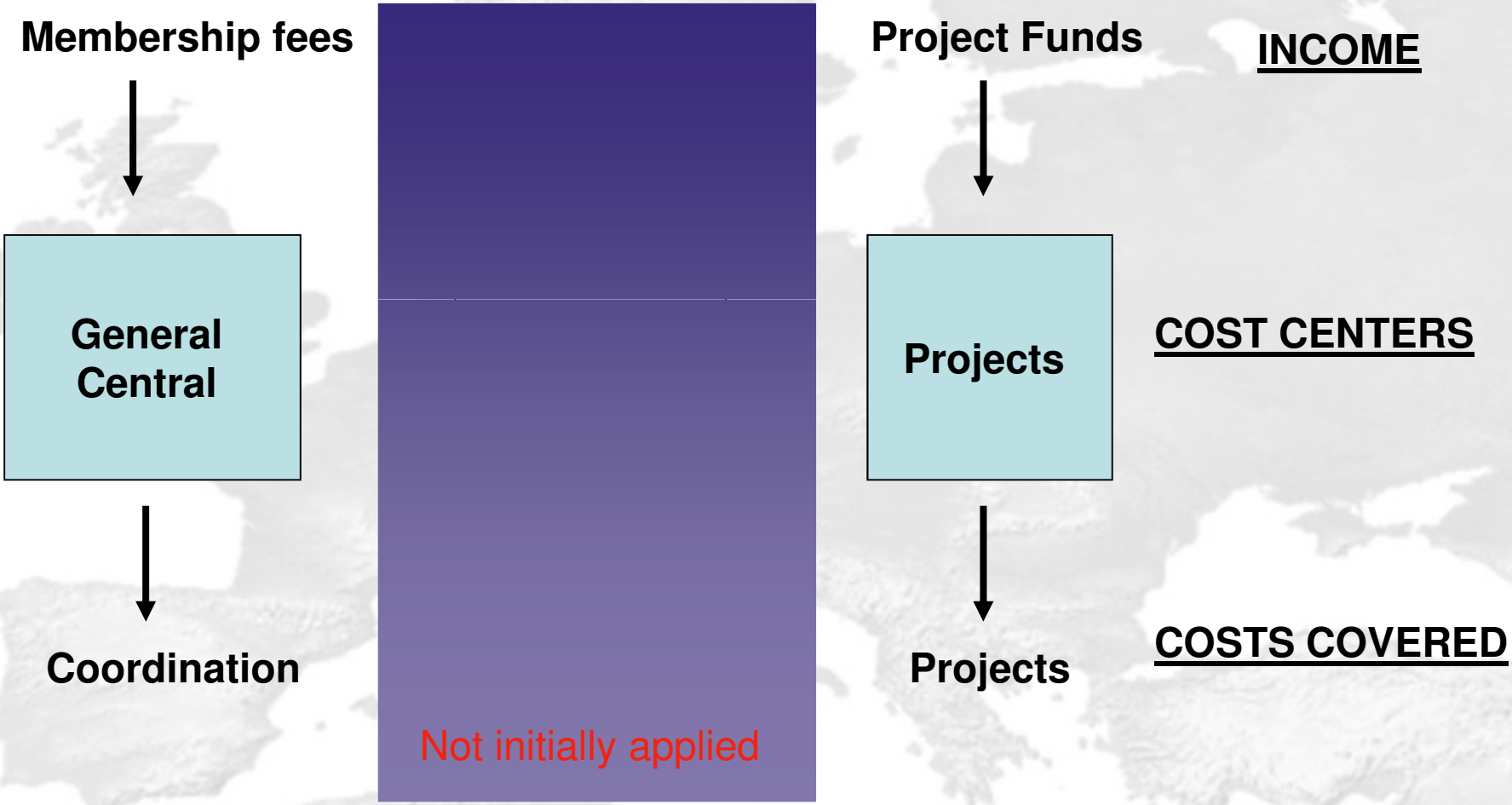
Proposed EGI Organisation



ONLY FINANCES OF BLUE CONSIDERED

All Green are nationally funded

EGI Funding Model



Principles behind EGI resource management

- Encourage:
  - Small countries to join
  - New scientific disciplines to join
  - New users to join
  - New resource providers to join
- Charging reflects usage
- Minimise accounting and billing costs

EGI Resource Allocation

- Resource Centres provide resources to NGI
- NGI allocate resources to VO
- NGI inform EGI
- EGI monitor resource usage and report

Long Term Vision

- The EGI will be financially self sustaining for operations
- Innovation and NGI expansion will be funded by projects – EU and others

Main players in European HPC Ecosystem

- PRACE – Petaflop computing centers
- EU-supported infrastructure projects, such as EGEE, DEISA, GEANT2 and OMII-Europe
- European Grid Initiative, EGI
- Policy groups, such as ESFRI and e-IRG
- Regional activities, such as NDGF
- National Infrastructures
- International centers, such as CERN, EBI and ECMWF
- Potential facilities on ESFRI Roadmap
- User communities with HPC requirements, such as fusion or climate