

The Role and Functions of European Grid Infrastructure

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EGI_DS Project Director

What is a Grid?

- A distributed system that connects primary computers and storage owned by different actors through high speed network allowing shared use of all these resources
 - Without a single administrative authority
 - In a coordinated way, with clear guarantees
 - No volunteering
 - Eventually SLA (Service Level Agreements)

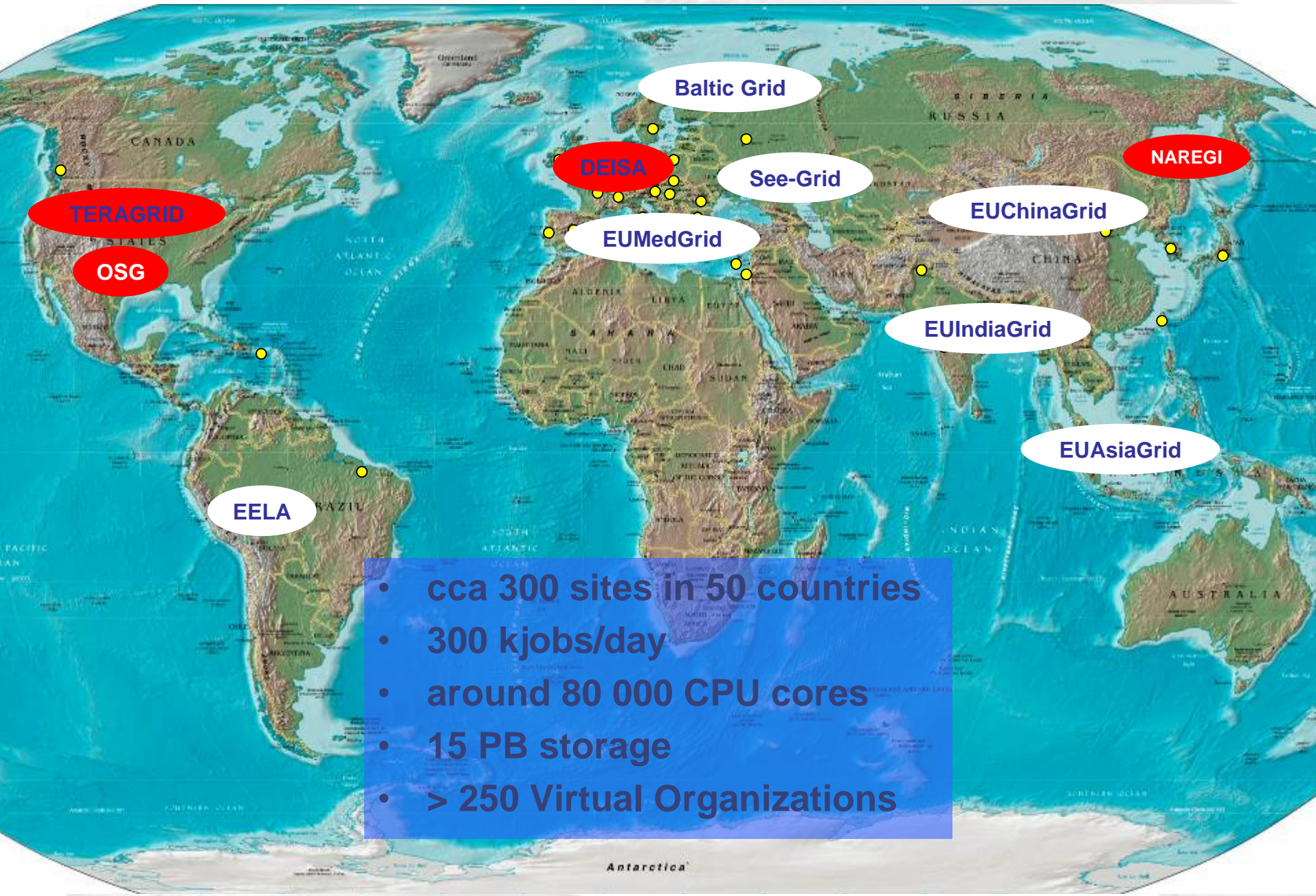
How users are organized?

- Virtual Organizations (VOs)
 - Users with same (similar) goal
 - True *organization*, with a manager and membership rules
- Negotiation with resource owners
 - Resources made available to VOs, not individual users
 - VO takes part of the responsibility for their members
 - VO also takes care of quality of resources

How to build a Grid?

- Infrastructure for collaboration
 - Must exist an interest in collaboration
- Defining the basic functions and responsibilities
- Setting up VOs
- Putting all this together

EGEE Production Grid Infrastructure



- cca 300 sites in 50 countries
- 300 kjobs/day
- around 80 000 CPU cores
- 15 PB storage
- > 250 Virtual Organizations

Evolution

National

Logos of national grid projects: INFN GRID, NORDUGRID, UNICORE FORUM, GridPP, e-Toile, open middleware infrastructure institute, NGS National Grid Service, D-GRID, HELLAS GRID Task Force, AUSTRIAN GRID, ACI GRID, DutchGrid.

Sustainable European Grid

Global

Logos of global grid projects: Data GRID, Diligent, EUMED Grid, omii europe, BioinfoGRID, Health-e-Child, Belief, ISS eG, and others.

Testbeds

Routine Usage

Utility Service

European Grid Initiative Vision

- Join efforts currently fragmented in different Grid infrastructure projects
- To create a shared (common) European Grid Infrastructure
- That connects all actors – users and resource providers and their institutions
- In a sustainable way

EGI building blocks

- National Grid Initiatives (NGIs)
- EGI.org as a coordinating body
- With the explicit involvement of
 - International organizations (CERN, EMBO,)
 - Users
- And with support of
 - National funding agencies
 - European Commission

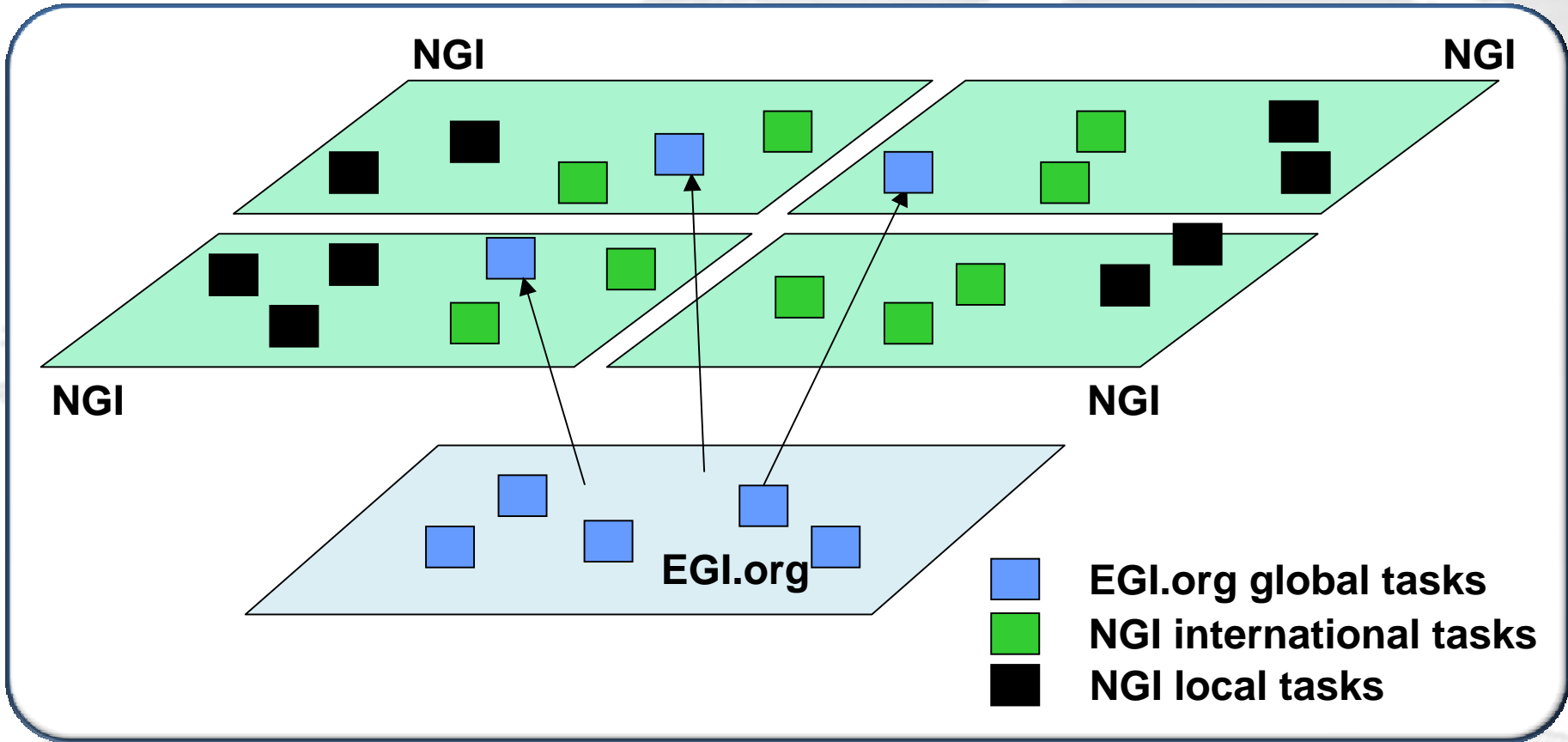
National Grid Initiatives

- National coordinating institutions – legal bodies – that take care of national Grid infrastructure
 - To guarantee the coordination of efforts within a country
- Different organizational models
- Sustainable business models that guarantee long term financial stability
 - As do have NRENs currently

EGL.org

- The coordinating body at the European level
- Medium sized organization, “**owned**” by NGIs
 - Around 50 FTEs
- Guarantees the coherent setup and operations of the European Grid infrastructure
- Will be located in Amsterdam
 - Selection process started in Autumn 2008
 - Decision taken by NGI representatives on March 2nd
- Currently under preparation

EGI.org and NGI Tasks



EGL.org Global Tasks

- Operations and security services
 - Those spanning the whole infrastructure
 - Drawing on man power provided by NGIs
- Middleware services
 - No development, but verification and testing
 - Also steering further mw development to suits best EGI requirements
- User community services
 - Help users to organize at the international level
 - Provide coordination of user support and training services
- External Liaison services
 - Relationship with non-European activities/infrastructures
 - Standardization liaison
 - Policy

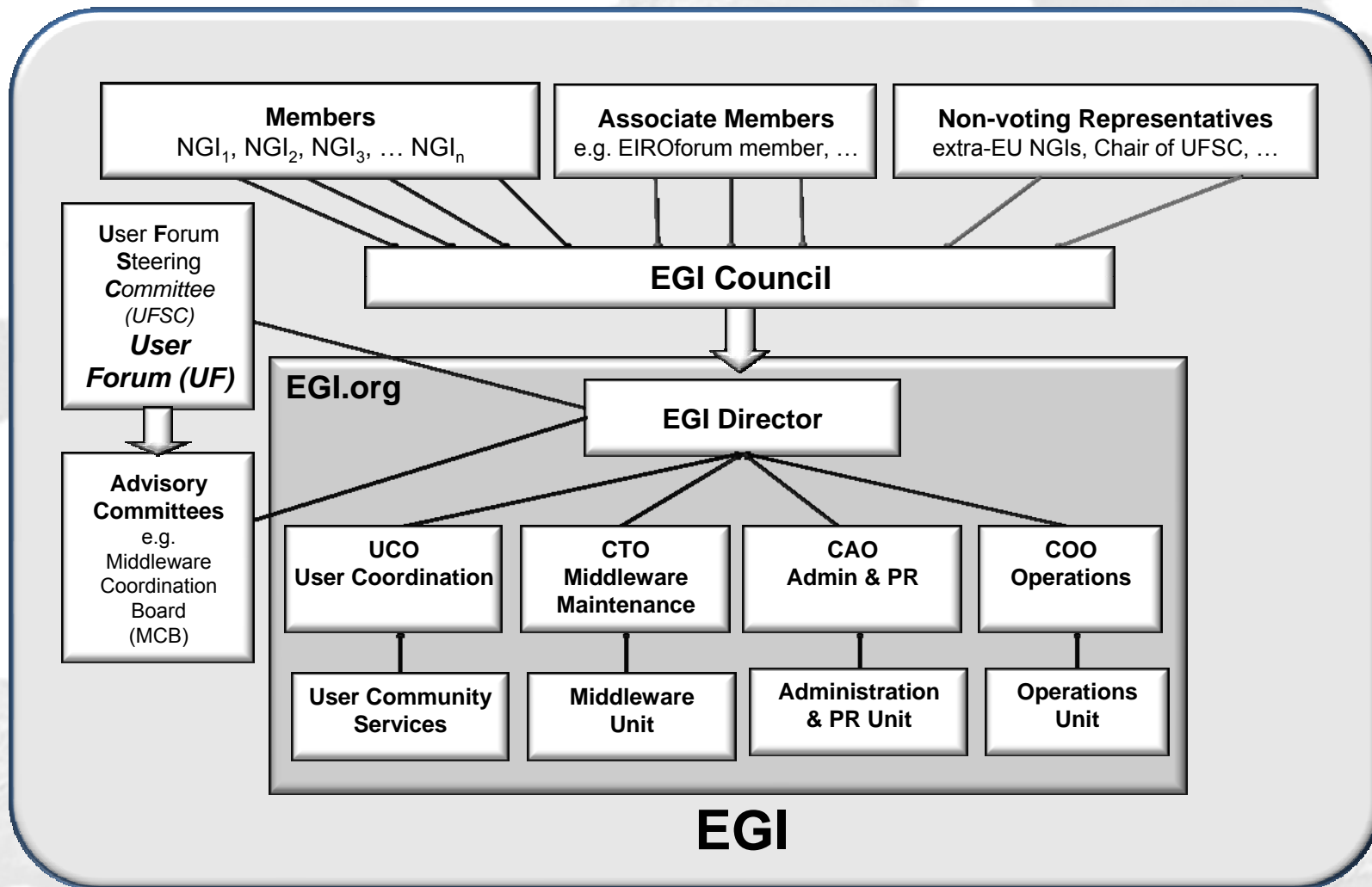
NGI International Tasks

- Tasks that must be run by each NGI to create a truly international EGI
 - Cover the responsibilities stemming from international collaboration
 - Reflect same or similar tasks at the national level
- Different size of NGI teams responsible for these tasks
 - Reflects NGI size and also its involvement in the international collaboration

NGI International Tasks II

- Corresponds to the EGI.org coordination tasks
 - Operations and security services
 - Middleware services
 - User community services
- “Nationalization” of these services
 - In fact interface between national and international service
 - Based on man power used to run national grid infrastructure

EGI Management/Governance



Middleware

- Middleware is the glue of a Grid
 - Software components providing general tasks for the whole infrastructure
 - Workload and data management, authentication and authorization services, monitoring, ...
- Current situation similarly fragmented as with the Grid infrastructures
 - Agreement on the **Universal Middleware Distribution**

Universal Middleware Distribution

- Production level middleware components
- Specifically tailored for EGI
- Coming from different sources
 - The middleware consortia
 - VOs and their middleware developers
 - Eventually commercial middleware adoption
- Process strictly in hands of EGI
 - Inclusion of components, conformance testing and certification

Transition towards EGI

- A path from current fragmented environment into the shared EGI
- A concern for large infrastructures (e.g. EGEE)
 - No interruption of services (“happy” users and resource providers)
- Staffing of the EGI.org
 - Move of personnel from other sites (esp. CERN)
 - People being able to put the fragments together, not allowing a domination of one solution only
- All this implies rather strict constraints

Major Transition Milestones

- Early May 2009
 - The Interim EGI Council established
 - Governing body for the EGI
 - Leading EGI.org personnel confirmed
 - Team for EGI project preparation
 - Confirmed by the Interim EGI Council
- End June 2009
 - Full EGI Council setup
 - EGI.org director appointed
- July – early November
 - EGI projects preparation
 - Proper EGI; User communities support; Middleware
- January 1st, 2010
 - EGI.org working, key personnel available
- April 2010
 - EGI completely taking over operations from EGEE and gradually other grid infrastructure projects

Summary

- EGI represents the future of European Grid Infrastructure
 - It is also very important part of the ERA eInfrastructure (together with networks and supercomputers)
- EGI will provide a general compute and data storage platform for scientific community in Europe
 - International collaboration through international VOs
 - Environment where users can meet and work together
 - Huge compute resources
 - Huge data resources
 - Appropriate security models to reflect different users needs
- Based on national activities and initiatives
 - The primary guarantee for sustainability
 - Also guarantees that national interests are not neglected
- VOs as means for users to organize and influence EGI
 - Making sure users are strong enough with a voice
- EC support complements the national funding
 - Call expected to be open during Summer 2009
- EGI preparation in good shape, still a lot of work ahead
 - A common European undertaking



European Grid Initiative



<http://www.eu-egi.eu>
contact@eu-egi.eu

Funding

- National and Institutional funding for research infrastructures – NGI Grids
- EC funding
 - International coordination
 - EGI.org global tasks
 - International activities
 - Innovation
 - Start up phase
- National co-funding of all these activities

EGI Financial Reference Model

	NGI International tasks		Middleware maintenance	EGI.org	Total
	Operations	User services			
Costs					
EGI Effort (FTEs)	225	110	70	51	
EGI costs (M€/year)	20.25	9.90	6.30	4.59	41
Income					
NGI membership fees (M€/year)				1,0	1
EC Contribution (M€/year)	10.125	4.95	3.15	1.80	20
NGI, Middleware consortia and EIRO/ESFRI co-funding Contribution (M€/year)	10.125	4.95	3.15	1.80	20



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