



European Grid Initiative



# A Business Model for the Establishment of the European Grid Infrastructure

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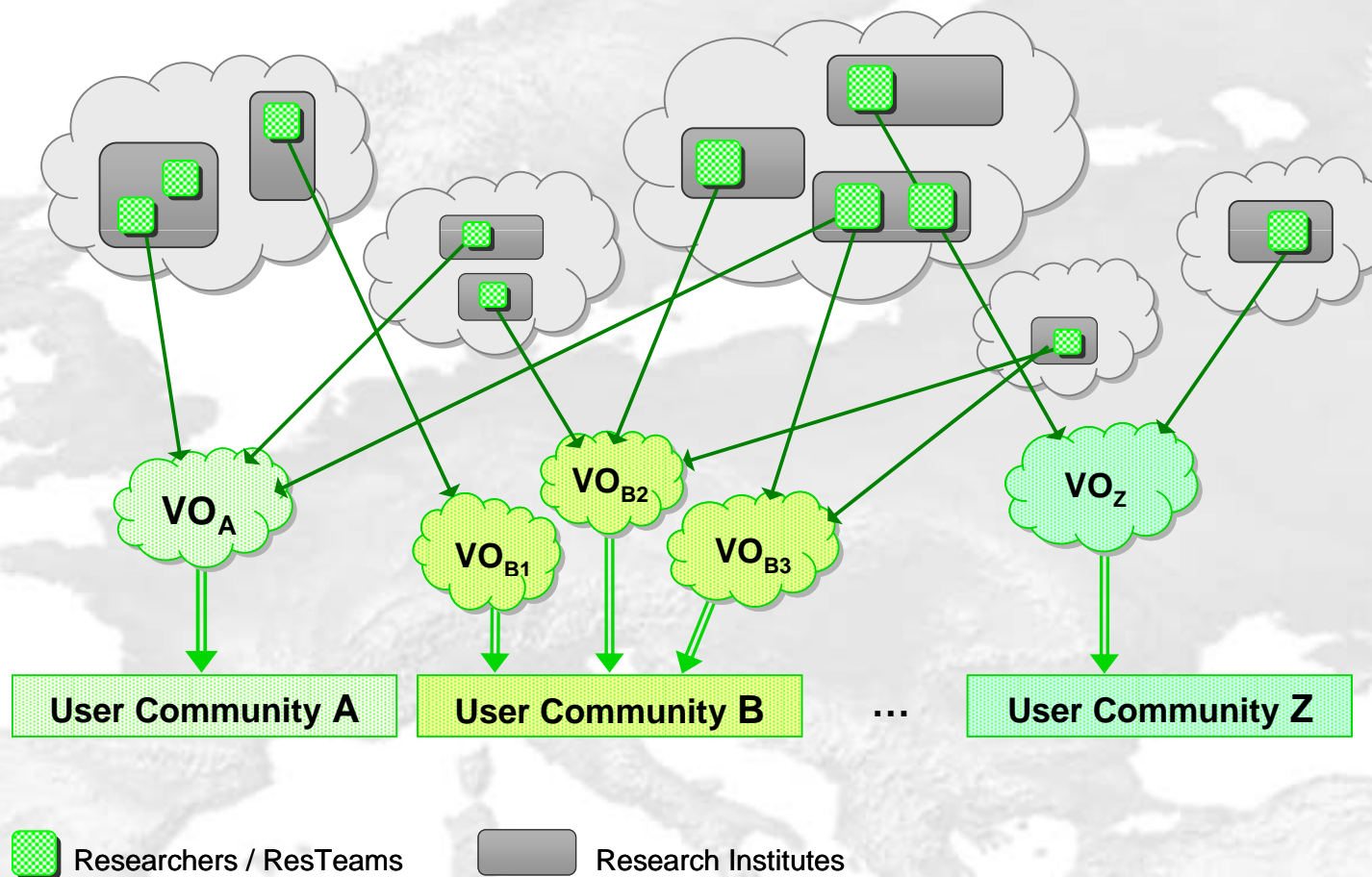
# Outline

- EGI use case
- Business model:
  - actors, offer and added value
- EGI layered infrastructure
- Conclusions

# Use Case

- International research teams and projects need a common international **infrastructure** for a *seamless, shared and uniform access* to a variety of computing resources, ranging from PC clusters to sites also operating supercomputers and all sorts of scientific archive
- The European Grid Initiative ensures a common infrastructure:
  - composed of national Grid infrastructures (**NGIs**)
  - coordinated by the EGI Organization (**EGI.org**) a central body with support and coordination role
  - and steered by **User Communities**

# International User Communities



# EGI Actors

- **National Grid Initiatives** and the related national **Resource Providers**
- **European International Research Organizations**
  - The International Organization members of EIROforum, associated to EGI (CERN today) are implicitly included in the “NGI” actor in the next slides of this talk
- **EGI.org**
- **Middleware consortia**
- **EGI Users**
  - Research Teams operating across Europe and organized into pan-European Virtual Organizations (VOs)
  - National VOs belonging to National Research Institutions: Universities, Research Laboratories, National Research Organizations....

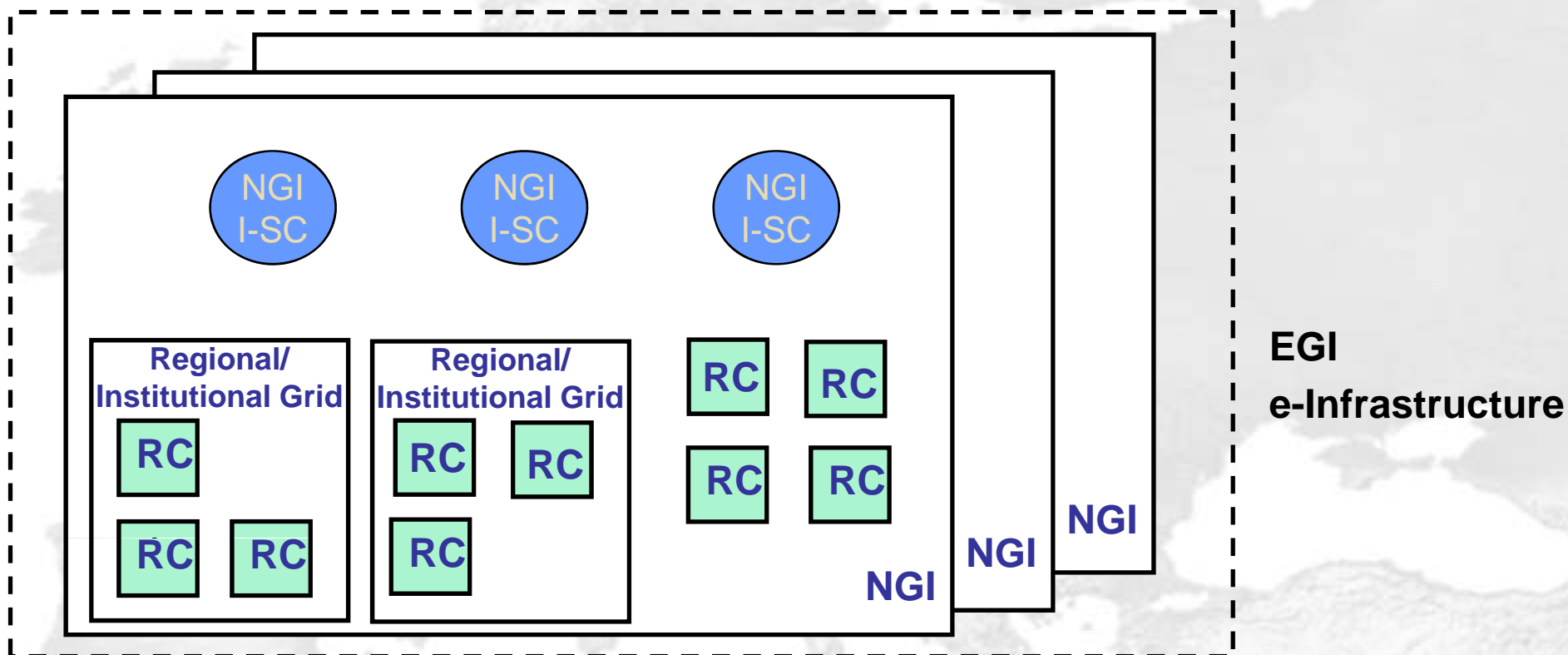
# EGI and NGI

## e-infrastructure Components 1/2

- **NGIs** comprising
  - **resource centres (RC)** and **regional/institutional Grids** including:
    - **distributed resources** funded and owned by national resource providers (computing, storage, network, data, ...)
    - **the technical interoperable Grid services** installed and operated at the Grid resource sites
  - **NGI infrastructure service centres (I-SC)**
    - **Grid core software services**
    - **the NGI operational services** (accounting, monitoring, help desk, etc.)
- the set of **common policies and rules** for the secure usage and sharing of the available resources and data
- the **Grid middleware** distribution and the testbeds for its certification and integration

# EGI and NGI

## e-infrastructure Components 2/2



# EGI Functions

- **Management** (EGI Council & EGI.org)
  - EGI Coordination (NGI funded)
- **Operations** (NGIs)
  - Resource Management
- **Middleware** (Consortia)
  - Maintenance (EGI-funded)
  - Research & Development (Project-funded)
- **User Community Services** (NGIs & Specialised Support Centres )
  - User Support
  - Training
  - User Requirements & Applications



# EGI Offer

- Secure sharing of all the partner Organizations' "local" IT resources and data located in the different administrative domains, **through common software tools**
  - primary *mandatory* purpose: satisfy the research communities in the enabling of **intra-VO sharing**, i.e. the possibility to get uniform standard access to the distributed pool of resources allocated to a given VO but from independent administration domains
  - in addition: **cross-VO sharing** to satisfy the demand of resource teams that do not own (neither directly nor indirectly) resources, but that are willing to pay for the uniform access to a certain amount of distributed resources
- Unified Middleware Distribution (UMD)
- User community services (e.g. application porting support, training), user driven, and thus largely outside EGI governance
- Helpdesk
- Resource brokerage (for smaller Research Teams, optional)

# EGI Added Value

- Research teams
  - availability of an enabling pan-European infrastructure, thus avoiding duplication of such infrastructures
  - easier establishment of multi-disciplinary projects
- Resource providers
  - efficient resource utilization thanks to a larger pool of international customers thanks to a progressively unified mw solution (e.g. scavenger service for utilization of idle resources)  
→ increased revenue
  - sharing of operational efforts and costs
- Funding agencies:
  - National level: better global return for the money invested by the funding bodies for the procurement of ICT resources, pushing for the creation of global pools based on a well defined certified set of services
  - International level: better return from past EC investments

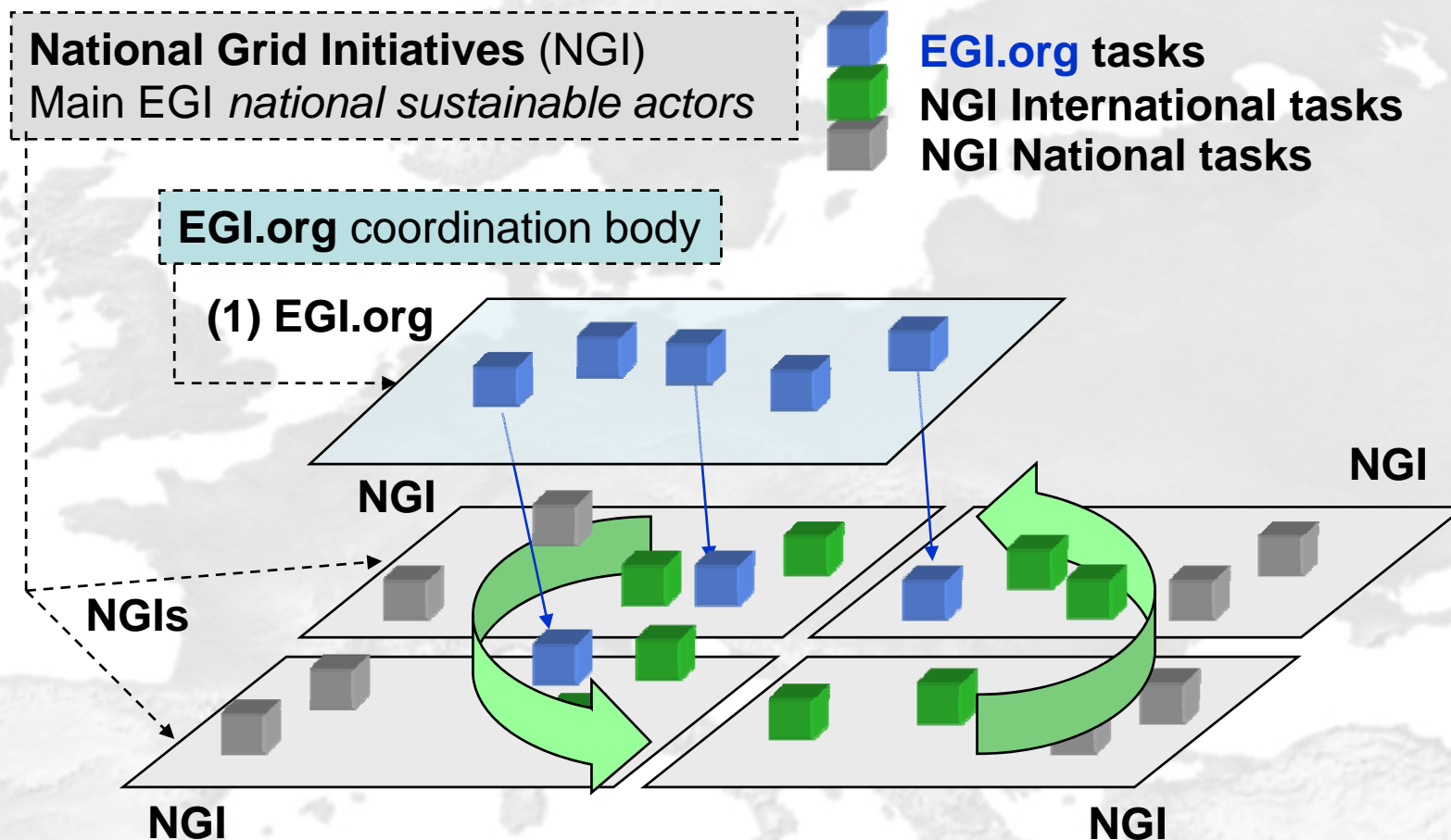
# Customer Relationship

- User  $\leftrightarrow$  NGI
  - support
  - gathers the new requirements and brings them up to the attention of the international community through EGI.org
- User/NGI  $\leftrightarrow$  Resource Provider
  - service level agreements
  - fees for services
- the NGI and the Resource Provider form a national business alliance to jointly develop and “sell” a specific national marketplace solution

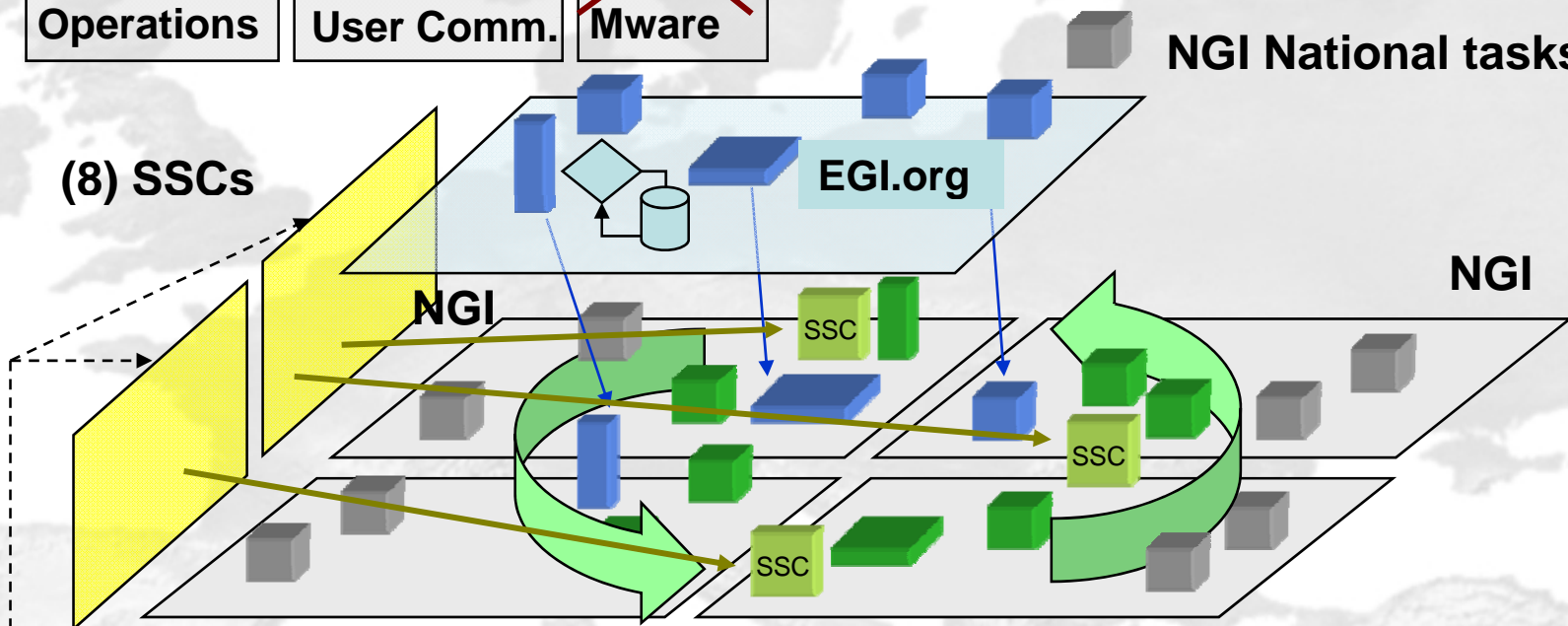
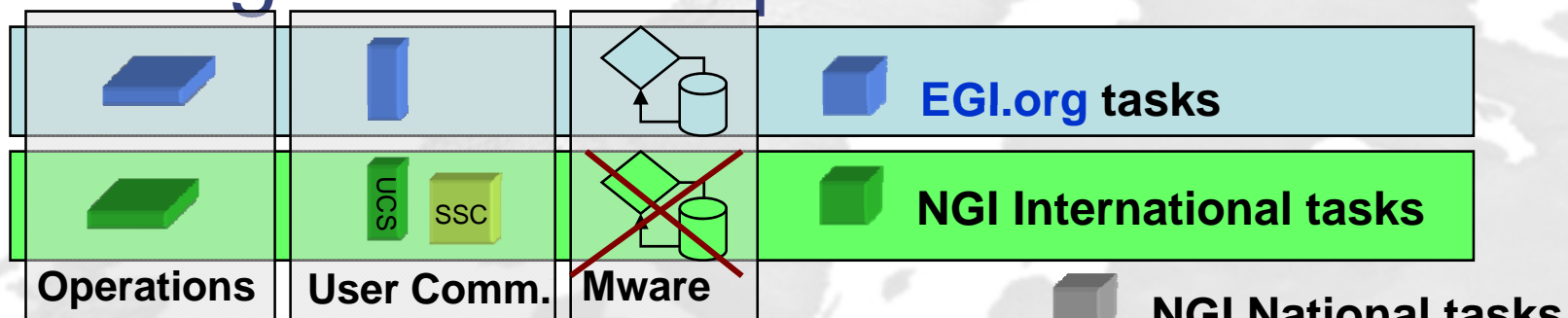
# NGI Tasks: National vs International

- NGI international tasks
  - aimed at allowing the **sharing** of the national IT resources at **pan-European and international level** in a uniform, robust, and seamless way, and at supporting the **international application communities**
- NGI national tasks
  - tasks each NGI performs for **supporting the national grid infrastructure** and the **national users and application communities**
- EGI.org
  - **Coordination** tasks to be run centrally
  - Other tasks can be **distributed** to NGIs

# Infrastructure Layer: EGI.org and NGI Operational Tasks 1/2

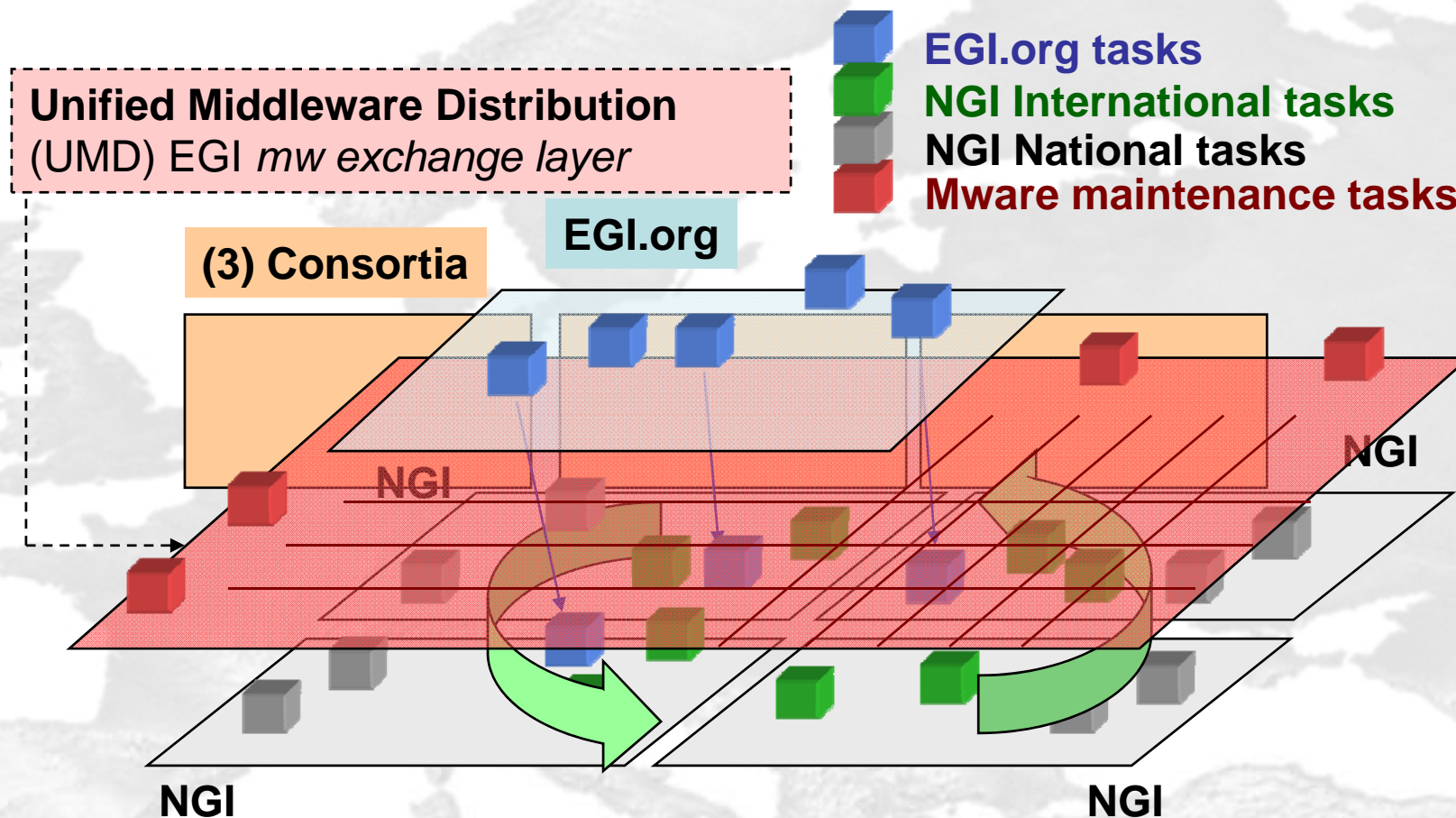


# Infrastructure Layer: EGI.org and NGI Operational Tasks 2/2

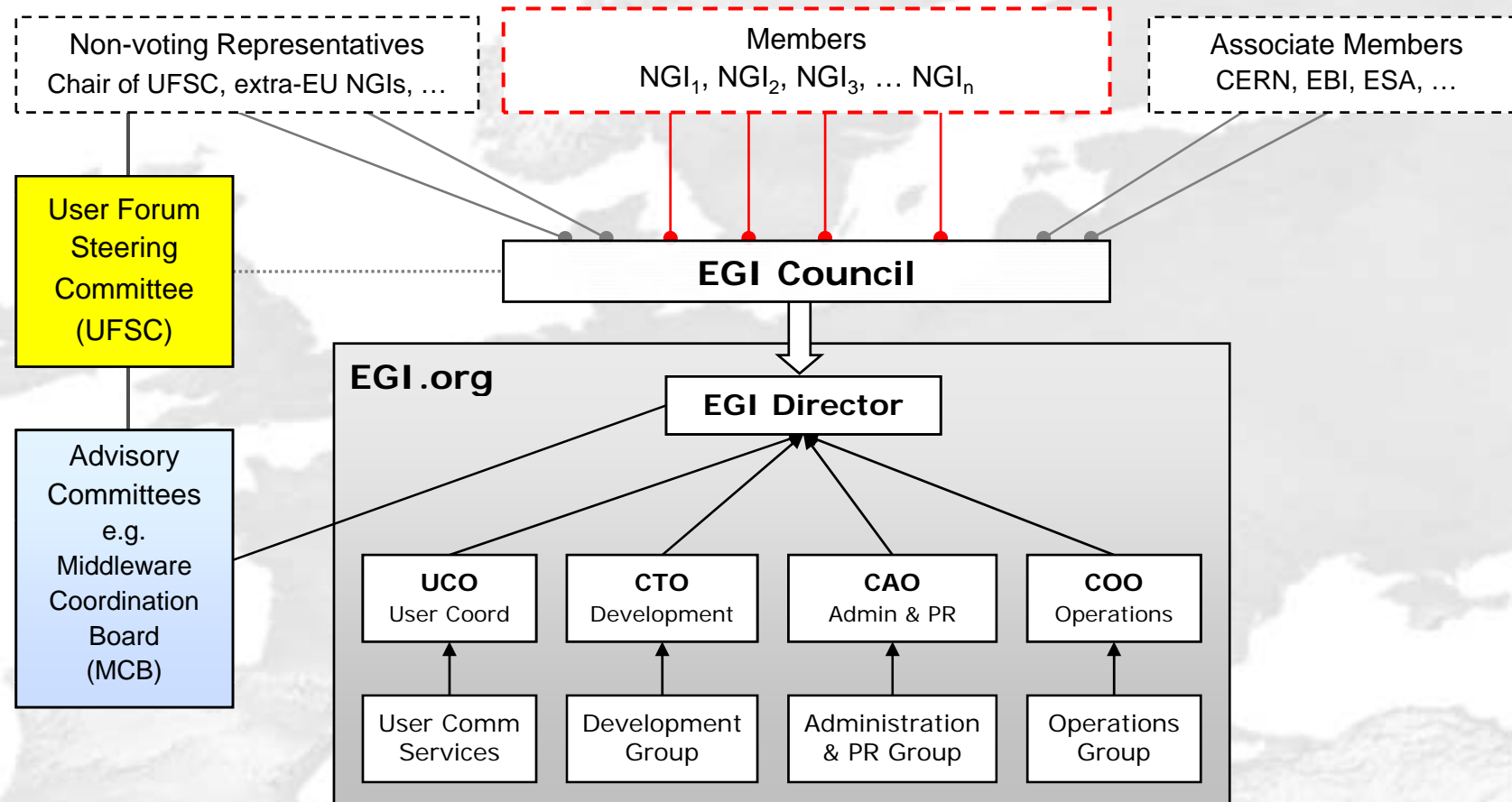


**Specialized Support Centers (SSC):**  
*EGI vertical entities for specific user communities*

# Middleware Layer



# The EGI Management Structure



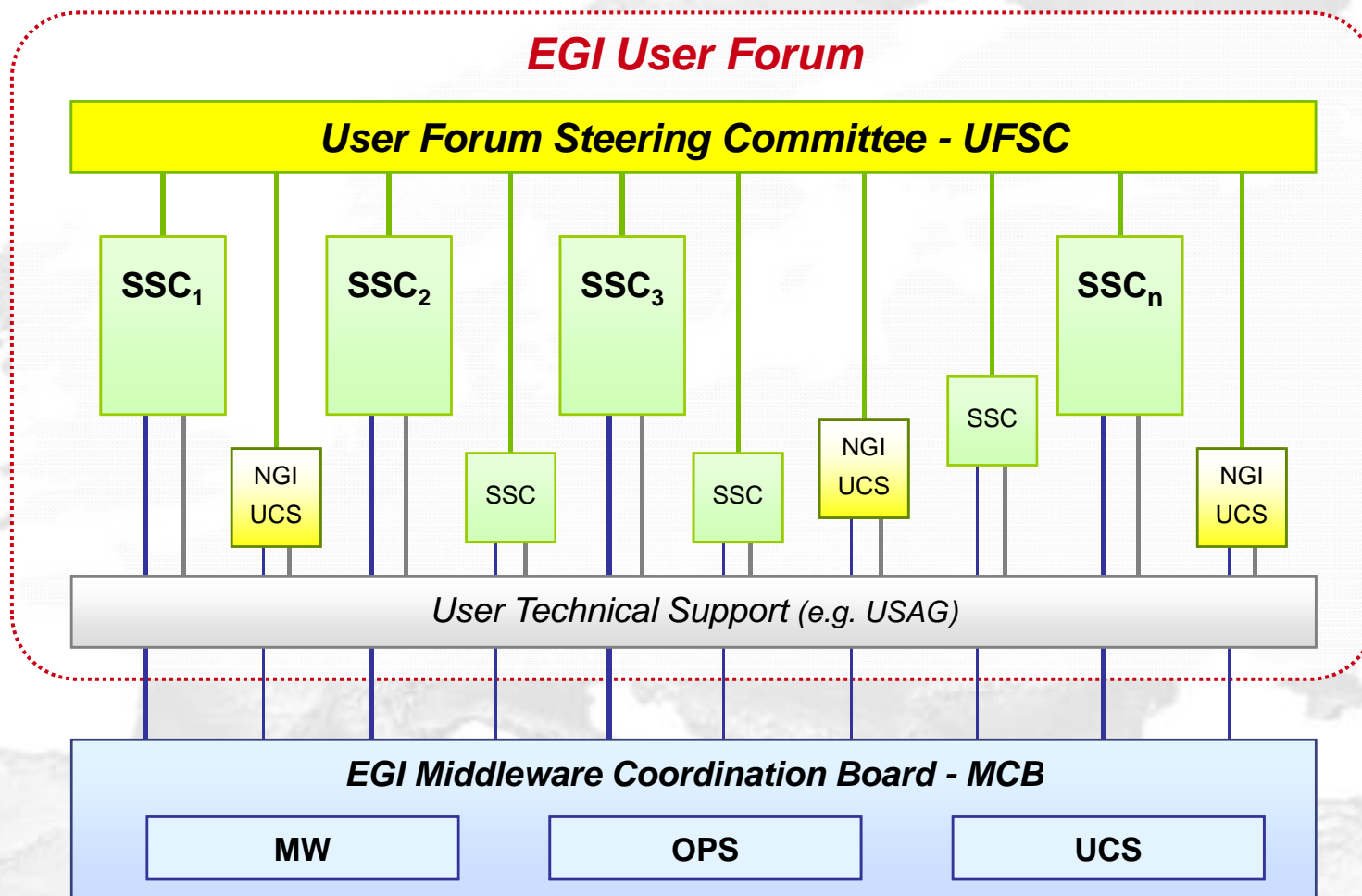


# Specialised Support Centres

- The **EGI SSCs** are established and governed by the user communities.
- **In the context of EGI, an SSC is defined as a centre (or cluster of activities) that has a formal relationship with EGI** in terms of the UCS activities described in D3.1 and D3.2
- SSCs do not require full NGI consensus to be established
- Initial SSCs to be defined during the drafting of the EGI proposal; EGI\_DS and EGEE are working with the user communities to help define these entities.
- In the future, SSC proposals will be evaluated by the EGI Council in consultation with the User Forum Steering Committee
- SSCs will interact closely with the central EGI.org UCS team

See also [http://knowledge.eu-egi.eu/index.php/Specialised\\_Support\\_Centres](http://knowledge.eu-egi.eu/index.php/Specialised_Support_Centres)

# The EGI User Forum and SSCs



# Conclusions

- EGI is a **new organizational model** of a sustainable pan-European **Grid infrastructure** providing services for users organized in Virtual Organizations, based on the assumption that NGIs are interested in organizing its compute and data resources in a Grid
- The EGI **organization and business model** have been defined to:
  - ensure the **long-term sustainability** of grid infrastructures in Europe by establishing a new federated model bringing together NGIs to build the EGI Organization
  - 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