Red española de e-Ciencia

ES-GRID
The Spanish National Grid Initiative

Dr. Isabel Campos Plasencia (IFCA-CSIC)

Spanish NGI Coordinator

CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

Acción financiada por:

GOBIERNO DE ESPAÑA
MINISTERIO DE CIENCIA E INNOVACION

Entidad Coordinadora:

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

The Framework for the NGI
The Spanish Network for e-Science

- IRIS Grid (http://www.irisgrid.es/doc/Folleto.pdf)
  - Thematic network dedicated to Grid

- E-Science activities in Spain: Astronomy and Space, Biomedicine, Material Engineering, Earth Science, Physics, Computational Chemistry, etc.
- The National Research Network (RedIRIS) and the Connection to the European Network GEANT as the Basic Communication Infrastructure.
- Participation of the Spanish Research Centres in Projects and Initiatives as DATAGRID, CROSSGRID, EGEE, DEISA, LCG, INTEUGRID, EELA, the Spanish Supercomputing Network, etc…

- Global Coordination of all the Activities, Development of Common Tools and Easy Access to the Research Resources: To Promote the Creation of a National Program of e-Science.

Red Española de
e - Ciencia

iF(A
Instituto de Física de Cantabria

CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

The Framework for the NGI
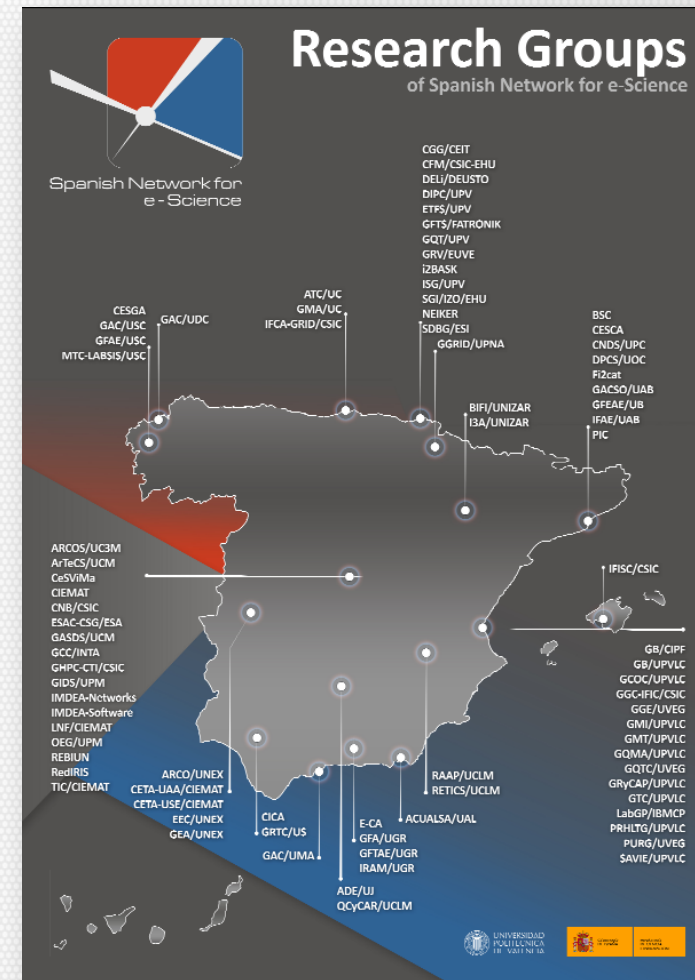## The Spanish Network for e-Science

- To Promote and Coordinate the Development of the e-Science in Spain.
- To coordinate the Spanish e-Infrastructures from the point of view of required investments, management, operation and user support.
- To Become the National Speaker for e-Science in the European framework.
- To promote the Collaboration with Portugal (IberGrid) and other Countries in the e-Science Context.
- To transfer the Network results, and to train people.

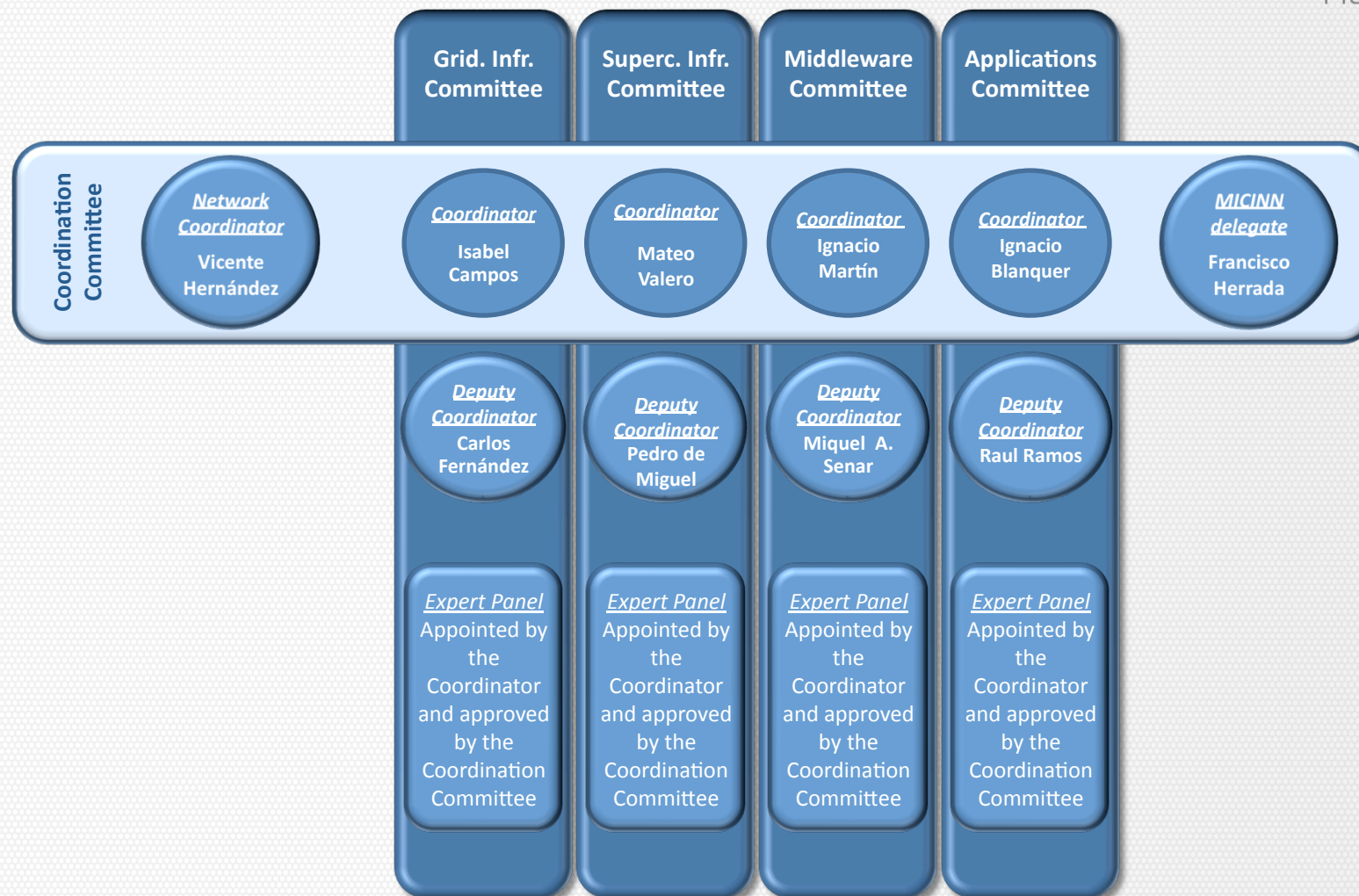# Participant Groups
The Spanish Network for e-Science

- More than 900 Researchers.

- 89 Research Groups.

- More than 45 Institutions.

- Dynamic Structure

Coordination Board
The Spanish Network for e-Science

Red Española de e - Ciencia

	Grid. Infr. Committee	Superc. Infr. Committee	Middleware Committee	Applications Committee	
Coordination Committee					
Network Coordinator Vicente Hernández	*Coordinator* Isabel Campos	*Coordinator* Mateo Valero	*Coordinator* Ignacio Martín	*Coordinator* Ignacio Blanquer	*MICINN delegate* Francisco Herrada
	Deputy Coordinator Carlos Fernández	*Deputy Coordinator* Pedro de Miguel	*Deputy Coordinator* Miquel A. Senar	*Deputy Coordinator* Raul Ramos	
	Expert Panel Appointed by the Coordinator and approved by the Coordination Committee	*Expert Panel* Appointed by the Coordinator and approved by the Coordination Committee	*Expert Panel* Appointed by the Coordinator and approved by the Coordination Committee	*Expert Panel* Appointed by the Coordinator and approved by the Coordination Committee	

iF(A
Instituto de Física de Cantabria

CSIC
Consejo Superior de Investigaciones Científicas

Achievements per Areas
The Spanish Network for e-Science

Applications Area
- 21 Proposals for Applications.
- 15 Proposals of Pilots.
- 15 Support Groups.
- 16 VOs in production.
- 9 Internal collaboration projects.

Grid Infrastructure Area
- 2024 cores in production.
- 6 resource providers.
- 2 Middlewares (gLite & GT4).
- Compliant to EGI policies.
- Monitoring, Accouting, Operation and Support Services.

Middleware Area
- Identification of new requirements and components.
- Interest on Cloud, interactivity, Interoperability and Integration of HPC and Grids.

Supercomputing Infrastructure Area
- Link to the Spanish Network for Supercomputing and the Autonomic centres.
- Development of Joint Boards and Strategies.

Instituto de Física de Cantabria

CSIC
Consejo Superior de Investigaciones Científicas

Web Site
The Spanish Network for e-Science

- Web: www.e-ciencia.es
  - Internal and External Communication of the Activities of the Network, Events and Work Material.
- Wiki: www.e-ciencia.es/wiki
  - In Continuous Development and Open to all the Participants of the Network for the Collaboration and Exchange of Information.
  - Structured in Areas.
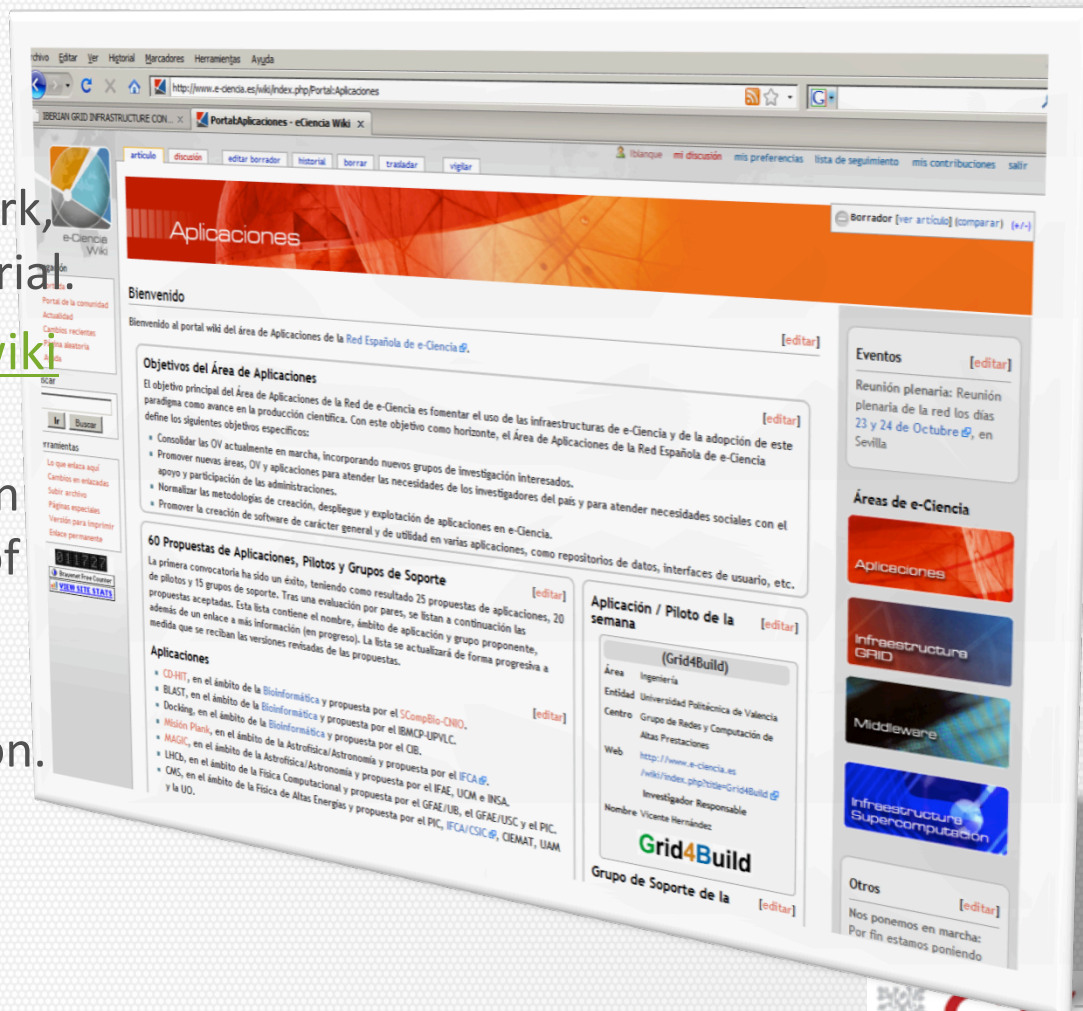
The Grid Infrastructure Area
ES-GRID

Objectives of the Grid Infrastructure Area
Grid Infrastructure Area

- Main Mandate: To Set up a National Grid Initiative in Spain
  - An NGI is "an Entity **Recognised** at **National Level** and Established as a **Single Contact Point** that **Operates** a **General Purpose e-Science Infrastructure**, Supporting **Different User Communities**, and Able to **Mobilise Resources** and to **Contribute** and **Adhere** to **International Standards** and **Policies**" (*).

  - On the International Context of the European Grid Initiative

  (*)Source: *EGI (www.eu-egi.org), e-IRG (www.e-irg.org)*

Concrete objectives
Grid Infrastructure Area

- Start in a coordinate way the integration of a National Grid Infrastructure with all the participating institutions

    - Authorization and Authentication mechanism based on the standards of EUGRIDPMA.
    - Global monitorization and resource access.
    - Provide middleware repositories and operational utilities.
    - Become the contact point between users and middleware developers.

- Follow up the operations and

    - Evaluate periodically the rates cost/performance
    - Propose a sustainable model for users, infrastructure owners and middleware developers

Grid Infrastructure Area
Tentative Schedule

Spanish Network for e-Science

March 08 Inventory of Resources

June 08 Design of the Interoperab. Schema and the Operations Prototype

Sept. 08 Creation of an Early Platform, Documentation and Sw Repository

Dec. 08 Start-up of the Global Infrastruct.

March 09 Training Infrastruct.

April 09 Analysis and Design of the Pre-production and Research Infrastruct.

Input for EGI

Infrastructure Oriented to Researchers

Grid Infrastructure Area

- The **Spanish NGI integrates** the resources of **ALL** european projects using grid infrastructure in the country based in the middleware of **glite**, and provides a mechanism to integrate resources based on **GT4**

- Inherits the philosophy of **IRISGRID**

- **Interacts with the Portuguese Grid initiative** to share information systems and computing capacity to give support to common research projects in the Iberian area

ORGANIZACIONES VIRTUALES
(usuarios)

Servicios Centrales
de la NGI

CENTROS DE RECURSOS

gLite

the globus® toolkit

Red Española de
e- Ciencia

Infrastructure Oriented to Researchers

Added Value of ES-GRID as interoperable infrastructure

The way to do it is providing a middleware layer of services and Operational tools which allow the resource centers to interoperate

- **For users and applications**

  - Transparent access to resources
  - Potentially this means accessing a much largue amount of resources
  - Develop and infrastructure suitable as common framework for European research ancd collaboration projects

- **For resource centers**

  - Reduction in the maintenance and common overhead cost that comes from operating more than one middleware stack, gridproject, etc… in the same center
  - Optimize the usage of resources
  - Integrate at the European level in the EGI infrastructure

An interoperable infrastructure
Resource Centers

GRID - CSIC
- General purpose infrastructure
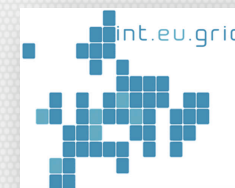- Guarantees a minimum of 2500 cores for the NGI

REGIONAL COMPUTING CENTERS
CESGA, CESCA y CICA

Universities and Departments with groups developing in GT4
Facilitate the integration of researchers in the NGI

RESEARCH CENTERS WITH PROJECTS IN GRID INFRASTRUCTURE
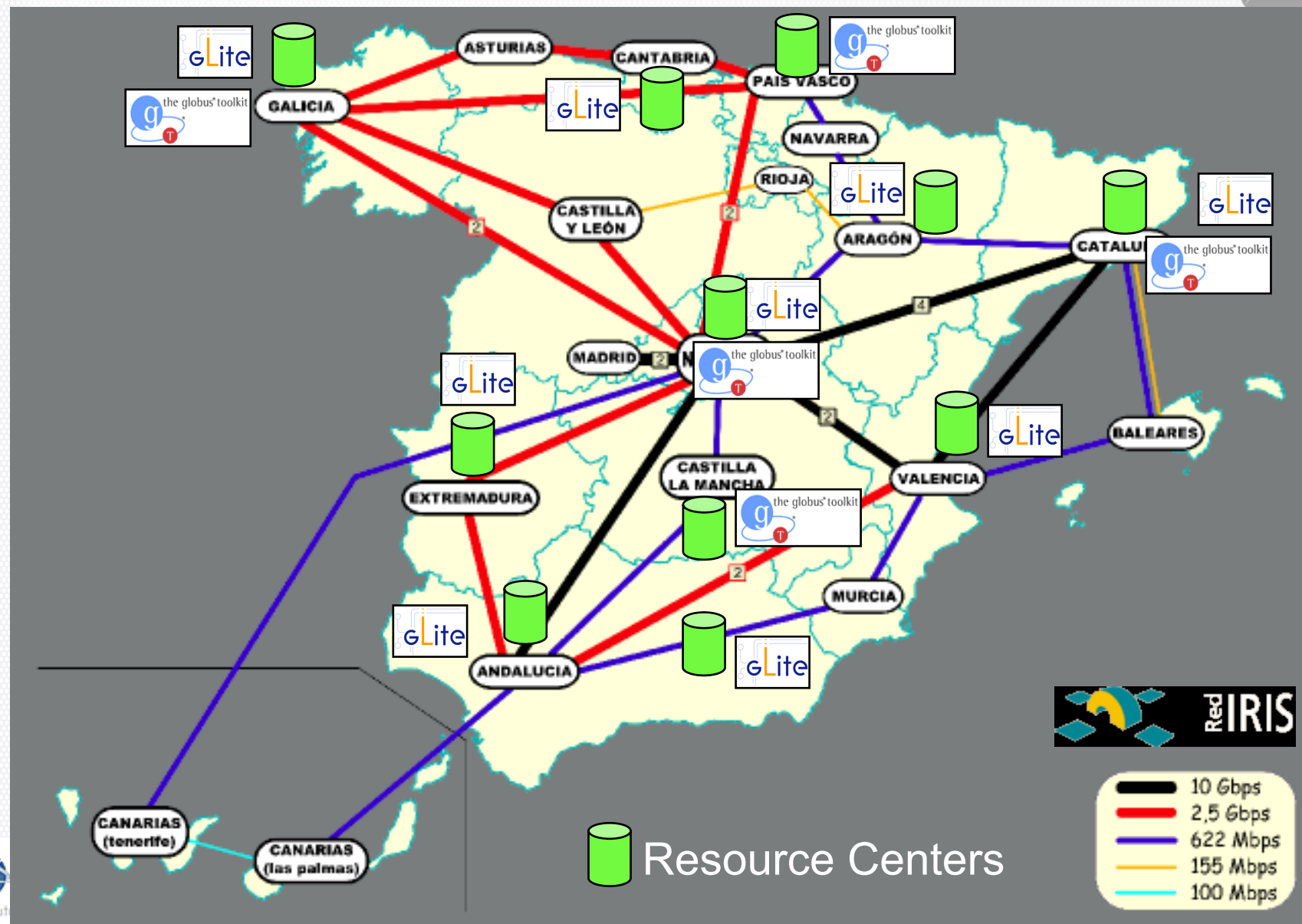
An interoperable infrastructure
Current status

- Current Grid Infrastructure is structured through the voluntary contribution of resources from several groups
  - Those resources are independent of other Grid Infrastructures and dedicated to the Spanish Network for e-Science.
  - Pursuing a reliable and stable infrastructure.
  - SLAs will be signed.
  - Access granted through the Applications Evaluation Committee.
- 21 centres have declared interest
  - There was an Initial compromise implies 1.300 Core and 350 TB of Storage for production.
  - Shared use of additional resources in case of low usage of additional 2.600 cores.
- 2.000 cores are currently integrated.

Current Status of the Infrastructure
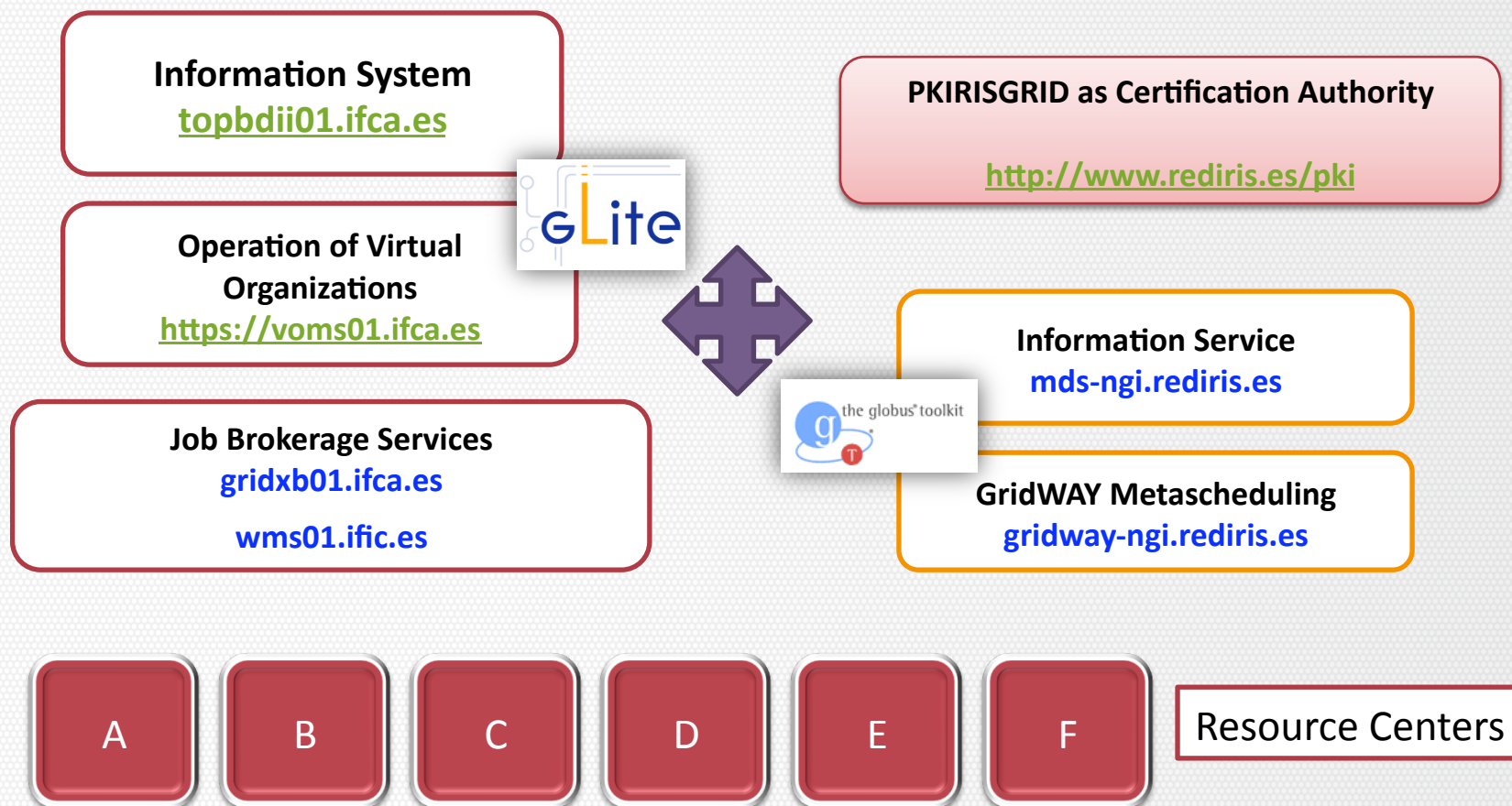

Resource Centers

10 Gbps
2,5 Gbps
622 Mbps
155 Mbps
100 Mbps

ES-GRID as a model for integration
The interoperation layer

Information System
topbdii01.ifca.es

PKIRISGRID as Certification Authority

http://www.rediris.es/pki

gLite

Operation of Virtual Organizations
https://voms01.ifca.es

Information Service
mds-ngi.rediris.es

Job Brokerage Services
gridxb01.ifca.es
wms01.ific.es

the globus toolkit

GridWAY Metascheduling
gridway-ngi.rediris.es

A   B   C   D   E   F   Resource Centers

Red Española de e - Ciencia

IFCA
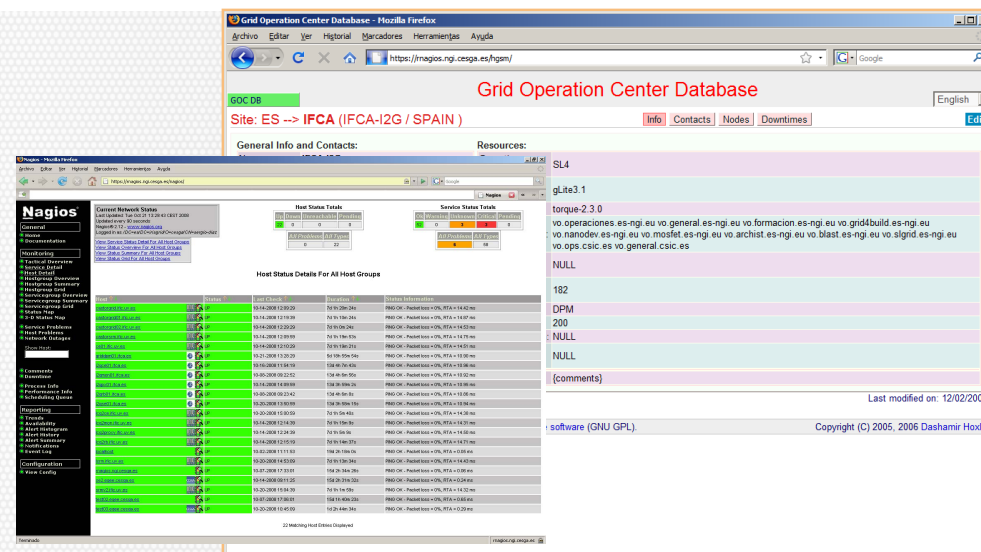Instituto de Física de Cantabria

CSIC
Consejo Superior de Investigaciones Científicas

Services of the Infrastructure
Grid Infrastructure Area

- NGI Grid configuration repository
  - Operation Tools: http://devel.ifca.es
  - Virtual Machines Storage: http://ftp.rediris.es/e-ciencia/
- NGI accounting repository.
  - http://www.ngi.cesga.es
- NGI ticketing and Regional helpdesk
  - http://rt-ngi.rediris.es
- National configuration repository (GOCDB)
  - https://rnagios.ngi.cesga.es/hgsm
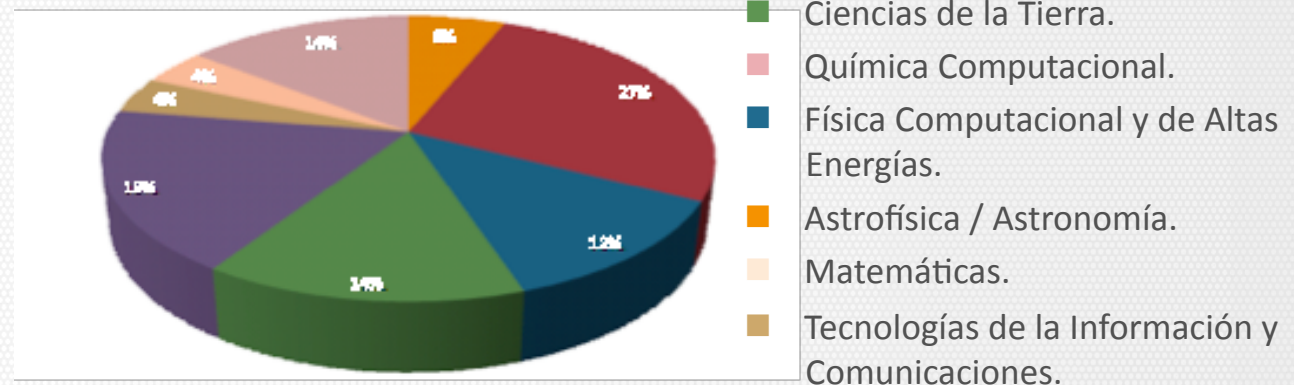- First-line Support
  - http://rt-ngi.rediris.es

The Infrastructure is running ☺

Applications Area

- The First Call for applications ended up with 20 Approved Proposals for Applications, 22 for Pilots and 14 for Support Groups
    - 16 New Applications or Pilots have been Started.
    - Application-specific VOs are Created for Accountability.
    - Applications Should Renew their Interest Periodically.

- The Internal Call for Co-Funding Through Contracts Technology Transfer Received 9 Proposals.

- Bioinformática / Biotecnología.
- Ingeniería.
- Ciencias de la Tierra.
- Química Computacional.
- Física Computacional y de Altas Energías.
- Astrofísica / Astronomía.
- Matemáticas.
- Tecnologías de la Información y Comunicaciones.

The Consolidation of the Infrastructure
Grid Infrastructure Area

- The Grid Infrastructure of the Spanish Network for e-Science is the **Start-up for the Spanish NGI**.

- It **will be Integrated in the EGI.eu** and Follow their Policies.

- It Keeps Strongly in Mind the **Interaction with the Portuguese NGI and the Alliance of IBERGRID**.

Conclusions
The Spanish Network for e-Science

- The Spanish Network for e-Science has Already **Achieved all the Main Milestones that were Planned for the NGI.**

- In the Next Year we will Consolidate the Collaborations and the Start-up of the Spanish NGI.

- This work will Continue Giving Support to the Spanish User Communities.

- Its **Open Nature and the Voluntary Effort of a Dynamic Community have made It Possible.**