Red española de e-Ciencia

ES-GRID
The Spanish National Grid Initiative

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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)*

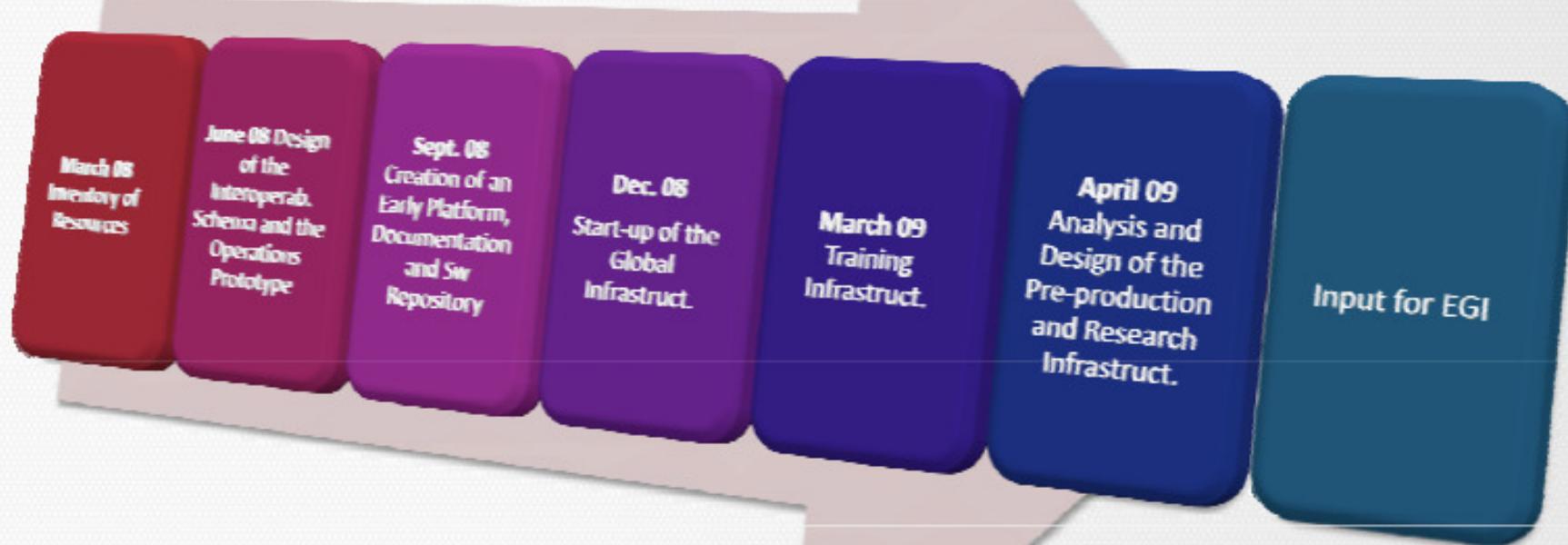# Concrete objectives
Grid Infrastructure Area

- **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

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

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An interoperable infrastructure
Resource Centers
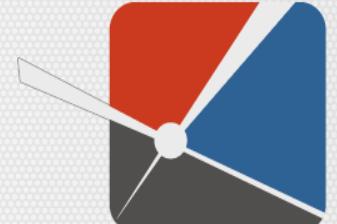
GRID - CSIC

- General purpose infrastructure
- Guarantees a minimum of 2500 cores for the NGI
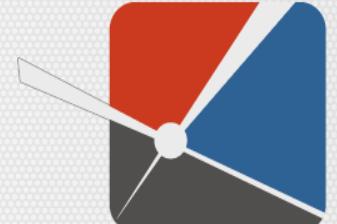
REGIONAL COMPUTING CENTERS
CESGA, CESCA y CICA

RESEARCH CENTERS WITH PROJECTS IN GRID INFRASTRUCTURE

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

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.
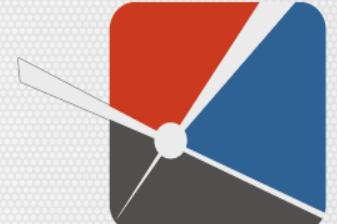
Current Status of the Infrastructure

Resource Centers

▬▬▬	10 Gbps
▬▬▬	2,5 Gbps
▬▬▬	622 Mbps
▬▬▬	155 Mbps
▬▬▬	100 Mbps
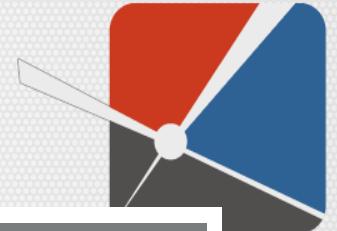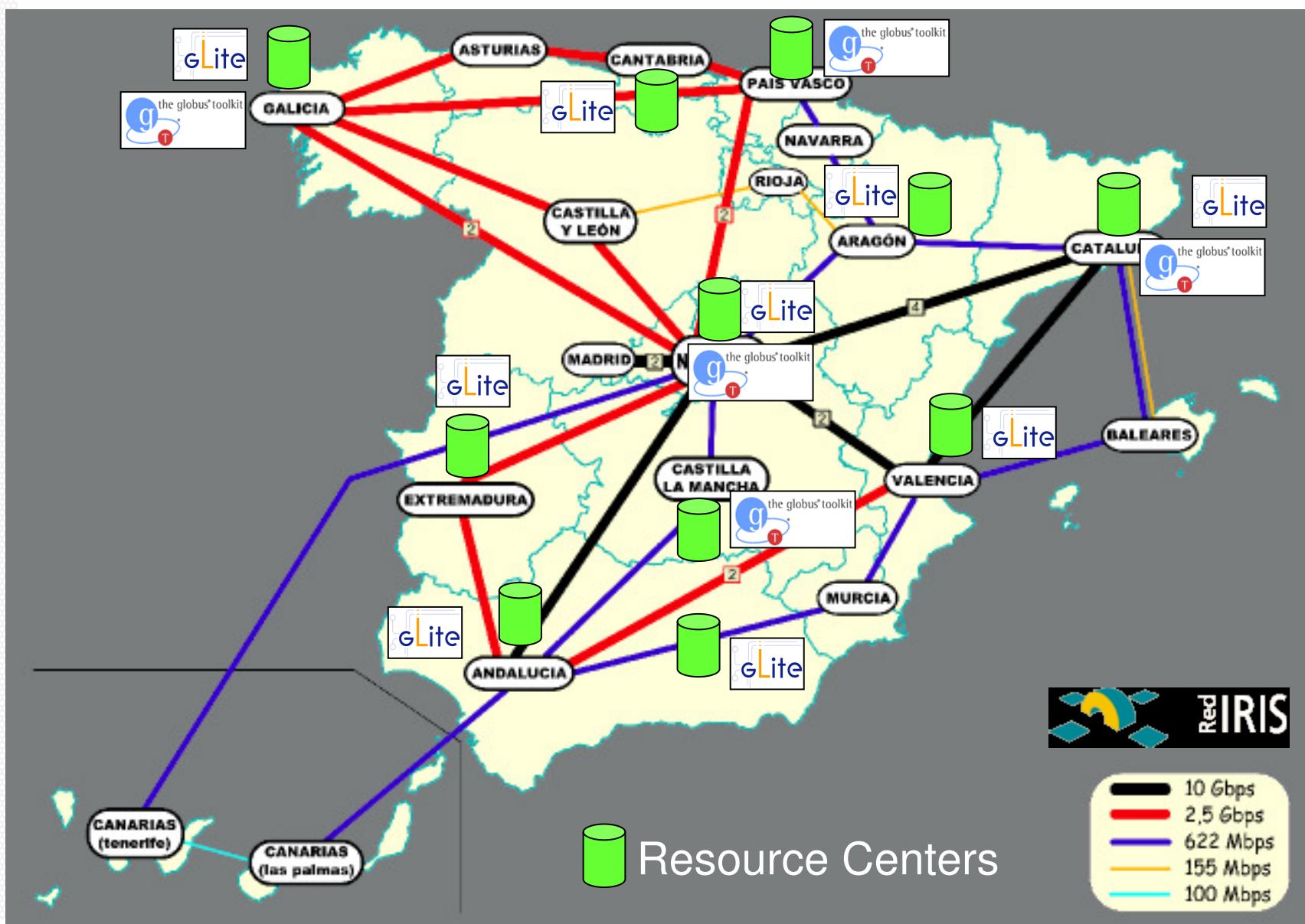
ES-GRID as a model for integration & cloud computing
The interoperation layer

Information System
topbdii01.ifca.es

PKIRISGRID as Certification Authority

http://www.rediris.es/pki

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

Information Service
mds-ngi.rediris.es

Job Brokerage Services
gridxb01.ifca.es

wms01.ific.es

GridWAY Metascheduling
gridway-ngi.rediris.es
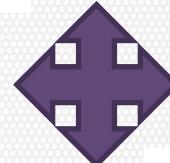
OpenNebula (VIM)
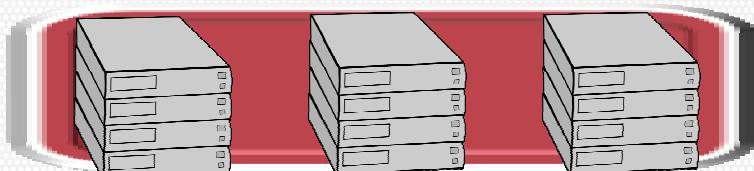
OpenNebula (VIM)

Resource Centers

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.
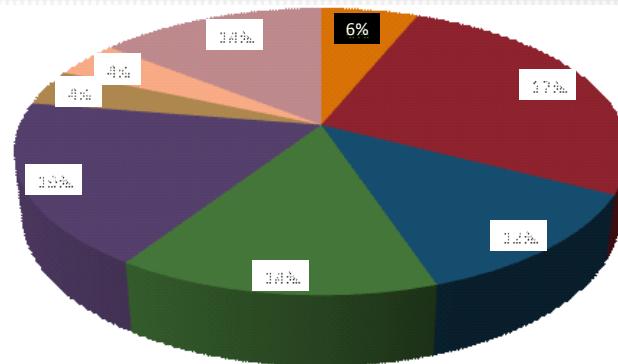
Legend:
- Bioinformática / Biotecnología.
- Ingeniería.
- Ciencias de la Tierra.
- Química Computacional.
- Física Computacional y de Altas Energías.
- Astrofísica / Astronomía.
- Matemáticas.
- Tecnologías de la Información y Comunicaciones.
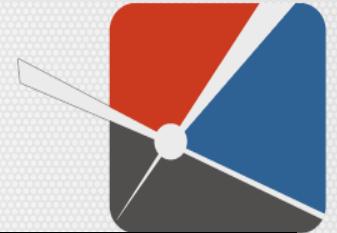
- The Grid Infrastructure of the Spanish Network for e-Science is the **Start-up for the Spanish NGI**.

- 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**.

The Consolidation of the Infrastructure
Grid Infrastructure Area – EGI Proposal, International Tasks

NGI International Task Code	Estado actual en la NGI / planes	Estado de despliegue en la	Instituciones que faltan	Necesaria en EGI	Depend en otras NGIs
O-N-1 : Operation of the NGI Grid topology and configuration repository	El repositorio HGSM esta en marcha y accesible en https://rnagios.ngi.cesga.es/hgsm/	CESGA, IFCA, LIP, BIFI, CIEMAT y PIC estan inscritos en HGSM	IFIC, CETA, UNICAN, IAA, ESAC y GryCAP/UPV	Si. Los datos del HGSM deben ser interfaseados con el mecanismo de GOCDB para EGI cuando este list en 2011	No
O-N-2: Operation of the NGI accounting repository	El portal de accounting esta accesible en http://www.ngi.cesga.es/	Publican en el portal CESGA, IFCA, BIFI, CIEMAT, PIC, IAA, UNICAN y UPV	IFIC, ESAC	Si. Los datos de accounting iran a un repositorio global de EGI al menos para VOs internacionales	No
O-N-3:Operation of repositories storing monitoring and performance data	Los datos de monitorización y rendimiento se están almacenando a través del servidor de Nagios https://rnagios.ngi.cesga.es/nagios	Se están monitorizando IFCA, IFIC, CESGA, CIEMAT-TIC, BIFI, PIC, y GRyCAP/UPV	CETA, IAA, ESAC, UNICAN	Si. Los datos necesitaran ser escalados hacia la monitorizacion de EGI en el caso de VOs internacionales como minimo.	No
O-N-4: Operation of the NGI Operations Portal	https://rnagios.ngi.cesga.es	Se están monitorizando IFCA, IFIC, CESGA, CIEMAT-TIC, BIFI, PIC, y GRyCAP/UPV	CETA, IAA, ESAC, UNICAN	Si.	N
O-N-5,6,7: NGI e-Infrastructure oversight; ticketing system; Regional helpdesk.	El helpdesk regional esta en marcha en https://rt-ngi.rediris.es. El sistema de alarmas de operación necesita ser puesto en marcha en conjuncion con nagios; Mecanismo de validación de nuevos nodos en la NGI mediante la ejecución de un conjunto de test de integridad (los tests de nagios)	Necesita ser definido el protocolo de operación y su interaccion con la solucion que se adopte en EGI. Necesario ver como se interacciona a traves de GGUS. Regional GGUS.	Necesario crear un equipo distribuido para gestion de tickets de operación	Si. En este momento el servicio de test SAM que esta localizado en el CERN necesita ser absorbido por alguna(s) NGI. Hemos hecho un bid al respecto como IBERGRID	N. Tal vez los SAM tests
O-N-8: Operation of production Grid core services	Servidor voms, lfc, topbdii, y resource brokers estan desplegados en **voms01.ifca, gridlfc01.ifca.es, bdii.ifca.es, gridxb01.ifca.es, wms01.ific.es**	Los servicios centrales redundantes están instalados en voms.egee.cesga.es, bdii.egee.cesga.es y se2.egee.cesga.es, pendientes de instalar LFC y WMS	Necesario instalar servicios redundantes en RedIris	Si	No
O-N-9a: Security and incident response coordination	Rediris coordinara los incidentes de seguridad informando a los sites de las incidencias locales y reportadas desde los grupos de seguridad de EGI.	Necesita ser definido con precision cuando la forma de la propuesta EGI este fijada		Si	No
O-N-9b: Rollout of middleware updates	La falta de un mecanismo de testeo a la hora de desplegar nuevas versiones de glite ha afectado a la eficiencia de los sites. Como parte del trabajo de la NGI el IFCA pondra en marcha un testbed en el que los updates de middleware seran testeados antes de ser puestos en produccion para toda la NGI	Necesita ser definido		No estrictamente, pero muy conveniente para aumentar la fiabilidad de los nodos	No
O-N-9c: Resource Allocation	Para VOs nacionales en colaboración con el area de aplicaciones de la Red de e-Ciencia. Para VOs internacionales necesita ser definido por EGI	Necesita ser definido		Si	No
O-N-9d: Interoperation with national and regional Grids	La interoperacion con Portugal esta en marcha a traves de IBERGRID.			Si	Si
U-N-* Servicios de soporte a usuarios en general	Helpdesk para usuarios basado en RT. Creación de un equipo distribuido especializado en el soporte a usuarios en coordinacion con la Red de e-Ciencia	Necesita ser definido	Creación de un equipo distribuido de gestion de tickets de usuarios	Si	N
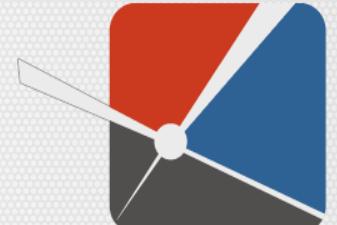
- IBERGRID: Submitted O-E-2, O-E-7 & O-E-9

O-E-1	Operation of the grid topology and configuration repositories
O-E-2	Operation of accounting repositories for international VOs
O-E-3	Operation of the grid repositories storing monitoring and performance data, and other related information
O-E-4	Operation of the grid operations portals
O-E-5	Grid operation and oversight of the e-Infrastructure
O-E-6	Central and regional Grid support, operation of a ticketing system and of a document repository
O-E-7	Triage of incoming problems
O-E-8	Gathering of requirements for user support tools and processes
O-E-9	Coordination of middleware roll-out and deployment, middleware pilot and certification testbeds
O-E-10	Coordination of resource allocation and of brokering support for VOs from NGIs
O-E-11	Coordination of interoperations between NGIs and other grids
O-E-12	Coordination of network support
O-E-13	Coordination of definition of best practices, operations procedures, operations requirements
O-E-14	Operation of production grid core software services, catch-all services for international VOs, catch-all CA
O-E-15	Coordination of security policy development and maintenance
O-E-16	Coordination of security and incident response
O-E-17	Coordination of development and maintenance of operational tools
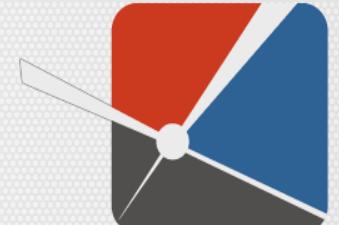
- IBERGRID: Submitted U-E-2 & U-E-5

U-E-1	User Forum Support
U-E-2	Coordination of SSC activities
U-E-3	Event Organisation
U-E-4	Grid planing & MCB
U-E-5	Technical Coordination - UTS
U-E-6	Technical Coordination – Infomraional and High-level tools
U-E-7	Documentation Review Coordinator
U-E-8	Coordination of Training
U-E-9	Services for new ommunities and Front Desk coordinator

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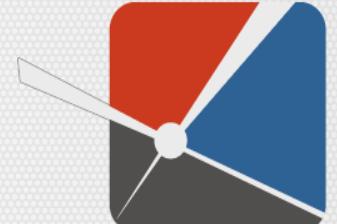
- The Spanish Network for e-Science has Already **Achieved all the Main Milestones that were Planned for the NGI.**

- Input to EGI provided.

- 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**.