IBERGRID

Deploying User Oriented Strategies and Services

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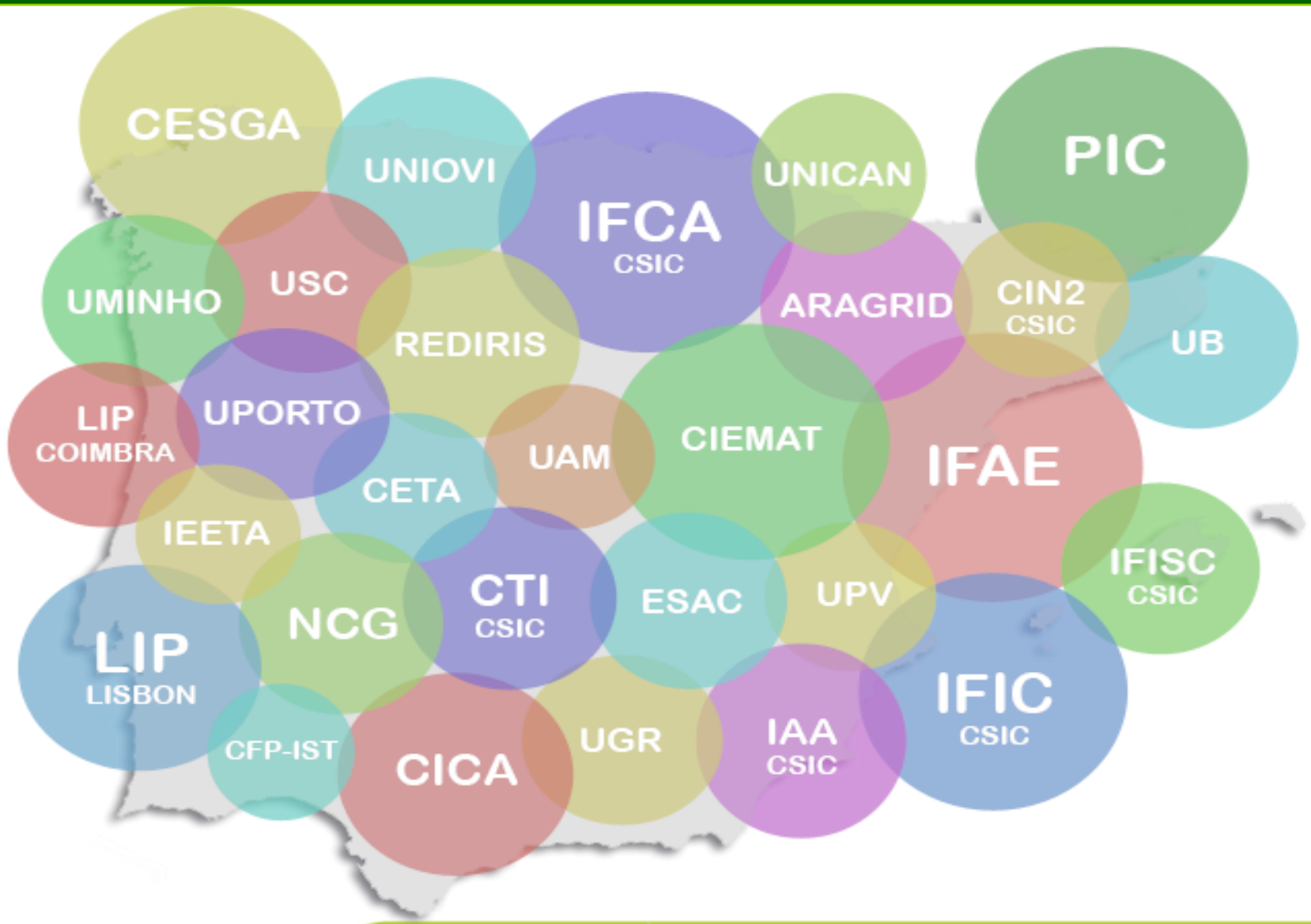
Introduction

- **Infrastructures gather users with different level of grid expertise**
  - Scientists as final users
  - Experiment operators
  - Developers of scientific applications
  - Developers of new information technologies

- **Users should be the main driver of infrastructures**
  - The infrastructure and the support level should adjust to different profiles and different needs

Resource Centres



Resource Centres

- **Resources oriented to specific domains**
  - WLCG TIER 1, 2 … (PIC, IFAE, CIEMAT, IFCA …)
  - AUGER (UGR), PLANCK (ESA-ESAC)

- **General support oriented resources**
  - From internal grids (GRID-CSIC, ARAGRID…)
  - From Computing Centres (CESGA, CETA …)
  - From Research Institutions (UPVLC, IEETA …)
  - From Universities (UPORTO, UMINHO-CP…)

An Infrastructure in Evolution

- **Redundant Monitoring**

Primary and backup NAGIOS for SAM

An Infrastructure in Evolution

- **Permanent infrastructure oversight**

Weekly shifts for oversight of the infrastructure

An Infrastructure in Evolution

- **LFC / VOMS Redundancy and Failover**

lfc01.ncg.ingrid.pt ↔ ibergrid-lfc.ifca.es
voms01.ncg.ingrid.pt ↔ ibergrid-voms.ifca.es

MySQL on the fly replication

An Infrastructure in Evolution

- **IS High Availability**

Dynamic update of a DNS alias based on results of tests executed on individuals TOPBDII instances

VO User Enrolment

http://ibergrid.lip.pt/USP

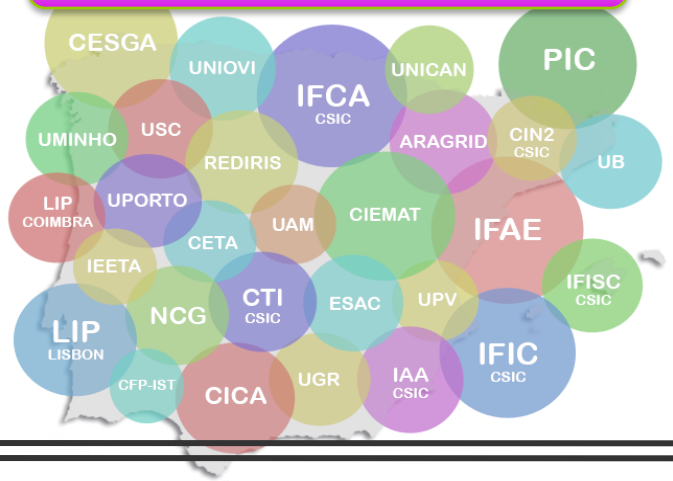
PT Web Portal (User Forms) → **DB**

DB ← **ES Web Portal (User Forms)**

Acceptance Procedure

VOMS SERVER

Acceptance Procedure



PT Integration and support

ES Integration and support

Macro VOs

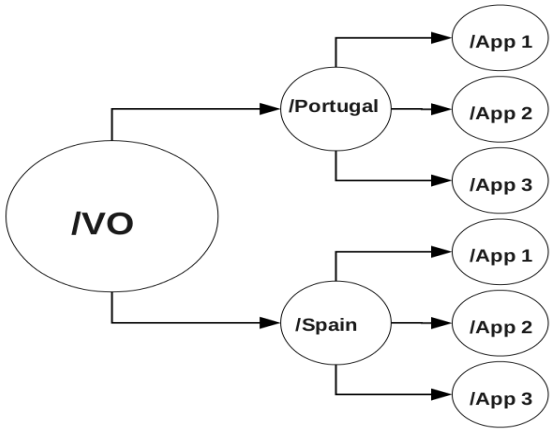
- **Different Users, Different Needs**

VO	Disciplines
phys.vo.ibergrid.eu	Physics and Space Sciences
ict.vo.ibergrid.eu	Mathematics, Computing Science and Information technologies
chem.vo.ibergrid.eu	Chemistry, Material Scienciesparmacy
life.vo.ibergrid.eu	Molecular, animal and celular Biology, Genetics, Ecology, Agriculture, Physiology, Pharmacology
earth.vo.ibergrid.eu	Earth Sciences
social.vo.ibergrid.eu	Social Sciences, Psychology and Education Sciences, Economics, Philology, Philosophy, History, Art
eng.vo.ibergrid.eu	Electrical engineering, electronics and automatic, mechanical engineering, naval and aeronautical

The idea is that the user is able to easily identify his working area

Macro VOs Group Schema

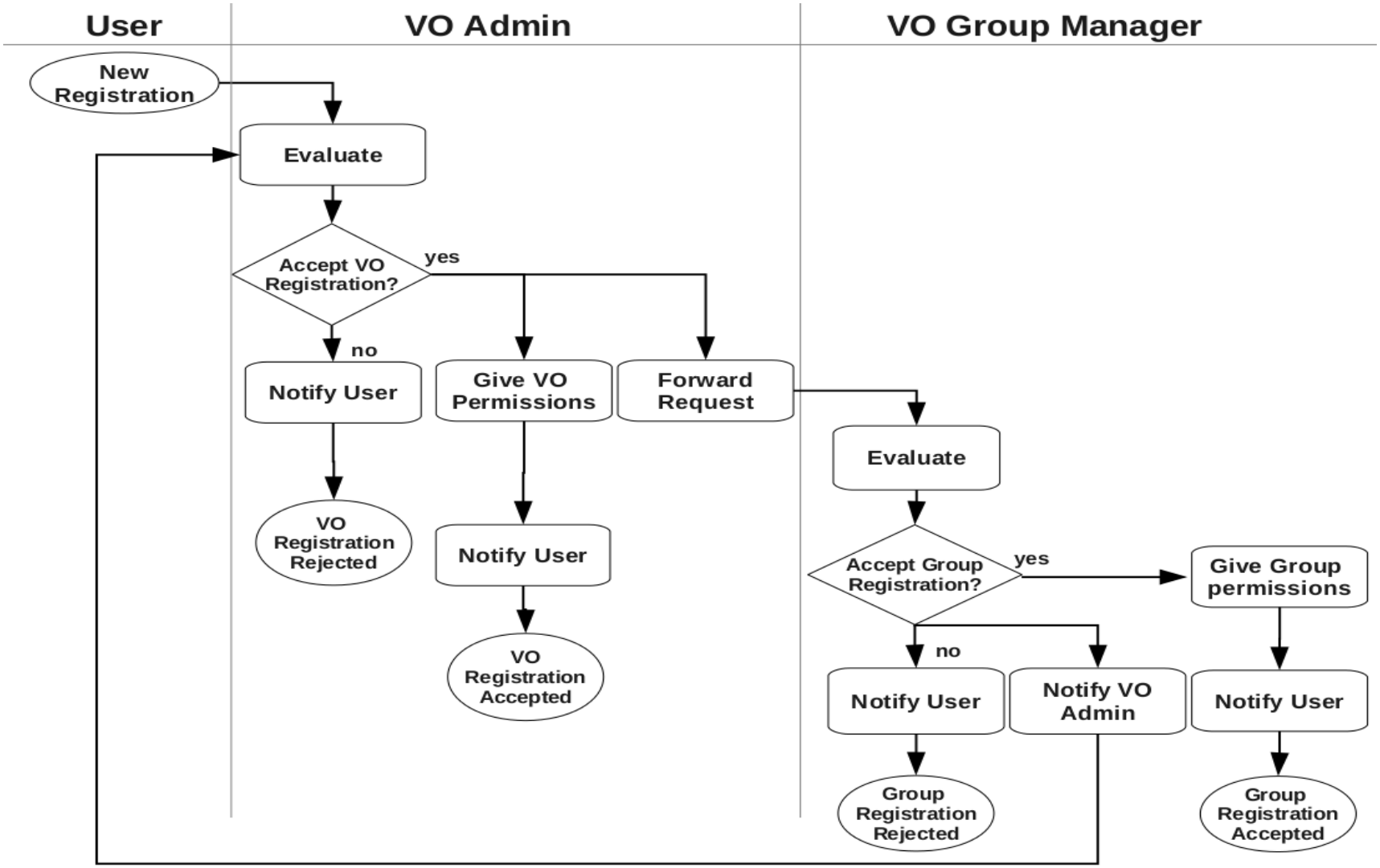
- **Rely on VO groups**
  - One group per country
  - One group per application



- **Limits VO growth and the effort of configuring new VOs in the infrastructure**
  - One application manager per application
  - Responsible to validate user inclusions in the application groups

A more flexible infrastructure.

Macro VO Membership Flow



Macro VOs Applications

- **Optimisation of diesel engines**
  - OpenFOAM & OpenWAM: 3D / 1D fluid mechanics simulations of combustion chamber and full engine.

- **Atmospheric chemical reactions and combustion processes**
  - Study the velocity of chemical reactions based on the equations that govern their movement
    - Total jobs: 280×10^3 (20 horas/job)
    - Total CPU time: 5.6×10^6 horas (years)
    - Grid EGI (1200 cores) - 7 meses

Macro VOs Resource Offer

- **Sites are requested to configure support to, at least, one of IBERGRID VOs**

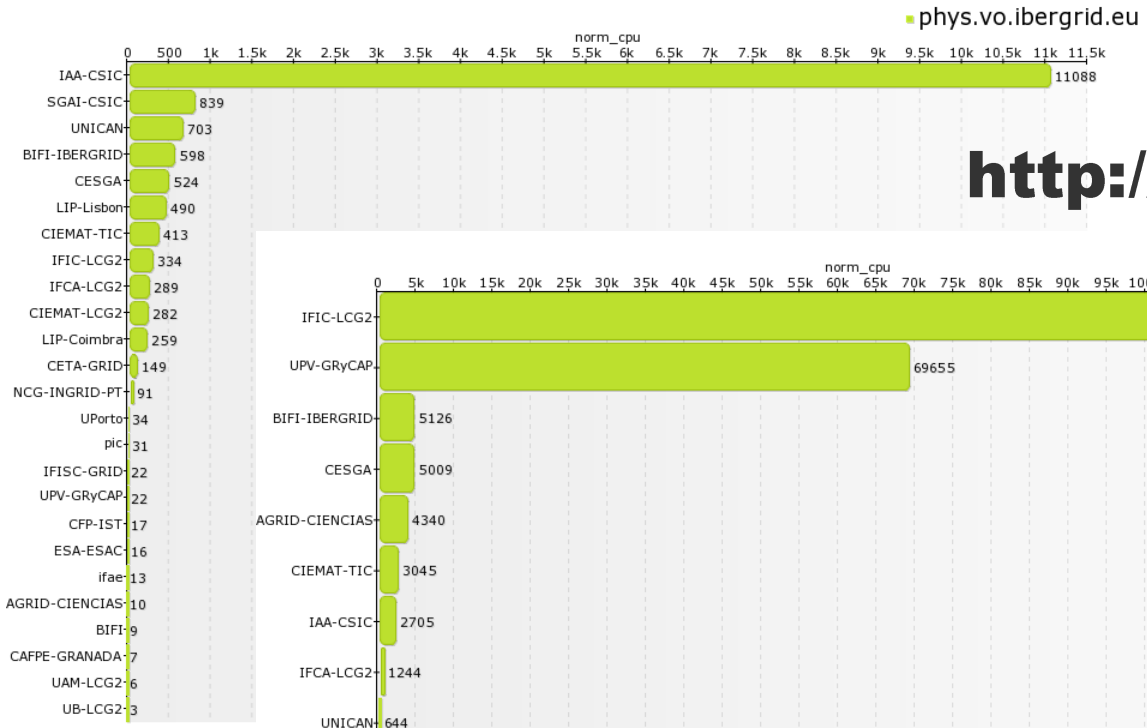
Site Classification					
CPU			STORA		
Type	Description	Sites	Type	Description	
AAA	A minimum of 200 slots are available for the Ibergrid VOs (as a whole) at any time with HIGH PRIORITY. Jobs arriving to that site will enter in execution at the earliest possibility the cluster occupation permits	*ARASGRID, BIFI, BIFI-IBERGRID, CETA-GRID, IAA-CSIC, IFCA, IFIC, IFISC, NCG-INGRID-PT*	A	Persistent storage is available to the Ibergrid VOs (as a whole) up to a limit of "N TB" (with N > 1 TB).	*ARASGRID, BIFI, BIFI-IBERGRID, CETA-GRID, CESGA-EGEE, CIEMAT-LCG2, CIEMAT-TIC, ESA-ESAC, IAA-CSIC, IFCA, IFIC, IFISC, NCG-INGRID-PT, UPV-GRYCAP*
AA	A minimum of 100 slots are available for the Ibergrid VOs (as a whole) at any time with HIGH PRIORITY. Jobs arriving to that site will enter in execution at the earliest possibility the cluster occupation permits	*CESGA-EGEE, UPV-GRYCAP*			
A	A minimum of 50 slots are available for the Ibergrid VOs (as a whole).	*CIEMAT-TIC, ESA-ESAC, SGAI-CSIC*			
B	The VO is configured, but no resources are reserved. Only oportunistic runs are foreseen to happen.	*CAPFE-GRANADA, CIEMAT-LCG2, CFP-IST, IFAE, LCG-USC2, LIP-COIMBRA, LIP-LISBON, PIC, UAM-LCG2, UB-LCG2*	B	Non-persistent storage is available (as a whole), with a deadline of 30 days. Files will be deleted by the site administrator when older than 30 days. Each site willing to be in this category needs to configure at least 1TB on this status.	*CAPFE-GRANADA, CFP-IST, LCG-USC2, LIP-COIMBRA, LIP-LISBON, SGAI-CSIC, UAM-LCG2, UB-LCG2*
-	-	-	C	No support at the level of Storage Element is provided.	*IFAE, PIC*

The idea is that the user understands the level of support at each site

http://ibergrid.lip.pt/USP

Macro VOs Resource Usage

- **Daily update of resource usage**

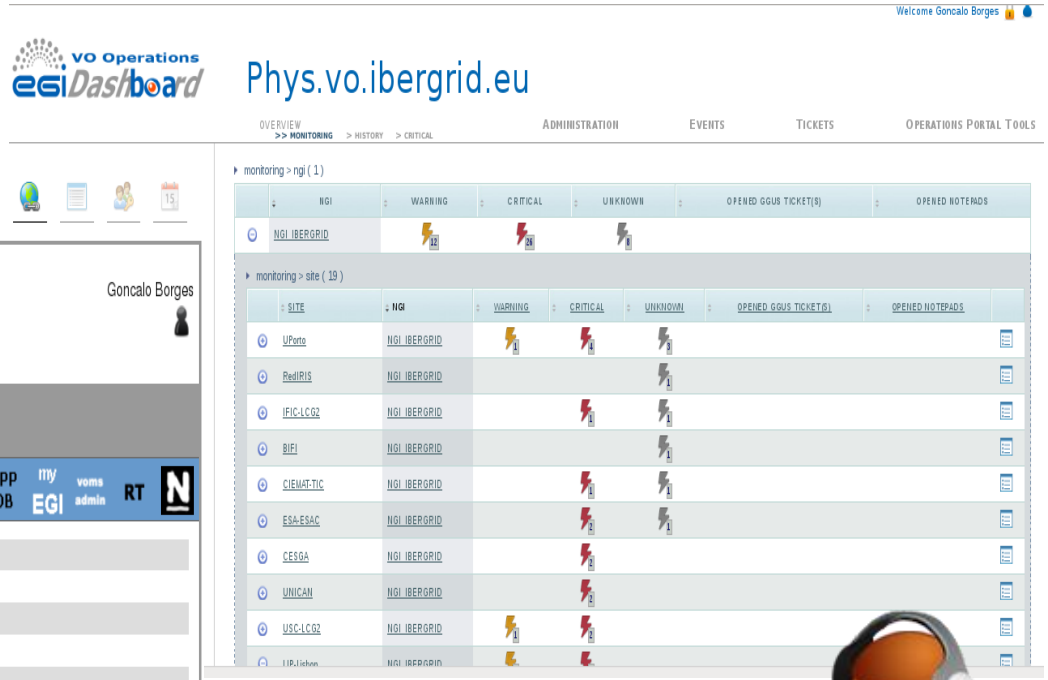


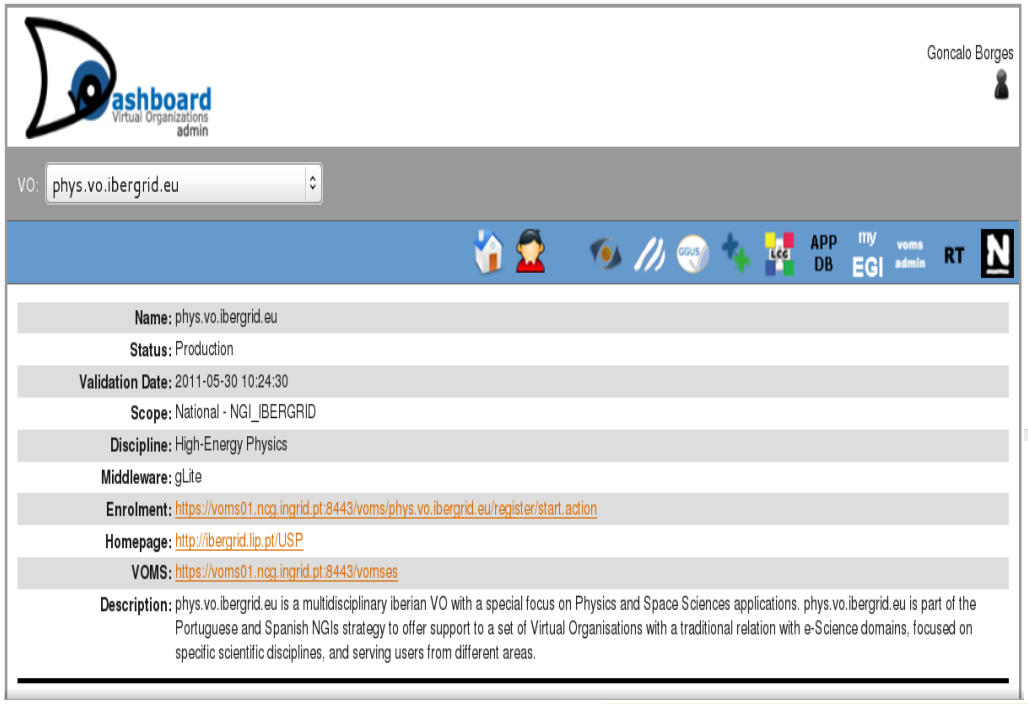
http://ibergrid.lip.pt/USP

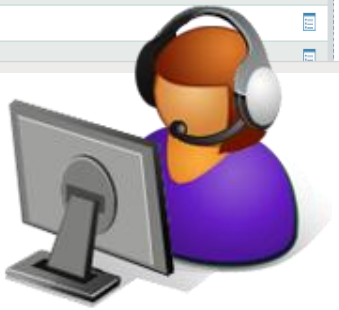
The idea is that the user knows what resources are being used

Macro VOs Monitoring

- **VO aggregators and VO Operations portal (based on VO SAM) for user support shifts**





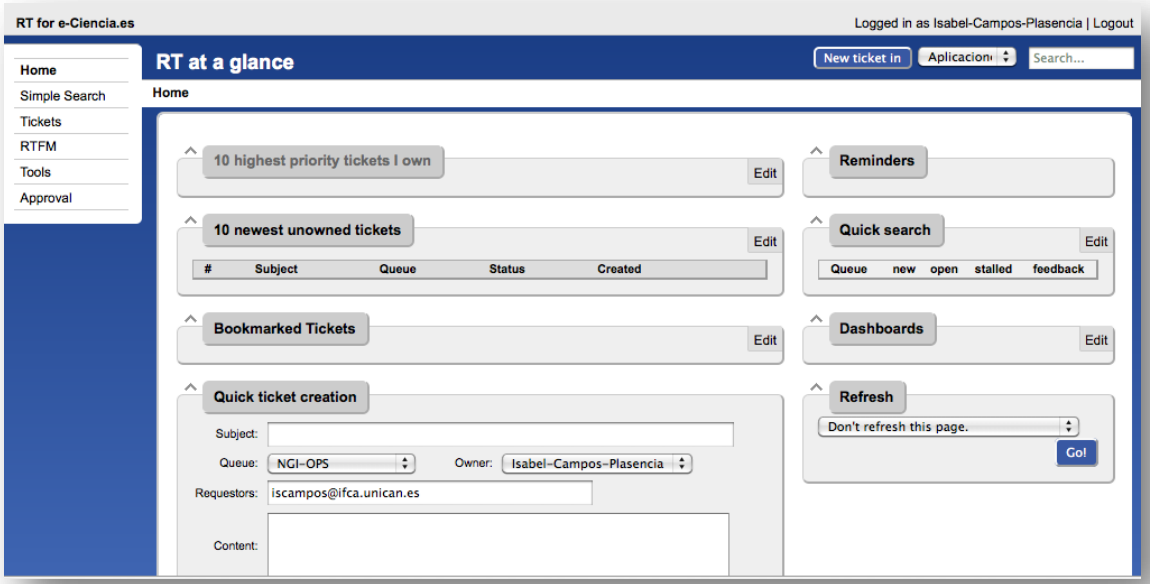


Macro VOs Support

- **Users just want to send an email somewhere to get support**

helpdesk@ibergrid.eu

Generates a ticket in
https://rt-ngi.rediris.es



Macro VOs Support

- **Identify each group capability, and provide the best possible support**

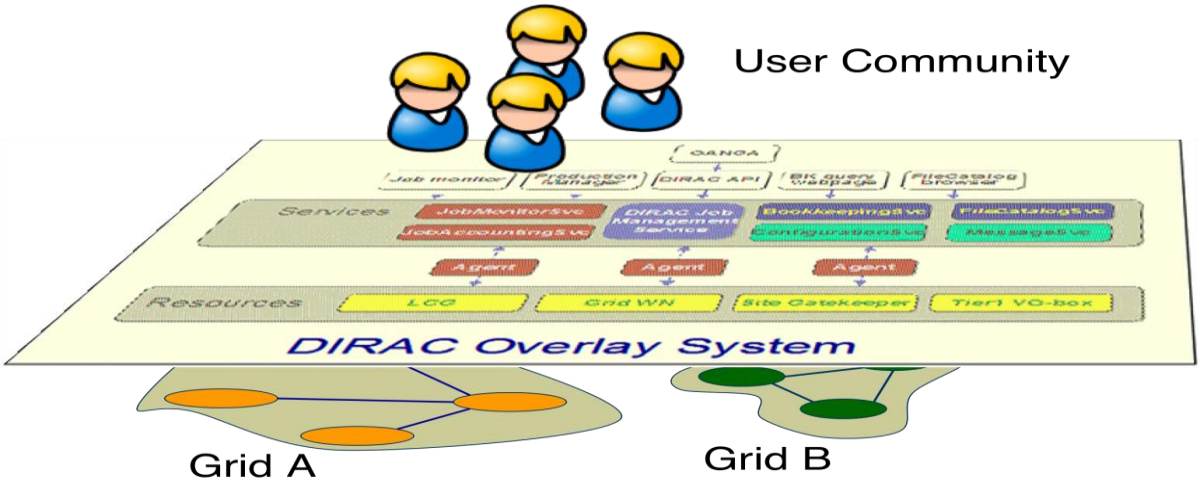
	Support \ Groups	BIFI - UNIZAR	CESGA	CETA - CIEMAT	TIC - CIEMAT	CIN2 - CSIC	ESA-ESAC	GRYCAP - UPV	IAA - CSIC	IFCA - CSIC	IFIC - C SIC	IFISC - CSIC	PIC	RedIRIS	SGAI - CSCI	UNICAN	UNIOVI
Basic components	UI configuration	X	X	X	X			X	X	X		X	X		X		
	Issues in job submission	X	X	X	X			X	X	X	X	X	X		X		
	Usage of MyProxy							X	X		X	X	X				
	VOMS credentials	X	X					X			X		X				
	Use of LFC	X						X	X	X	X	X	X				
	AMGA							X			X						
	Accounting		X														
	Monitoring		X														
	Scientific Portals	X	X					X				X					
	MPI Compilation and Job Execution									X							
	Issues with non-GNU Compilers (eg. Intel)									X							
General Scientific Support	Application Porting	X			X			X				X			X		
	Computational chemistry codes		X														
	Mathematical codes		X					X									
	Medical physics code		X		X												
	Metaschedulers and parametric jobs		X					X							X		
	Earth science models		X														
	GEANT4										X						
											X						

ES-NGI INGRID +

Normal View Ready Sum=0

Work in Progress

- **Dedicated Dirac Portal for IBERGRID**
  - http://icc.ub.edu/gr_DIRAC.php
  - Supported by ICC-UB
- **DIRAC is a software framework to easy the access to grid resources to end users**



Work in Progress

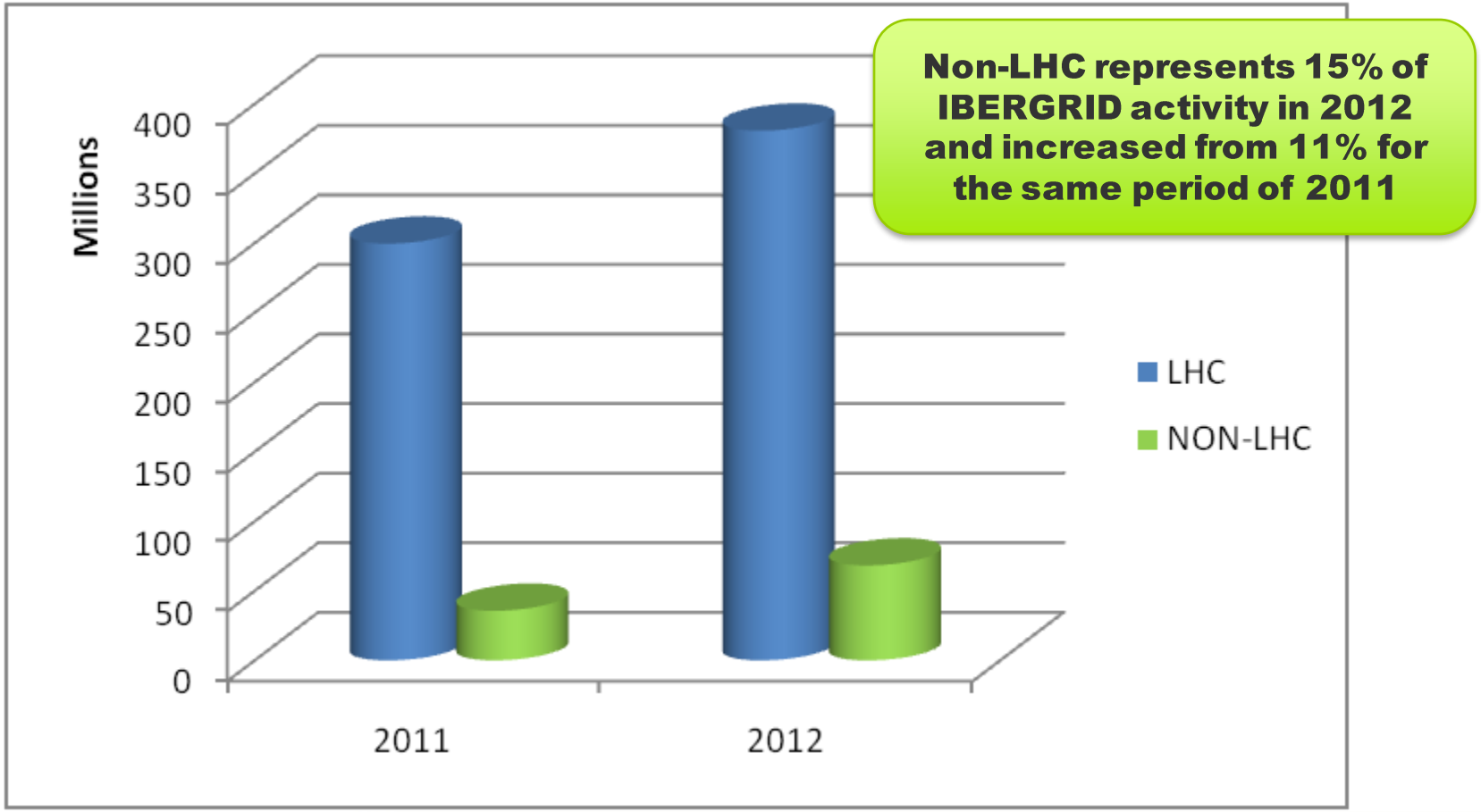
- **SW availability**
  - Generic support means that users will have to take care of the specific software they need for their case
  - Many users limit the sites to a predefined list where SW is already available

Pilot being developed between IAA-CSIC and UB

- **Dirac Pilot installation**
  - Create a repository of tarballs in short terms (migrate to CVMFS in long term)
  - Enhance DIRAC module to guarantee that software is available in the WNs before user payload executes

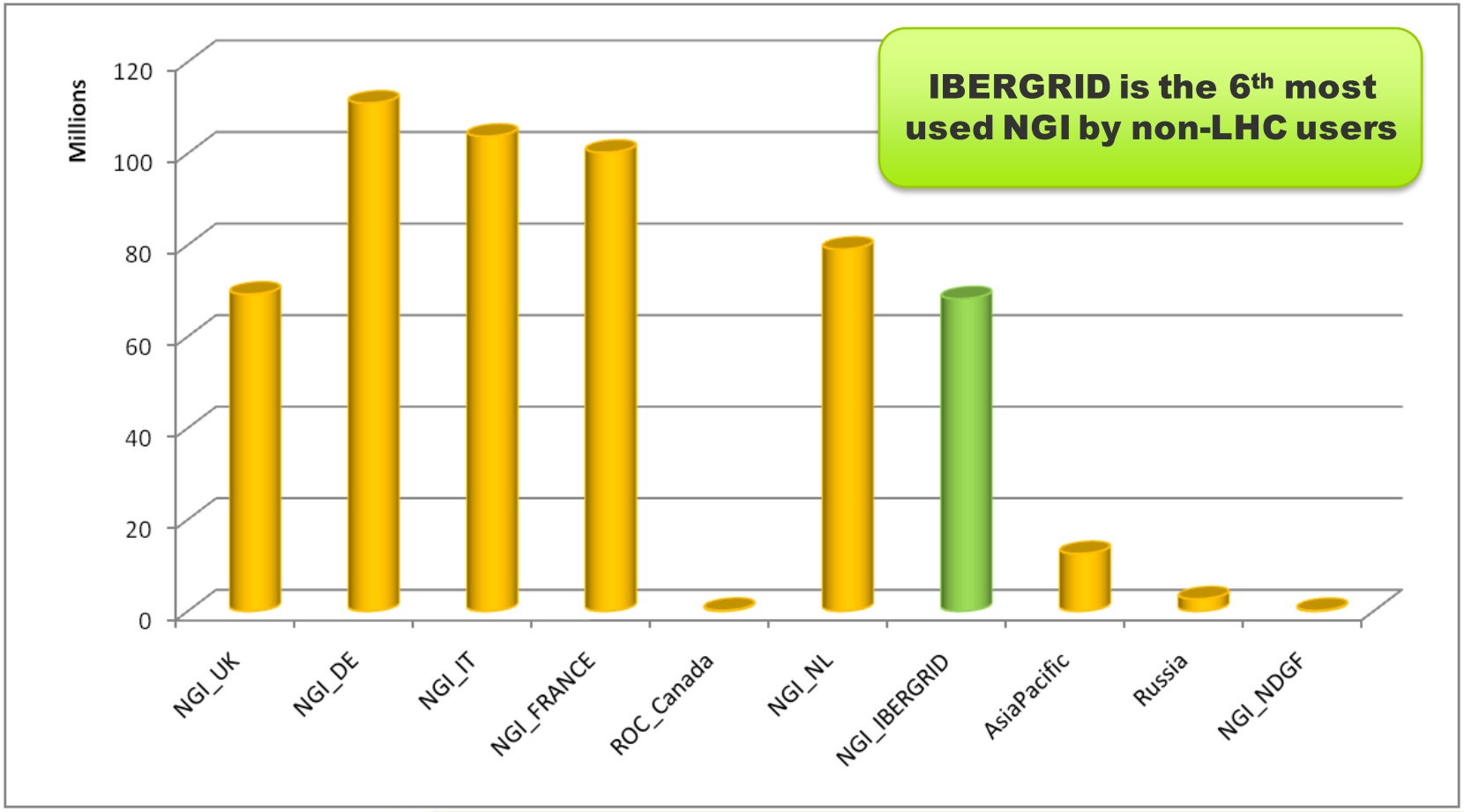
Non-LHC Activity

- **Norm CPU Time (HS06) (Jan to Aug)**
  - IBERGRID activity



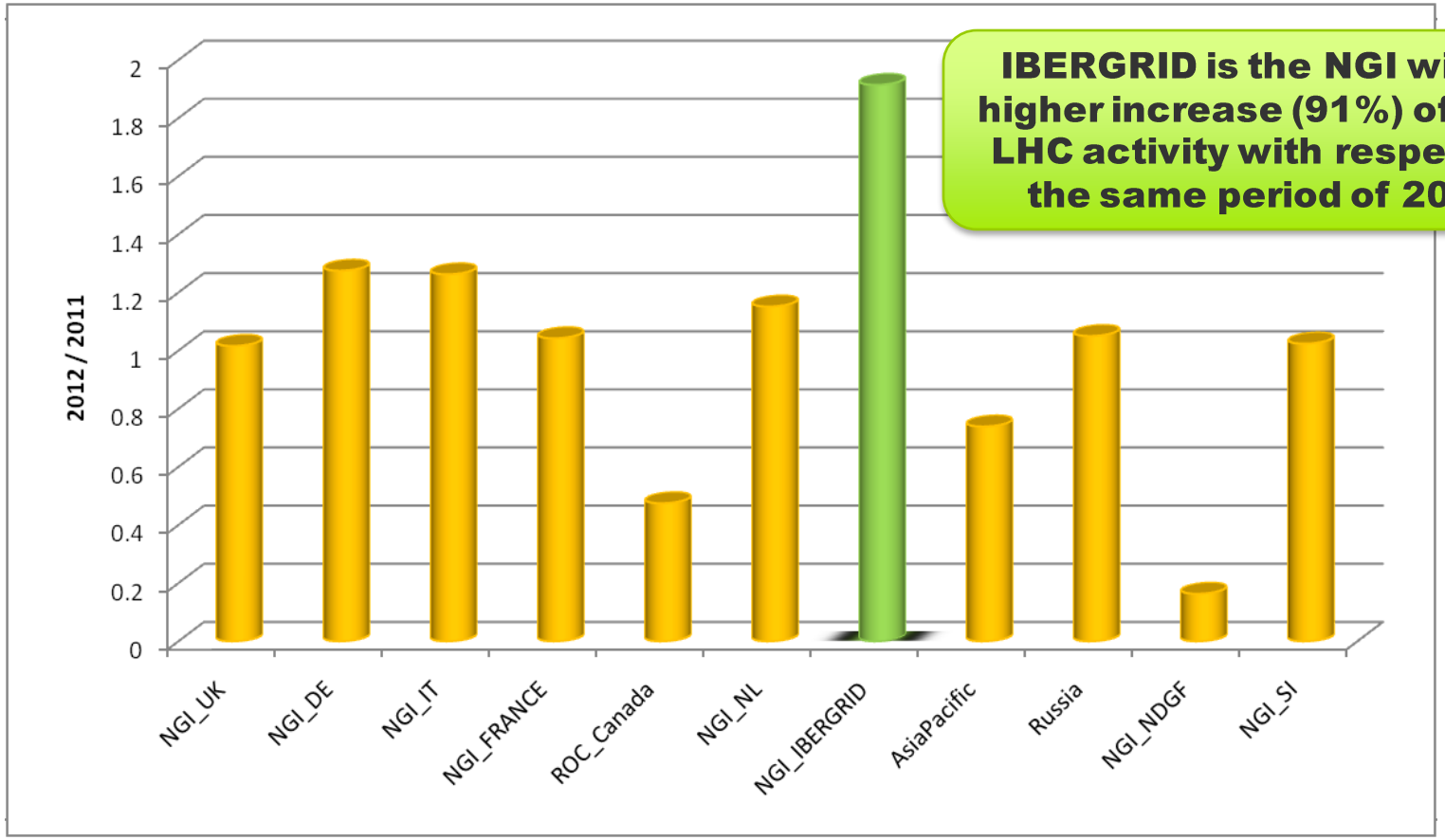
Non-LHC Activity

- **Top 10 NGIs 2012 (Jan to Aug)**
  - Norm CPU (HS06) for all VOs and all Regions



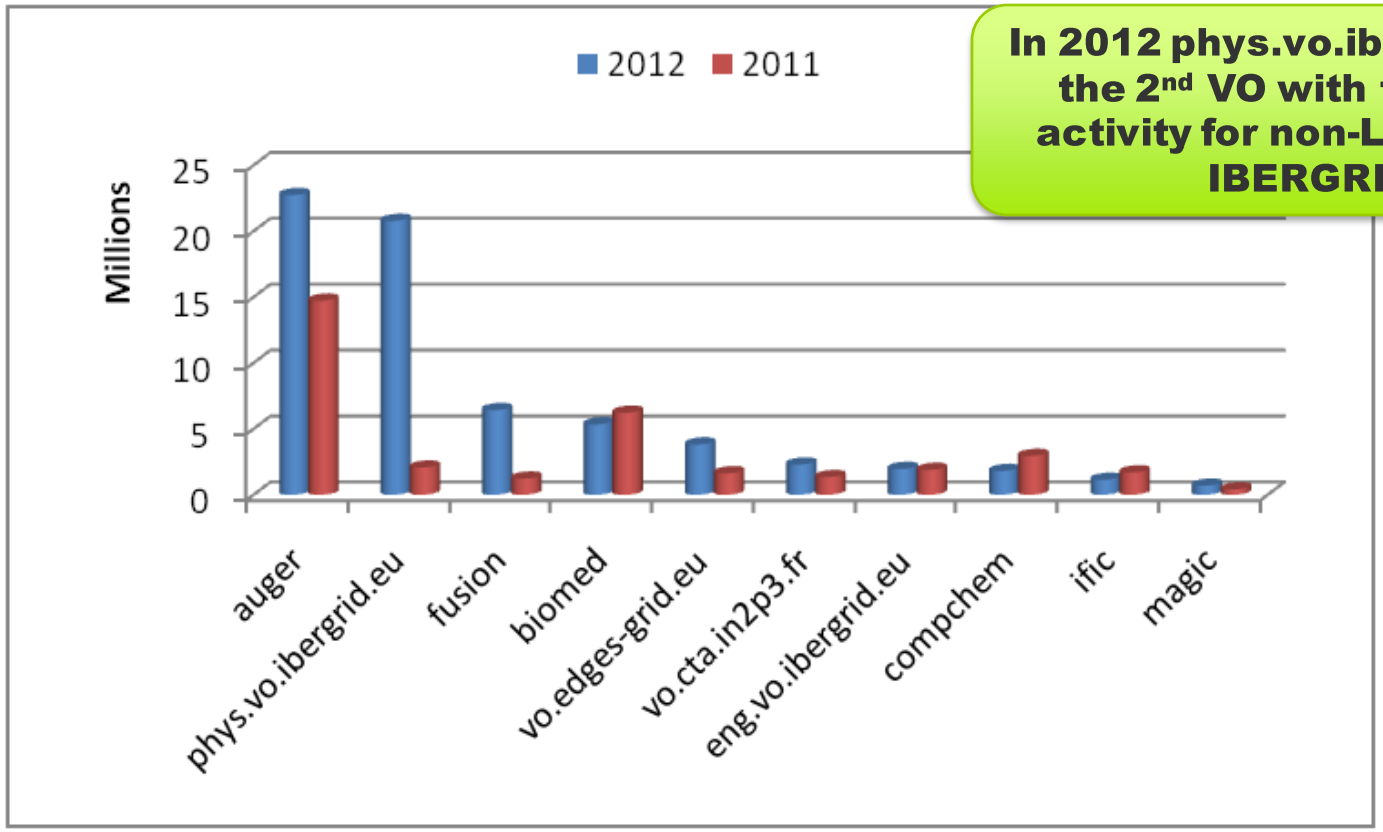
Non-LHC Activity

- **Top 10 NGIs 2012 (Jan to Aug)**
  - Non-LHC growth (Norm CPU (HS06)) wrt to 2011



Non-LHC Activity

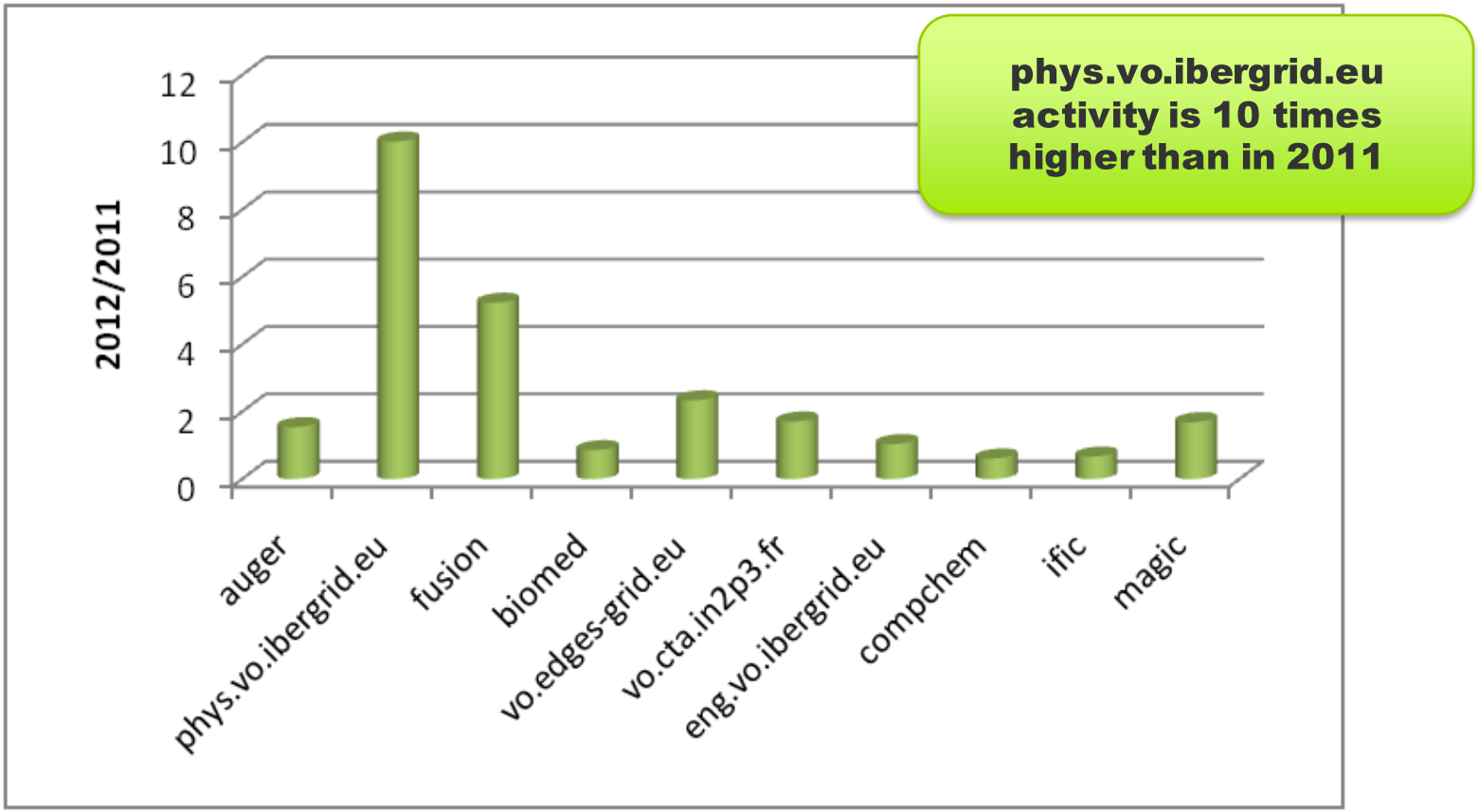
- **Top 10 Non-LHC VOs 2012 (Jan to Aug)**
  - Norm Sum CPU (HS06)



In 2012 phys.vo.ibergrid.eu is the 2nd VO with the most activity for non-LHC VOs in IBERGRID

Non-LHC Activity

- **Top 10 Non-LHC VOs 2012 (Jan to Aug)**
  - Ratio of Norm Sum CPU (HS06)



Conclusion

- **Keep it simple**
  - Keep your infrastructure fit with active monitoring and support (for VO operations)
  - Teach your users and keep them informed
    - Clear VO management procedures, enrolment process and resource polices
  - Provide user direct support and empower your users with proper tools