

Scientific Council of the CNRS Grid Institute



Production Grid

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Production grid overview

- The production grid in France is mainly based on the EGEE middleware
- France has been very active in all 3 phases of EGEE ... and even before (Datagrid project !)
- We now have a fully operational production infrastructure based on Grid technology
- We are in the process to move from EGEE to EGI / NGI → This is a very important step which is not a simple continuation of the existing
- Other production grid projects:
 - Decryphon based on the DIET middleware developed in the research grid framework
 - Several other regional or dedicated initiatives ...

French activities in EGEE-III

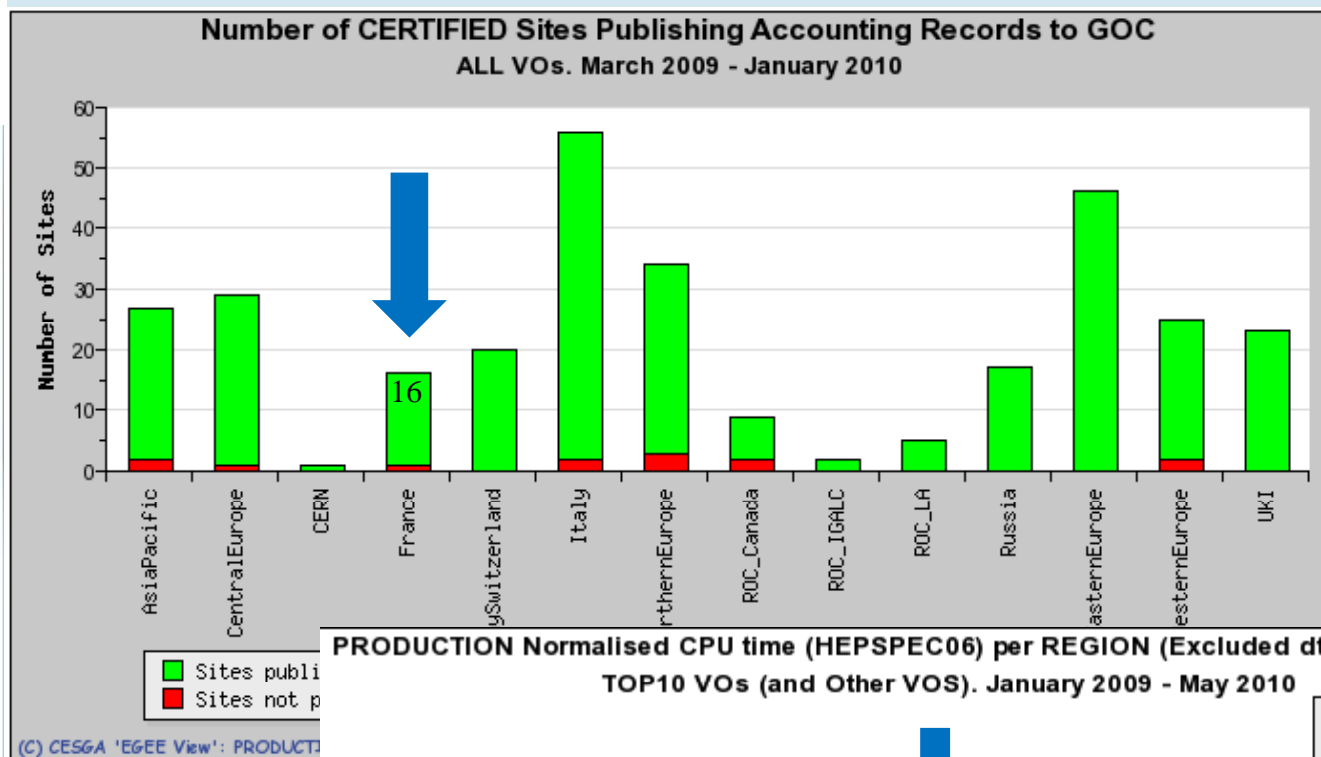
Involvement in:

- NA2: Dissemination and business
- NA3: Training
- NA4: User community support and expansion
 - HEP, Life science, Earth science, Chemistry, Astronomy & Astrophysics, Grid Observatory
- SA1: Operations
- Network support

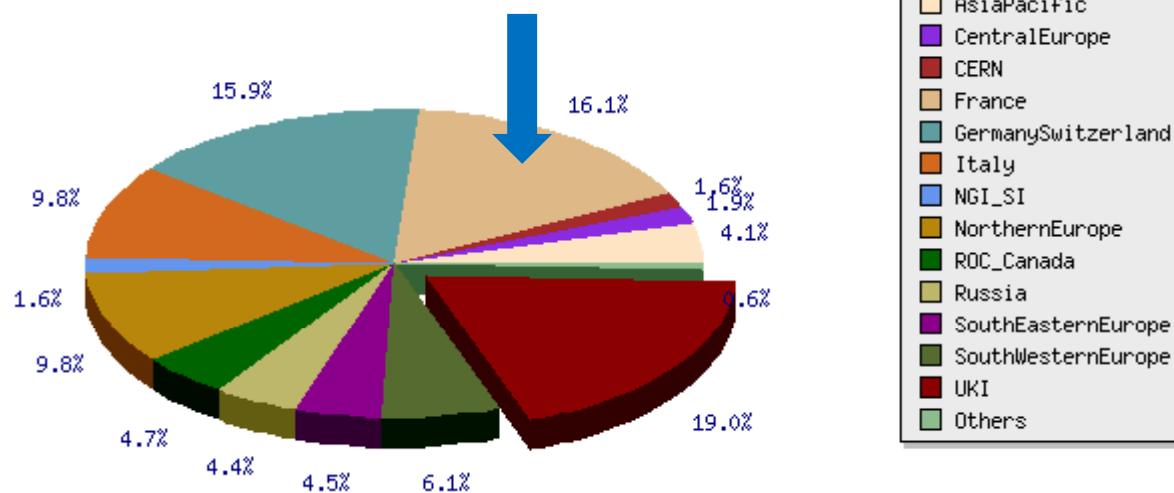
Activity	NA2	NA3	NA4	SA1	SA2
Person Months	39	24	245	426	96

A total of 827 Person Months over a total of 9010 Person Months for the whole project

France Vs other EGEE regions



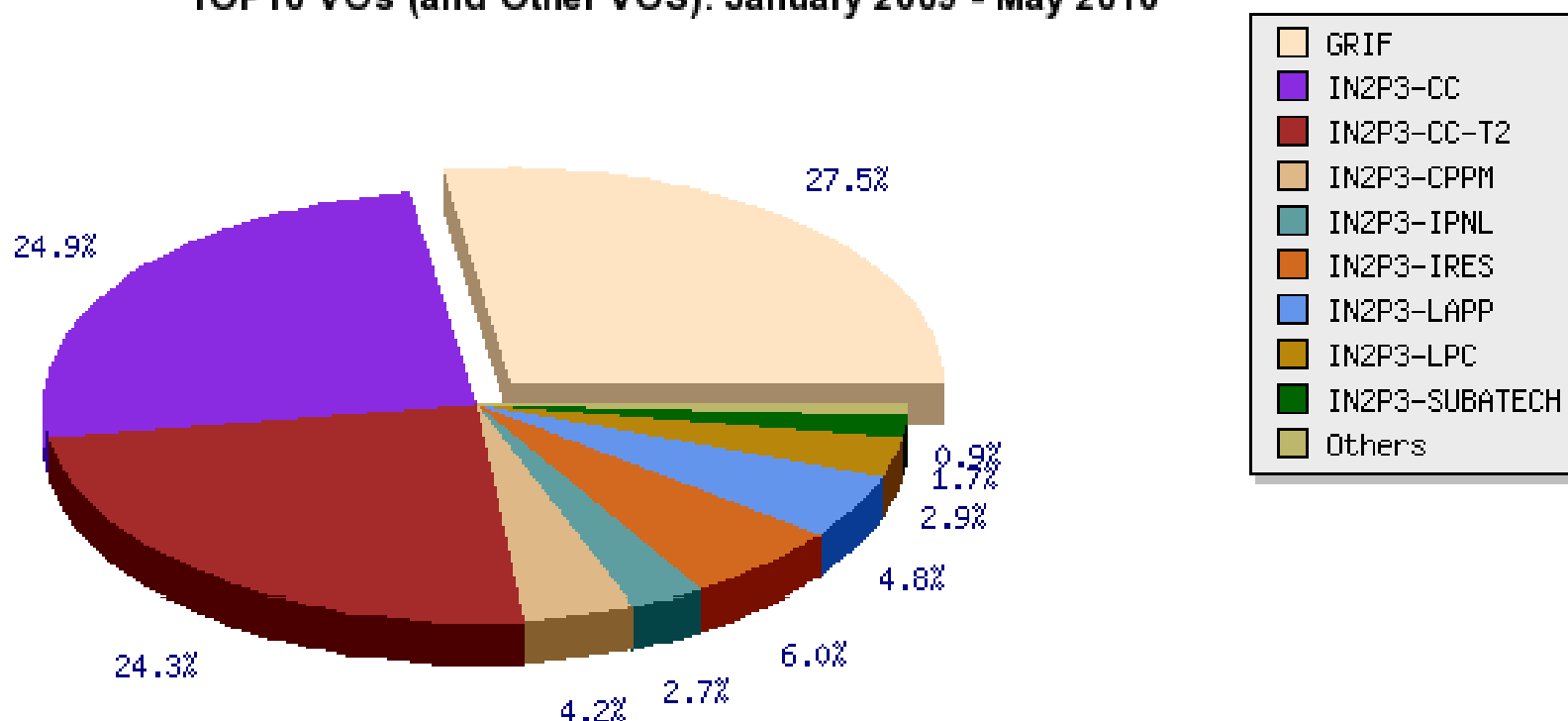
PRODUCTION Normalised CPU time (HEPSPEC06) per REGION (Excluded dteam and ops VOs)
TOP10 VOs (and Other VOS). January 2009 - May 2010



To be noted: The GRIF site is a federation of 7 nodes

CPU delivered by French sites

France Normalised CPU time (HEPSPEC06) per SITE (Excluded dteam and ops VOs)
TOP10 VOs (and Other VOS). January 2009 - May 2010



Provided resources

Target 2009 (EGEE III DOW)

	Nbr. sites	CPU (KSI2K)	Disk (TB)	Seed CPU (KSI2K)	Seed Disk (TB)
CEA	1	615	208	30	2
CGGV	1	66	0,5	0	0
CNRS	16	22 879	7285	180	7
		23 560	7 494		

Actually provided in 2010

	Nbr. sites	CPU (KSI2K)	Disk (TB)	Seed CPU (KSI2K)	Seed Disk (TB)
	16	39 963	6 559	557	6,8

EGEE grid availability and reliability

April 2010

Was 93% in
April 2009

Was 95% in
April 2009

Region	Avail- ability	Reli- ability
AsiaPacific	93 %	93 %
CERN	98 %	99 %
CentralEurope	88 %	88 %
France	97 %	97 %
GermanySwitzerland	93 %	93 %
Italy	94 %	94 %
NGI_GRNET	96 %	97 %
NGI_PL	94 %	95 %
NorthernEurope	91 %	91 %
ROC_Canada	92 %	92 %
ROC_IGALC	79 %	90 %
ROC_LA	89 %	89 %
Russia	86 %	89 %
SouthEasternEurope	77 %	77 %
SouthWesternEurope	91 %	91 %
UKI	93 %	96 %

Availa bility Relia bility Unkn own Availability History
Jan-10 Feb-10 Mar-10

France)

AUVERGRID	99 %	99 %	0 %	95 %	99 %	99 %
CGG-LCG2	85 %	85 %	0 %	93 %	92 %	100 %
GRIF	100 %	100 %	0 %	99 %	98 %	100 %
IBCP-GBIO	99 %	99 %	0 %	98 %	91 %	100 %
IN2P3-CC	95 %	95 %	0 %	93 %	90 %	94 %
IN2P3-CC-T2	95 %	95 %	0 %	85 %	88 %	93 %
IN2P3-CPPM	97 %	97 %	0 %	99 %	90 %	99 %
IN2P3-IPNL	99 %	99 %	0 %	97 %	96 %	93 %
IN2P3-IRES	91 %	91 %	0 %	89 %	95 %	93 %
IN2P3-LAPP	97 %	97 %	0 %	97 %	95 %	98 %
IN2P3-LPC	99 %	99 %	0 %	97 %	100 %	100 %
IN2P3-LPSC	98 %	98 %	0 %	91 %	90 %	93 %
IN2P3-SUBATECH	99 %	99 %	0 %	98 %	98 %	99 %
IPSL-IPGP-LCG2	90 %	90 %	0 %	98 %	89 %	96 %
M3PEC	99 %	99 %	0 %	96 %	93 %	98 %
MSFG-OPEN	90 %	90 %	19 %	N/A	62 %	99 %

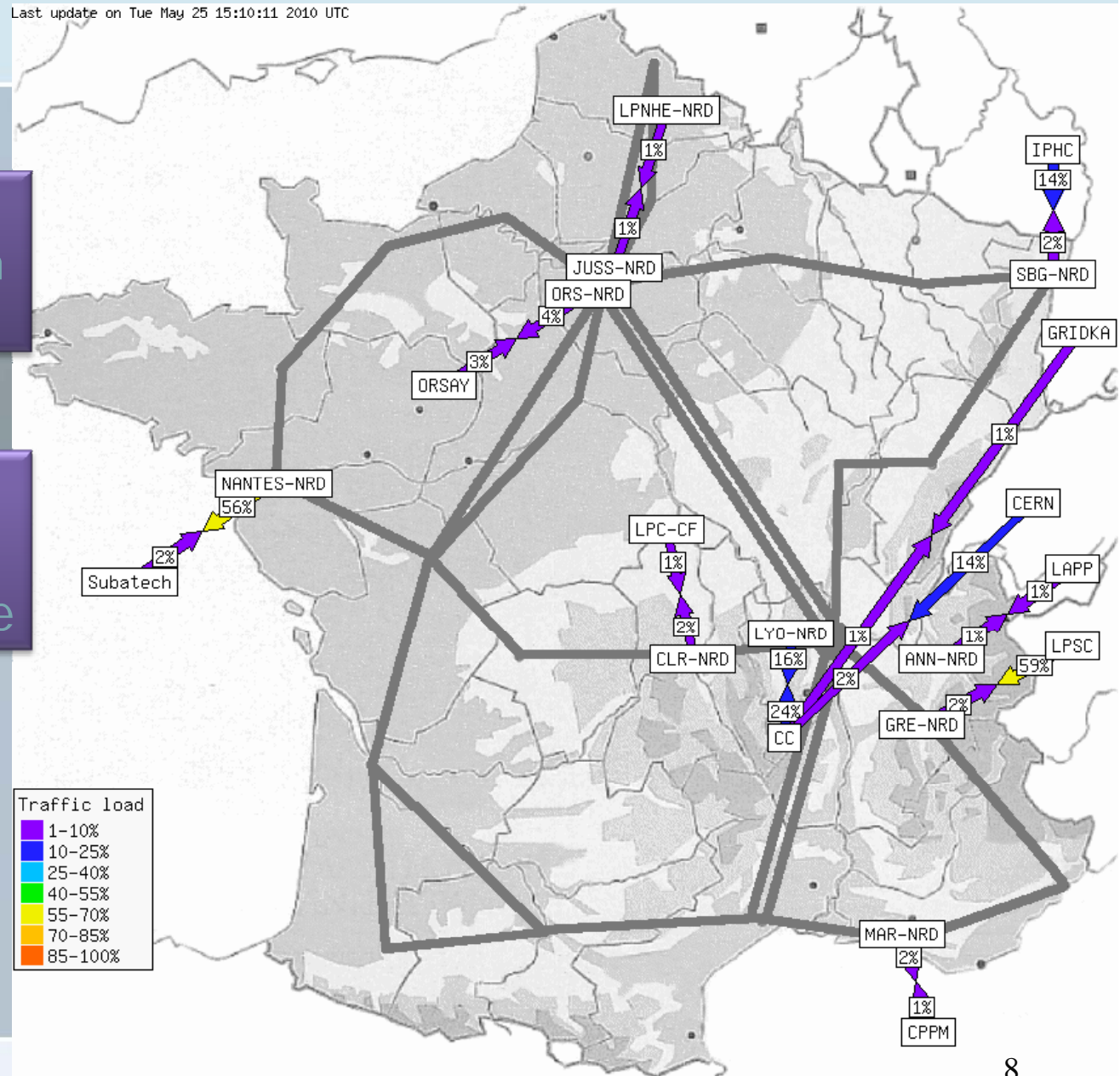
New Montpellier site ramping up

Network

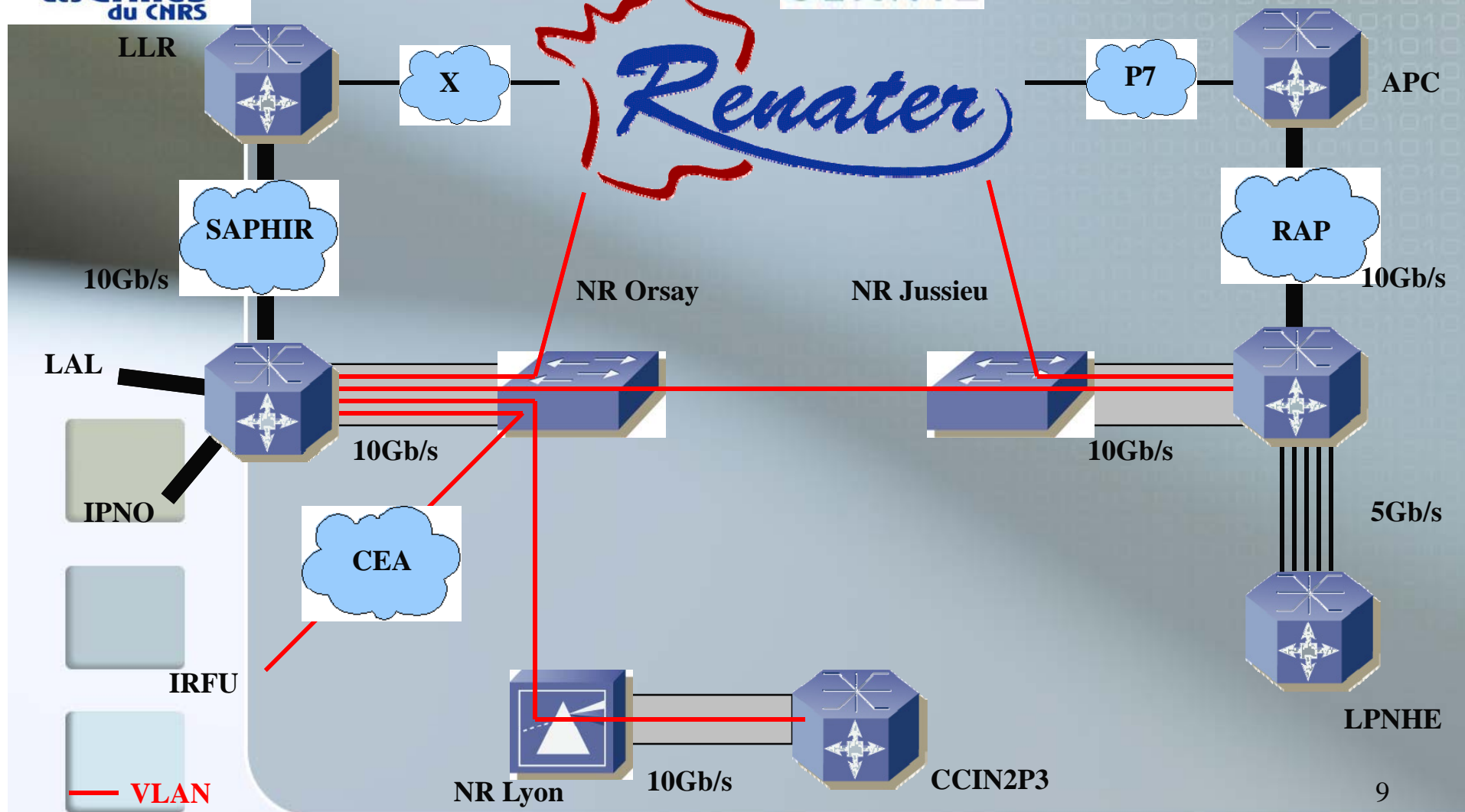
Last update on Tue May 25 15:10:11 2010 UTC

The French production
Grid crucially depends on
RENATER

Who is extremely
helpful in providing an
adequate infrastructure



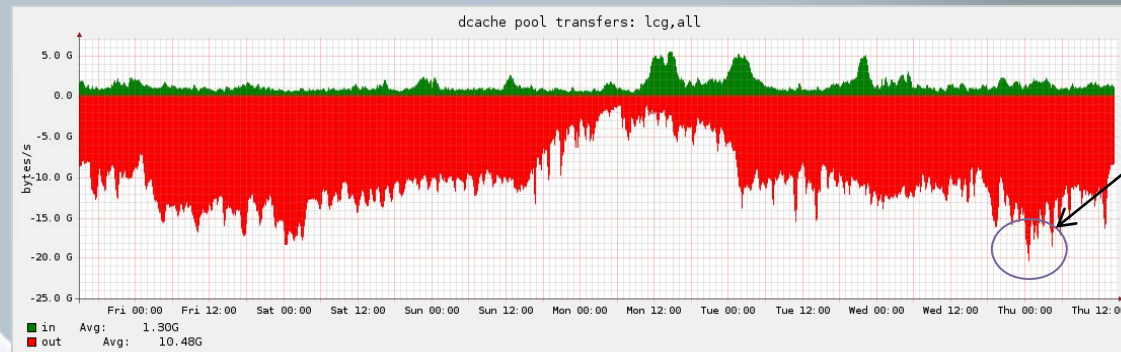
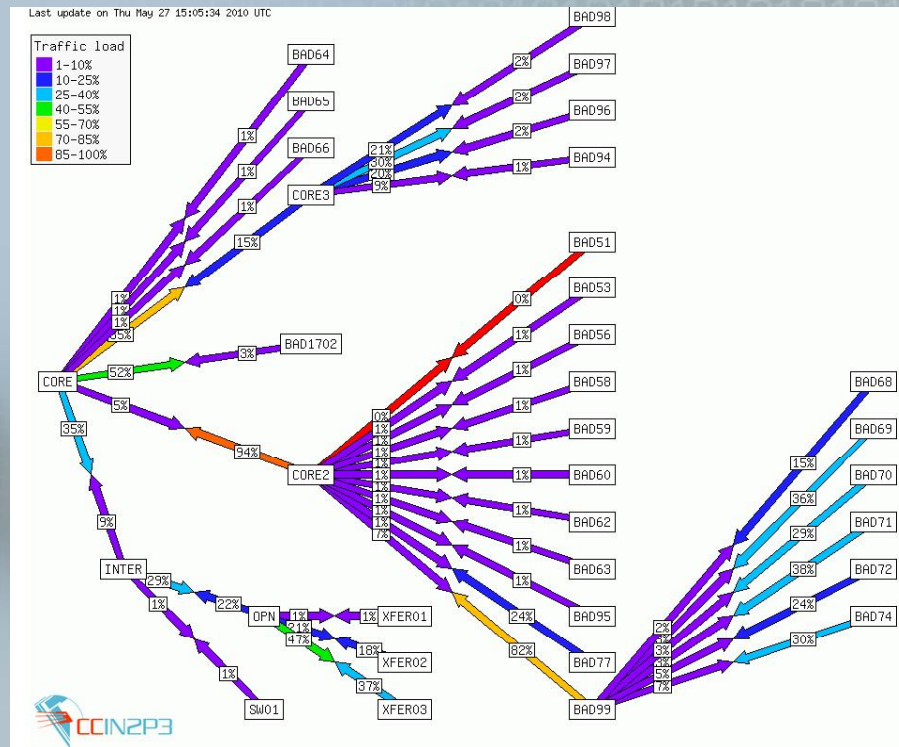
GRIF



Grid activity is I/O intensive

Heavy load observed
on local Tier-1
network infrastructure

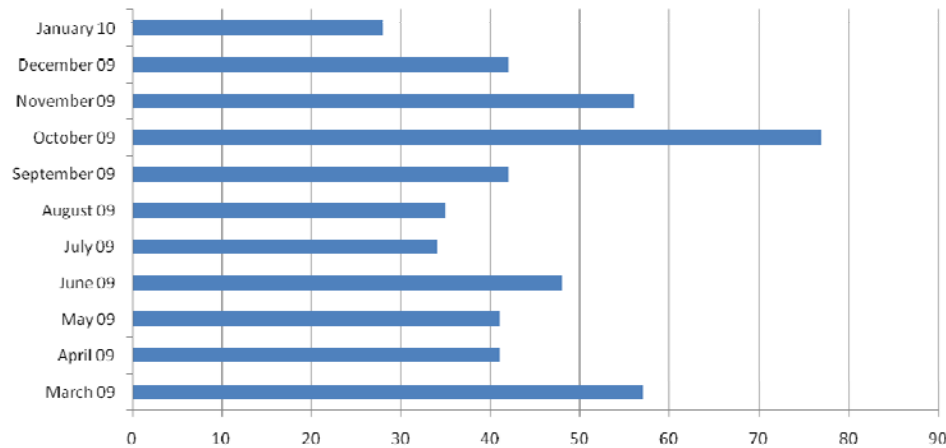
Related to LCG usage
→ dcache



~20 GBytes/s

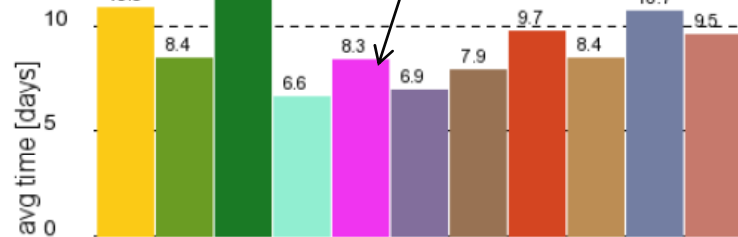
Incident resolution (GGUS)

Nbr. Of GGUS tickets

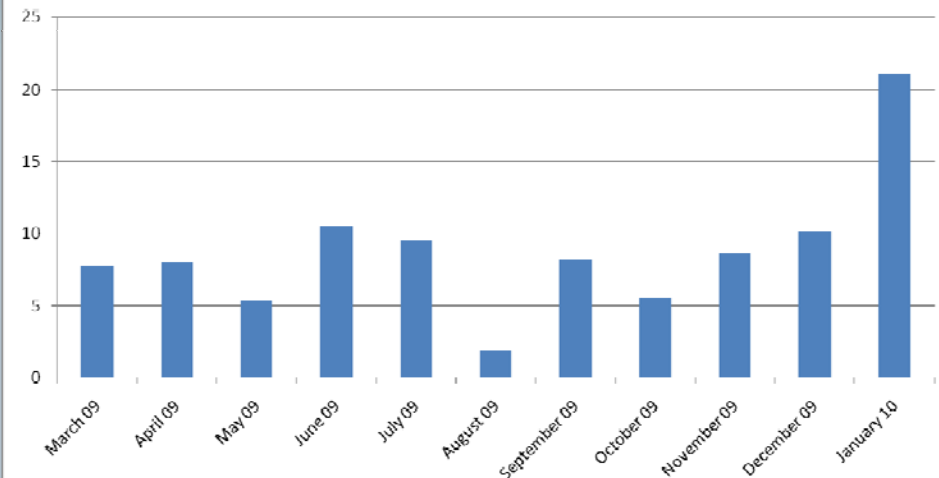


All French sites are involved in ticket treatment

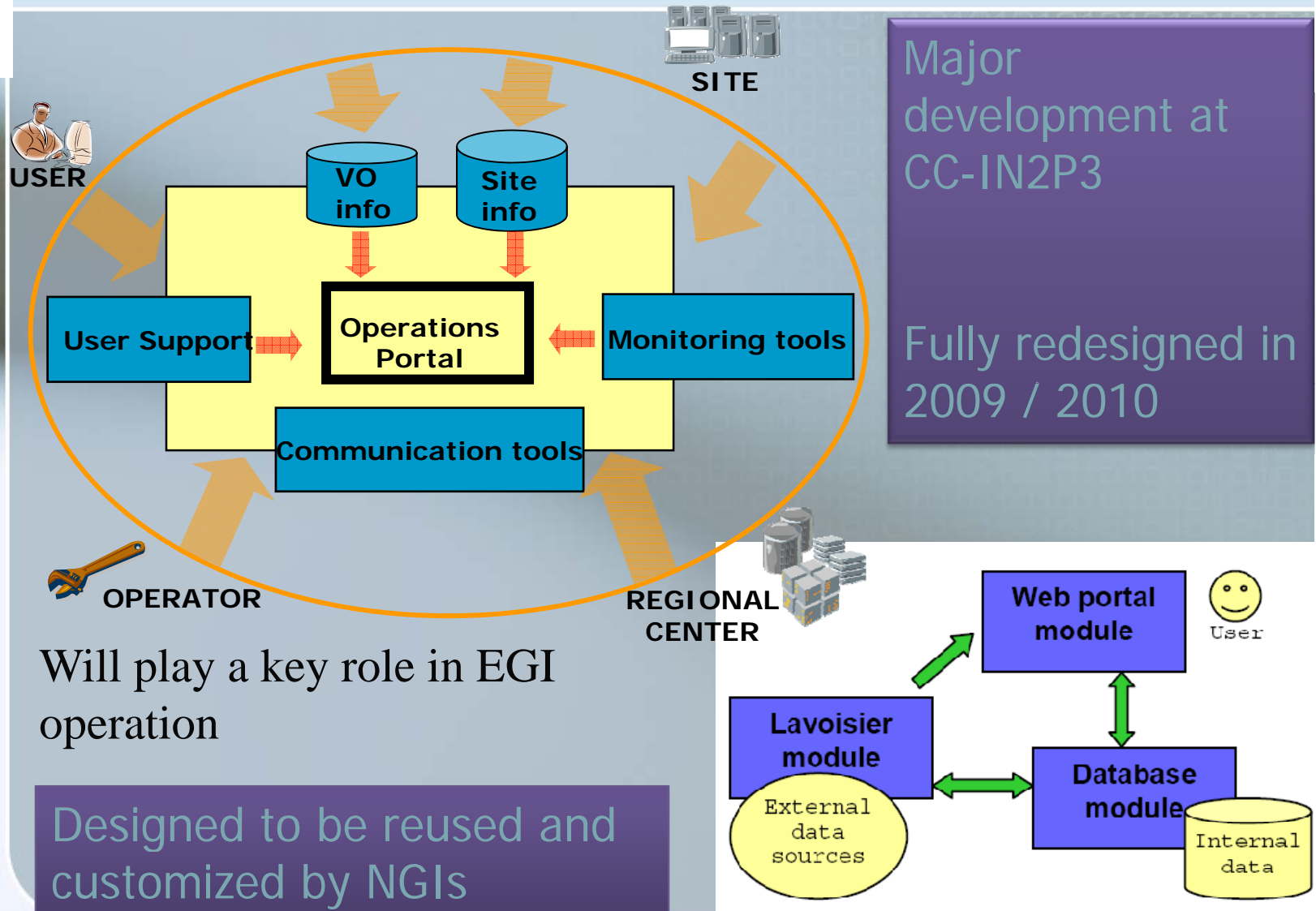
France



Average resolution time in days



The Grid Operation Portal



Regional Grids

- The regional grids will be the corner stones of the French National Grid
 - Much more than within the EGEE centralized model
- Of course LCG T1/T2/T3 will continue to be top users of the NGI for some time but...
- ... the French grid will tend toward a federation of regional grids providing resources for multidisciplinary projects
 - IdG is going to help these regional projects
- Regional grids will be
 - A must to attract regional funds
 - in phase with current politics toward large University poles

Keeping the coherence of the whole system will be a major task

Regional grids

■ AUVERGRID

- Historically the first in France
- Strong involvement in biology and biomedical applications

■ GRIF (Paris)

- 5 IN2P3 labs + CEA/Irfu
- 80% LHC oriented – 20% opened to Life Science, Earth Science, Astrophysics...

■ In Rhône-Alpes

- CIRA for HPC
- TIDRA for data storage and analysis

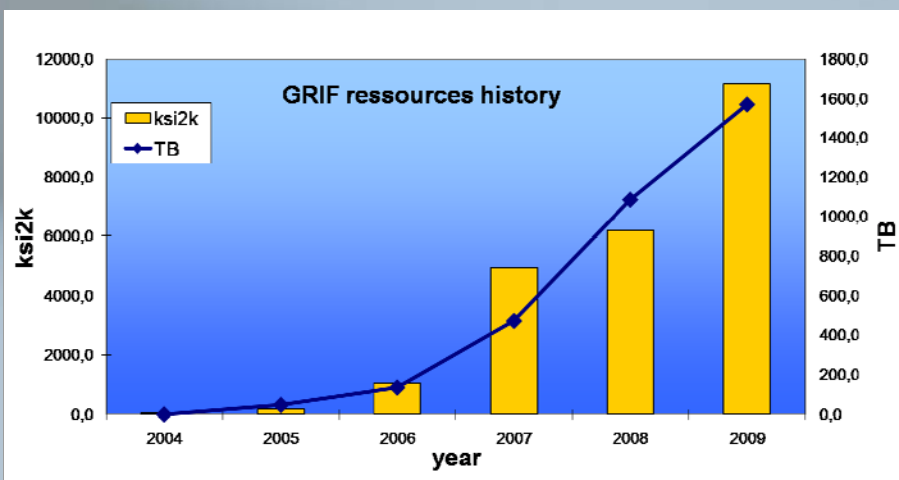
■ Some initiatives in

- Marseille
- Montpellier
- Bordeaux



A focus on GRIF

	APC	IPNO	Irfu	LAL	LLR	LPNHE	ISC-PIF	Total
ksi2k	354	1274	3754	770	1955	1293	1342	10742
TB	21	153	913	431	296	303	47	2164



45 Supported VOs including:

- LHC Vos
- Auvergrid
- Biomed
- Calice
- CompChem
- D0
- Egeode
- Esr
- Embrace
- Fusion
- GEANT4
- ILC
- Vo.u-psud.fr

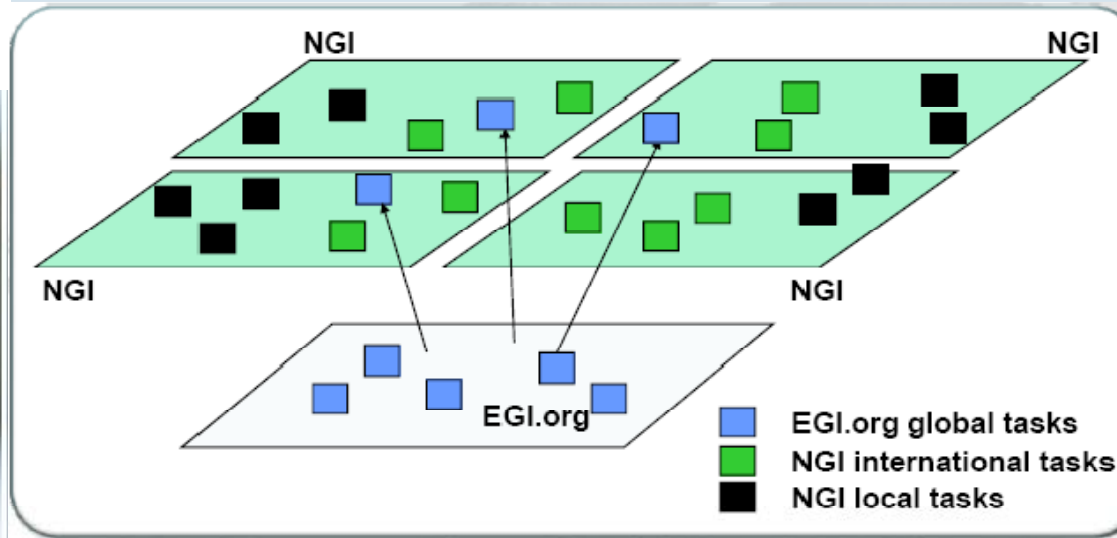
Deployed resources

- 7 CE (2750 cores)
- 7 SRM SE
- 4 WMS
- 1 top BDII
- 1 MONBOX
- 1 Proxy server
- 1 VOMS server
- 2 LFC

Managed by quattor

This is a very significant effort
requiring technically skilled people

New services



NGI will have freedom to support specific middlewares

In order to match the goal to develop multidisciplinary activities we have to provide:

Tools which are fitting the needs well

Keep things as simple as possible

Provide an efficient user assistance

iRODS an alternative solution for grid data storage and access

integrated Rule Oriented Data System

- ☐ Storage virtualization
- ☐ Data management (transfer – replication – metadata – integrity checks)
- ☐ Supports VO – roles – groups
- ☐ Definition of data management rules at the server level
- ☐ Relatively easy to deploy and maintain

and... Considerable expertise at CC-IN2P3

A very popular solution for astroparticle, biology and humanities applications at CC-IN2P3

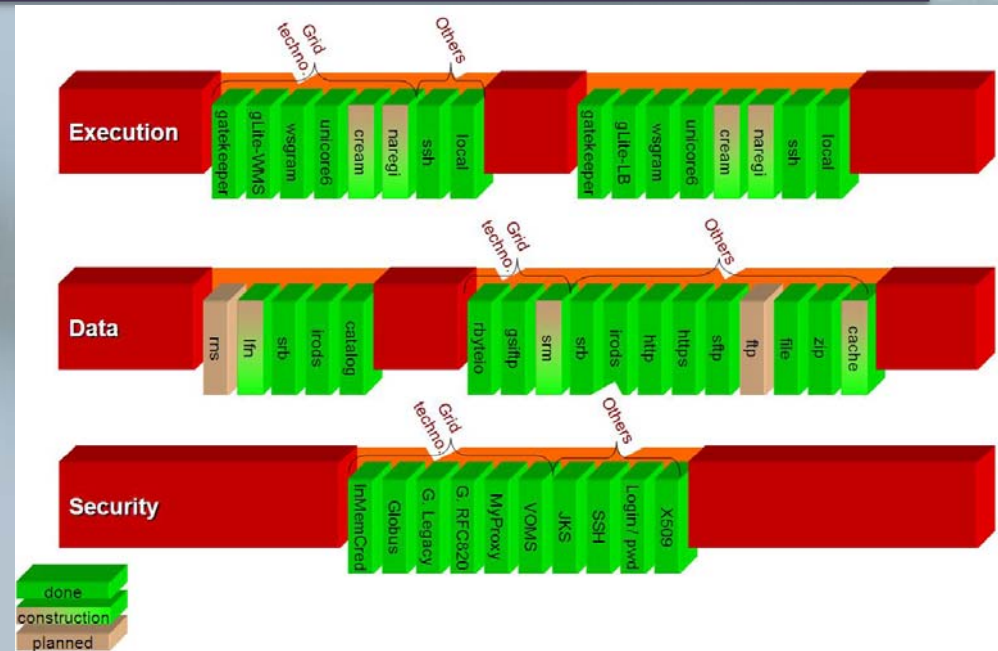
We would like to make iRODS part of the NGI standard “kit”

Interoperability – User interfaces

JSAGA is an interoperability tool developed at CC-IN2P3 based on the OGF standards SAGA and JSDL

The main idea is to hide the grid complexity to the user

Handle both
program execution
and data
management



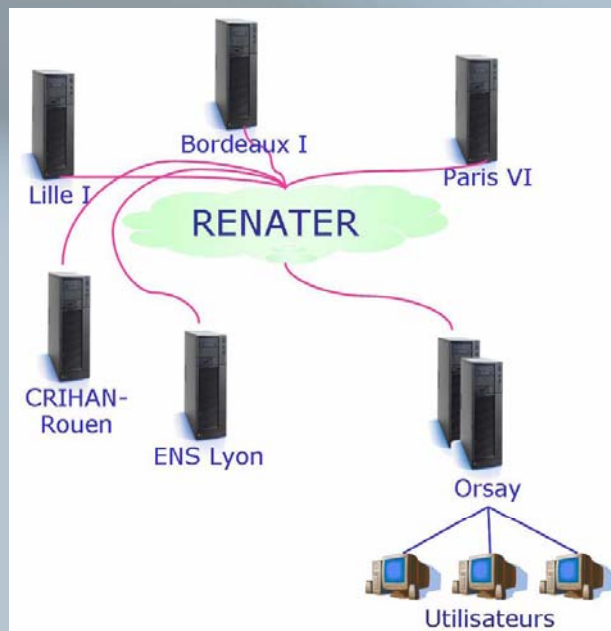
A standard central piece for user interface and portals

A JSAGA – DIRAC interface is being written – It will allow to use the pilot job concept on any grid

A collaboration between AFM – IBM – CNRS

Genomics computation to better understand genetic diseases

Molecular docking to find drugs to cure muscular dystrophy



Power G5 computers given by IBM
to 6 universities (500 Gflops)

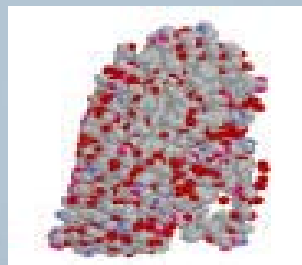
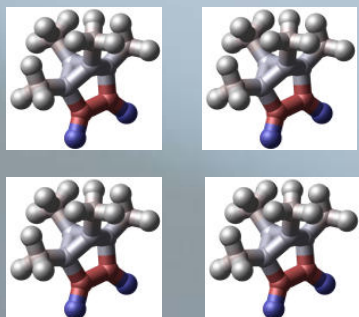
Decrypthon is running the DIET
middleware developed at ENS
Lyon (IT research team)

Connection with the community
grid: WCG

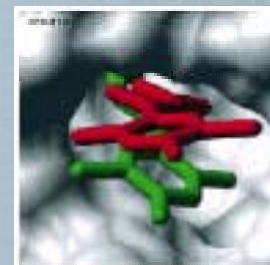
Project to interface DIET and JSAGA → interesting bridge
between the 2 communities

Results on the HCMD-II project

Ligand DB

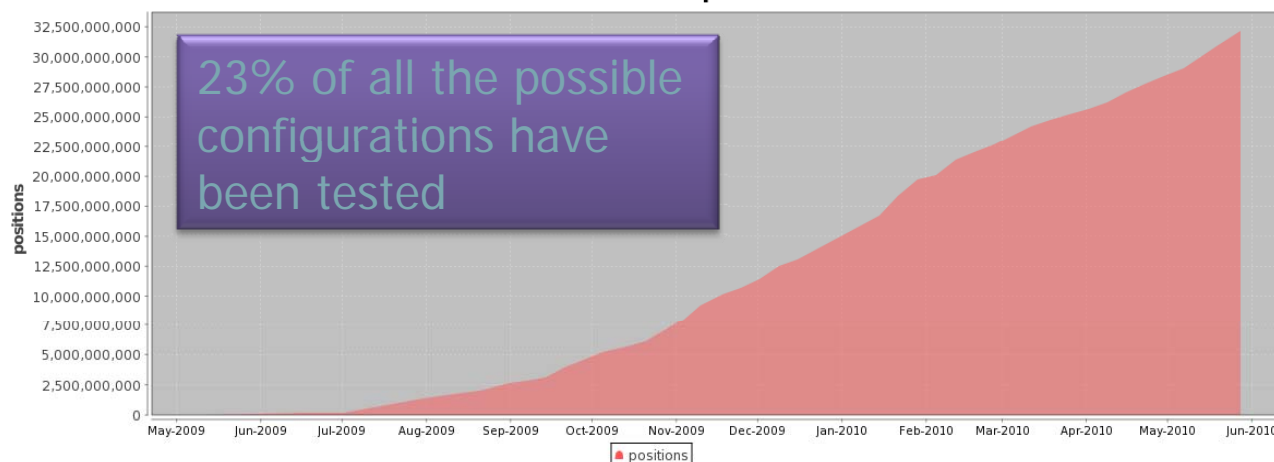


Protein



Ligand
docked on
the protein

Evolution of number of positions done.



Conclusions

- The French production grid organization is now working well, thanks to many expert people who know each others since a long time
- We are in the process to move from the EGEE organization to the EGI / NGI one
 - No special problems are expected from the operational point of view
- The focus will now be put on multidisciplinary activities running in regional grids
 - While supporting LCG who is going to stay the major resource consumer for a few years
- We need to provide flexible and simple tools if we want this to be a success
- While dominated by EGEE / gLite up to now, the French NGI is also integrating other grid activities like Decryphon and other lightweight grids