



Polska Infrastruktura  
Informatycznego Wspomagania Nauki  
w Europejskiej Przestrzeni Badawczej

# *PL-Grid & Cyfronet @Resource Centre Forum*

*EGI TF 2011*

Tomasz Szepieniec

ACC CYFRONET AGH,  
ul. Nawojki 11, 30-059 Kraków, Poland



# Mission and Model

- Mission:
  - Provide computing, storage, network capabilities to **facilitate research***
- Objective of managing resources:
  - Maximize scientific results in national science and research***
- Model:
  - Funding *mainly* by Research Council
  - Resources are *not* pre-assigned to user community
- Measured by:
  - *List of scientific papers with acknowledgements*
  - *Supported international collaborations recognized by Research Council*
- Lesson learned from 36 years of HPC/HTC:
  - ***maintain relations with users and customer satisfaction***

# Resources

- Resource
  - 12 320 cores
  - 1 PB of storage
- Access methods:
  - Local batch system
  - gLite
  - UNICORE
  - QosCosGrid
  - Cloud technologies (soon)



## TOP500 – June 2011

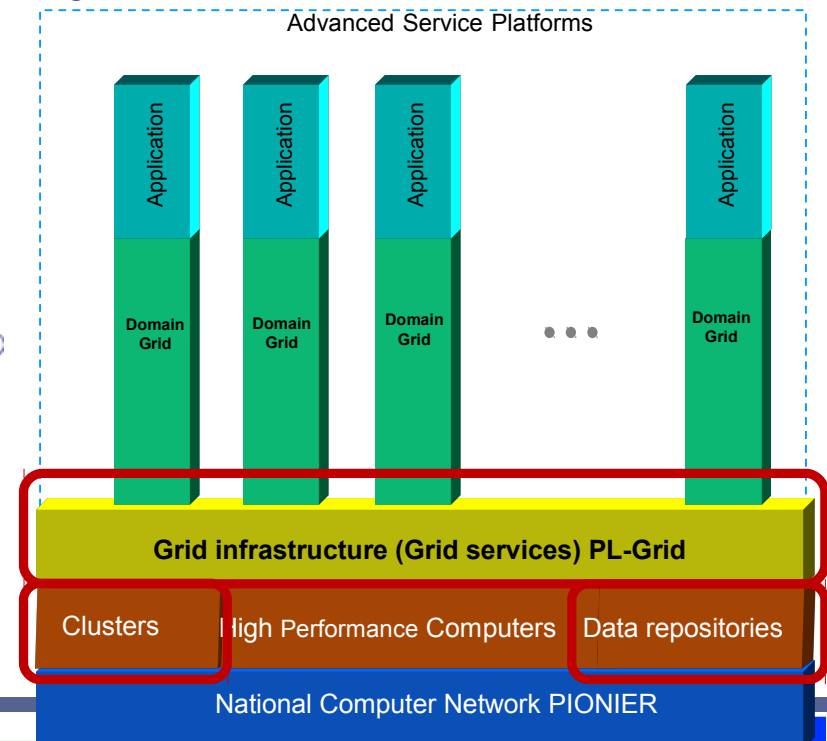
Rank	Site	System	Cores	$R_{max}$ (TFlops)	$R_{peak}$ (TFlops)
81	ACK Cyfronet AGH Poland	Cluster Platform 3000 BL2x220, L56x 2.26 Ghz, Infiniband Hewlett-Packard	11694	104.77	124.42

# PL-Grid - more than NGI PL

- ◆ Development of a common base infrastructure – compatible and integrated with international Grids
- ◆ Capacity to construct specialized, domain Grid systems – including services and tools focused on specific types of applications
- ◆ Enabling efficient use of available financial resources
- ◆ Plans for HPC and Scalability Computing, including clouds environments

## PL-Grid sites

- ◆ ACC Cyfronet AGH, Kraków
- ◆ ICM, Warszawa
- ◆ PSNC, Poznan
- ◆ WCSS, Wrocław
- ◆ TASK, Grańsk



# Support for New Communities/Projects

- Open for new communities that:
  - show a link with Polish science, or
  - has potential : seed resources, incubators, etc.
- (Theoretically) ready for financial-based usage model
  - Possible for about 30% of resources (depending on money source)
  - Resource provision mechanism in place
  - Delivery computation and storage cost assessment in progress

# New Community Example

- ◆ Astronomy: Cherenkov Telescope Array (CTA)
- ◆ ESFRI Project
- ◆ EGEE VO vo.cta.in2p3.fr since 15th August 2008
  - but limited usage
  - need to integrate internal CTA group one by one
    - Even if they are computing-aware



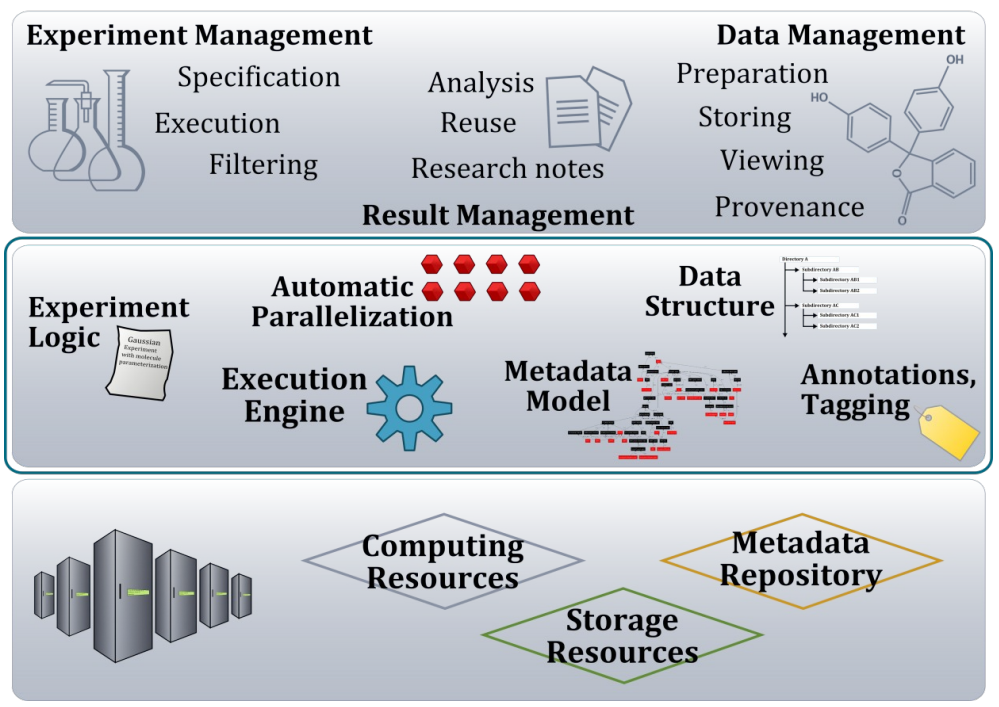
ACK: G. Lamana, D. Torres, CTA

# Support Layer Required

To increase Grid usage, the **support layer** was needed that:

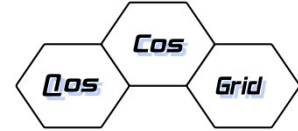


- Joins the user-domain space with the resource access layer
- Is responsible for:
  - Executing the experiment's logic
  - Automatic parallelization
  - Execution monitoring
  - Storing the user's data
  - Creating metadata - annotations, tags



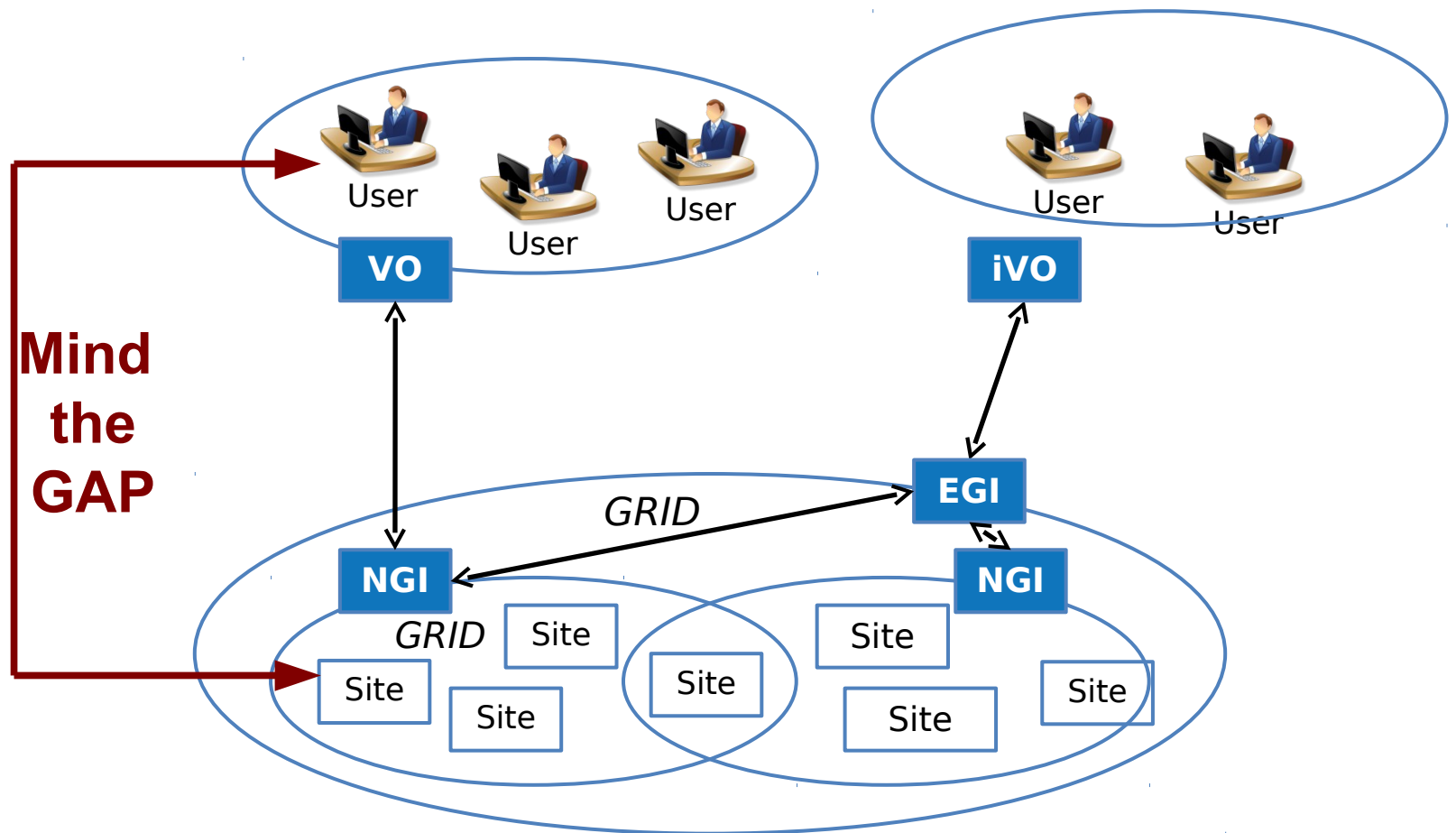
# PL-Grid Tools Offer

- ◆ Efficient Resource Allocation
  - ◆ Tools for users and systems administrators: **Grid Resource Bazaar**, mobile access to the infrastructure, new security modules
- ◆ Experimental Workbench
  - ◆ Extending of the **GridSpace2** platform with a set of new functions, support for new scripting languages and integration with new grid services
  - ◆ **InSilicoLab** – integrated environment for chemists and biologists
- ◆ Tools and Middleware
  - ◆ Integration of the **Migrating Desktop**, **VineToolkit** and **gEclipse** tools with various PL-Grid middleware services
  - ◆ **QStorMan Toolkit** – extension and deployment of **FIVO** – a new tool for VO management and monitoring
  - ◆ Novel Grid Middleware – performance and functional tests of middleware service **QosCosGrid** and integration with gLite and Unicore infrastructure at the queue systems level
  - ◆ Integration of the selected tools and web applications with Liferay **portal** framework and Nagios monitoring system





# Resource Centers in EGI Ecosystem



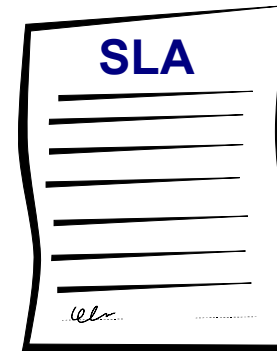
# Service Level Management – bridging the gap

*Service Level Management is to properly manage relationship with customers (ITILv3)*

- VOs motivation
  - Need way to express their expectations related to resources and services they need
  - Want to know capacity of resources allocated for them to plan experiments
- **Sites Motivation**
  - **Are autonomous in managing resource allocations for Vos**
  - **Need to know what are the customers expectations**
- NGI Motivation
  - Keeps a role of single point of contact for nationals Vos
  - Coordinates and mediate in the resource allocation process



Customer/VO



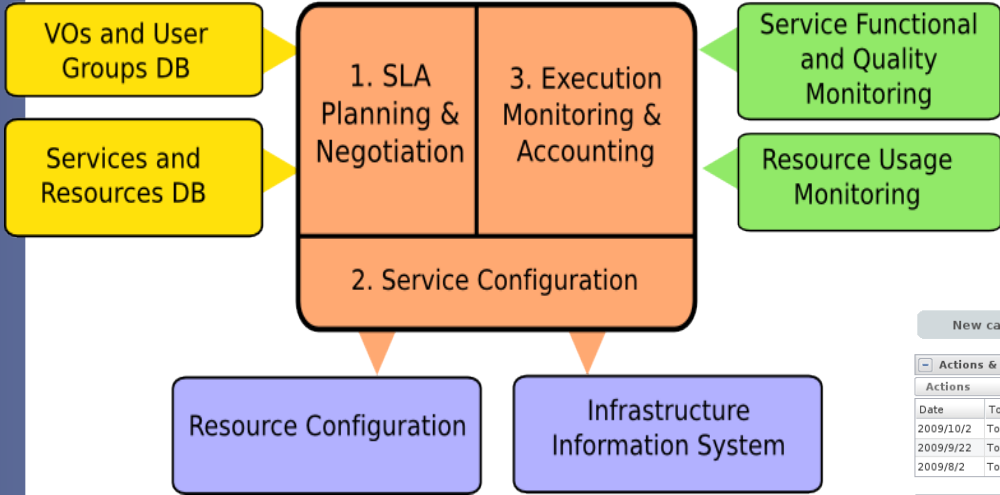
NGI operator

Resource/Service Providers



# Implementation (integrated with PL-Grid)

## Service Level Management



SLA-aware operations model

- Grid Resource Bazaar – a platform for traceable SLAs negotiations that enables efficient communication in the process; in production since June 2011
- Tools for automatic configuration of sites according SLAs in preparation

New call Date scope: Start: 1/1/1970 End: 31/8/2009

**Actions & logs**

Date	Topic	SLA	See	Det.
2009/10/2	Tomasz Szeplieniec (CYFRONET) proposed a new SLA	15		
2009/9/22	Tomasz Kukulka (jakis site) proposed a new SLA	18		
2009/8/2	Tomasz Szeplieniec (CYFRONET) accepted SLA change offer	10		

**Log**

2009/10/1 Tadeusz Szymocha (IFJ-PAN-BG) proposed a new SLA

**Chart section - CPU & STORAGE**

**List of calls**

Call name	VO Name	CPU	Stor.	Comp. Star	Comp. End	Act. Start	Act. End
alice call	alice	60	60	8/9/2009	9/30/2009	8/1/2009	9/1/2009

**List of SLAs**

ID	Site Name	CPU	CPU BE	Stor.	Stor. BE	Comp. Start	Comp. End
359	BMEGrid	0	24	0	2	8/9/2009	9/30/2009
367	BUDAPEST	0	150	0	52960	6/1/2009	4/30/2010

SLA: 367 for call: 'alice call'

**Edit Report\_MISCONFIGURED**

**Basic information:**

Related call: 426, alice call  
 VO Name: alice  
 Computation Period: 2009-06-01 - 2010-04-30

States: Main: AGREED, Activity: ACTIVE, Configuration: PREPARED

Responsible person: Malgorzata Tomanek  
 Description: Agreement registered according to BDIJ status from 1.06.2009

**Resources:**

Estimated:	cores/CPU[No.]	stor. space [GB]
	1	1
Best effort:	cores/CPU[No.]	stor. space [GB]
	150	52960

**SLA edition: SLA no. 367**

Best effort: 150  
 Number of CPUs: 150  
 Storage: 52960 GB  
 Comp. start date: 18/1/2010  
 Comp. end date: 30/4/2010

Description: Agreement registered according to BDIJ status from 1.06.2009

**Services:**

VOMS: 33  
 LFC: 44

Top BDIJ Level: adres do serw [X]  
 adres do serw [X]  
 add a new entry  
 RB/WMS: rb 1 [X]  
 rb2 [X]  
 add a new entry

Notification:

# Summary

- Initiative to understand better requirements from resource providers in EGI would be very helpful in
  - Bridging the user communities
  - Understanding business model