



Enabling Grids for E-science

# EGEE operations model

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[www.eu-egee.org](http://www.eu-egee.org)

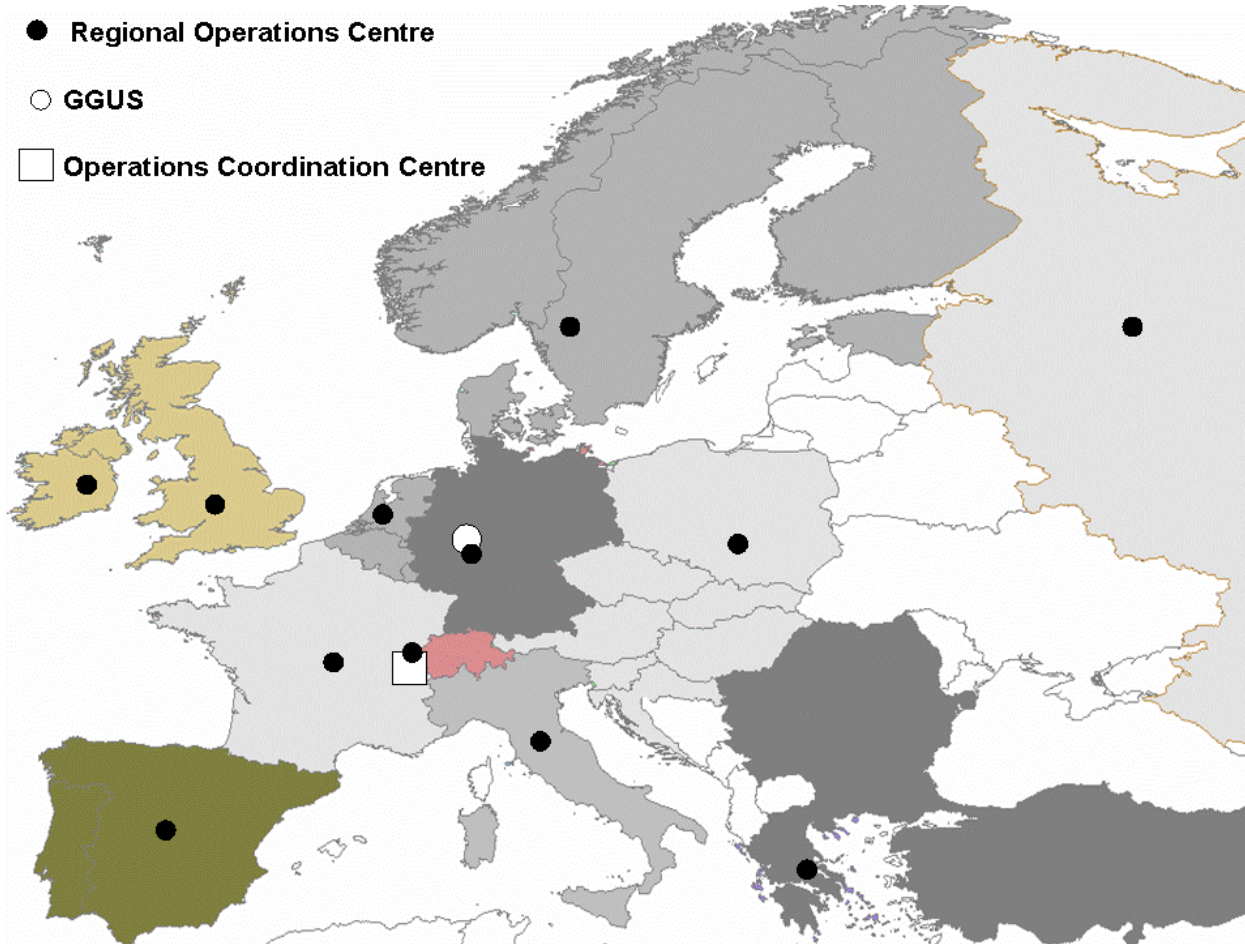


Information Society  
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- **EGEE Operations infrastructure**
- **EGEE Operations process**
  - Roles
  - Tools
  - Workflow
  - Escalation procedures
  - Site related procedures
  - Tier-2s
- **Operations coordination**
- **Summary**

- Regional Operations Centre
- GGUS
- Operations Coordination Centre



- **Operations Coordination Centre (OCC)**
- **Regional Operations Centres (ROC)**
  - Front-line support for user and operations issues
  - Provide local knowledge and adaptations
  - One in each region – many distributed (inc. A-P)
  - Manage daily grid operations – oversight, troubleshooting
    - “Operator on Duty”
  - Run infrastructure services
- **User Support Centre (GGUS)**
  - In FZK: provide single point of contact (service desk) + portal.

- **Grid operator on duty**
- **Operations coordination**
- **Geographically distributed responsibility for operations:**
  - There is no “central” operation
  - **Tools are developed/hosted at different sites:**
    - GOC DB (RAL), SFT (CERN), GStat (Taipei), CIC Portal (Lyon)
- **Procedures described in Operations Manual**
  - Linked form the CIC portal

<https://edms.cern.ch/document/701575>

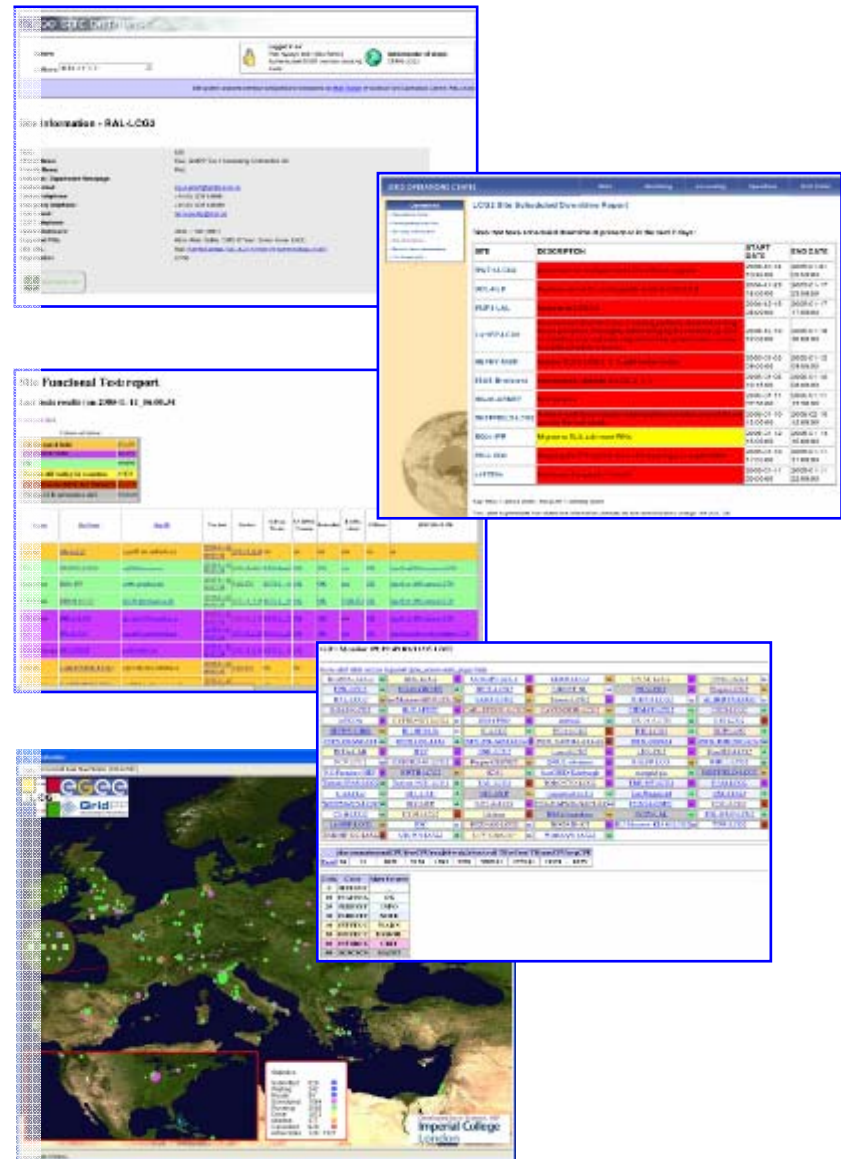
- **Role:**

- Watch the problems detected by the grid monitoring tools
- Problem diagnosis
- Report these problems (GGUS tickets)
- Follow and escalate them if needed (well defined procedure)
- Provide help, propose solutions
- Build and maintain a central knowledge database (WIKI)

- **Who does it?:**

- 8 ROC teams working in pairs (one lead and one backup) on a weekly rotation
- CERN, France, Italy, UK, Russia, Asia-Pacific, Southeastern-Europe, Central-Europe

- Tools used by the Grid Operator on Duty team to detect problems
- Distributed responsibility
- CIC portal
  - single entry point
  - Integrated view of monitoring tools
- Site Functional Tests (SFT -> SAM)
- GIS monitor
- GOC certificate lifetime
- GOC job monitor



- **Site Functional Tests (SFT)**
  - Framework to test (sample) services at all sites
  - Shows results matrix
  - Detailed test log available for troubleshooting and debugging
  - History of individual tests is kept
  - Can include VO-specific tests (e.g. sw environment)
  - Normally >80% of sites pass SFTs
    - NB of 180 sites, some are not well managed

- **Very important in stabilising sites:**
  - Apps use only good sites
  - Bad sites are automatically excluded
  - Sites work hard to fix problems

Colours definition			ver	Software Version (WN)
SD	Scheduled downtime	#a3a3a3	wn	WN host name
JL	Job list match failed	#aab3ff	ca	CA certs version
JS	Job submission failed	#f4876b	crl	CRL timestamp test
CT	Critical tests failed	#f9d48e	rm	Replica Management
NT	Non-critical tests failed	#f2f98e	votag	VO Tag management
OK	OK	#b2f98e	js	Job submission
			bi	BrokerInfo

Test summary						
	SD	JL	JS	CT	OK	total
dteam	15	12	4	6	139	176
lhcb	15	81	5	35	39	175

## Extending to service availability:

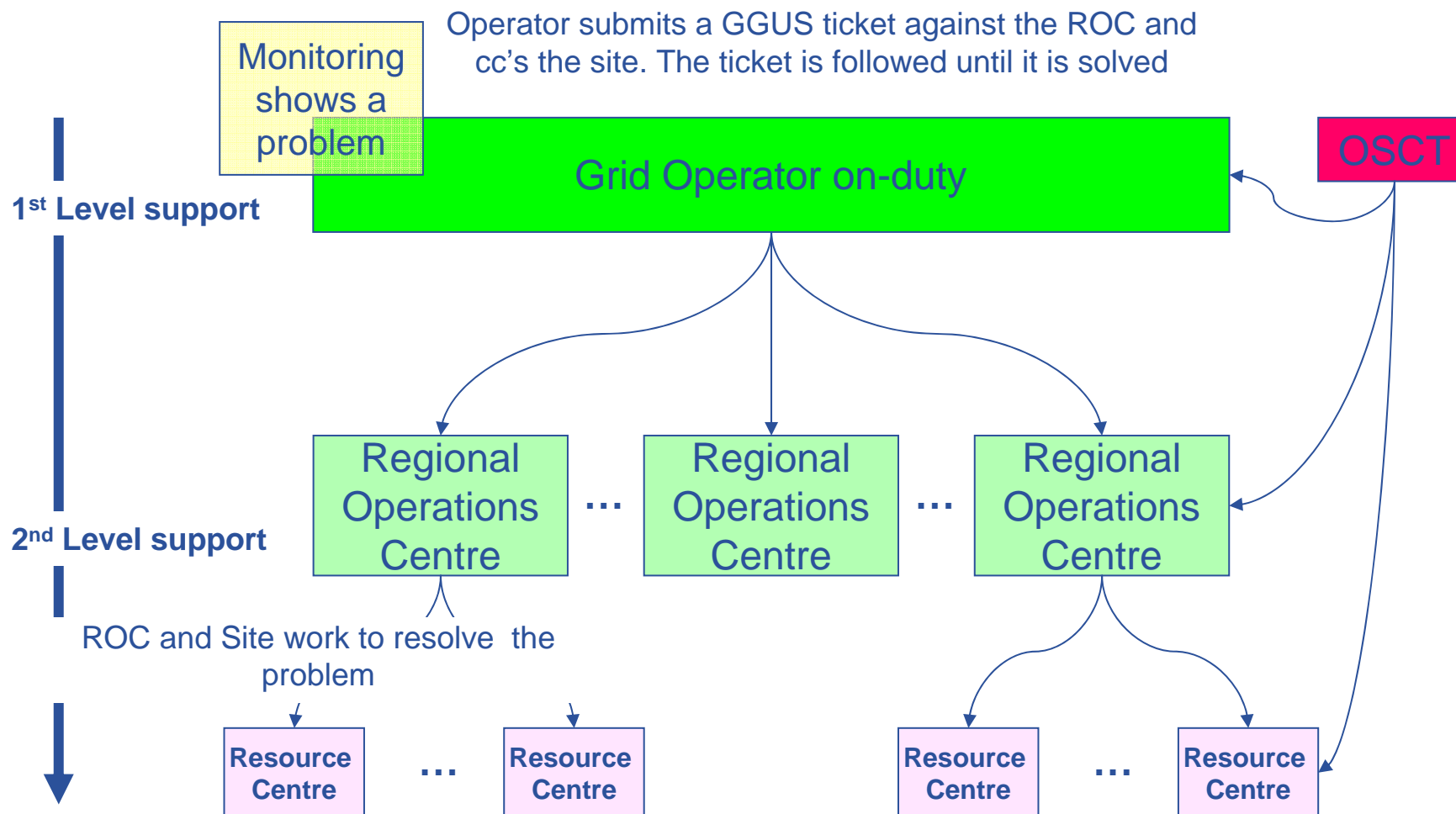
- measure availability by service, site, VO
- each service has associated service class defining required availability (Critical, highly available, etc.)

## First approach to SLA

## Use to generate alarms

- generate trouble tickets
- call out support staff

St.	Site Name	Site CE	VO dteam											VO lhcb					
			St.	js	ver	wn	ca	rgma	bi	csb	rm	votag	swdir	crl	St.	js	dirac-test		
<b>AsiaPacific</b>																			
CT	INDIACMS-TIFR	ce.indiacms.res.in	CT	O	2	6	0	I	O	O	O	O	X	O	O	!!!	JL	X	??
OK	TW-NCUHEP	grid01.phy.ncu.edu.tw	OK	O	2	6	0	I	O	O	O	O	O	O	O	!!!	JL	X	??
OK	TOKYO-LCG2	dgce0.icepp.jp	OK	O	2	4	0	I	O	O	O	O	O	O	O	!!!	JL	X	??
OK	Taiwan-LCG2	lcg00125.grid.sinica.edu.tw	OK	O	2	6	0	I	O	O	O	O	O	O	O	!!!	JL	X	??
OK	Taiwan-IPAS-LCG2	testbed001.phys.sinica.edu.tw	OK	O	2	6	0	I	O	O	O	O	O	O	O	!!!	JL	X	??
OK	GOG-Singapore	melon.ngpp.ngp.org.sg	OK	O	2	6	0	I	O	O	O	O	O	O	O	!!!	JL	X	??
OK	Taiwan-NCUCC-LCG2	ce.cc.ncu.edu.tw	OK	O	2	6	0	I	O	O	O	O	O	O	O	!!!	OK	O	O
OK	LCG_KNU	cluster50.knu.ac.kr	OK	O	2	5	0	I	O	O	O	O	O	O	O	!!!	CT	O	!!!
<b>BNL</b>																			
SD	BNL-LCG2	lcg-cc01.usatlas.bnl.gov	SD	X	??	??	??	??	??	??	??	??	??	??	??	??	SD	X	??
<b>Canada</b>																			
JL	TORONTO-LCG2	bigmac-lcg-ce.physics.utoronto.ca	JL	X	2	6	0	I	O	O	O	O	O	W	O	!!!	OK	O	O
11.	SD	CARLETONU-LCG2	lcg02.physics.carleton.ca	SD	X	??	??	??	??	??	??	??	??	??	??	??	SD	X	??
12.	OK	TRIUMF-LCG2	lgce01.triumf.ca	OK	O	2	6	0	I	O	O	O	O	O	O	O	OK	O	O
13.	OK	Umontreal-LCG2	lcg-ce.lps.umontreal.ca	OK	O	2	6	0	I	O	O	O	O	W	O	!!!	OK	O	O





<i>Action taken</i>	<i>Low</i>	<i>normal</i>	<i>high</i>
1st mail to site admin and ROC	3	3	1
2nd mail to ROC	3	3	1
phone call to ROC	3	3	1
final mail to ROC	immediate	immediate	immediate
weekly operations meeting call	asap	asap	asap
Mail to OCC for validation	asap	asap	asap
site suspension	asap	asap	asap

- **Introducing a new site**
  - The ROC is the contact point
  - ROC registers the site and sets the Initial site status to *uncertified*
  - After SFTs run OK for a week -> certified
- **Site downtime scheduling**
  - EGEE resources need to be switched off properly in order not to disturb operations
  - Set downtime period in GOCDB and tick off “monitoring” for the affected nodes
  - Announce the downtime through the EGEE broadcast tool
  - “GlueCEStateStatus: Closed”
- **Required site contacts**
  - Stored in GOCDB
- **Suspending a site**
  - The site is then removed from the top-level BDII and monitoring is turned off

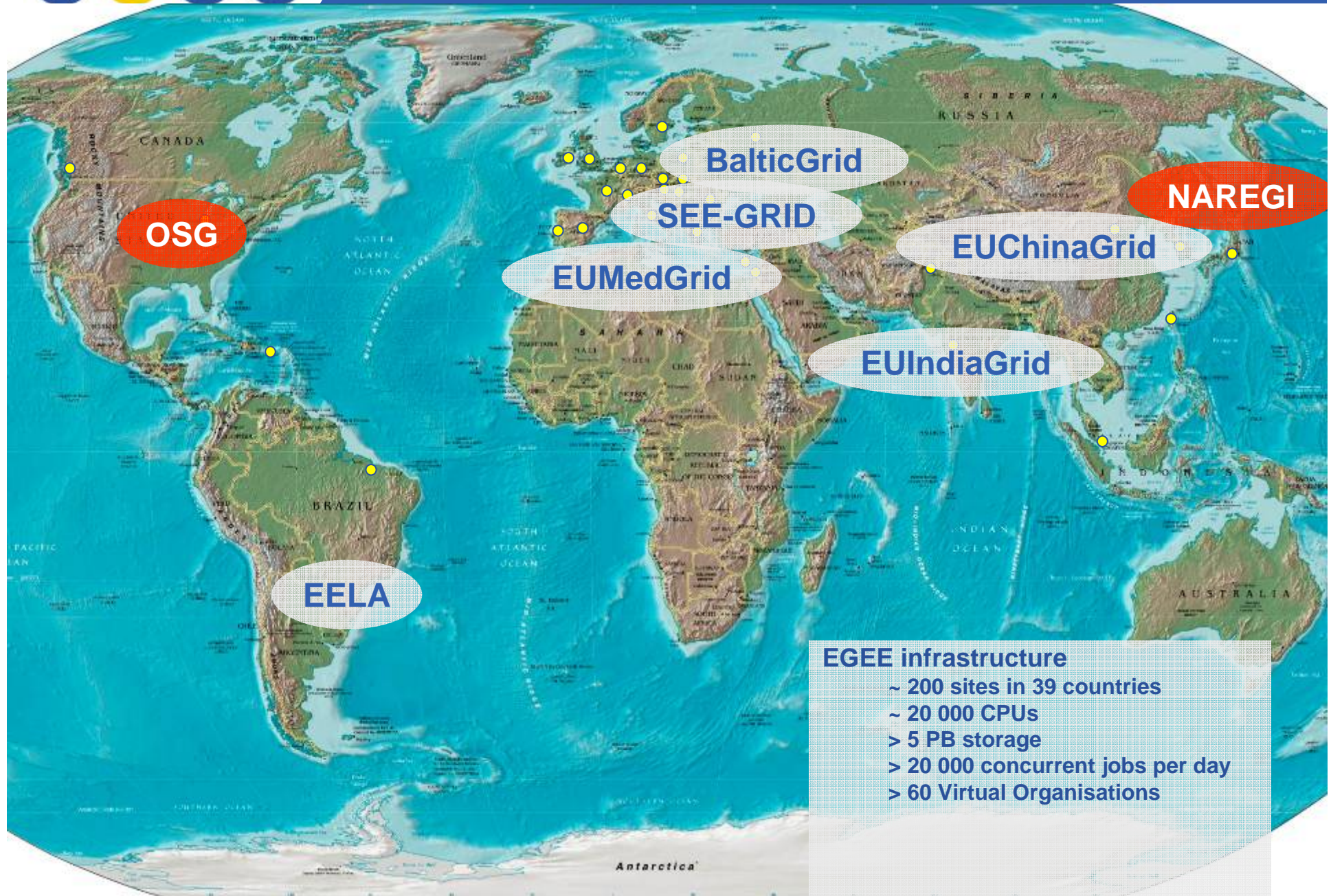
- **ROC managers meeting**
  - Biweekly
  - Discuss inter-ROC issues, general coordination, interfaces with other activities
- **Operations meeting**
  - Weekly, Mondays at 16:00 (Swiss time)
  - WLCG/OSG/EGEE
  - Pre-reports from sites, ROCs and VOs through CIC portal
  - Discuss, track and solve operation related issues from the previous week
- **Interoperations**
  - Monthly phone conferences with OSG to synchronize/interface our processes
- **Operation Workshops**
  - Twice per year.
  - Next one: next week, 19<sup>th</sup> and 20<sup>th</sup> of June

<http://agenda.cern.ch/fullAgenda.php?ida=a062031>

- **Infrastructure contact is the ROC**
  - Deployment and general operations support
  - The ROC is the one raising the points to be discussed at the weekly operations meeting
- **Important: Fill weekly site reports**
- **Follow the defined procedures (announce downtime, register services, etc) AND report the problems/holes and be proactive: propose enhancements, new processes, new grid monitoring sensors, documentation, etc**



# A global, federated e-Infrastructure



**EGEE infrastructure**

- ~ 200 sites in 39 countries
- ~ 20 000 CPUs
- > 5 PB storage
- > 20 000 concurrent jobs per day
- > 60 Virtual Organisations

- **Regional Operation Centres (ROCs) are the central point for the EGEE infrastructure and operations**
  - Tier-2s should refer to their associated ROC
- **Proactive participation in daily operations is essential**
  - Reports and attendance to weekly meetings
  - Contributions to process and tools
- **Well defined operation procedures, continuously reviewed and improved to match the WLCG needs**
- **Ongoing interoperation with OSG**