Advancing South-East Europe into the eInfrastructure era

www.see-grid.eu

South Eastern European GRid-enabled eInfrastructure Development

\<Name\>
\<Organization name\>

- SEE-GRID-1 project May 2004 - May 2006: results

- SEE-GRID-2 project May 2006 - May 2008:
  - Definition
  - Objectives
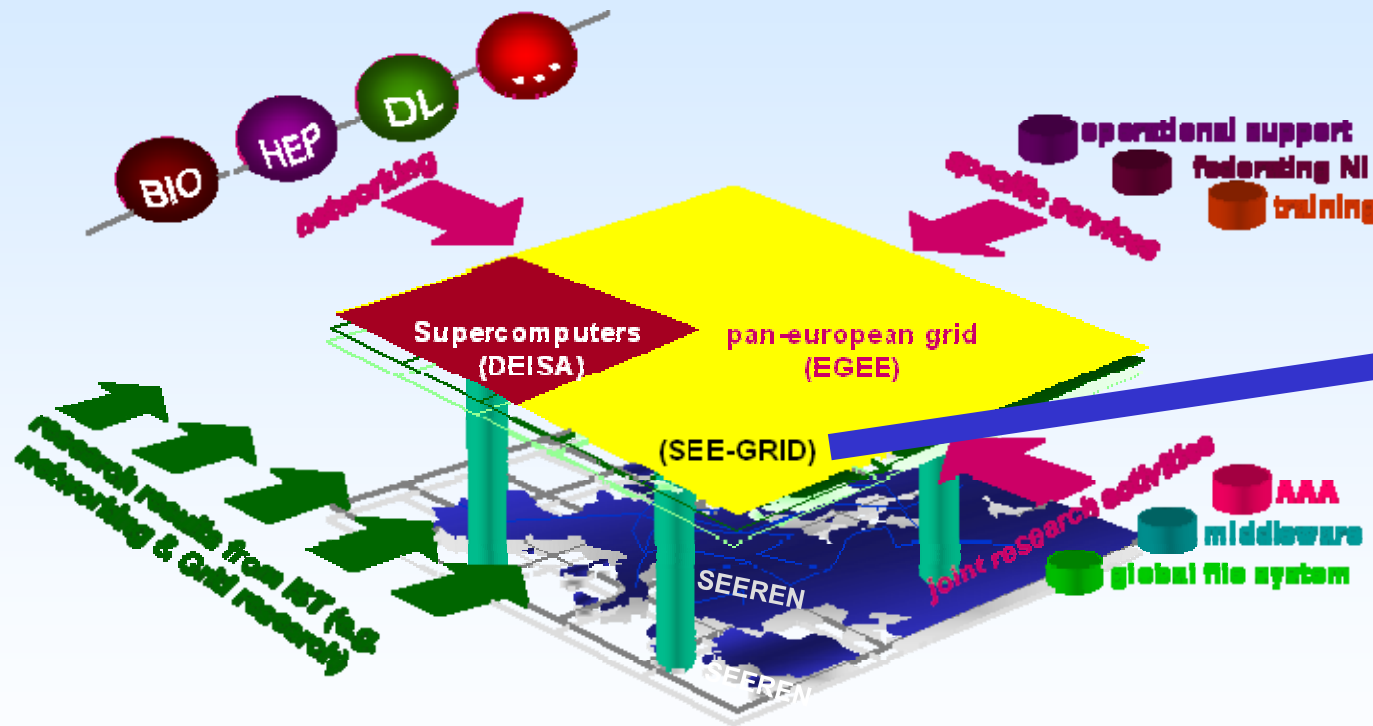
- Recommendations for regional initiatives

The SEE-GRID-1 initiative

Contribute to building a worldwide Infrastructure by expanding the "eInfrastructure inclusion" into South-East Europe

> **http://www.see-grid.org**
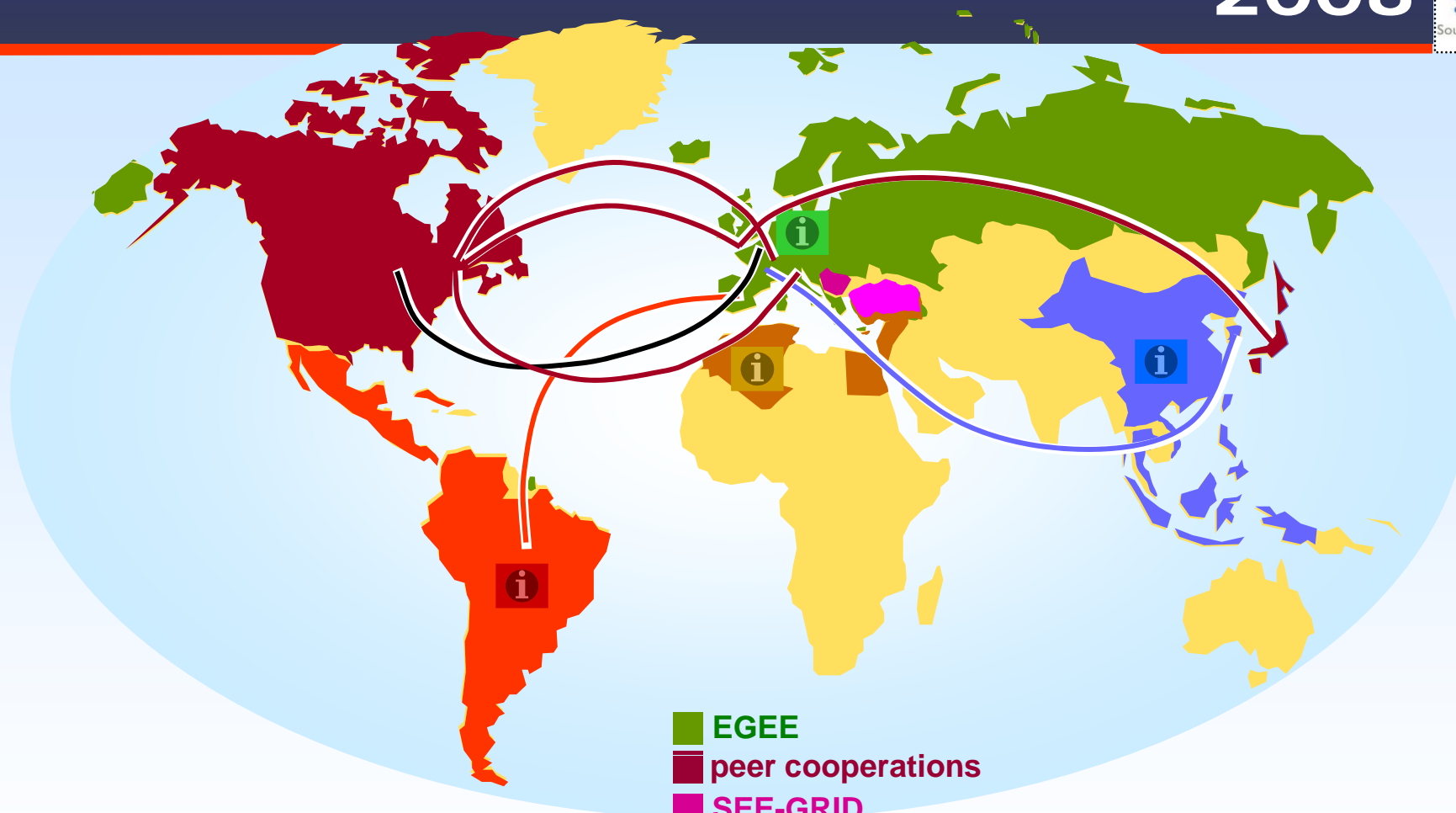
Grids: regional expansion 2004-2008

- **EGEE**
- **peer cooperations**
- **SEE-GRID**
- **BalticGrid**
- **EUMEDGRID, EXPRESS**
- **EELA, RedCLARA**
- **EUChinaGrid**

Contractors

GRNET	Greece
CERN	Switzerland
SZTAKI	Hungary
IPP-BAS	Bulgaria
ICI	Romania
TUBITAK	Turkey
INIMA	Albania
BIHARNET	Bosnia-Herzegovina
UKIM	FYR of Macedonia
UOB	Serbia-Montenegro
RBI	Croatia

Third Parties

18 universities / research centres

Pan-European Production Quality Grid Infrastucture

GRNET .gr · MTA SZTAKI .hu · BAS .bg · ICI .ro

South East Europe Pilot Grid Infrastructure

TUBITAK .tr · RBI .hr · INIMA .al · AMREJ .yu · MARNET .mk · BIHARNET .ba
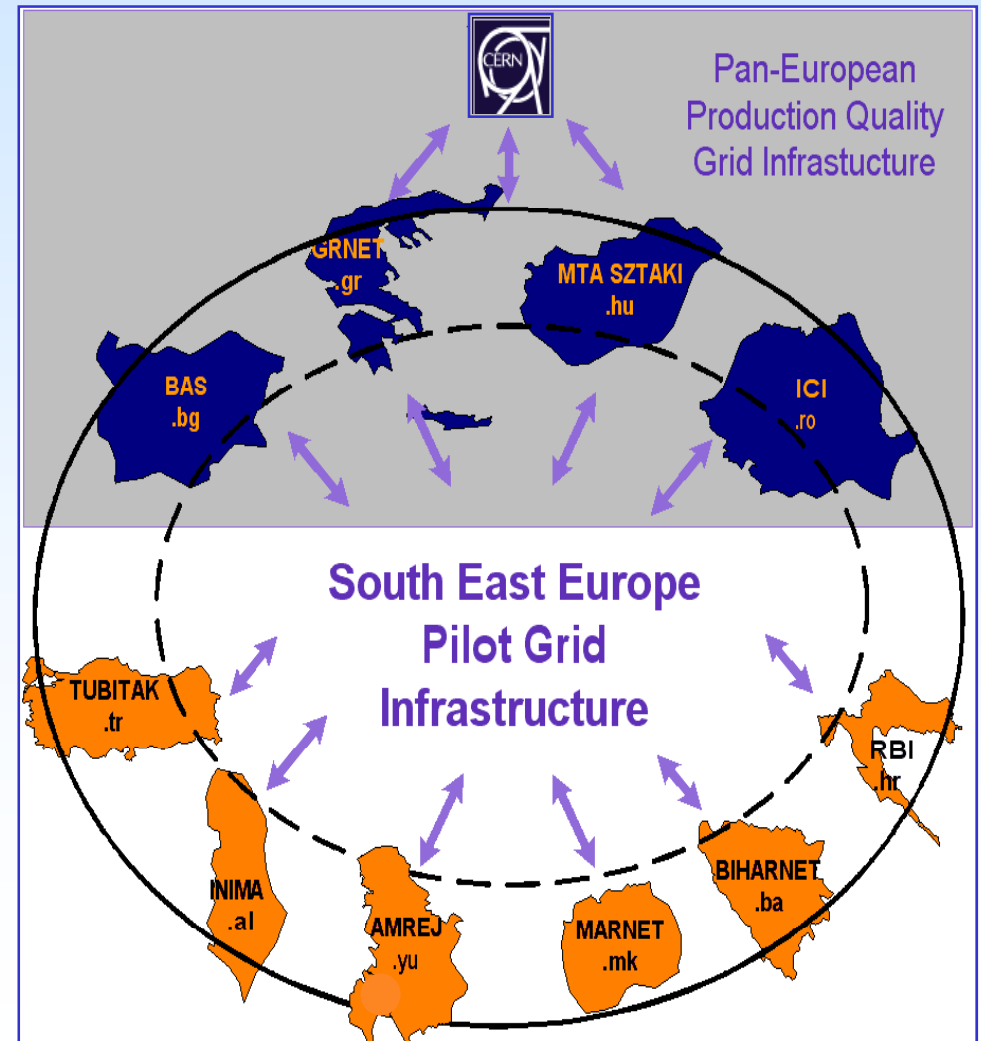
SEE-GRID-1 key results: infrastructure

- Large, distributed infrastructure spanning all countries:
    - Including EGEE-SEE sites, without GR and HU: 30 sites, 450 CPUs
    - 150 CPUs in 20 non-EGEE-SEE sites
- LCG-2 MW on Scientific Linux
- Support the SEE-GRID Virtual Organization
- Interconnection of SEE sites by P-GRADE portal
- Catch-all SEE-GRID CA operational
- Overlap with EGEE production
- Operations centre management solutions deployed: a number of monitoring tools, helpdesk, sites database, etc...

SEE-GRID and EGEE

- Infrastructure overlapping and complementing to EGEE
- SEE-GRID open to new "fresher" sites
- SEE-GRID open to new applications

EGEE-wide VOs
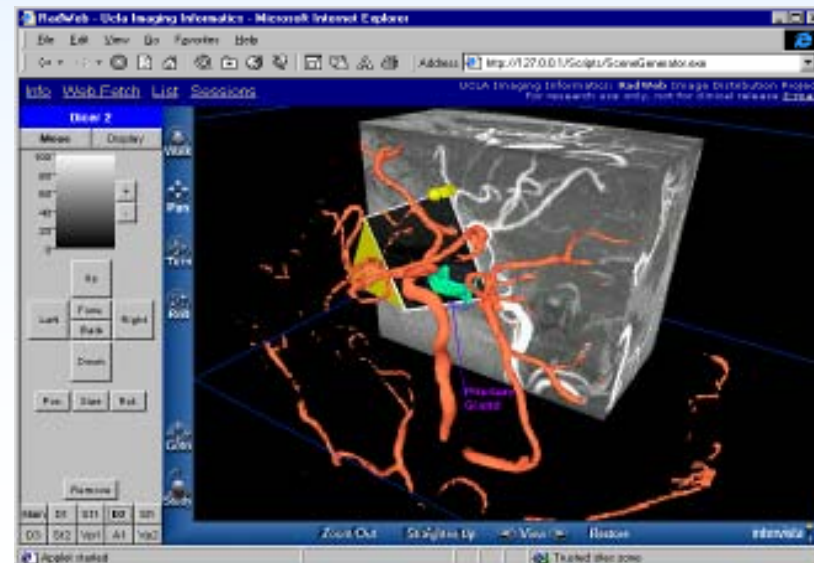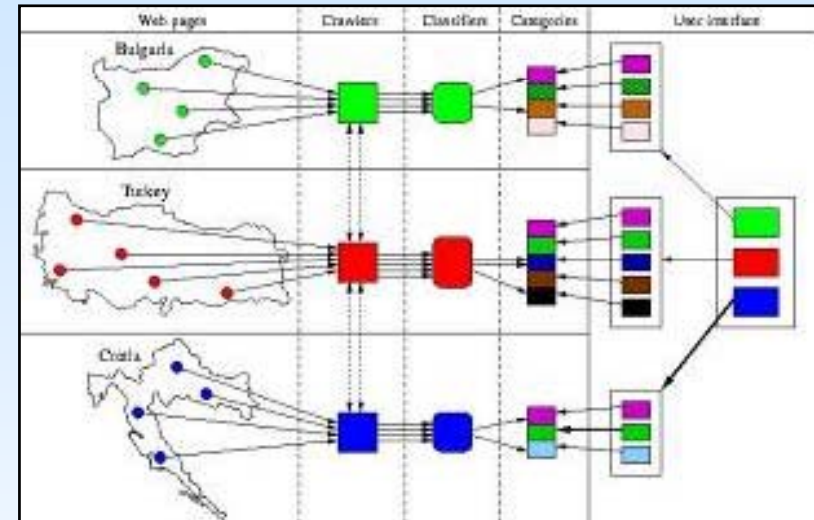EGEE-SEE core services

SEE-GRID VOs
SEE-GRID core services

EGEE-SEE Grid   SEE-GRID Grid

- 2 regional grid applications developed:
  - **Search Engine for South-East Europe (SE4SEE)** for Grid-aided web-crawling & data indexing.
  - **Volumetric Image Visualization Environment (VIVE)** for medical images and other static or time-dependent scalar and vector 3D fields

SEE-GRID-2 project partners: expansion

Start date:	01/05/2006
Duration:	24 months
Total Budget:	2,028,886 €

Contractors

GRNET	Greece
CERN	Switzerland
SZTAKI	Hungary
IPP-BAS	Bulgaria
ICI	Romania
TUBITAK	Turkey
ASA/INIMA	Albania
UoBL	Bosnia-Herzegovina
UKIM	FYR of Macedonia
UOB	Serbia
UoM	Montenegro
RENAM	Moldova
RBI	Croatia

Third Parties

27 universities / research centres

SEE-GRID-2: new directions

- Policy-focused deployment strategy
    - Shift priority from a "<u>top-down</u>" approach towards a a "<u>bottom-up</u>" approach (i.e. from regional project execution to national implementation)
    - Achieve Grid uptake beyond the R&E community (-> government, policy-makers, dialogue with industry...)
- Growth of infrastructure
    - Expand regionally to include new countries/areas and widen the SEE eInfra community
    - Expand nationally to include new sites/institutes and strengthen collaboration in each country
- Application-driven deployment approach
    - serve the needs of diverse and multi-disciplinary communities
    - extend the user-base – USE the grid, USE the network, USE the Infrastructure

Work organization

- WP1 - Project management

- WP2 – Sustainability
  - Studies and Strategies for sustainable operational, organizational and policy schemes

- WP3 - eInfrastructure expansion and operations support

- WP4 - User community enlargement and applications support

- WP5 - Training, dissemination and communication
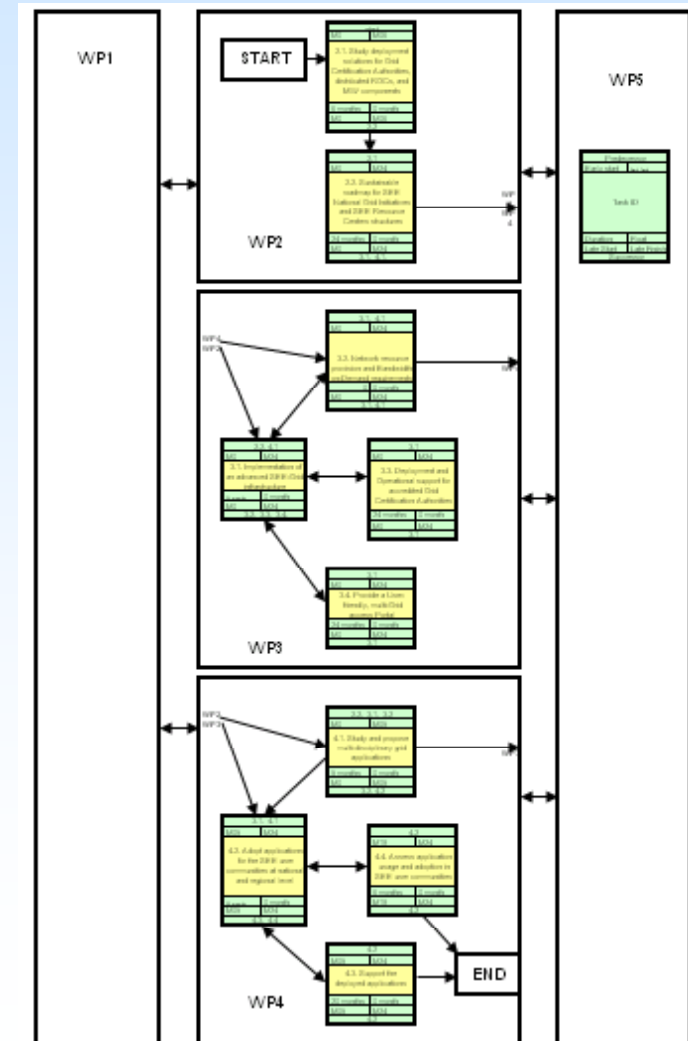
SEE-GRID-2 objectives: ensure sustainable development

- Clear NGI strategy

- National government commitment and support for incubating NGIs

- Build solidarity and cooperation with research and academic organizations at national level

- Engage regional and national user communities

- Build long-term operational solutions: operations centres, CAs, etc, in each country

Strategic priority: NGIs

- Formation of stable NGIs is the key to long-term sustainability

- National Grid Initiatives are concerted efforts taken at National level in order to deploy, operate, and expand grid infrastructures in a coherent and coordinated way

- Usually involves the inter-connection and inter-operation of academic and research-based resource centers under an umbrella of a national program aiming to integrate the available resources

SEE-GRID-2 objectives: upgrade SEE grid infrastructure

- Upgrade the capacity of the regional pilot infrastructure
- Guarantee stability and interoperability of the infrastructure
- Support the accreditation of national Grid CAs.
- Strengthen operations at national level
- Deploy portal technology for accessing the grid and supporting application development and deployment
- Collaborate with other EGEE-based grid projects (EUMEDGRID, BalticGrid, EELA)
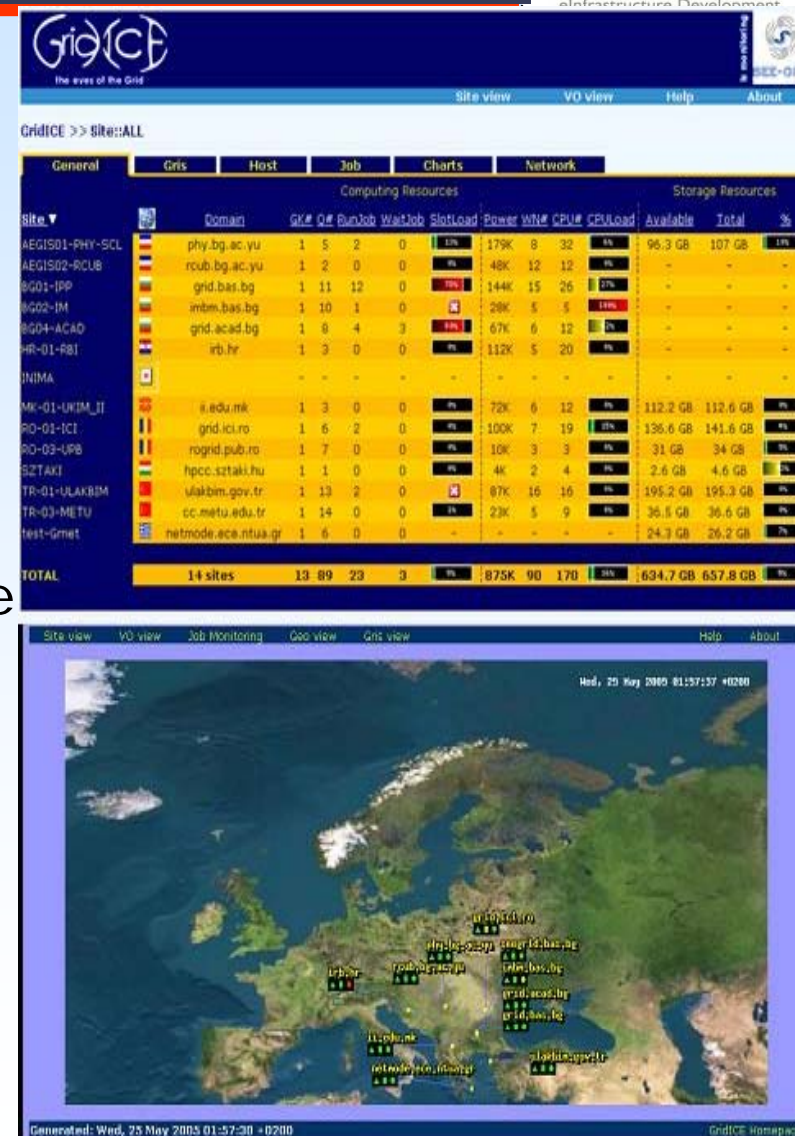
Current infrastructure

- Number of Countries: 11
- Number of Sites: 31
- Number of CPUs: 540
- TBs of Storage: 11.64

- Migrating from LCG to gLite
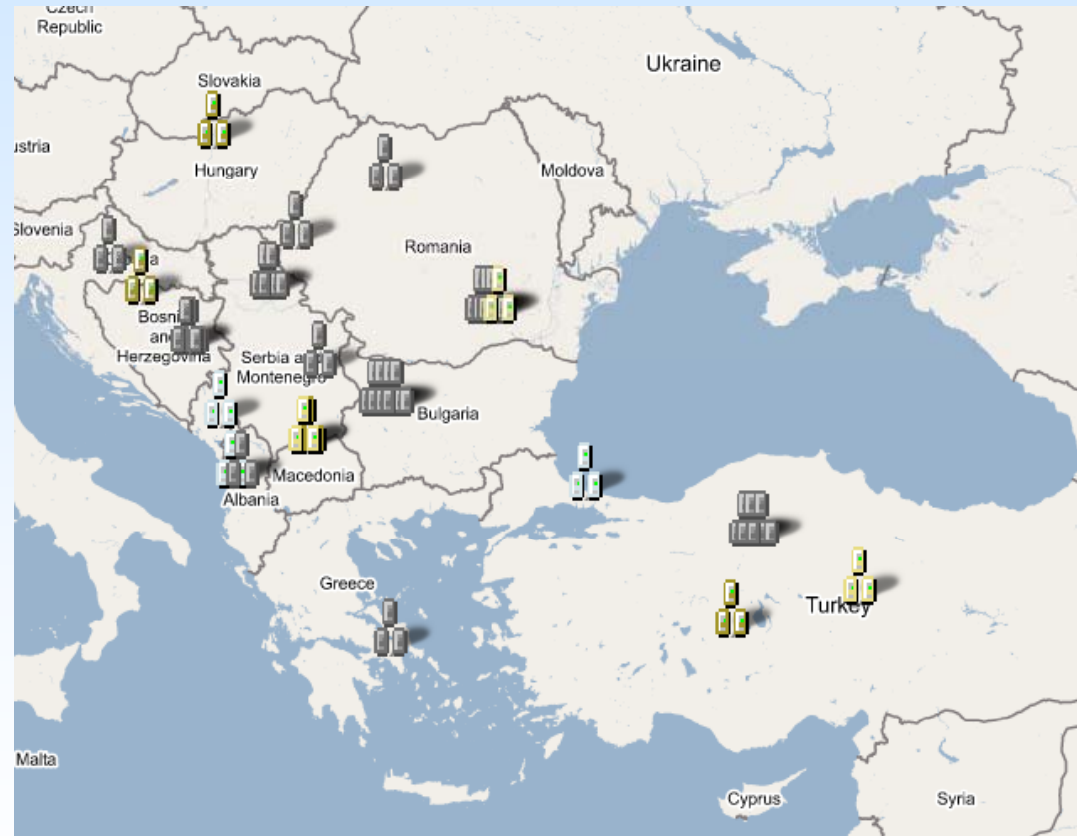
Infrastructure management: monitoring

No	Site Reports	GIIS Host	bnode	cernse	gperf	sanity	serv	version	totalCPU	freeCPU	runJob	waitJob	seAvail TB	seUsed TB	maxCPU	avgCPU
1	AEGIS01-PHY-SCL	ce.phy.bg.ac.yu	ok	ok	ok	ok	ok	GLITE-3_0_1	100	1	99	276	0.06	0.07	100	95

General | **Gris** | **Host** | **Job** | **Charts** | **Network**

Computing Resources / Storage Resources

Site ▼		Domain	GK#	Q#	RunJob	WaitJob	SlotLoad	Power	WN#	CPU#	CPULoad	Available	Total	%
AEGIS01-PHY-SCL		phy.bg.ac.yu	1	8	99	2	99%	560K	25	100	99%	135.2 GB	278.5 GB	51%
AEGIS02-RCUB		rcub.bg.ac.yu	1	3	6	0	51%	48K	12	12	11%	112.2 GB	199.2 GB	44%
AEGIS03-ELEF-LEDA		elfak.ni.ac.yu	1	3	0	0	0%	19K	4	4	0%	8.5 GB	9.3 GB	9%
AL-01-INIMA		salla6.inima.al	1	2	1	28	0%	4K	3	3	1%	1.2 GB	9.1 GB	87%
AL-02-FIE		fie.upt.al	2	6	0	26664	–	45K	8	8	0%	47.5 GB	49.1 GB	3%
BA-01-ETFBL		grid.etfbl.net	1	2	0	0	0%	17K	2	3	0%	147.2 GB	149.5 GB	2%
BA-02-ETFIS		etf.unssa.rs.ba	1	2	0	10	✖	29K	3	6	0%	24.1 GB	29.8 GB	19%
BA-04-PMFSA		pmf.unsa.ba	1	2	3	0	100%	40K	7	9	4%	33.6 GB	34.4 GB	2%
BG01-IPP		grid.bas.bg	1	10	0	1	0%	–	–	–	–	591.7 GB	705 GB	16%
BG02-IM		imbm.bas.bg	1	5	4	15	80%	–	–	–	–	15.4 GB	32.9 GB	53%
BG04-ACAD		grid.acad.bg	1	10	1	3	0%	373K	39	78	14%	27 GB	70.3 GB	62%
BG05-SUGrid		grid.uni-sofia.bg	1	9	12	87	86%	–	–	–	–	58.5 GB	83.5 GB	30%
HR-01-RBI		irb.hr	1	4	0	2	75%	112K	5	20	0%	60.8 GB	64.6 GB	6%
MK-01-UKIM_II		ii.edu.mk	1	4	0	5	0%	72K	6	12	0%	327.5 GB	337.7 GB	3%
MK-02-ETF		etf.ukim.edu.mk	1	2	0	0	0%	–	–	–	–	–	–	100%
MREN-01-CIS		cg.ac.yu	1	2	0	0	0%	25K	2	4	0%	64.6 GB	67.7 GB	5%
RO-01-ICI		grid.ici.ro	1	8	8	8	88%	–	–	–	–	410.7 GB	433 GB	5%
RO-03-UPB		rogrid.pub.ro	1	3	0	0	0%	20K	6	6	0%	29.9 GB	34 GB	12%
RO-08-UVT		info.uvt.ro	1	7	0	1	0%	–	–	–	–	298.2 GB	299 GB	0%
RO-09-UTCN		mosigrid.utcluj.ro	1	3	0	0	0%	–	–	–	–	196 GB	216.6 GB	9%
SZTAKI		hpcc.sztaki.hu	1	2	0	0	0%	–	–	–	–	17.9 GB	18.7 GB	4%
TR-01-ULAKBIM		ulakbim.gov.tr	1	14	24	25	73%	665K	125	125	60%	2.7 TB	3.1 TB	11%
TR-02-BILKENT		cs.bilkent.edu.tr	1	13	0	0	0%	12K	1	2	0%	128.7 GB	205.1 GB	37%
TR-03-METU		cc.metu.edu.tr	1	13	0	0	0%	3K	1	1	0%	46 GB	50.3 GB	8%
TR-04-ERCIYES		erciyes.edu.tr	1	13	0	0	0%	–	–	–	–	97.3 GB	102.6 GB	5%
TR-05-BOUN		grid.boun.edu.tr	1	13	0	0	0%	–	–	–	–	30.8 GB	34.7 GB	11%
TR-06-SELCUK		selcuk.edu.tr	1	13	6	60	100%	–	–	–	–	24.5 GB	33.2 GB	26%
test-Grnet		netmode.ece.ntua.gr	1	2	0	27	–	–	–	–	–	29.3 GB	32.9 GB	11%
TOTAL		**28 sites**	**29**	**178**	**164**	**26938**	**27%**	**2M**	**249**	**393**	**12%**	**5.6 TB**	**6.6 TB**	**23%**

Infrastructure management: Helpdesk, database, wiki

Using the infrastructure

- Going to website www.seegrid.eu
- Talking to the SEEGRID representative in the country
- Obtaining a certificate from SEE-GRID catch-all CA
- Joining the SEE-GRID VO
- Asking local country Grid team to provide support

- Currently 10+ new applications under development, ~20 in the course of the project

Conclusions

- SEE-GRID was the first step for regional eInfrastructure integration

- SEE-GRID-2 is the next step towards SUSTAINABLE Grid-related ACTIVITIES (NOT just infrastructure!) in the SEE region

- SEE-GRID-2 is open for discussions, feedback, inputs to other related regional initiatives