

EU Research Information Event  
Towards Integration into the European Research Area  
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# e-Infrastructure Development in Serbia

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**seeRaei**

South East European  
Research Area  
for eInfrastructures



June 29, 2009



# eInfrastructure

- **Network**  
basic underlying physical infrastructure
- **e-Science grids**  
middleware layer to pool distributed resources
- **Scientific data**  
the knowledge layer
- **Supercomputing**  
increase competitiveness of the research by providing HPC resources
- **Virtual research communities**  
innovative way of doing e-Science

# Policy

- European level:
  - ESFRI + eIRG
  - Overcoming the “digital divide” EC comm’s
- Regional level:
  - “Action Plan of EU-Balkan countries in the sector of R&D”, Thessaloniki 2003
  - “eSEE AGENDA +”, Sarajevo 2007
  - Projects: SEERA-EI, WBC-INCO-NET, SCORE, WINS-ICT, ...
- National level:
  - In preparation;  
eInfrastructures one of core priorities

# Network



- **AMRES** = Academic and Research Network of Serbia (<http://www.amres.ac.rs/>)
- Coordinating institution: Belgrade University Computing Centre (RCUB)
  - central infrastructure, operational and management node in AMRES
  - 30 employees
  - knowledge and experience in ICT (development, implementation, know-how, maintenance, support)
- International dimension:
  - Pan-European: GEANT3
  - Regional: SEELIGHT, SEERA-EI
  - Finished projects: SINSEE, SEEREN, SEEREN2, SEEFIRE

# Network today



AMRES

Akademika mreža Srbije

## Layout:

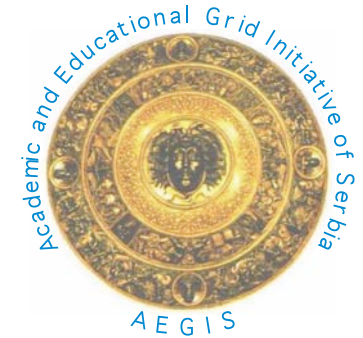
- 155 members
- 100,000 active users
- 2100 km fibre links
- 20 cities

## Services:

- IPv4 multicast
- IPv6 multicast
- Eduroam service (in final stage of joining)

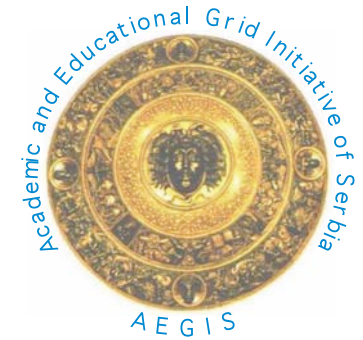


# Grid



- **AEGIS** = Academic and Educational Grid Initiative of Serbia (<http://www.aegis.rs/>)
- Founded in April 2005
- Mission:  
To provide Serbian research and development community with reliable and sustainable grid infrastructure.
- Coordinating institution: Institute of Physics Belgrade
  - central infrastructure, operational and management node in AEGIS
  - national focal point for HPC
- International dimension:
  - Pan-European: EGEE-III
  - Regional: SEEGRID-SCI, SEERA-EI
  - Finished projects: EGEE-II, SEEGRID, SEEGRID-2

# Grid today



## Infrastructure:

- 9 core sites
- 1000 CPUs
- 40 TB storage space

## Services:

- AEGIS CA
- Grid core services: VOMS, WMS, LB, BDII, LFC, PX
- Operational support
- Training



# Supercomputing



- National Supercomputing and Data Storage Center Project – Blue Danube
  - Duration: 7 years
  - Coordinator: Institute of Physics Belgrade
- Objectives
  - eInfrastructure development
  - Development of human resources
  - Increasing competitiveness of R&D sector
  - Opening up new R&D venues
  - Collaboration with industry
- International dimension:
  - Pan-European: PRACE
  - Regional: SEERA-EI

# Knowledge layer

## Data

- KoBSON library documentation consortium
  - > 35K journals available
  - ≈ 1M articles downloaded in 2007
  - Indexing of Serbian research papers

## Virtual organizations

- AEGIS catch-all national VO
- Participation in regional catch-all VOs: SEE, SEE-GRID
- Discipline VOs: METEO, ENV, SEISMO
- European VOs: ATLAS, CMS

# Summary

- The importance of eInfrastructure recognized; full sustainability is not achieved.
- Network and Grid are success stories; HPC and knowledge layer are in development.
- Full integration at European and Regional levels achieved; particularly successful sequence of regional projects (SEEREN, SEEREN2, SEE-GRID, SEE-GRID-2, SEE-GRID-SCI, SEERA-EI)



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