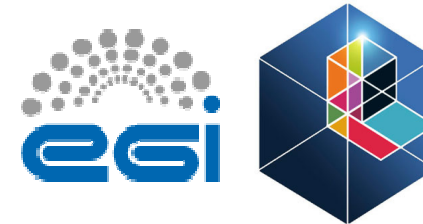


IMI AȘM, RENAM, IDSI, eGov



HP-SEE

High-Performance Computing Infrastructure
for South East Europe's Research Communities



Probleme actuale privind implementarea serviciilor federative în RM

Dr. Petru Bogatencov

www.renam.md www.math.md www.idsi.md

AGENDA

❑ **Premisele pentru implementarea sistemului centralizat de management al identității în cadrul RȘEN**

Raportor: Valentin Pocotilenco, RENAM (20 min.)

❑ **Starea actuală privind implementarea și utilizarea serviciilor în comunitatea științifico-educativă**

Rapoarte: Nicolai Iliuha, IMI ASM, RENAM (15 min.)
Alexandru Cacean, IDSI (10 min.)
Pavel Roșca, RENAM (7 min.)

eInfrastructures – new way of doing SCIENCE

The new research environment in which all

researchers - whether working in the context of their home institutions or in national or multinational scientific initiatives - have shared access to unique or distributed scientific facilities (including data, instruments, computing and communications), regardless of their type and location in the world.

e-infrastructure provides remote access to scientific data and instruments located in top level laboratories around the world, and enables worldwide collaboration among researchers who work on similar challenges and are willing to share resources.

e-infrastructure offers unique research services to users from different countries, including from the peripheral and outermost regions, and attract young people to science through networking of facilities. Thus, e-infrastructure has a key role in structuring the scientific community and in the construction of an efficient research and innovation environment.

e-Infrastructure layers

The **e-Infrastructure** layers consist of:

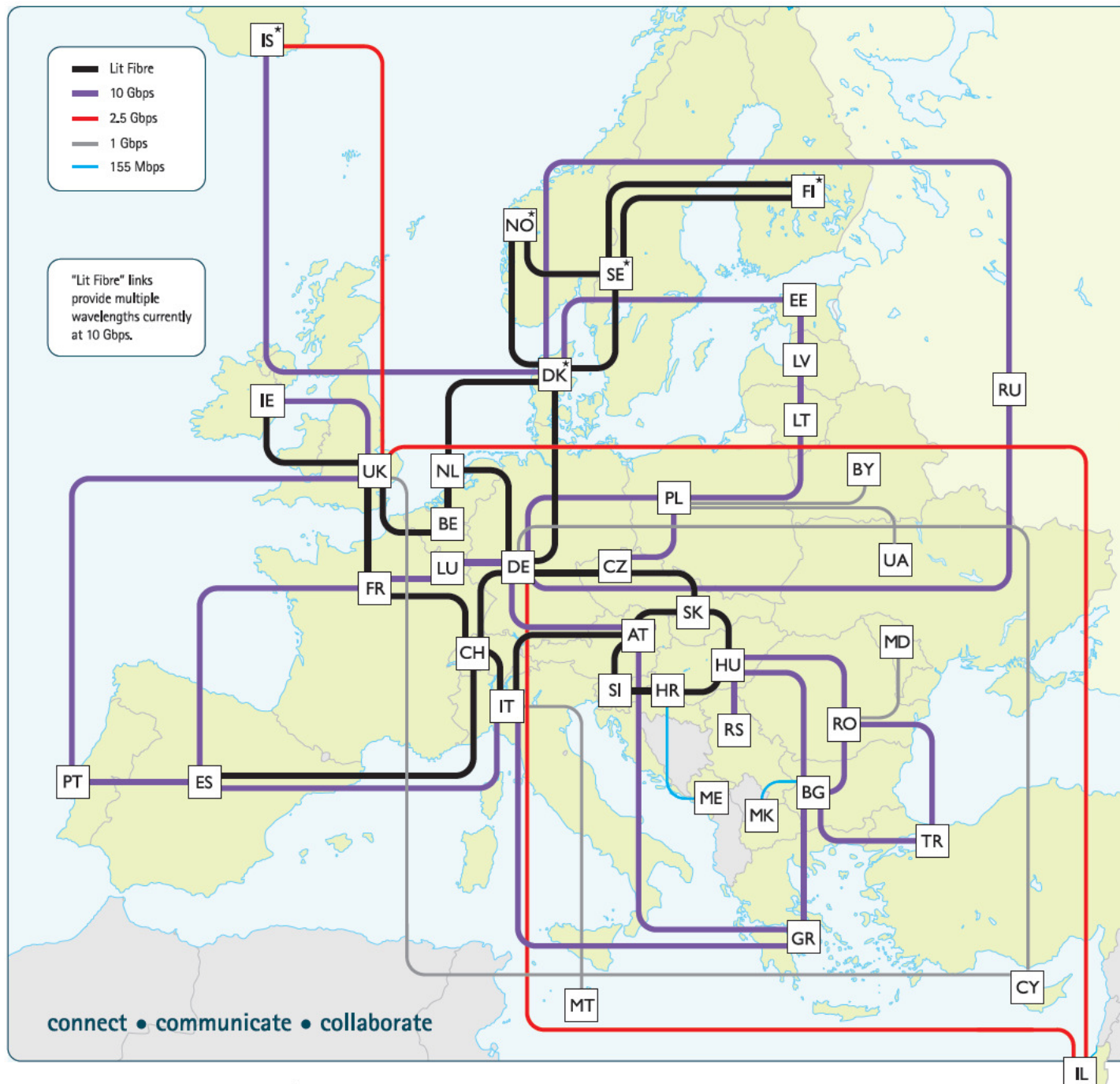
- Communication Networks (the European Research & Education Network GÉANT, National Research & Education Networks - NRENs),
- Distributed Computing (GRID, High Performance Computing, Cloud computing, etc.),
- Middleware (the intermediate software between any local IT resource management system and the applications),
- Specialized applications and software systems,
- Scientific data (data management systems, data repositories, eLibraries, etc.).

The e-Infrastructure activity will:

- Extend and reinforce the high capacity communication infrastructure - GEANT and NRENs
- Strengthen multidisciplinary grid and supercomputing infrastructures
- Expand scientific data infrastructure
- Encourage the adoption of e-Infrastructure by an increasing number of user communities
- Support the construction of new computation and data treatment facilities (petaflop supercomputing, scientific clouds, ...)
- Exploit the power of e-Infrastructure as a vector of international cooperation.

Probleme actuale privind implementarea serviciilor federative în RM

GEANT network



Backbone topology as at March 2012. GÉANT is operated by DANTE on behalf of Europe's NRENs.

GEANT Services Portfolio

GEANT Connectivity Services:

- GÉANT IP
- GÉANT Plus
- GÉANT Lambda
- GÉANT Open
- Bandwidth on Demand
- Tools for Connectivity Services

Network Performance Services:

- perfSONAR MDM
- eduPERT
- GÉANT Security - CERT Portal
- GÉANT Framework

Namespace Registry

User Access & Applications:

- eduroam
- eduGAIN
- eduPKI
- eduCONF
- GIdP

Services Registration Authority:

- SSL Certificates
- Request a Certificate

Training

Importance of Scientific Computing

- *"Although the fastest computers can execute millions of operations in one second, they are always too slow. This may seem a paradox, but the heart of the matter is: the bigger and better computers become, the largest are the problems scientists and engineers want to solve."*

A. Jaffe, *Ordering the Universe: The Role of Mathematics*, SIAM Review, 1984

- *"Computing has become a third branch of research, joining the traditional practices of theorization and laboratory experimentation and verification. Due to the expense and complexity of actually performing experiments in many situations, simulation must be done first."*

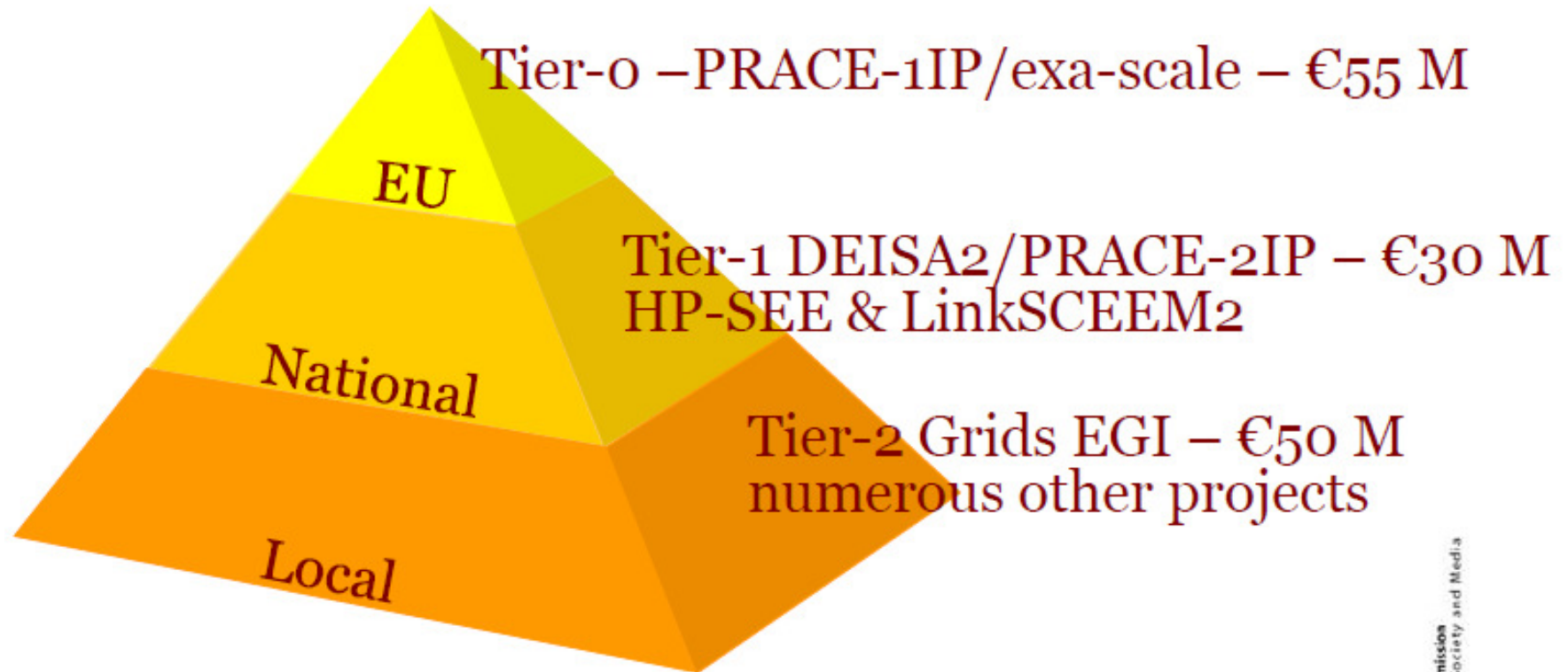
C. C. Douglas, G. Haase, U. Langer, *A Tutorial on Elliptic PDE Solvers and their Parallelization*, SIAM, 2003



European Projects for Scientific Computing development support

- ❑ PRACE (Partnership for Advance Computing in Europe – www.prace-project.eu)
- ❑ DEISA (Distributed European Infrastructure for Supercomputing Applications - www.deisa.eu)
- ❑ EGEE I-III projects (Enabling Grids for eScience)
- ❑ EGI-InSPIRE (European Grid Initiative: Integrated Sustainable Pan-European Infrastructure for Researchers in Europe – www.egi.eu)
- ❑ Enabling Clouds for e-Science

European Scientific Computing Eco-System



- ❑ SEE-GRID-1 project (May 2004 - May 2006)
- ❑ SEE-GRID-2 project (May 2006 - May 2008)
- ❑ SEE-GRID-SCI project (May 2008 - May 2010)
- ❑ HP-SEE project (High-Performance Computing Infrastructure for South East Europe's Research Communities – www.hp-see.eu)

Grid and HPC Initiatives. MD-Grid NGI Aims and Tasks

- ❑ **MD-Grid NGI** participates in strategic European Programs for the development of transnational grids and in initiatives for the completion of SEE eInfrastructures. The operation of the MD-Grid NGI implements the general EU policy on the development of national initiatives for the coordination of actions related to eInfrastructures and Grids.
- ❑ **The integration** of Grid actions (infrastructures, middleware and applications) with the broadband research and technology network into a standard e-Infrastructures system. Optimization of exploitation of advanced network resources and services, which can serve the new e-Science generation and will attract the greater users community of the Information Society to the mass adoption of advanced services provided by Grid architectures.
- ❑ **Permanent development** and administration of Grid infrastructure in Moldova
- ❑ **Organization access** for national R&E community to the regional and European computational resources (HPC, Grid, scientific clouds, etc.)
- ❑ **Preparing** (educational, training events organization) and **support** of national users' communities

Thank you!



Questions ?

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www.renam.md