

# HORIZON 2020 REGIONAL LAUNCH EVENT for Eastern Partnership Countries



## *Perspectives of access to the resources of European e-Infrastructures for National Research and Educational Community*

*Acad. Ion TIGHINEANU, Prim Vice-president of ASM*

*Acad. Ion BOSTAN, Rector of the Technical University of Moldova*

*Dr. Petru BOGATENCOV, RENAM*

*Dr. Grigore SECRIERU, RENAM*

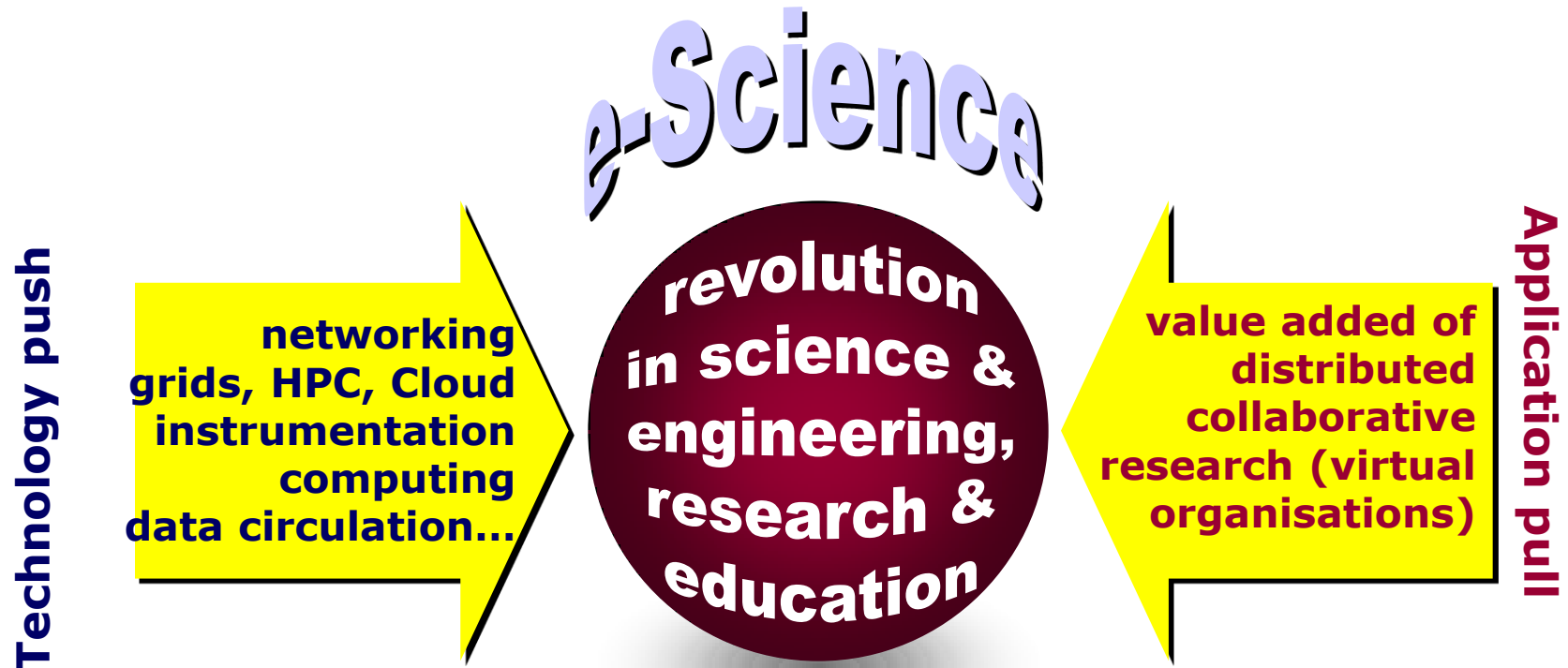
[www.asm.md](http://www.asm.md)

[www.renam.md](http://www.renam.md)





# E-Infrastructure - new way of doing Science



**a new way for all scientists to work on research challenges that would otherwise be difficult to address**



# eInfrastructures – support of e-SCIENCE



**e-infrastructure** offers shared access to unique or distributed scientific facilities (including complex research installations, instruments, computing and communication resources), regardless of their type and location in the world.

**e-infrastructure** provides remote access to scientific data 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

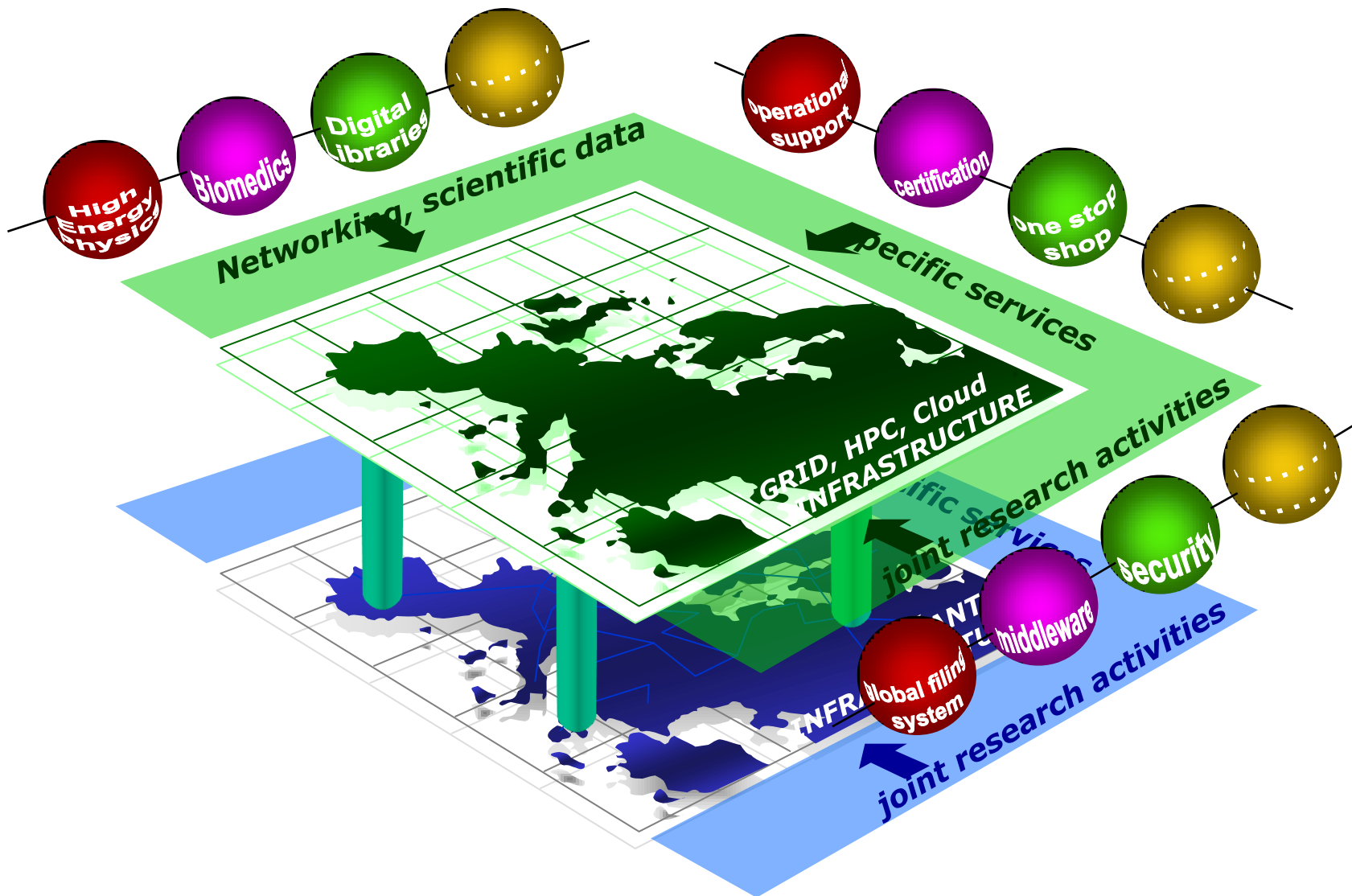


The **e-Infrastructure** layers consist of:

- Communication Networks (the trans-European Research & Education Network GÉANT, National Research & Education Networks - NRENs),
- Scientific Computing (GRID, High Performance Computing, Cloud computing),
- 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.),
- AAI and Identity Management



# e-Infrastructure - Implementation blocks





# Trans-European and regional eInfrastructure Development Projects (networking layer)



- ❑ GÉANT (The pan-European research and education network – [www.geant.net](http://www.geant.net));
- ❑ GEANT3 (GN3) project (04.2010 – 03.2013);
- ❑ GN3plus project (04.2013 – 03.2015);
- ❑ PORTA OPTICIA STUDY (Distributed Optical Gateway from Eastern Europe to GÉANT) project (02.2006 – 01.2008);
- ❑ EPIC: Eastern Partnership Interconnect Initiative



# Trans-European e-Infrastructure Development Projects (computing)



- ❑ PRACE (Partnership for Advance Computing in Europe – [www.prace-project.eu](http://www.prace-project.eu))
- ❑ DEISA (Distributed European Infrastructure for Supercomputing Applications - [www.deisa.eu](http://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](http://www.egi.eu))
- ❑ Enabling Clouds for e-Science



# Regional e-Infrastructure Development Projects



- ❑ SEE-GRID-1 project (2004 – 2006);
- ❑ SEE-GRID-2 project (2006 – 2008);
- ❑ SEE-GRID-SCI project (2008 – 2010);
- ❑ SEERA-EI project (2010-2013);
- ❑ HP-SEE project (High-Performance Computing Infrastructure for South East Europe's Research Communities – [www.hp-see.eu](http://www.hp-see.eu), 2010-2013);
- ❑ Experimental Deployment of an Integrated Grid and Cloud Enabled Environment in BSEC Countries on the Base of g-Eclipse (BSEC gEclipseGrid, 2013-2014)



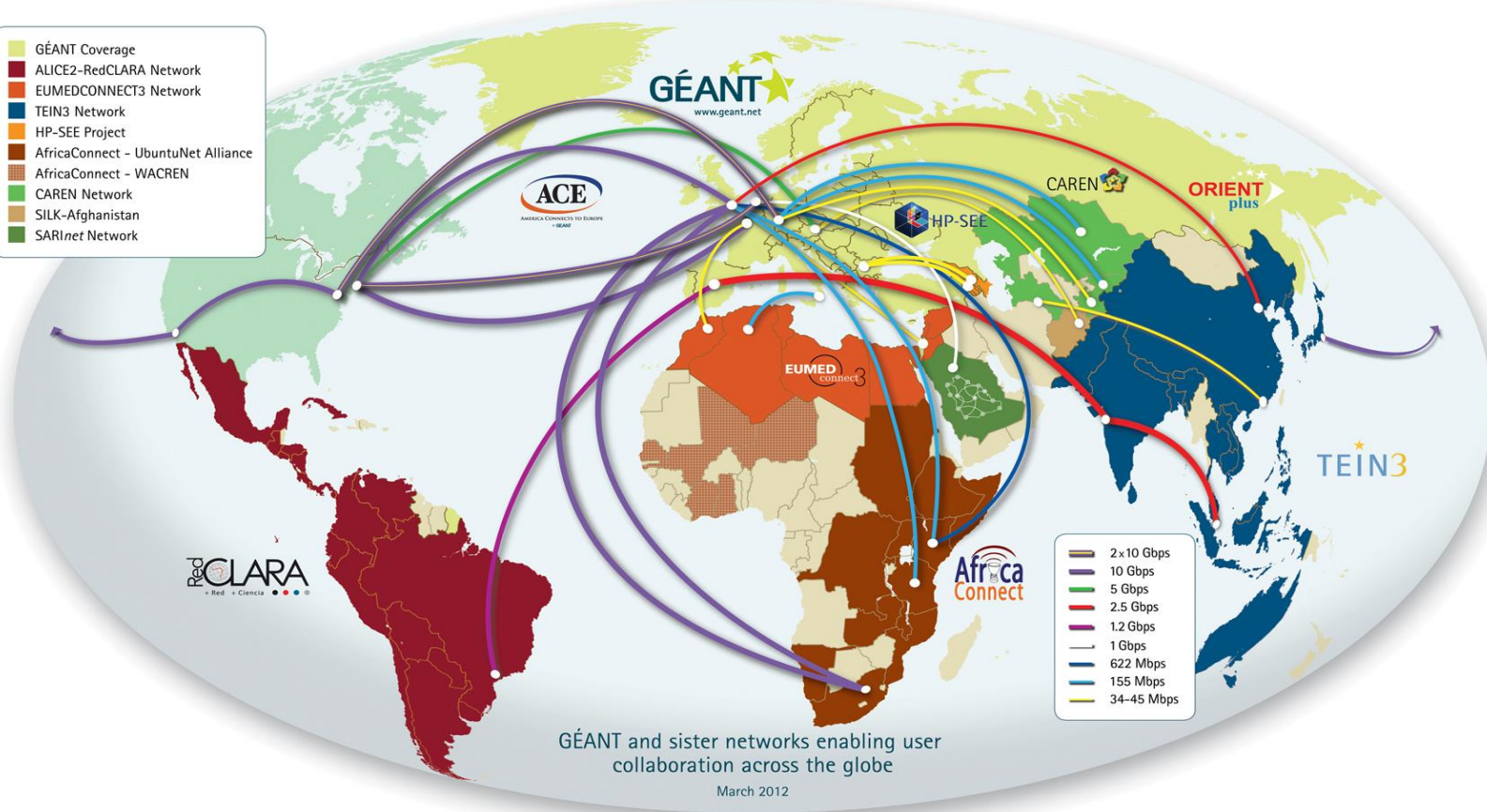


# The pan-European research and education network



## GÉANT At the Heart of Global Research Networking

- GÉANT Coverage
- ALICE2-RedCLARA Network
- EUMEDCONNECT3 Network
- TEIN3 Network
- HP-SEE Project
- AfricaConnect - UbuntuNet Alliance
- AfricaConnect - WACREN
- CAREN Network
- SILK-Afghanistan
- SARINET Network



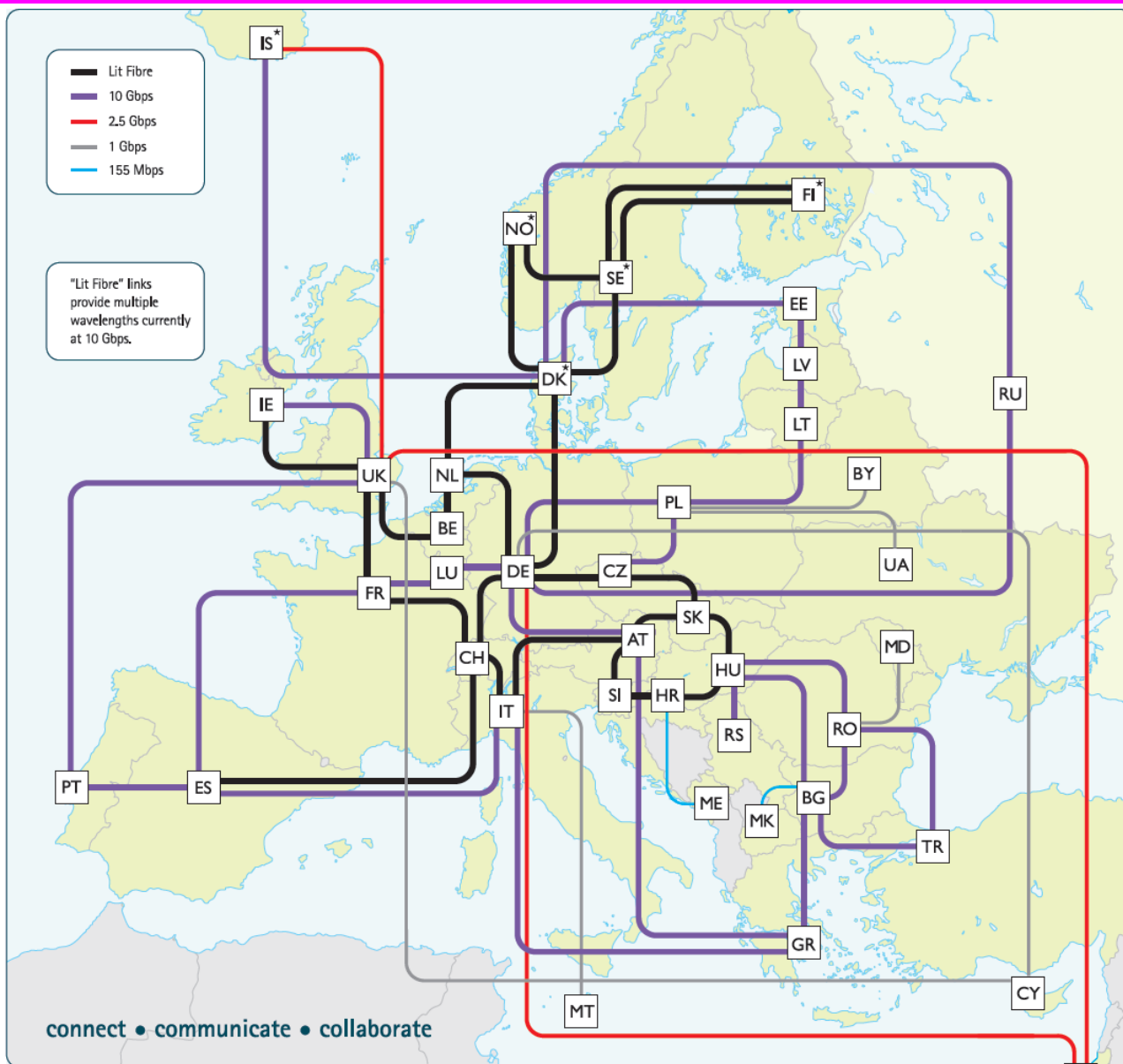
connect • communicate • collaborate

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# GEANT connections scheme

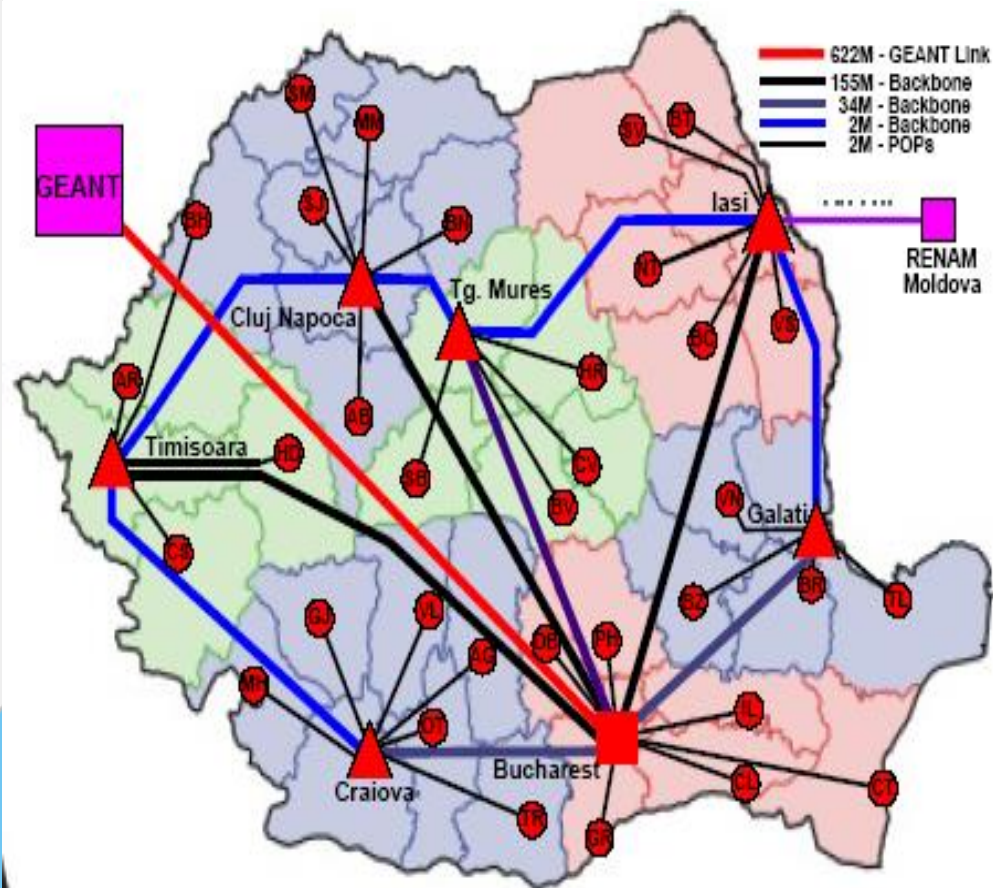




# RENAM – RoEduNet Fiber Optic connection



**Fiber link project was successfully implemented and the link operation was officially inaugurated in May 2010**





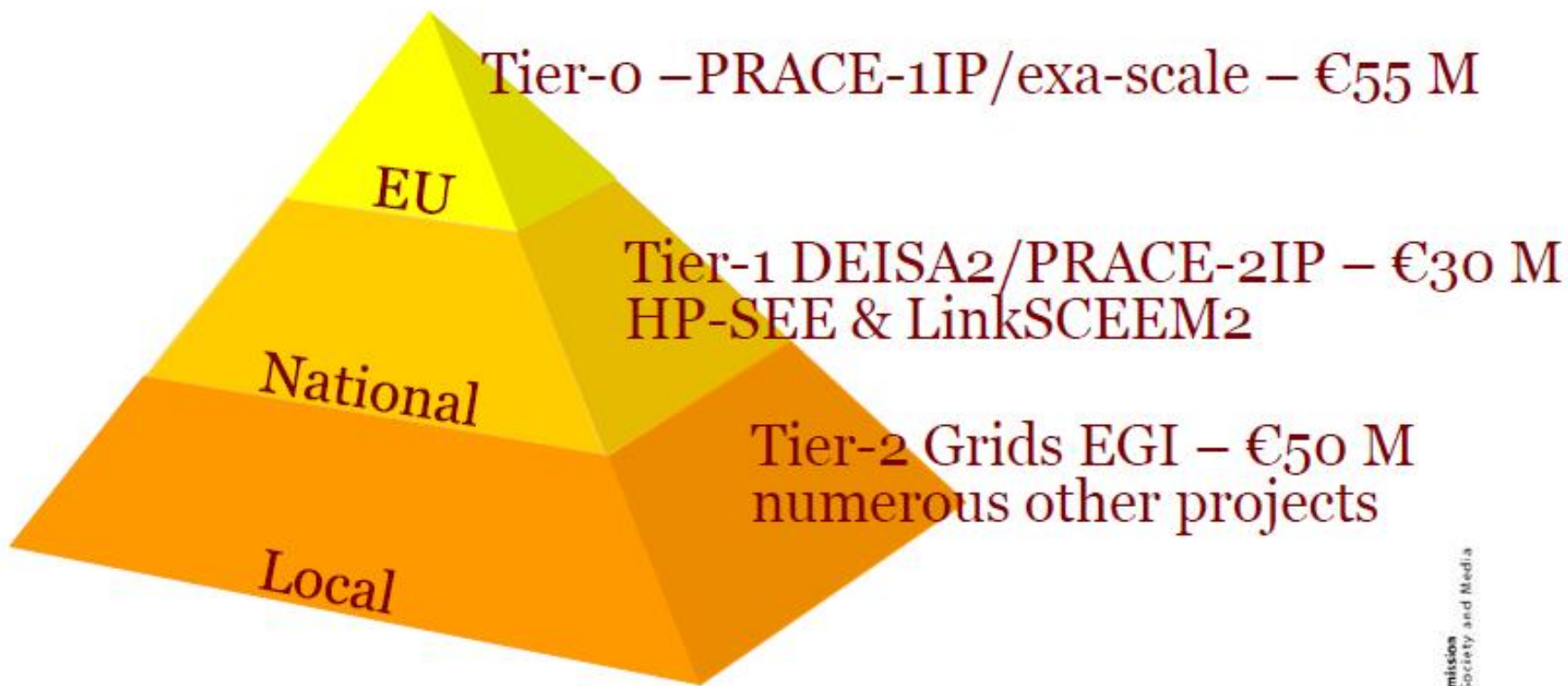
# Scientific Computing – resources and services



- ❑ Computing facilities based on Parallel Architectures and used for running complex applications:
  - HPC - Clusters' systems;
  - HPC - Supercomputers;
  - Distributed computing – Grids;
  - Scientific Clouds...
- ❑ Parallel Algorithms Design and Programming
- ❑ Complex Computing Applications Development
- ❑ Scientific Computing architecture is moving towards building modern virtualized computing systems – scientific clouds



# European Scientific Computing Eco-System



European Commission  
Information Society and Media



# A Role of Scientific Computing



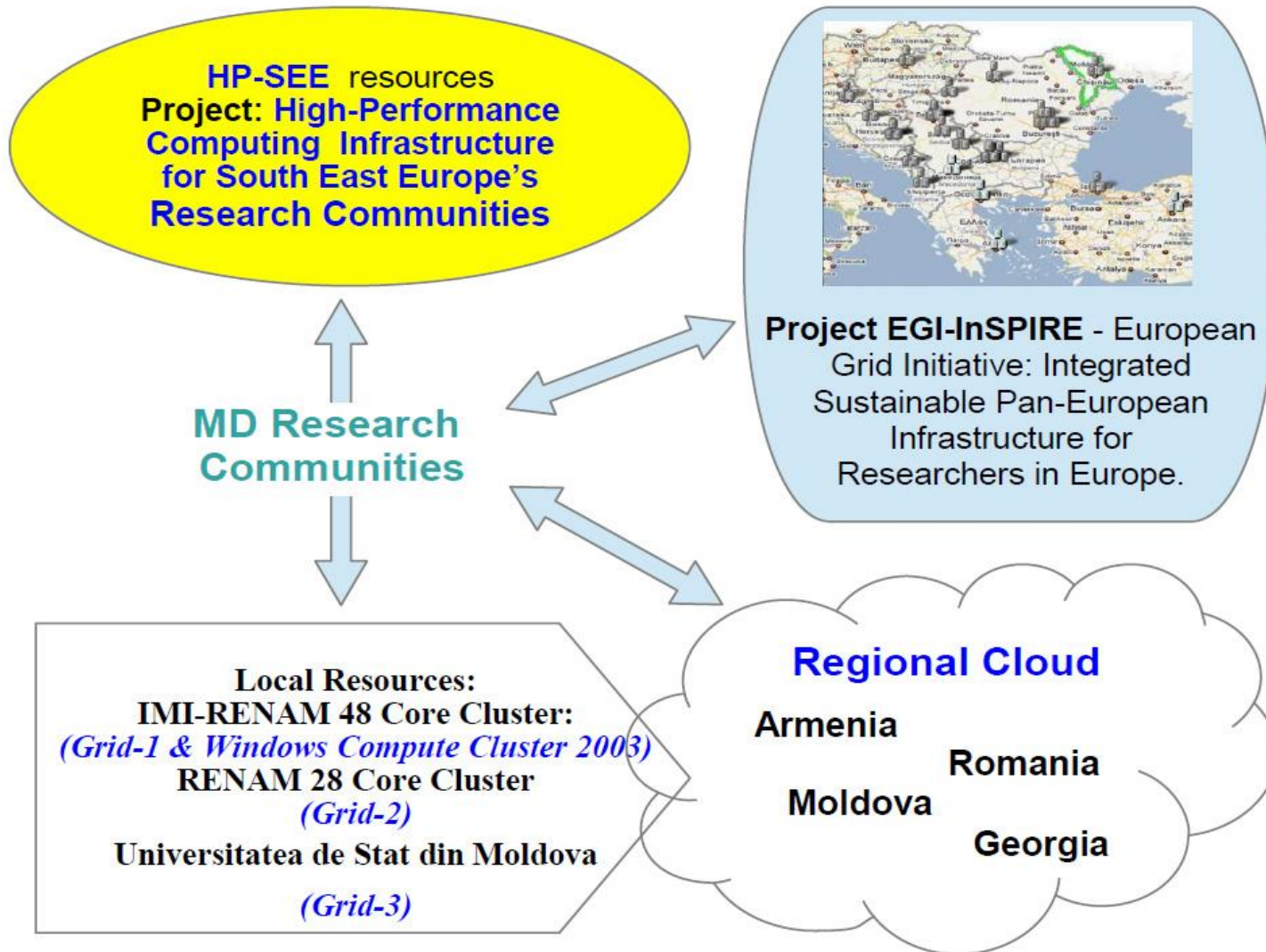
## A new vision for Science:

- Collaboration between European and worldwide research teams; remote access
  - Global virtual research communities
- Data-intensive science and innovation
  - Use and manage exponentially growing sets of data
- Experimentation *in silico*, simulation
  - **Use of High-Performance Computing**

**Scientific Computing is a fundamental enabler for research & innovation**



# Scientific Computing infrastructure in Moldova





# 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





# Memorandum of Understanding for High-Performance Computing resource sharing in the region of South Eastern Europe



This Memorandum of Understanding (MoU) is made on February 23rd 2012 hereinafter referred to as the "effective date"

BETWEEN Resource Coordinators and Beneficiaries:

For Moldova: RESEARCH AND EDUCATIONAL NETWORKING ASSOCIATION OF MOLDOVA

The following principles will be followed within this resource sharing model:

- A. Partners should allocate as a minimum 5% of the total core hours of their HPC systems offered for resource sharing, per year for regional use.*
- B. Cycles are allocated to users via the peer review system.*
- C. Calls for access can be either continuous or are announced periodically (yearly or twice a year), based on the demand and the capacity of the peer review system.*

This MoU is intended to remain into effect for at least 3 years from the effective date.

The duration of the MoU is automatically extended for one year after the end of the initial 3 years period or after the end of each yearly extension.



**Thank you!**



# Questions?

[www.asm.md](http://www.asm.md)

[www.renam.md](http://www.renam.md)

[tiginyanu@asm.md](mailto:tiginyanu@asm.md)

[bogatencov@renam.md](mailto:bogatencov@renam.md)