NRENs Users Workshop
A Eastern Partnership Platform IV event on e-Infrastructures

Kiev, 22-05-2013

Jean-Luc Dorel
CONNECT/C1
e-Infrastructure

Summary

- e-Infrastructures motivation
- e-Infrastructures towards Horizon 2020
- International collaboration
- Cooperation with Eastern Partnership countries

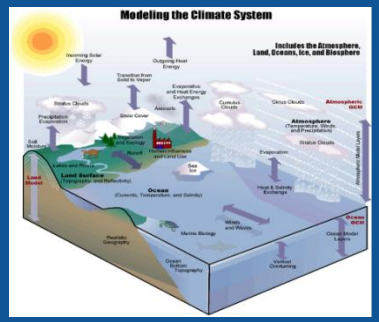
e-Infrastructures motivation

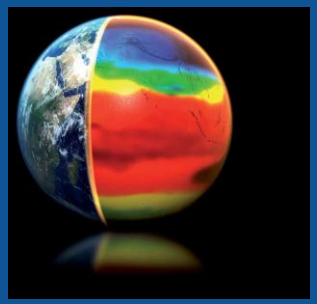
Staying Competitive in Science

- Large scale collaborations becoming the norm
  - ***often global***
  - ***virtual research communities***
  - ***access to rare/remote resources***
- Data-intensive science and innovation
  - ***Use and manage exponentially growing sets of data***
- Experimentation in silico, simulation
  - ***Use of high-performance computing***

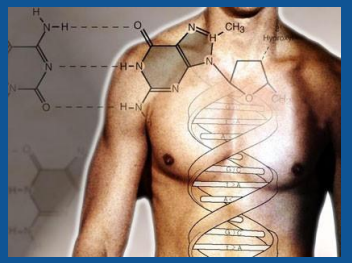
Simulation and *in silico* experimentation

European Commission

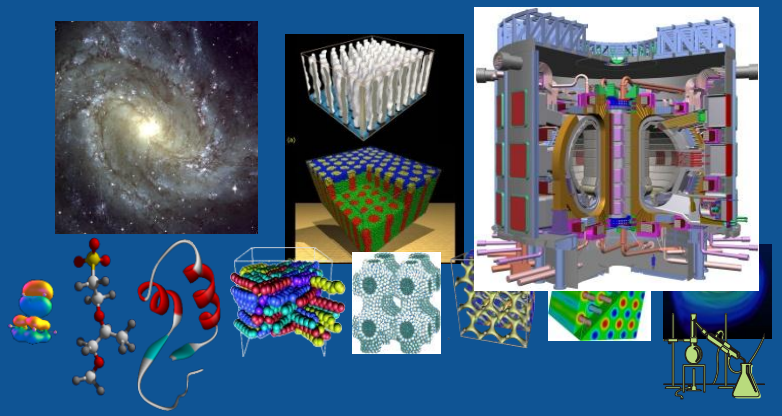




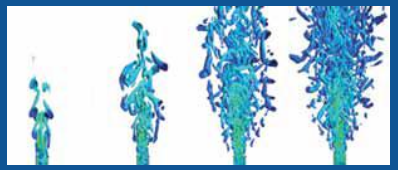
Weather, Climate & Earth Sciences

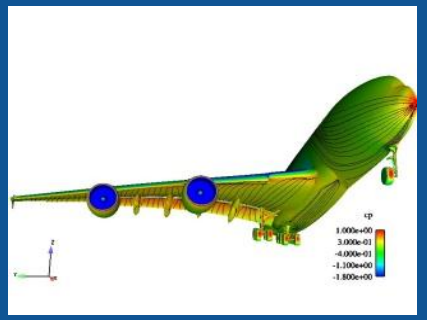


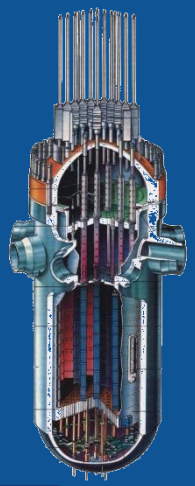
Life Sciences and Health

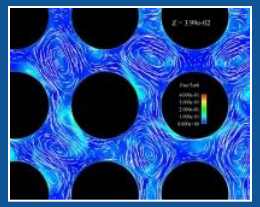


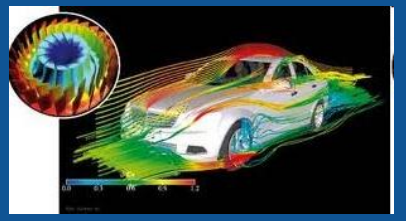
Fundamental sciences: Physics, Chemistry, Material Sciences, Astrophysics Applications.









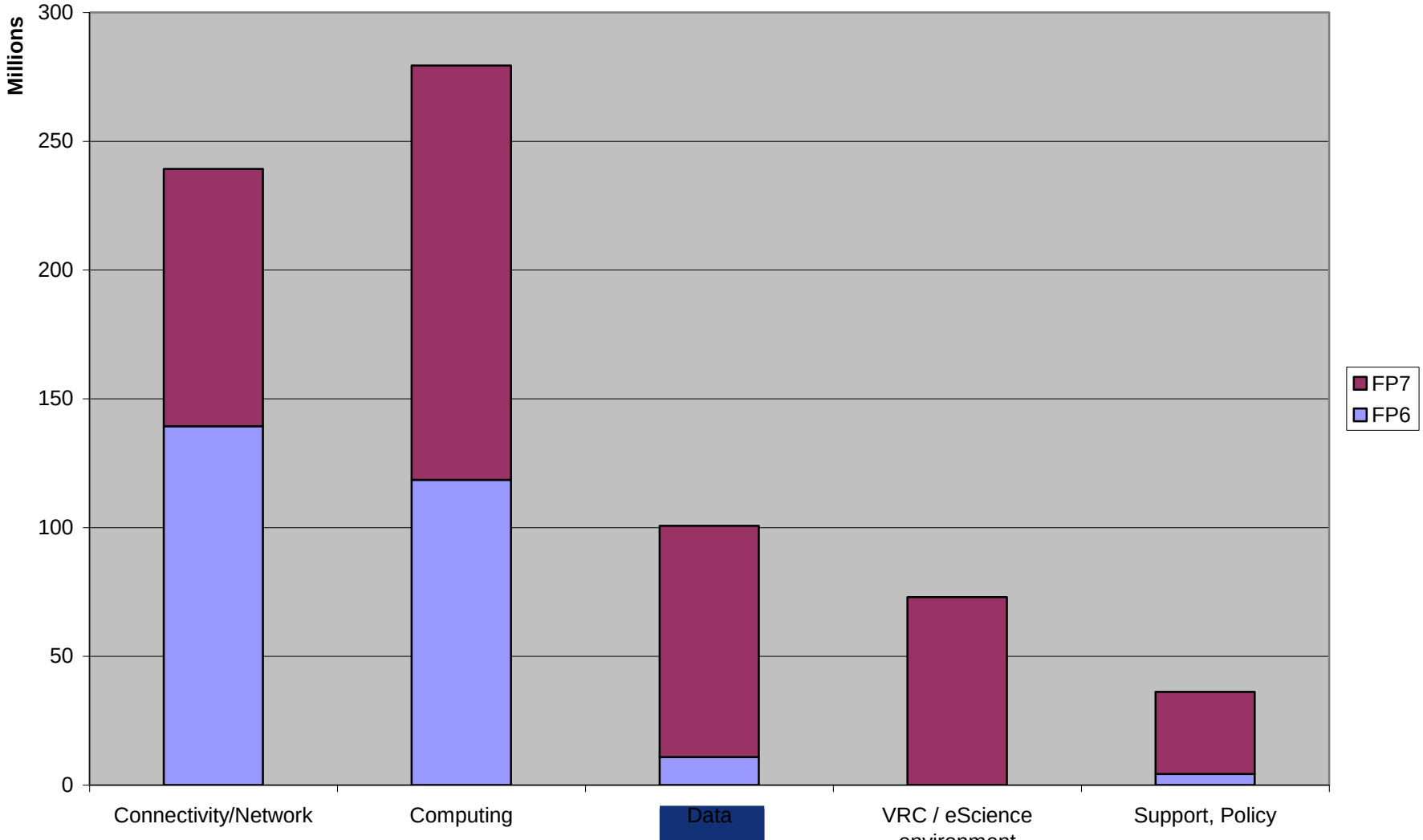


Industrial & Engineering Application for transport and energy

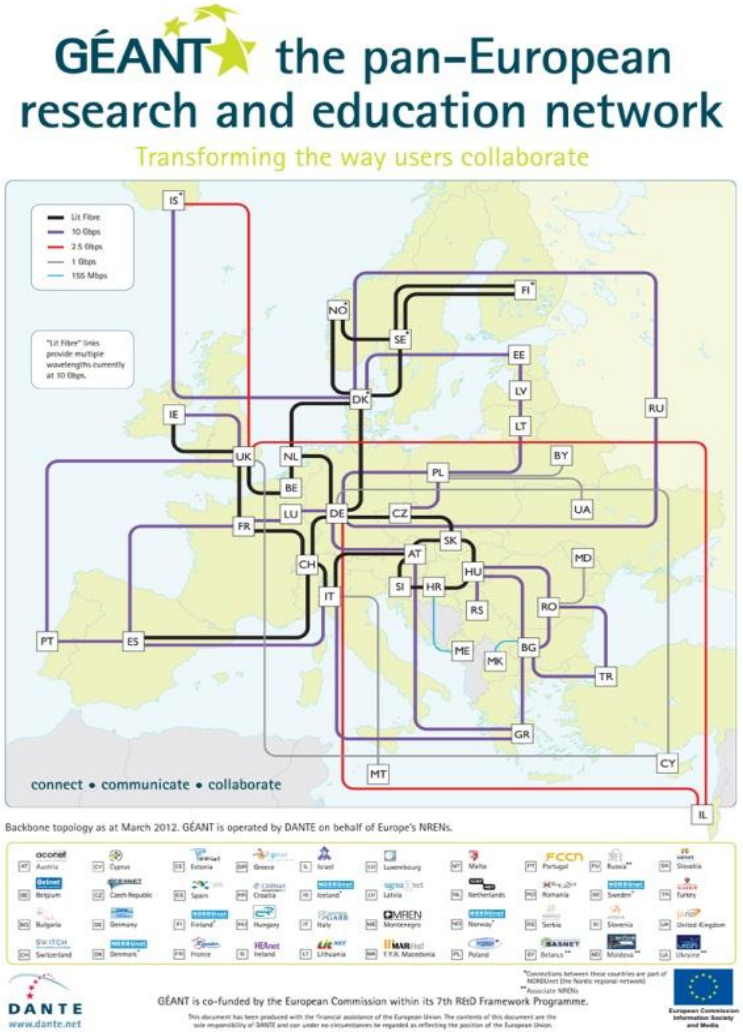
e-Infrastructures towards Horizon 2020

e-Infrastructures spending

Support to infrastructure layers - FP6-FP7

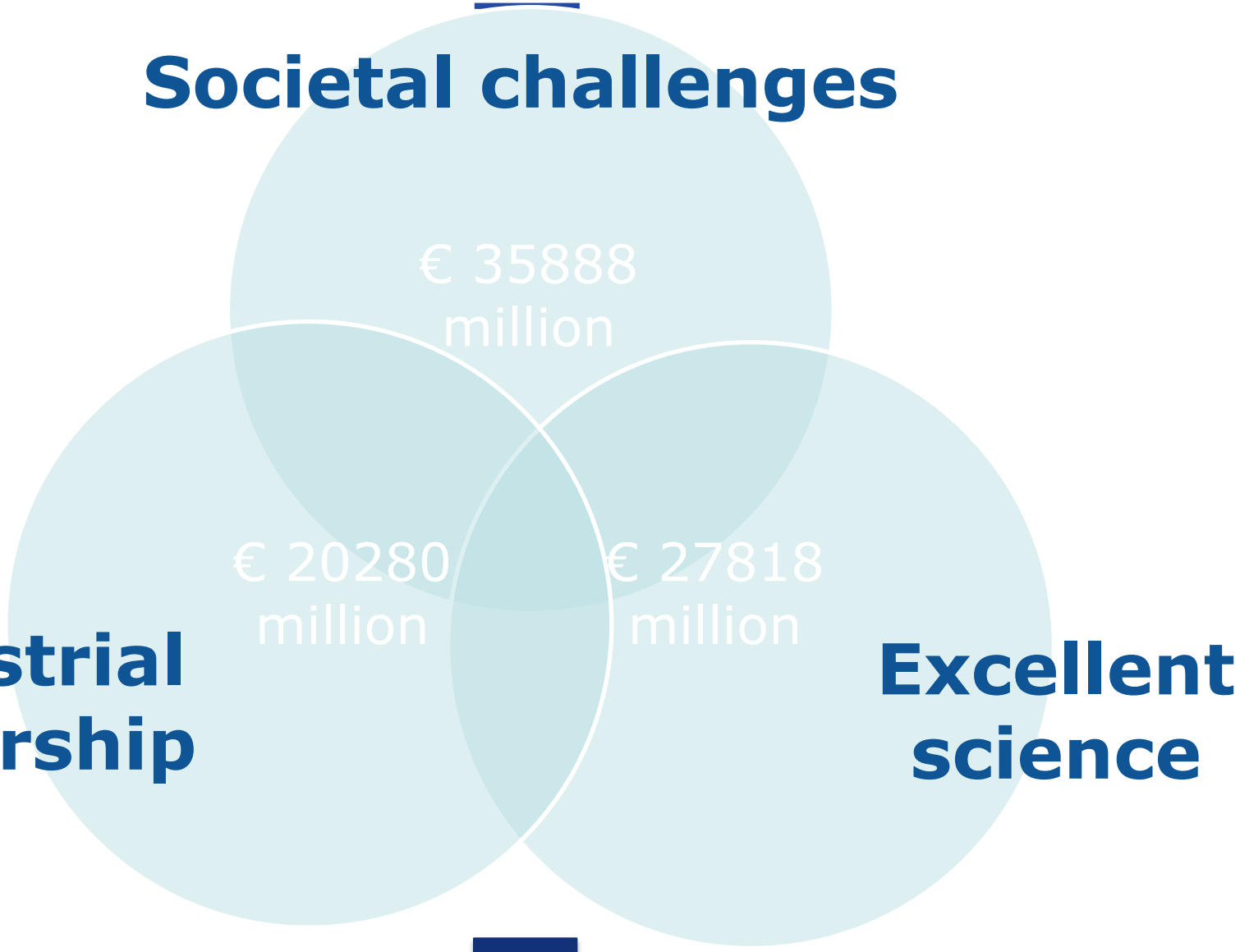


e-Infrastructures facts



- Computers, communications, software and policies serving research & education
- Federation of Member States resources
- GÉANT: 40 million users in over 8,000 institutions across 40 countries, 50000 km of optical fiber; range of innovative services operated 24x7
- EGI provides 400000+ cores handling 1,3M tasks/day
- 6 of the top 20 biggest supercomputers offering cycles to European researchers through PRACE
- Data infrastructures for open access (OpenAIRE), management, storage
- Impact on all communities including education, humanities & arts

Priorities and Budget



Research Infrastructures in H2020

Developing the European Research Infrastructures for 2020 and beyond

- Developing new world-class RIs
- Integrating and opening existing national RIs of pan-European interest
- **Development, deployment and operation of ICT based e-Infrastructures**

Fostering the innovation potential of Research Infrastructures & their human capital

- Exploiting the innovation potential of RIs
- Strengthening the human capital of RIs

Reinforcing European Research Infrastructures policy and international cooperation

- Reinforcing European policy for RIs
- Facilitating strategic international cooperation

Development, deployment and operation of ICT based e-Infrastructures

Objective: To achieve by 2020 a single and **open European space** for online research

Priorities:

Data-centric science and engineering

- ✓ Interoperable, open and rich scientific data infrastructure (services for data access, storage, discovery, integration, curation and analytics)

Computational infrastructure

- ✓ Ecosystem of supercomputing facilities progressing towards exa-scale
- ✓ Grid and cloud infrastructures
- ✓ Software and service infrastructure for visualisation and simulation

Research Networks - GÉANT

- ✓ Global research and education networks (GÉANT as the European "communications commons" for research, education and public service)

e-Infrastructures for virtual research communities and e-Science environments

- ✓ Real-time collaborative tools for virtual research communities

International collaboration

GÉANT At the Heart of Global Research Networking

global value of e-Infrastructures

the more people, machines and data that are connected the more value of research (e-Infrastructure externalities)

DANTE www.dante.net GÉANT www.geant.net

connect • communicate • collaborate

GÉANT is co-funded by the European Commission within its 7th R&D Framework Programme.
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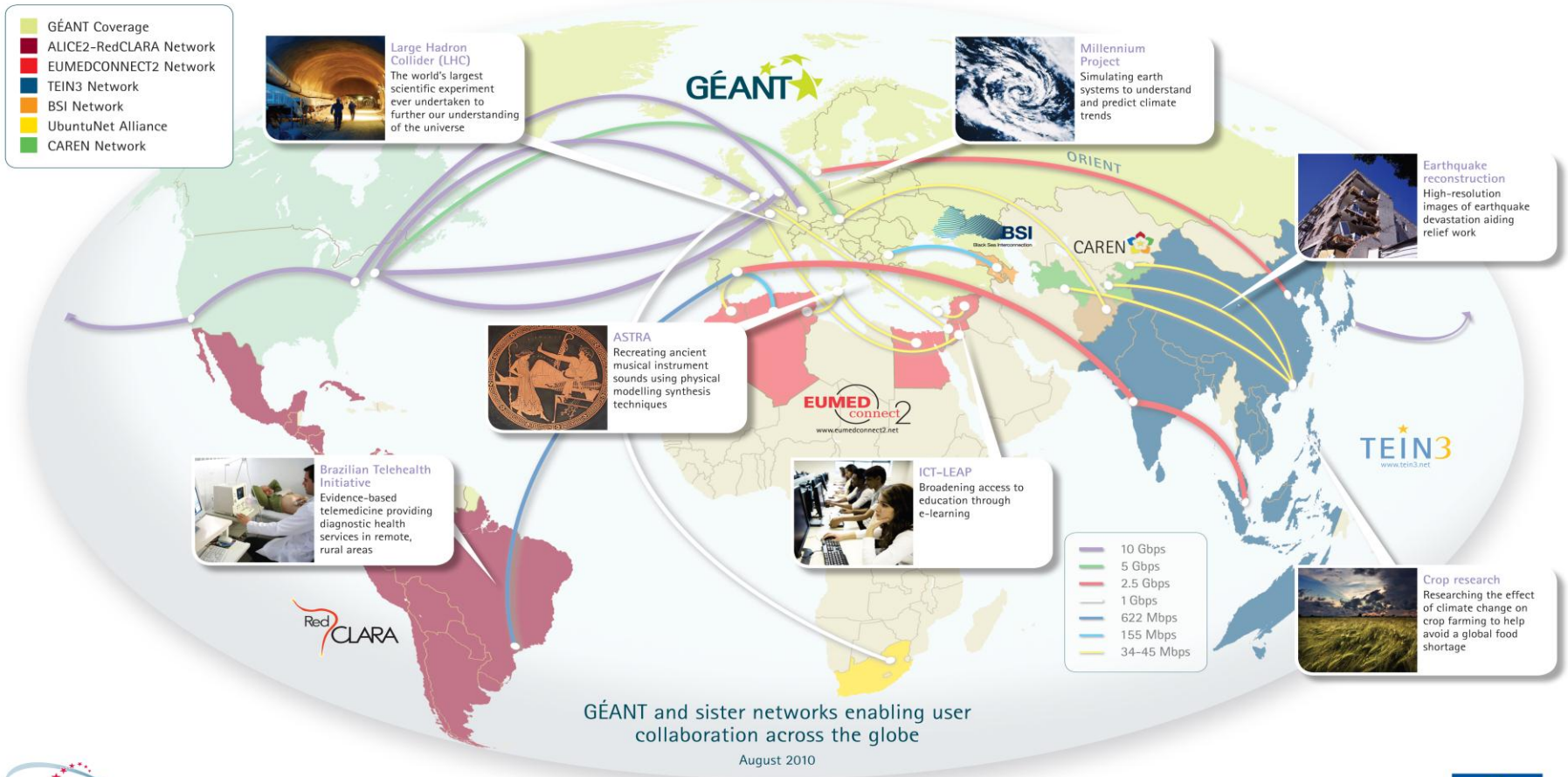
European Commission Information Society and Media

European Commission

GÉANT At the Heart of Global Research Networking



GÉANT and sister networks enabling user collaboration across the globe

August 2010

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European Commission
Information Society and Media

UN Broadband Commission

Broadband and Science Working Group

*"**Broadband connectivity facilities are basic infrastructure** in a modern society, just like roads, electricity or water; it almost becomes a human right –even more so when it's used for science. e-Infrastructures build on broadband to provide **online services to science and education** communities. Not only have these services become today indispensable, they have also **transformed the scientific process** by enabling the instantaneous sharing of knowledge, virtual collaborations spanning the globe, and remote access to scientific resources and instruments. e-Infrastructures are today one of the **main engines of scientific progress** and their potential in other social and economic areas is enormous. **Developing regions stand to benefit in particular** because broadband networks dramatically reduce the barriers of distance and location."*

European Commission

Cooperation of/with Eastern Partnership countries

European Commission

EaP Summit, Warsaw, 29-30 September 2011

11 …facilitate participation in EU programmes and agencies (protocols signed with Ukraine and Moldova,…)

18 …a Common Knowledge and Innovation Space linked to Smart Growth and the EU innovation agenda will be established in order to give the policy more impact and visibility

29. …participants welcome the intention of the High Representative and the European Commission to propose by the end of this year a roadmap […] that would list the objectives, instruments and actions and guide and monitor their implementation until the next Summit in the second half of 2013

Moldova Event & Declaration

- The Moldovan government presented a joint declaration signed by more than 50 organisations including Member of governments, National Research and Education Networks, leading research institutions and European flagship projects.
- The declaration sets ICT-based infrastructures as a key priority for turning those countries into knowledge-based societies and fostering collaboration in research and education regionally and with Europe. The declaration was sent to HRVP Ashton and Commissioner Fule with copy to VP Kroes through a letter from the Moldovan government.
- A working group led by Dante the operator of GEANT is being setup to identify scenarios for best connecting the region.
- Ukraine is playing a key role both due to geographical and policy reasons.

Why is it important for the region?

- Research and innovation are key for the economy
  - *But they are increasingly collaborative and ICT-intensive*
  - *Can we reverse the brain drain?*
- Some challenges know no borders: resource management, weather forecast, pandemics,…
  - *Regional or global collaboration needed*
- Regional aggregation of demand can allow critical mass in building capacity
  - *Building capacity but also skills*
- Cross-border mobility (eduroam in BY, MD,…)

Stakeholders

~1.7 Million students, faculty members, researchers from 700+ institutions

NRENs:
- from the 6 EaP countries
- Some EU MS or neighbours:
  - PL, RO, GR, BG, TR,…

European flagships:
- GÉANT, EGI, PRACE,…

Funders:
- Academies of Science,
- Ministries of Education or Telecom,
- Agencies for eGov,…
- EU Member States,
- European Commission,
- International donors
- …

Conclusions

- National investment in e-infrastructures essential
  - *For research and innovation performance within the country*
  - *For its integration in the European/global ecosystem*
- European programmes could provide needed assistance
  - *Horizon 2020; EaP (multilateral - Platform 4)*
- Coordination of policies and funding streams essential
- Sustainable and clear funding models required
  - *Build service organisations beyond project-based funding*
  - *Critical mass through service integration*
- Telecom regulatory framework very important for affordability

Thank you for your attention!

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