EGEE'09 Conference

Joint NSF-OCI & EC-INFSO-e-infra session

Barcelona, 21 September 2009

US-EU collaboration on CI/e-Infrastructure topics

- new opportunities through e-Infr. Call-7 -

Kyriakos Baxevanidis (kyriakos.baxevanidis@ec.europa.eu)
European Commission - DG INFSO
Deputy Head of Unit, GÉANT & e-Infrastructure Unit

e-infrastructure

European Commission
Information Society and Media

Overview - US-EU Scientific & Technological (S&T) collaboration

Motivations

- Major global challenges such as climate change, poverty, infectious diseases, energy sources & threats to energy, food and water supply, security of the citizen, biodiversity & ecosystems, networks security, digital divide etc highlight need for effective global S&T cooperation to promote sustainable development
- Globalisation accelerating (impact on way we produce, share and use knowledge) – continuous need to facilitate access to knowledge, resources and markets worldwide
- Promote democratic values in the global information society, in particular freedom of expression and the right to access information
- Promoting ICTs worldwide as a key driver of socio-economic growth contributes to the Growth and Jobs agenda

Examples of joint statements, agreements

In the 2005 US-EU Summit in Washington DC the leaders agreed:

"We will increasingly rely on innovation and advanced technologies to stimulate economic growth and prosperity. Our aim is to increase synergies across the Atlantic as we become more knowledge-based economies."

Joint Declaration of 2008 EU-US Summit in Brdo, Slovenia:

It was agreed to continue & intensify EU-US science & technology cooperation on energy & climate change in agreed priority areas, such as sustainable production & use of biofuels, clean & renewable energy sources, carbon capture & storage, hydrogen fuel cells, climate change impacts..

e-infrastructure

European Commiss
Information Soci

Framework of cooperation: US-EC S&T Agreement (1)

Principles for conducting cooperative activities

- Mutual benefit based on an overall balance of advantages
- Reciprocal opportunities to engage in cooperative activities
- Equitable and fair treatment
- Timely exchange of information which may affect cooperative activities

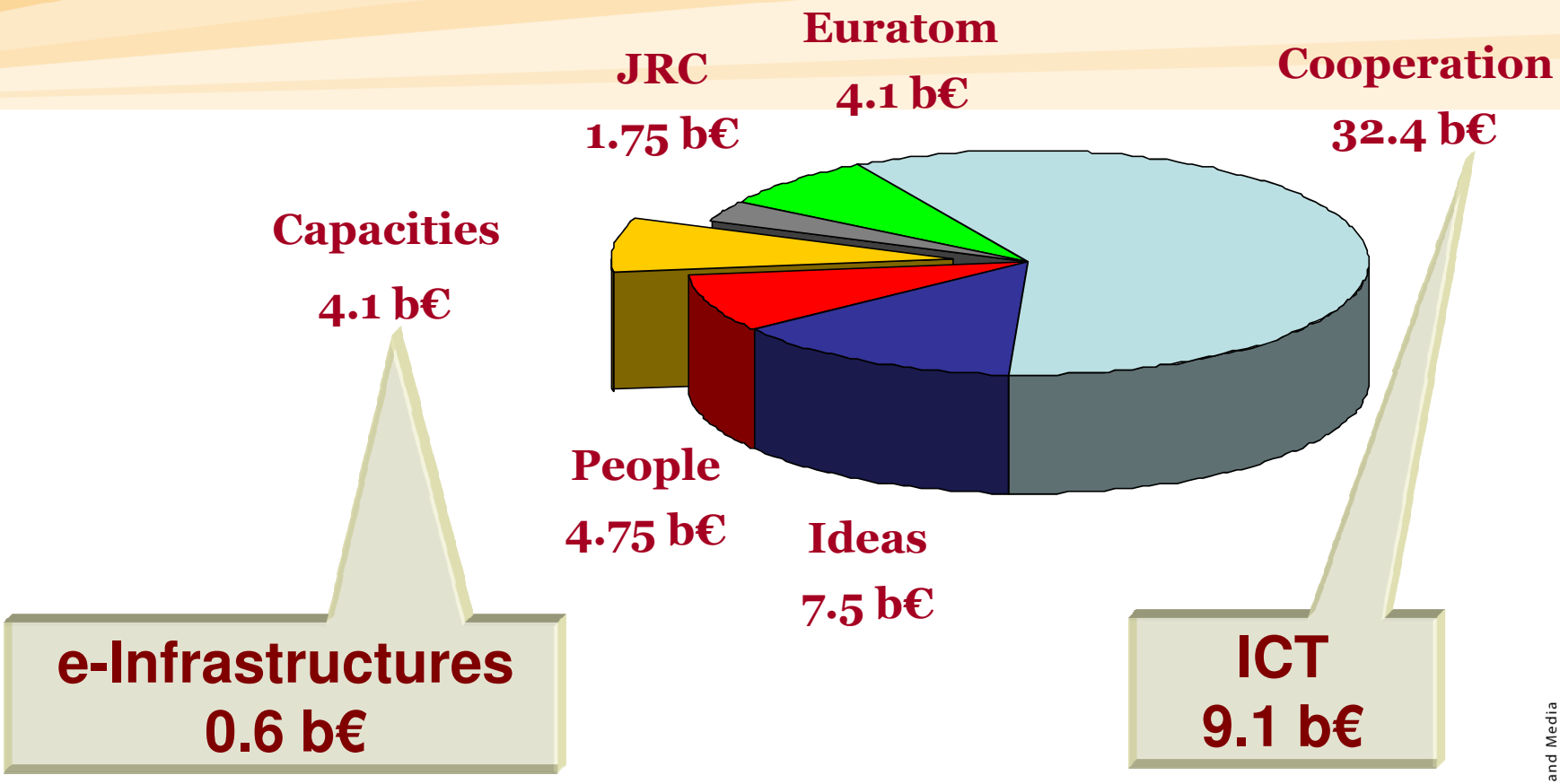
Funding of cooperative activities subject to respective applicable laws/regulations, policies and programmes of the two parties (FP7 in case of EC)

Framework of cooperation: US-EC S&T Agreement (2)

Forms of cooperative activities

- Open research programmes, coordinated & joint research projects
- Exchange or sharing of equipment & materials *(joint/interoperable research infrastructures)*
- Seminars, conferences, symposia, workshops, studies
- Mobility of researchers, training of scientists & technical experts
- Exchange of information as well as practices, law, regulations and programmes (including on management of IPR) relevant to cooperation under this agreement

EU 7th Research Framework Programme - FP7 (2007-13)



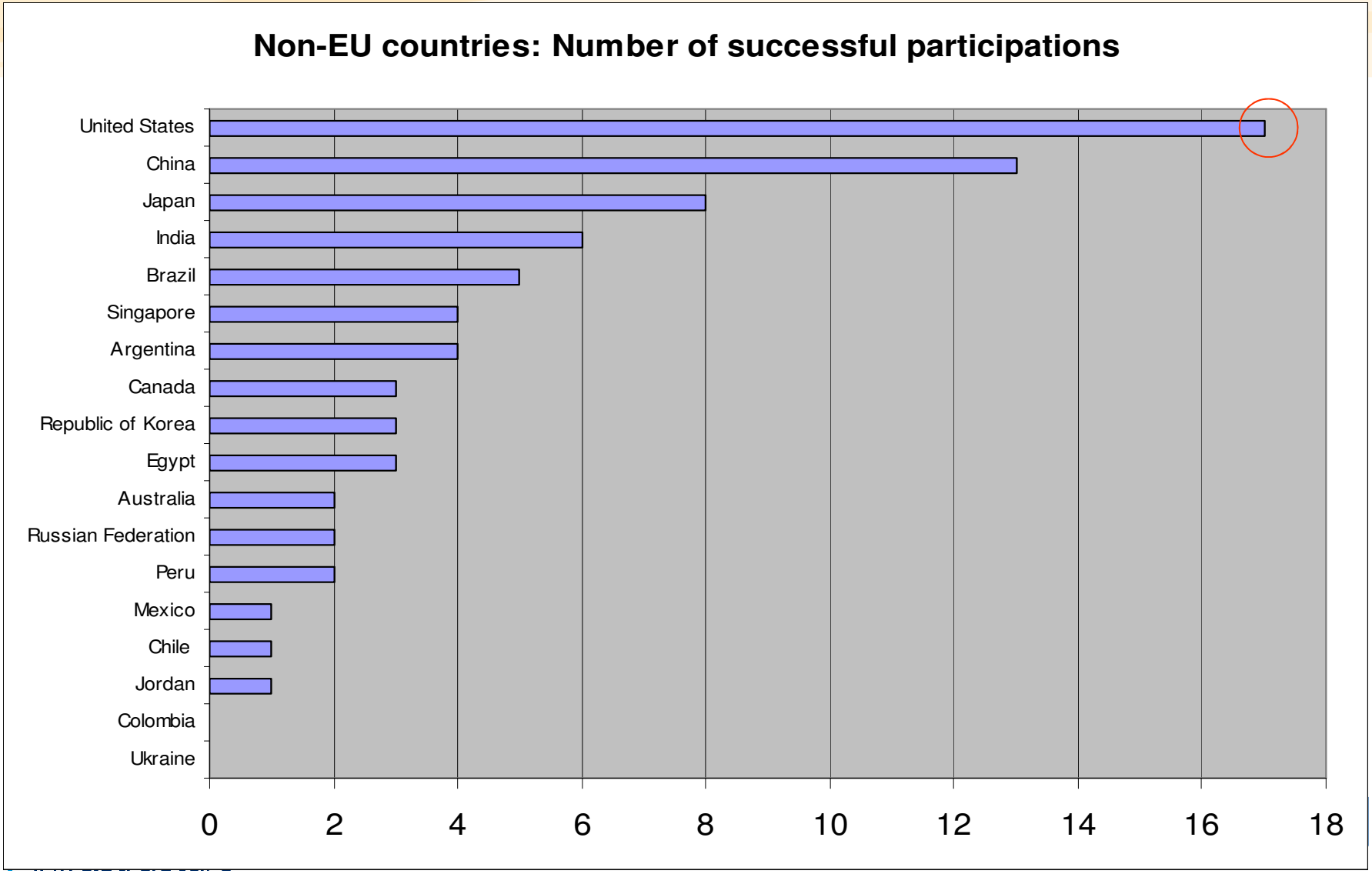
- Open to third country participation
- Mechanisms to encourage international cooperation (e.g. Capacities – International Cooperation programme, ERA-NET scheme)

Rules for participation for US organisations (FP7)

- In conformity with principles of cooperation (S&T Agreement)
- Funded initiatives must include minimum number of legal entities from EU & Associated States (funding-instrument specific)
- US organisations established in EU or Associated states can receive financial contributions
- Financial support to US-based organisations possible in case that at least one of following conditions is satisfied:
  - Provision is made to that effect in specific programmes or relevant work-programmes
  - Contribution essential for carrying out the action
  - Such funding is provided for in a bilateral scientific and technological agreement or any other agreement between the European Community and the US

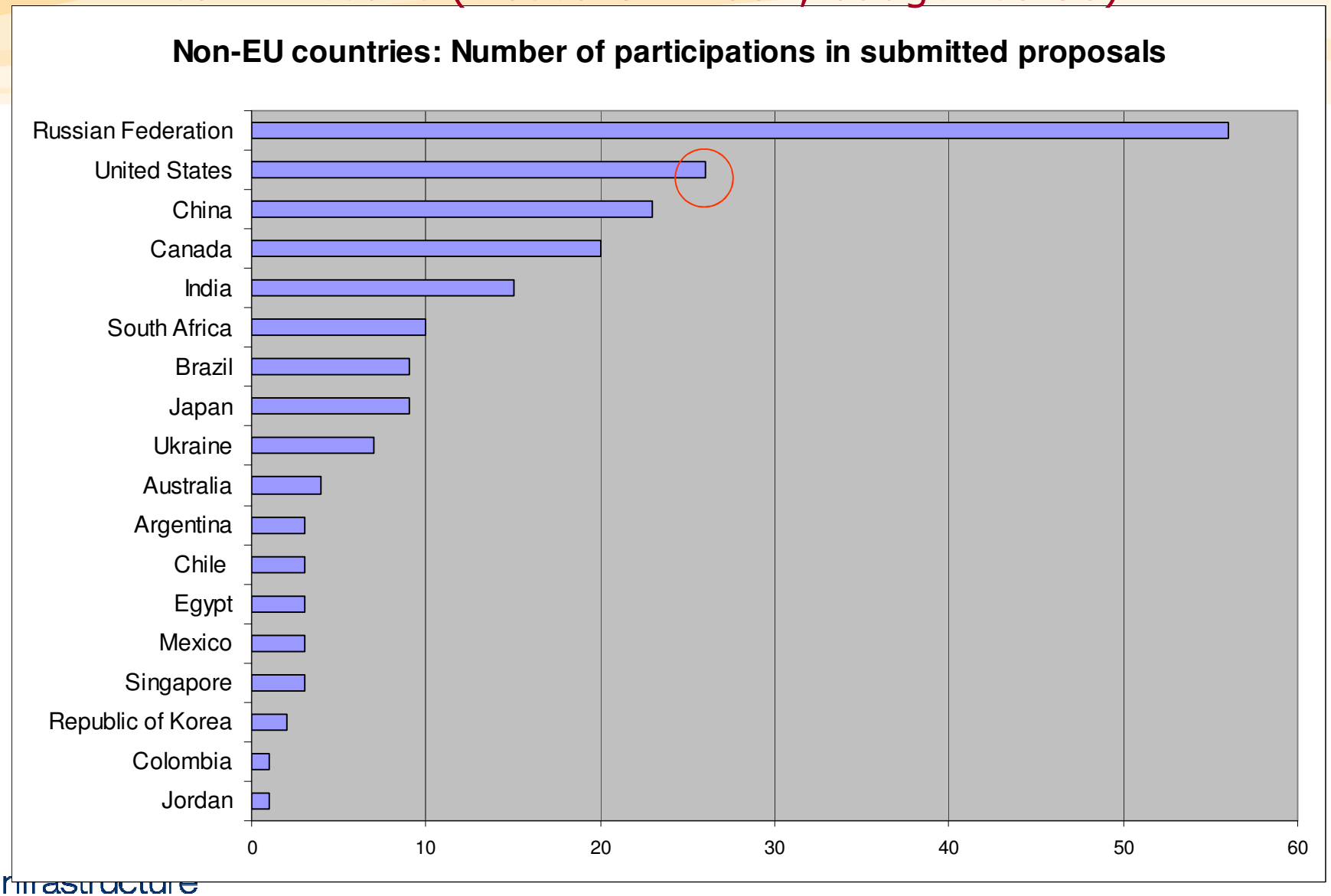
Example: US participation in FP7-ICT (1)

Call-1 results (closed Dec 2006, budget €1b)



Example: US participation in FP7-ICT (2)

Call-2 results (closed Oct 2007, budget €0.5b)



CI/e-I: some achievements, good practices

EGEE-III – OSG

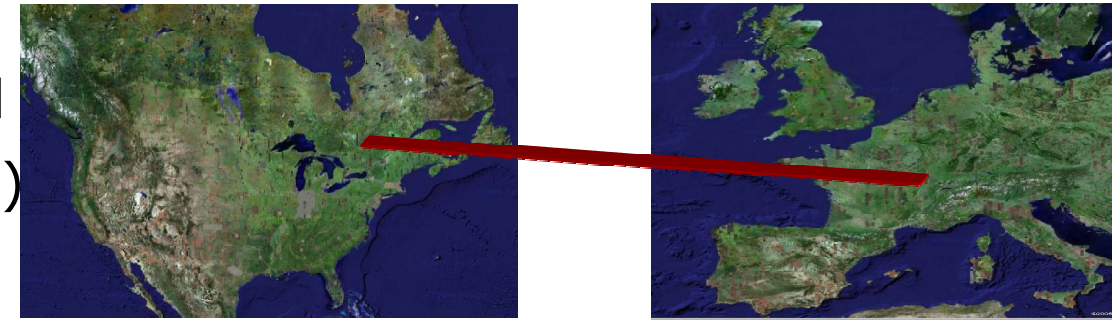
(24/7 grid-service)

GEANT – NASA, Abilene, ESnet

(40Gbit/s)

DEISA2 – TeraGrid

(global file system)



Pooling of resources NSF-EC for connection to Pakistan

e-infrastructure

European Commission
Information Society and Media

US org. in e-Infrastructure projects today

Total EU funding to US-organisations: € 175,000

US organisation	EU-funded project
CORNELL UNIVERSITY	EXPReS
MCNC	PHOSPHORUS
LOUISIANNA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE	PHOSPHORUS
TRUSTEES OF PRINCETON UNIVERSITY	METAFOR
UNIVERSITY OF WISCONSIN-MADISON	EGEE-III
THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	EGEE-III
THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS	LinkSCEEM
BOARD OF REGENTS OF THE UNIVERSITY OF WISCONSIN SYSTEM	ETICS 2
Rensselaer Polytechnic Institute	HELIO
Lockheed Martin Corporation Lockheed Martin Space Systems Company Lockheed Martin Advanced technology Center	HELIO
SMITHSONIAN INSTITUTION NATIONAL MUSEUM OF NATURAL HISTORY	4D4Life
THE REGENTS OF THE UNIVERSITY OF CALIFORNIA	outGRID
San Diego Supercomputing Center	HPCW
University of California Los Angeles*The regent of the University of California LOS ANGELES	OutGrid

Opportunities ahead

(new impetus: informal meetings NSF-OCI – INFSO-F3)

- Identify new common areas of interest (e.g. exascale systems, data interoperability, policy - open source/access..)
- Better use of funding mechanisms
- Jointly support education & training (e.g. summer schools), mobility
- Promotional, outreach activities (best practices, common events, fora like the OECD, G8..)
  - Reinforce information points (helpdesks?)
- Joint roadmaps? MoU? Joint actions/funding?

Community input invited (e.g. on best practices, challenges, joint activities..)

New opportunities: e-Infrastructures Call-7

e-Infrastructures Today

Innovating the scientific process:
global virtual research communities

Accessing knowledge:
scientific data

Experimenting *in silico*:
simulation and visualisation

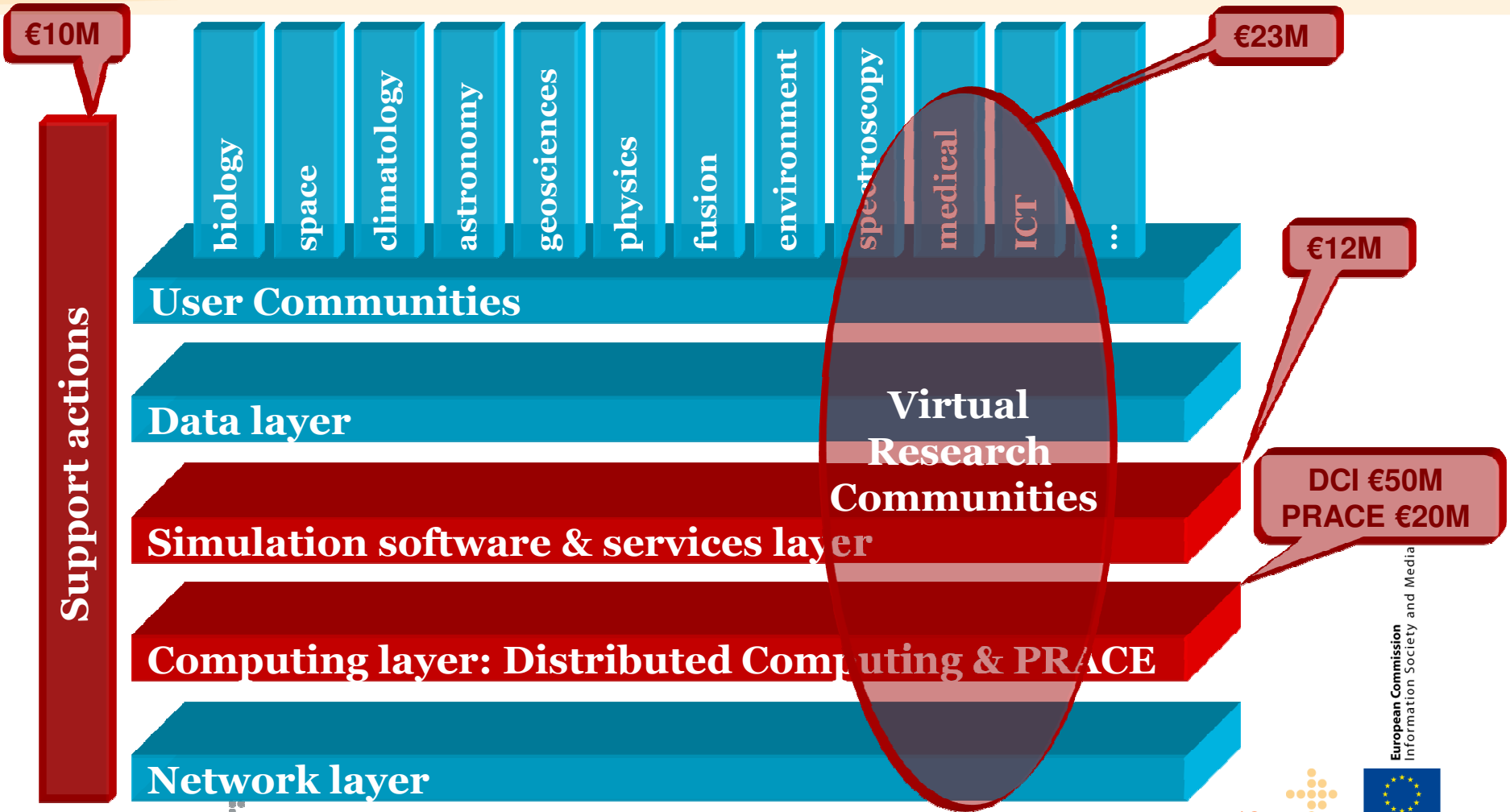
Sharing the best computational resources:
e-Science grid, supercomputing

Linking at the speed of the light:
GÉANT

e-infrastructure

European Commission
Information Society and Media

Call 7: closing 24.11.09, budget 115 mEUR



Call 7: topics and budget

Topic	Indicative budget (EUR million)	Funding Scheme
INFRA-2010-1.2.1 Distributed computing infrastructure (DCI)	50	CP-CSA
INFRA-2010-1.2.2 Simulation software and services	12	CP-CSA
INFRA-2010-1.2.3 Virtual Research Communities	23	CP-CSA
INFRA-2010-2.3.1 First implementation phase of the European High Performance Computing (HPC) service PRACE	20	CP-CSA
INFRA-2010-3.3 Coordination actions, conferences and studies supporting policy development, including international cooperation, for e-Infrastructures	10	CSA-CA and CSA-SA

Topic objectives

INFRA-2010-1.2.1: Distributed computing infrastructure (DCI)

- 1.2.1.1– European Grid Initiative (EGI)
  - Set up organisation for sustainable grid services provision including user support & SW/middleware repository maintenance, operation & certification
  - Plan and prepare future service evolution of grids
  - Stakeholders: National Grid Initiatives (NGIs); possibly other entities
  - Seamless progressive transition to new EGI scheme is required
  - Promote international collaboration & interoperability; open source, standards and licensing policy are required

- 1.2.1.2 – Service deployment
  - Services for user communities that are heavy users of DCIs and have multi-national dimension
  - Activities expected to be articulated with EGI

The total indicative budget for sub-topics 1.2.1.1 and 1.2.1.2 is EUR 25 million. A single proposal is expected to be funded to cover sub-topic 1.2.1.1.

Topic objectives

INFRA-2010-1.2.1: Distributed computing infrastructure (DCI)

- 1.2.1.3 – Middleware and repositories
  - Further develop quality middleware; consolidate or go beyond existing DCIs (e.g. emerging virtualisation environments…)
  - Create SW-component repositories to complement middleware-services; maintenance to be ensured later by EGI
- 1.2.1.4 – Access to DCI platforms
  - Easier access to DCIs through science gateways for computing and data service; support workflows combining capacity & capability computing and access to data & networks
- 1.2.1.5 – Extension of DCI platforms
  - Extend existing DCIs to incorporate remote operation of scientific instruments (e.g. in context of ESFRI roadmap projects)

All DCI proposals are encouraged to consider the international dimension, education & training and standards. Innovation in services and technology is encouraged.

Topic objectives

INFRA-2010-1.2.2: Simulation software and services

- General objectives:
  - Multi-disciplinary and multi-scale "in silico" experimentation and simulation, ensuring the ability to fully and timely exploit high-performance and distributed computing capabilities
  - Integrating scientific application software in the European e-Infrastructure
- More specifically:
  - Development, adaptation and maintenance of scientific software on dynamically evolving hardware platforms
  - Deployment of a computational science infrastructure through models, tools, algorithms and simulation and visualisation techniques
  - Promotion of appropriate software standards to provide scalability, evolution and interoperation in integrated platforms

Topic objectives

INFRA-2010-1.2.3: Virtual Research Communities

- General objectives:
  - Enable an increasing number of users from all disciplines to access, share and use e-Infrastructures
  - Remove constraints of distance, access and usability, as well as barriers between disciplines for a more effective scientific collaboration and innovation
- More specifically:
  - Deployment of e-Infrastructures in research communities to enable multi-disciplinary collaboration
  - Deployment of end-to-end e-infrastructure services and tools for integrating and increasing research capacities
  - Build user-configured virtual research facilities and test-beds from collection of diverse resources
  - Address human, social and economic factors to facilitate the creation, take up/maintenance of e-Infrastructure services
  - Integrate and link regional e-Infrastructures

Addressing e-Infrastructures for the ESFRI projects and communities is encouraged

Incorporating users from academia and industry and training activities in the use of e-Science are welcome

Topic objectives

INFRA-2010-2.3.1: First implementation phase of the European High Performance Computing (HPC) service PRACE

- General outcomes:
  - Deploy new ecosystem of computational resources to address the needs of advanced science & engineering; build on PRACE and integrate DEISA resources and services
- More specifically:
  - Set up & operation of a new organisational structure
  - Development, adaptation and maintenance of SW
    - system SW & tools, from operating systems and software accelerators to parallelising compilers
    - tools, algorithms & standards for modelling, simulation, visualisation)
  - Technology and system evaluations to ensure deployment of leading edge technology
  - Mechanisms for industry involvement as partners (users, vendors, providers)
  - Training and sharing of best practices

Address financial/environmental sustainability

Topic objectives

INFRA-2010-3.3:Coordination actions, conferences and studies supporting policy development, including international cooperation, for e-Infrastructures

- Enhance coordination between national and pan-European e-Infrastructure initiatives and programmes
- Strengthen the innovation potential and impact of e-Infrastructures
- Establish a new scientific software strategy to reinforce the global position of Europe in scientific software development, deployment and use
- Coordinate a European eco-system of scientific data repositories for preservation and sharing of scientific information
- Specific studies on e-Infrastructure related topics
- Dissemination of information on the e-Infrastructure programme and projects
- International cooperation, including:
  - further extension of e-Infrastructures to International Cooperation Partner countries (ICPC);
  - joint roadmaping of activities with developed countries;
  - promotion of the interoperation between similar infrastructures on the global scale

Further information

- Leaflet on RI Call 7: ftp://ftp.cordis.europa.eu/pub/fp7/ict/docs/e-infrastructure/e-infrastructures-in-fp7-call7_en.pdf
- Web page of the Call 7 information day held on 18.06.09: http://cordis.europa.eu/fp7/ict/e-infrastructure/events-20090618_en.html
- E-mail for questions related to the call: INFSO-RI-CALLS@ec.europa.eu

- Web page of Call 7: http://cordis.europa.eu/fp7/dc/index.cfm?fuseaction=UserSite.CapacitiesDetailsCallPage&call_id=263

- e-Infrastructures home page: http://cordis.europa.eu/fp7/ict/e-infrastructure/home_en.html

e-infrastructure

European Commission
Information Society and Media

Summary

- Important motivations for international cooperation (an urgency not an option..)
- Good track record of US-EU cooperation on CI/e-Infrastructures *(but more can be done!)*
- FP7 open to international collaboration
- New opportunities (e-Infrastructures Call-7..)