e-Infrastructure:
objectives and strategy in FP7

National information event on the FP7 open calls

Athens, 4 July 2008

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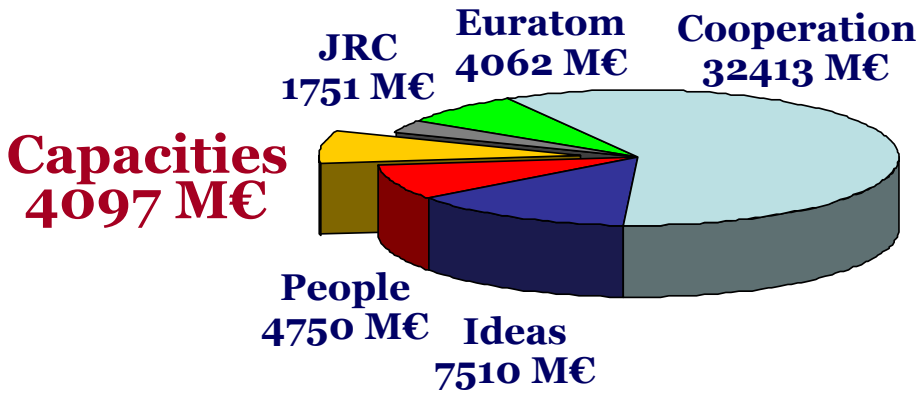
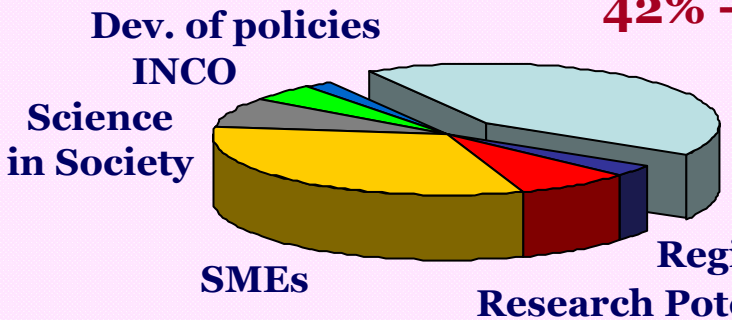
Framework Programme 7 (2007-13)



Research Infrastructures
42% - 1715 M€



e-Infrastructures
(ICT for Science)
572 M€

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e-Infrastructure is changing the way science is done!

e-Infrastructure:

- a combination of ICT-based resources and associated tools and services such as networks, computing systems and scientific data repositories
- a new way of collaborating and sharing resources independently of the researcher's geographical location
- a key enabler for virtual global research communities
- a driver for social and economic well-being in Europe

ICT Infrastructures for science

e-Infrastructure by layer

Linking the ideas at the speed of the light:
GÉANT

Sharing the best resources:
e-Science grid

Accessing knowledge:
scientific data

Designing future facilities:
novel e-Infrastructures

Innovating the scientific process:
global virtual research communities

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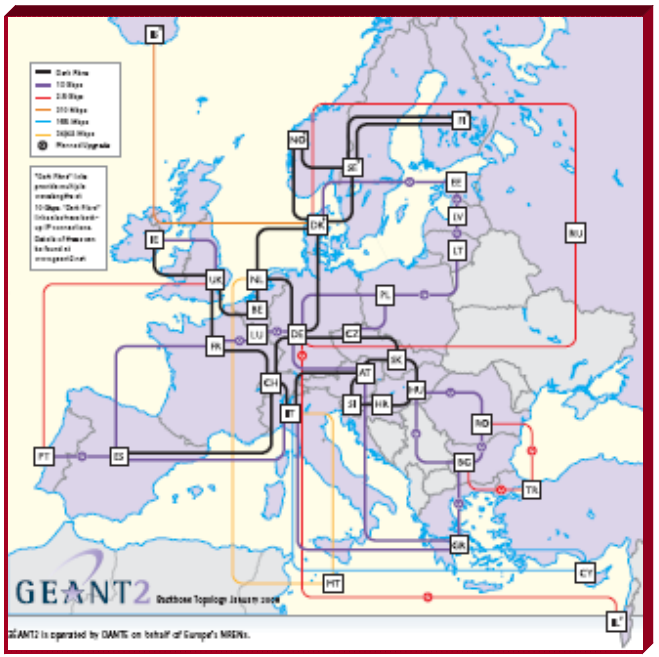
GÉANT: linking the finest minds

- Pan-European coverage
  (40+ countries /3900 universities / 30+ million students)
- Hybrid architecture:
  - connectivity at 10 Gb/s
    (aggregated traffic)
  - dark fiber wavelengths
    (demanding communities)



BBSI

EVALSO

FEDERICA

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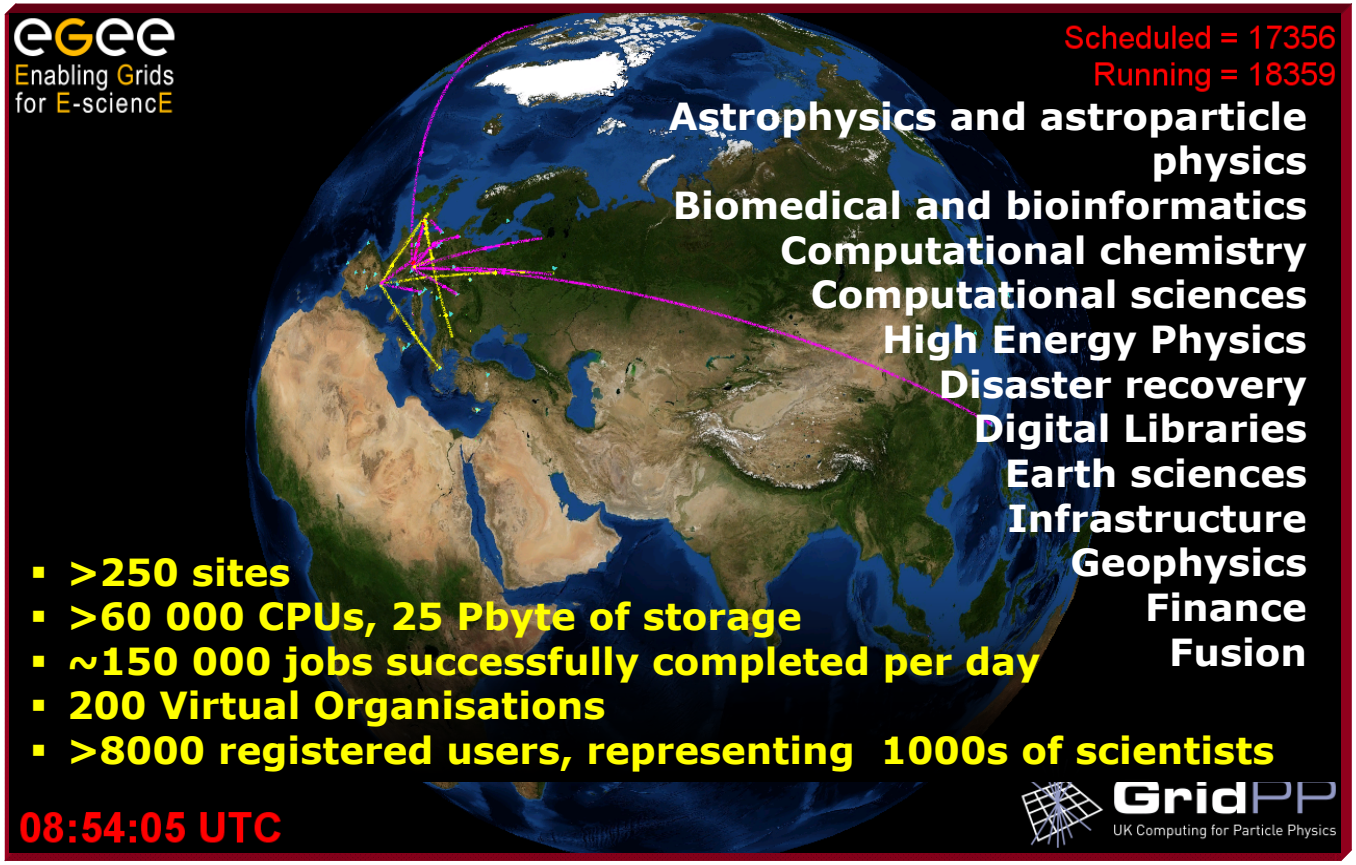
Grids for science



e-Science grid perspective

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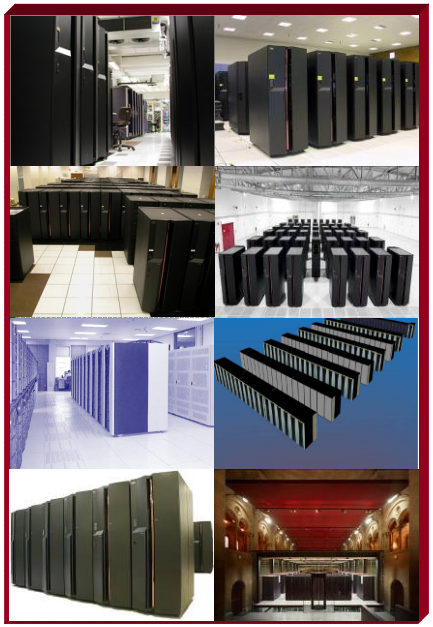
DEISA: virtual HPC services

- 11 sites/7 countries connected at 10 Gb/s
- Over 22,000 CPUs sporting 200 TFlop
- Larger parallel applications in individual sites
- Workflow applications with grid technologies
- Global data management service
- Extreme Computing Initiative



Distributed European Infrastructure for Supercomputing Applications

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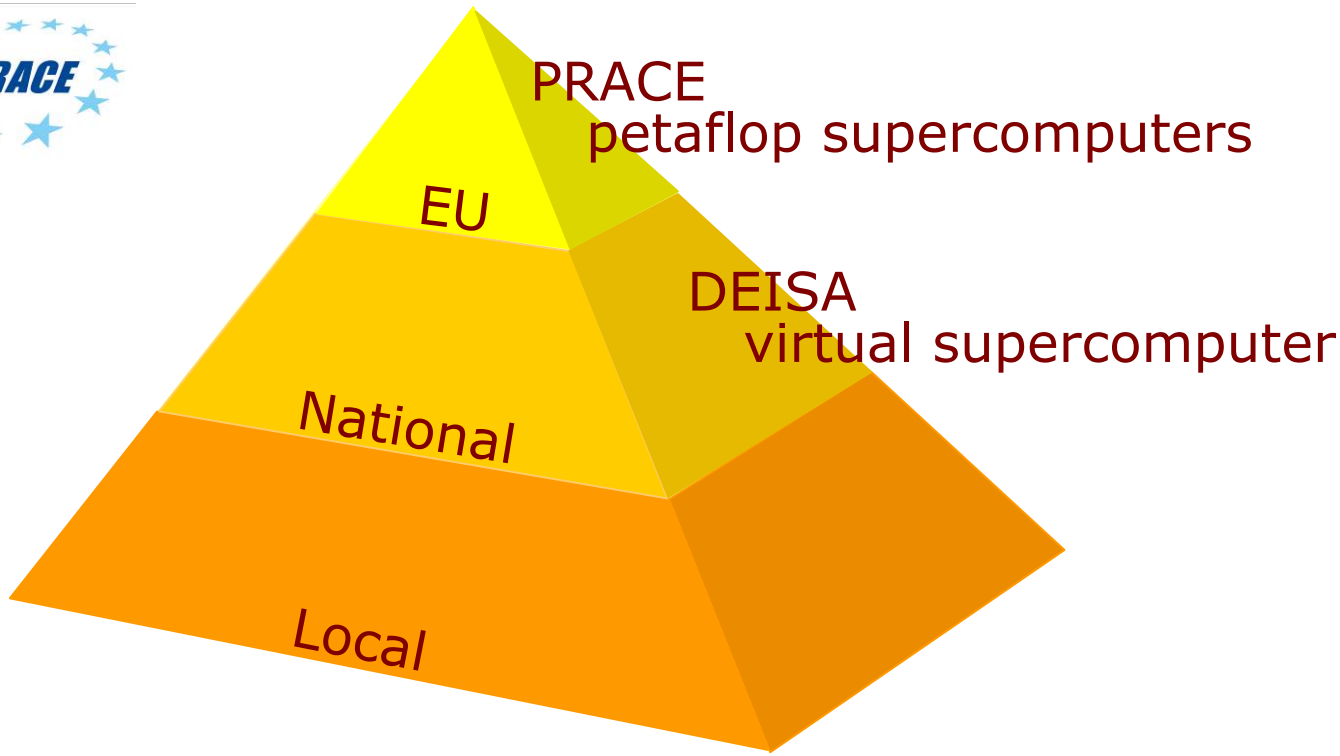
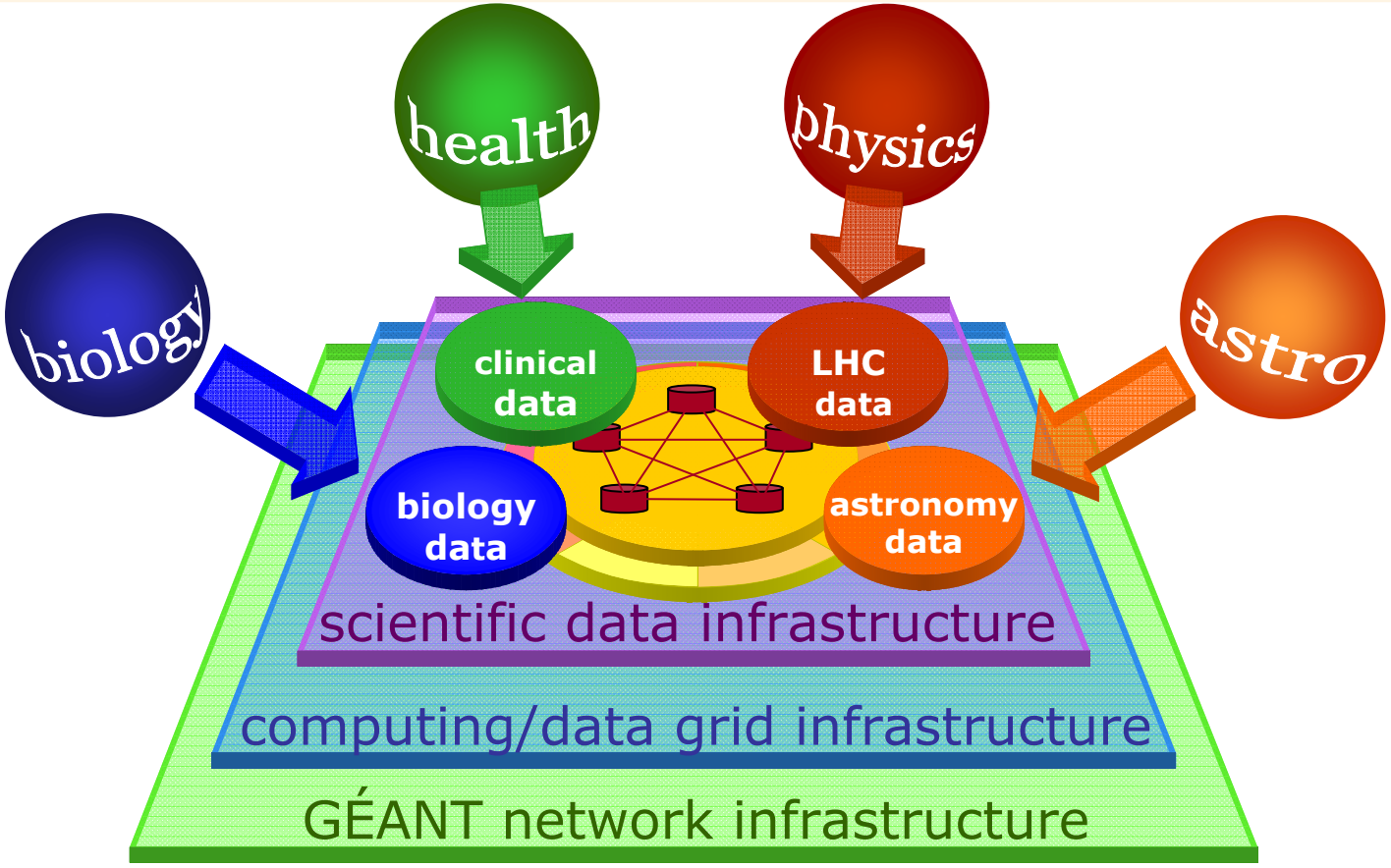
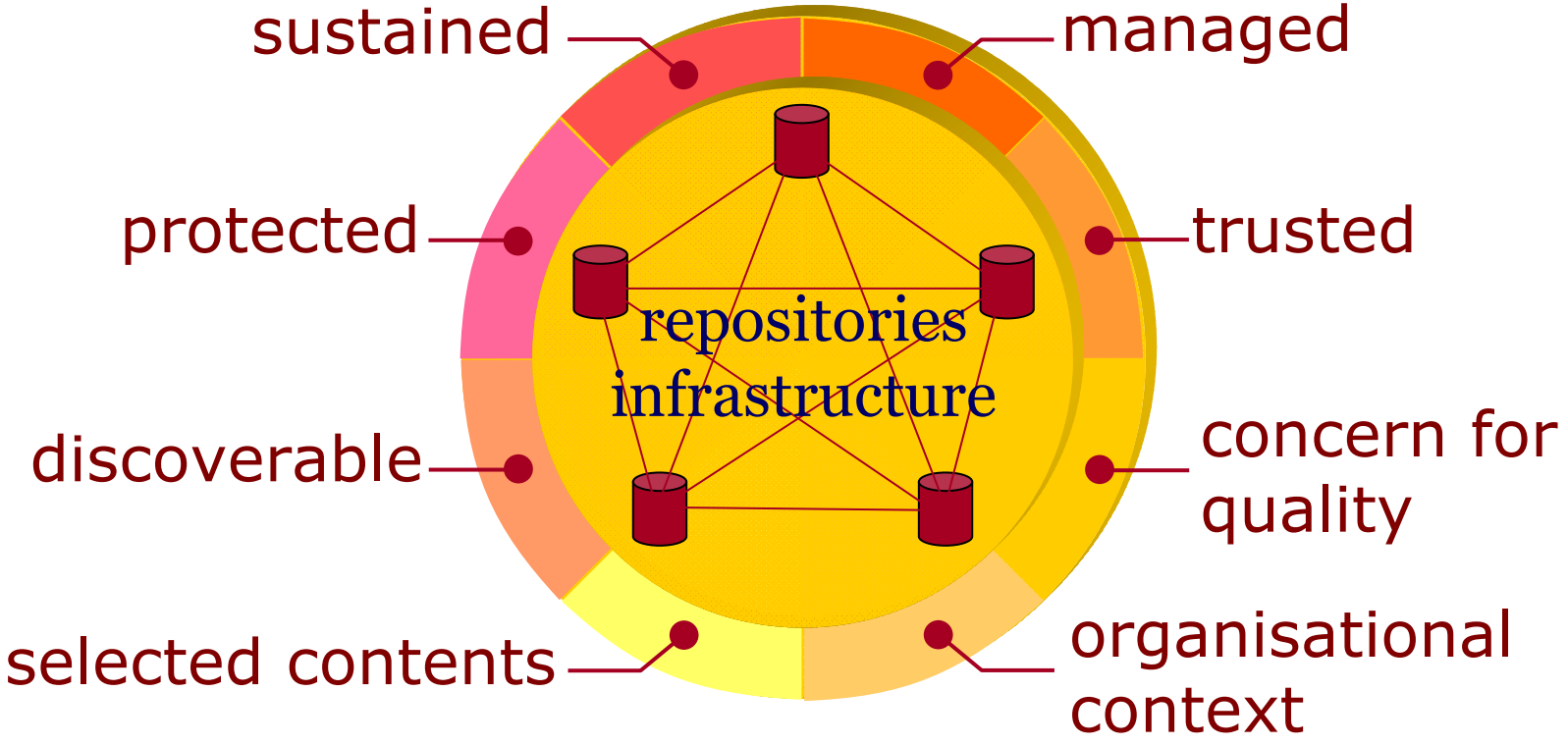
New Petaflop supercomputer



Data as an Infrastructure



Characteristics of repositories



source: eSciDR study (adapted)

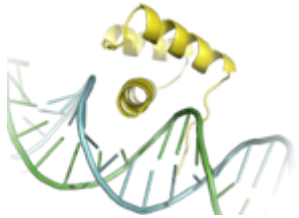
Scientific data perspective

driver

Flexible, robust, scalable and cohesive pan-European infra-structure of Digital Repositories

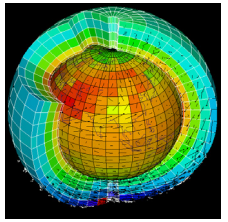
IMPACT

Improving protein annotation through coordination and integration of databases



METAFOR

Common Information Model and tools for using climate data and models



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Involving scientific communities

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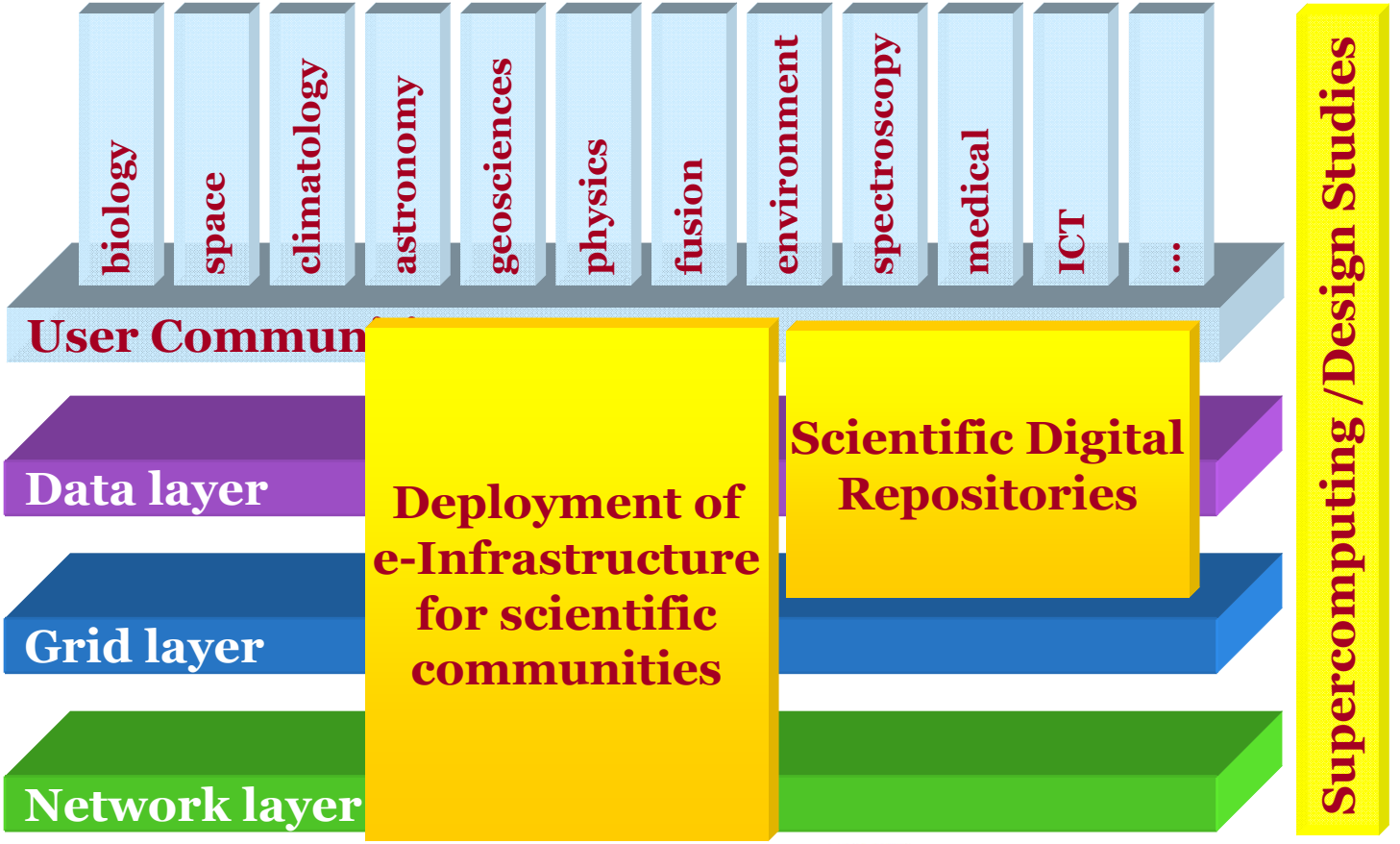
Policy debate

- ESFRI: European Strategy Forum on Research Infrastructures
- e-IRG: e-Infrastructures Reflection Group
- ENPG: European Network Policy Group
- Council of European Union: research infrastructures, scientific data, regional dimension
- ERA (European Research Area) green book
- Communications to the Council and Parliament: scientific data, ICT infrastructures for Science

Calls for proposals 2007 (closed)



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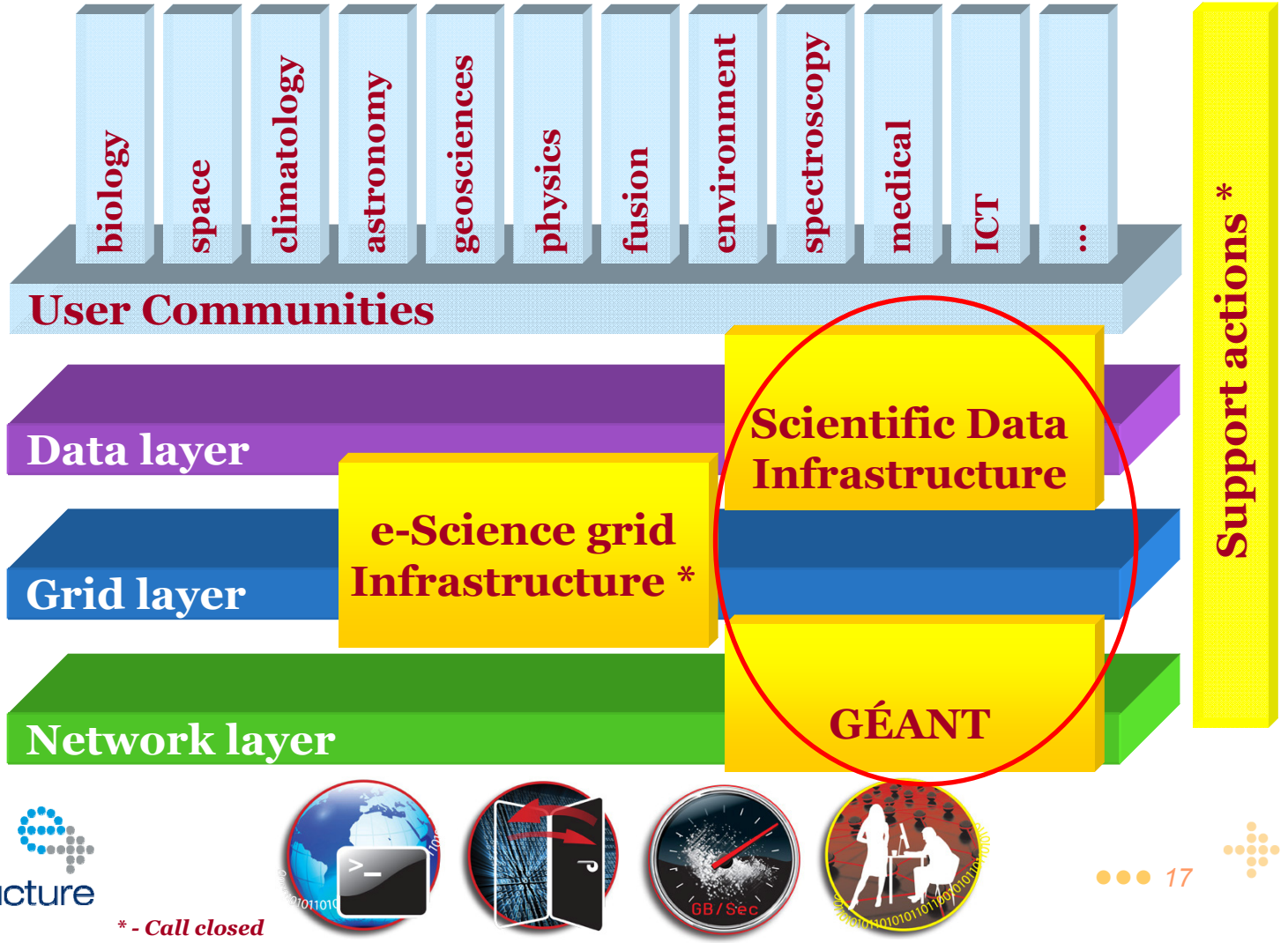
Calls for proposals 2007 and 2008



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* - *Call closed*

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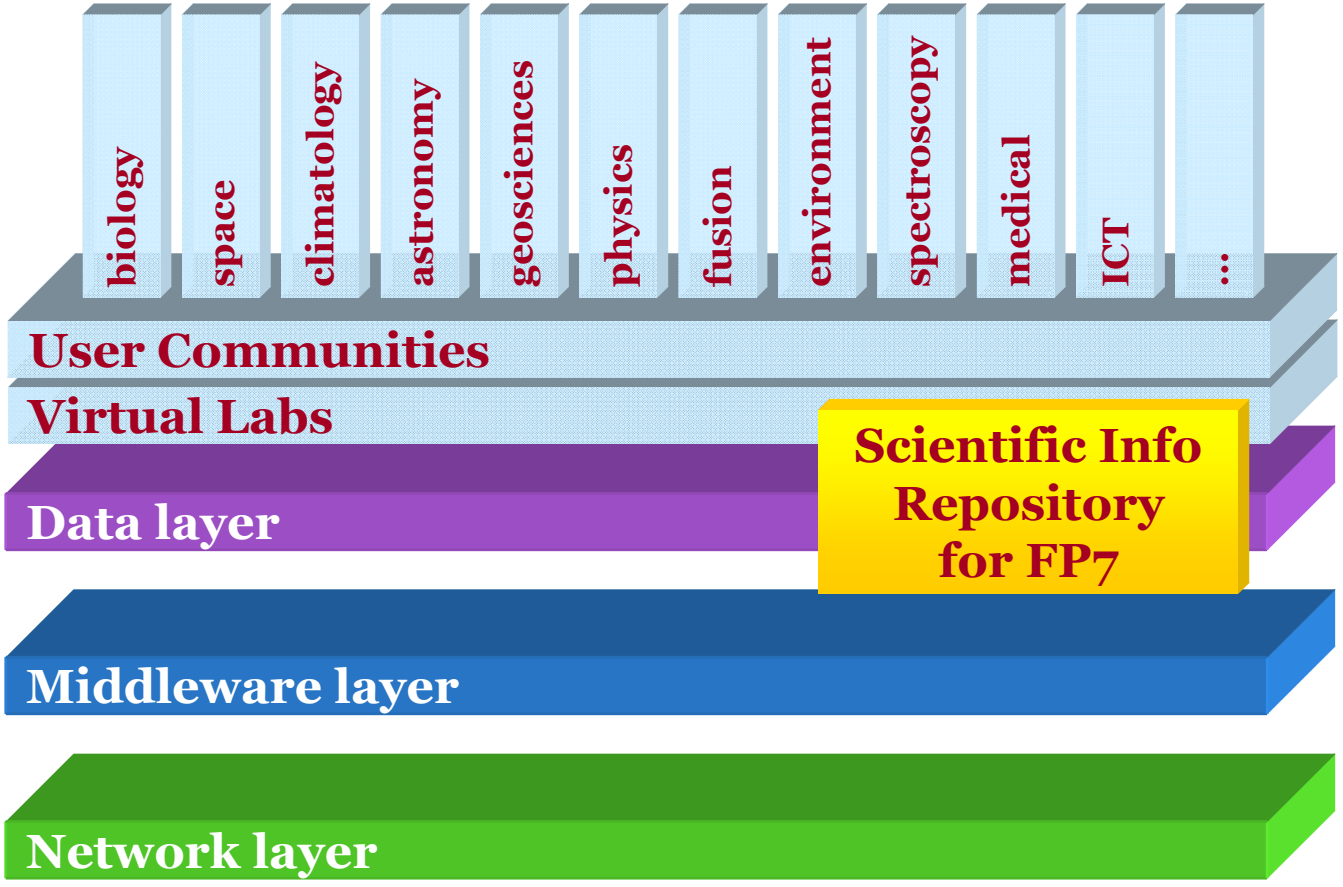
e-Infrastructure Call 5 - DRAFT! – (Mar 2009, €9.6m)



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INFRA-2008-1.2.1: GÉANT

Further deployment and evolution of the pan-European high-capacity and high-performance communication network (GÉANT), in close articulation with the National Research and Education Networks (NRENs), building upon the current world leadership and addressing the ever growing requirements of advanced scientific communities.

- GÉANT should reinforce the provision of end-to-end connectivity and services (user-to-user) by ensuring a high level of cohesion and coordination of priorities amongst the interconnected NRENs.
- GÉANT should represent an instantiation of the "Internet of the future" by making timely use of state-of-the-art communication technologies and considering solutions that may emerge from innovative research done in the context of "Experimental Facilities".
- GÉANT should strive for world leadership by undertaking the necessary technical research activities and reinforce Europe's position as a hub for global research networking, by promoting intercontinental connectivity.

Expected impact

- Enabling e-Science and implementation of the European Research Area
- Fostering new paradigms of collaborative research across Europe and globally
- Providing harmonised and pan-European e-Infrastructure
- Bridging the digital divide and enabling all scientists in Europe to participate in collaborative work on equal terms independently of their location

Example of activities

- Service Activity implementing pan-European optical connectivity and interconnecting other regions
- Joint research activity developing novel services
- Networking Activity integrating the NREN community

Details

- **Funding Scheme**

  Combination of Collaborative Projects & Coordination and Support Actions (I3s)

- **Indicative Budget**

  93 MEuro

- **Note**

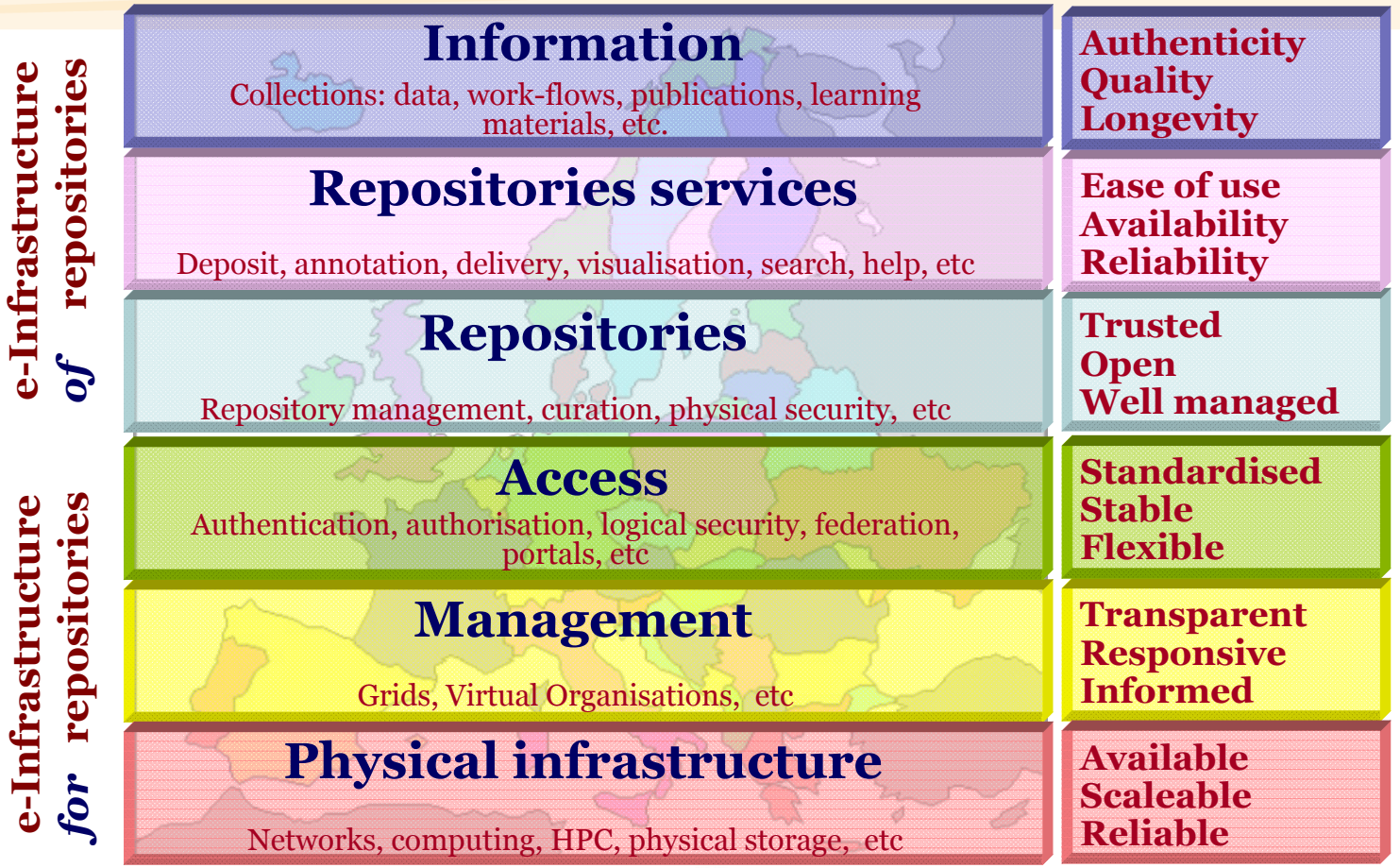
  Given the specific objective of this topic, the proposal must be collectively submitted by legal entities operating the NRENs. Legal entities created by the NRENs to contribute to the deployment of connectivity and services on a pan-European scale (e.g. DANTE, TERENA, NORDUnet) can also participate

INFRA-2008-1.2.2: Scientific data infrastructure

Support to the deployment of a broad European multidisciplinary scientific data infrastructure able to be easily federated with other knowledge infrastructures in other parts of the world, building upon the achievements of network and grid infrastructures and opening its benefits to other potential research areas such as e-health, e-learning and others.

- This activity addresses the rapidly increasing use of digital content in research and in the generation and dissemination of scientific and technical knowledge. The increasing availability of primary sources of data in digital form (e.g. experimental raw data, social sciences data) has the potential to shift the balance away from research based on secondary sources (such as publications), thus positioning data as the central element in the scientific process.
- This activity should provide an integrated set of services exploiting the middleware and grid capabilities to federate data in an eco-system of digital resources. These services should enhance the ability of researchers to extract further meaning from masses of data stored in institutional, national or community repositories, by supporting the deployment of standardised mechanisms to store, archive, authenticate, access, transfer, preserve, curate, certify and interpret scientific data.
- Furthermore, the deployed scientific data infrastructure will require adaptation in cultures and new approaches and competences, given the intrinsic relation between data and associated software to read, interpret and process it.

INFRA-2008-1.2.2: Scientific data infrastructure



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source: eSciDR study (adapted)

Expected impact

- Increase the scale of federation and interoperation of digital repositories
- Consolidation of synergies with the underlying e-Infrastructures
- Robust data infrastructures profiting from the interconnection and access to distributed and high-end computing and storage resources

Expected impact

- Widespread implementation of strategies for curation and preservation
- Common management strategies to reduce costs by increasing the users' base and bridge across
- Multidisciplinary communities, enabling cross-fertilisation of scientific results and favouring innovation

INFRA-2008-1.2.2
Scientific Data Infrastructure

- Deployment of a broad European multidisciplinary scientific data infrastructure:
  - ecosystem of 'repositories' seamlessly accessible
- Science is a 'Global' endeavour and Europe wants to be a global partner
- Building upon the achievements of network and grid infrastructures which are opening its benefits to other research areas
  - services exploiting the middleware and grid capabilities to federate data in an eco-system of digital resources

INFRA-2008-1.2.2 Scientific Data Infrastructure

- Support the 'next-generation' of Science – based on experimentation with very complex systems - and better 'link' data sources with information prepared for dissemination and knowledge exchange
  - enhance the ability of researchers to extract further meaning from masses of data stored in institutional, national or community repositories
  - infrastructure to support the generation and dissemination of scientific and technical knowledge
  - deploy standardised mechanisms to store, archive, authenticate, access, transfer, preserve, curate, certify and interpret scientific data
- Last but not least…
  - adaptation in cultures and new approaches and competences, given the intrinsic relation between data and associated software to read, interpret and process it.

Details

- **Funding Scheme**

  Combination of Collaborative Projects & Coordination and Support Actions (I^3)

- **Indicative Budget**

  20 MEuro

The I3 Model

Activities in an Integrated Infrastructure Initiative (**I3**) must cover (see WP p23-24)

- **Joint Research** activities (RTD)
- **Networking** activities (human: incl. training and dissemination)
- **Service** activities (and/or Transnational Access) (OTHER)
- Consortium **management** activities (MGMT)

The CCPCSA reimbursement table

Maximum reimbursement rates of eligible costs	Research and technological development (*)	Support activities	Networking activities	Management of the consortium activities	Other activities
Collaborative project	50% / 75%			100%	100% 50% Connectivity
Coordination and support action		100% 7% indirect	100% 7% indirect		

Further information

www.cordis.europa.eu/fp7/ict/e-infrastructure/

INFSO-RI-CALLS@ec.europa.eu

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Connecting the finest minds

••• Linking ideas at the speed of light

Sharing the best scientific resources

••• Harnessing the unlimited power of computers, instruments and data

Building virtual global research communities

••• Innovating the scientific process

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Thank you

géant | grids | scientific data | supercomputing

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