

e-Infrastructures in **FP7: Call 7** (WP 2010)

... **Call 7**

Preliminary information on the call for proposals
FP7-INFRASTRUCTURES-2010-2 (Call 7)
subject to approval of the Research Infrastructures WP 2010



About this document

The purpose of this leaflet is to introduce the “**e-Infrastructures**” area in FP7¹ with a **focus on the seventh call for proposals** under the lines of action “1.1. Support to existing research infrastructures”, “1.2 Support to new research infrastructures” and “1.3 Support for policy development and programme implementation” of the “Capacities” specific programme.

This leaflet contains preliminary information pending the formal approval of the Research Infrastructures Work Programme 2010. Therefore, before deciding on submitting a proposal applicants are advised to consult the approved version of the Work Programme that will be available on CORDIS (accessible from <http://cordis.europa.eu/fp7/dc/index.cfm>) following the publication of the call expected for the end of July.

The seventh call is expected to close on 24 of November 2009 and would include the following topics:

Under activity “1.1.2 ICT based e-Infrastructures”:

- **INFRA-2010-1.2.1: Distributed computing infrastructure (DCI)**
- **INFRA-2010-1.2.2: Simulation software and services**
- **INFRA-2010-1.2.3: Virtual Research Communities**

Under activity “1.2 Construction of new infrastructures (or major upgrades) – implementation phase”:

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

Under activity “1.3 Support for policy development and programme implementation, including support to emerging needs”:

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

⁽¹⁾ Seventh Framework Programme (2007-2013) of the European Community for research, technological development and demonstration activities.



The description of each topic includes the objectives, expected impact, examples of activities and indicative budget. The list of examples is not exhaustive and solely aims at providing better understanding of tasks that could be carried out under the specific topic.

Further information on the topics, calls and the “Capacities” specific programme are available on the e-Infrastructures web site:

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

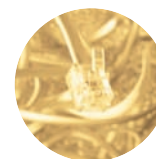
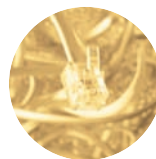
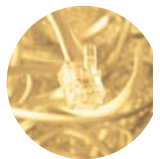
The complete information on the seventh call will be accessible via the CORDIS FP7 web site: <http://cordis.europa.eu/fp7/dc/index.cfm>.

Research Infrastructures in FP7

The overall objective of the Research Infrastructures part of the “Capacities” specific programme is to optimise the use and development of the best research infrastructures existing in Europe, and to help to create in all fields of science and technology new research infrastructures of pan-European interest needed by the European scientific community to remain at the forefront of the advancement of research. The ultimate aim is to be able to help industry to strengthen its base of knowledge and its technological know-how.

Within the scope of this Community action, the term ‘research infrastructures’ refers to facilities, resources and related services that are used by the scientific community to conduct top-level research in their respective fields. This definition covers: major scientific equipment or instruments; knowledge based-resources such as collections, archives or structured scientific information; enabling ICT based e-Infrastructures such as Grid, computing, software and communications; any other entity of a unique nature essential to achieve excellence in research.

The draft Work Programme 2010 foresees two calls: FP7-INFRASTRUCTURES-2010-1 (Call 6) and the one presented here FP7-INFRASTRUCTURES-2010-2 (Call 7).



Overview of current e-Infrastructures activities in FP7

The e-Infrastructures area supports a number of interrelated topics designed to foster the emergence of a new research environment in which “virtual communities” of researchers are empowered to share and exploit the collective power of the European ecosystem of scientific and engineering resources, from research facilities and scientific instruments, computation and databases.

Linking the ideas at the speed of light: GÉANT

GÉANT², the world’s largest multi-gigabit communication network dedicated to research and education, offers the scientists the possibility to store, transmit and analyse more data than ever before. More than 40 million research and education users of GÉANT² in over 40 countries across Europe are interconnected to other world regions enabling global research collaboration.

Sharing the best scientific resources: e-Science grids

Grid infrastructures make unprecedented amounts of computing power available to scientists by pooling resources distributed across Europe and beyond in a secure and reliable way. Using grids helps researchers to solve complex scientific problems more effectively and efficiently than it was possible before.

Accessing knowledge: Scientific data

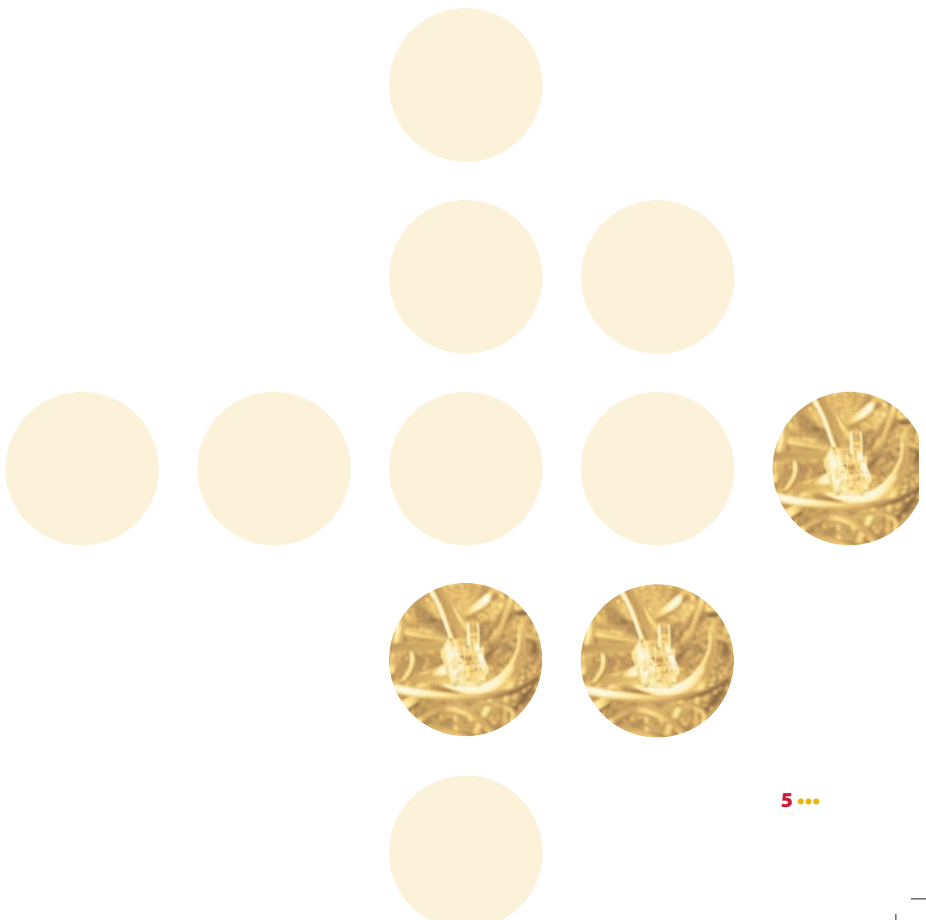
By weaving together scientific data repositories, multidisciplinary research communities are given ready access to an unprecedented amount of data. This allows for greater creativity and productivity in research and a broader dissemination of information.

Towards a European supercomputing resource: PRACE

The aim is to create a new research infrastructure in the area of High Performance Computing (HPC) in order to remain at the forefront of scientific research and to help industry to strengthen its technological know-how. This action implements one of the projects foreseen in the European Strategy Forum on Research Infrastructures (ESFRI) roadmap.

Innovating the scientific process: virtual research communities

By their ability to solve complex problems, remove the constraints of geographic distance and provide remote access to expensive instruments, ICT based e-Infrastructures are changing the way research communities address key societal and economic issues, such as energy, healthcare or climate change.



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

Objectives

- 1.2.1.1– European Grid Initiative (EGI)
 - Set up organisation for sustainable grid services provision, including user support and SW/middleware repository maintenance, operation and certification
 - Plan and prepare the future evolution of grids
 - Stakeholders: National Grid Initiatives (NGIs); possibly other entities
 - Seamless progressive transition to new EGI scheme is required
 - Promote international collaboration and 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
- 1.2.1.3 – Middleware and repositories
 - Further develop quality middleware
 - 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 services; support workflows combining capacity and capability computing and access to data and 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.

Expected impact

- Overall impact:
 - Broader and deeper inter-disciplinary scientific collaboration
 - Coordinated, strengthened and focused software deployments in e-Infrastructures and e-Science
 - Improved usability of DCI platforms in terms of users and inter-disciplinary research, also exploiting changing hardware environments
 - Reinforcing the European position in software development and deployment
- Regarding the EGI in particular:
 - Sustainable environment for the provision of grid-based computing services through a stable collaborative European and national co-funding scheme
 - Easy sharing of resources (computation, storage, data) across borders to ensure the technological interoperability of global grids.
 - Contribute to the realisation of the ERA

Examples of activities

- Creation of a repository providing a tool box of services verified to work properly on top of middleware stacks
- Comprehensive interfaces to middleware stacks exposing subsets of features relevant to certain application types
- Deployment of user-friendly environments mapping the different steps of a scientific process to the appropriate e-Infrastructure services
- Efficient data handling mechanisms in distributed computing environments
- Remote access to physical instruments as a service
- Enrich existing DCIs with novel paradigms (e.g., web 2.0, virtualisation, new licensing schemes, incentive-based models for attracting resources, etc.)

Funding Scheme

Combination of Collaborative projects and Coordination and Support Actions (CP-CSA)

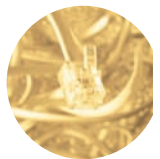
Indicative Budget

EUR 50 million

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.

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Seventh Call: tentative deadline 24 November 2009

INFRA-2010-1.2.2: Simulation software and services

Objectives

- 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

Expected impact

- Exploiting the highest quality computational and data resources
- Strengthening Europe’s international role as software producer and user
- Unified community of computational scientists, as an essential element of underpinning e-Infrastructures
- Addressing the computing needs of the research community

Examples of activities

- Integration and adaptation of existing scientific application software to fully exploit leadership class or distributed computing e-Infrastructure
- Development and maintenance of models, tools, algorithms and simulation and visualisation techniques for new scientific applications
- Definition of research challenges that require high-end computing capabilities and development of a plan for exploiting such computational capabilities efficiently
- Development of simulation software that will have broad impact in a particular research field and will be made freely available through the deployment of open standards and appropriate licensing schemes for open source software
- Improve simulations and algorithmic scalability using techniques that better exploit multi-threaded, highly parallel, hierarchical architectures
- Create adequate programming models to fully exploit the computational capabilities of innovative computing architectures
- Create, adapt and maintain modular simulation software that will be portable to multiple systems

Funding Scheme

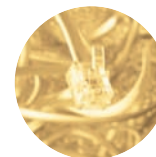
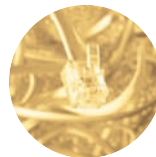
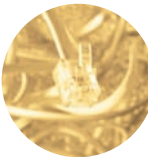
Combination of Collaborative projects and Coordination and Support Actions (CP-CSA)

Indicative Budget

EUR 12 million

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Seventh Call: tentative deadline 24 November 2009

INFRA-2010-1.2.3: Virtual Research Communities

Objectives

- General objectives:
 - Enable an increasing number of users and research communities from all science and engineering disciplines to access and use e-Infrastructures
 - Remove the constraints of distance, access and usability as well as the 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 and maintenance of e-Infrastructure services
- Integrate and interlink regional e-Infrastructures

The deployment and further evolution of e-Infrastructures addressing the research infrastructures of the ESFRI-roadmap is particularly encouraged.

Proposals should incorporate users from academia and industry, computational scientists and e-infrastructure providers. Training activities in the use of e-Science environments are welcome.

Expected impact

- Increased effectiveness of European research
- Use of e-Infrastructure services and tools by actors from new disciplines and scientific communities
- National initiatives are able to address the European and international dimension
- Easier development and adoption of standards, common tools, procedures and best practices
- Increased quality and attractiveness of e-Infrastructures

Examples of activities

- Deployment, quality assurance and support of e-Infrastructure services specific to a user community building upon existing services where relevant
- Vertical integration of different services to create virtual laboratories or specific workbenches for simulation in support of specific research communities
- Innovative software solutions for making a specific user community benefit from e-infrastructure services
- Joint management of access to distributed resources
- Definition of common standards and protocols for interoperability
- Coordination with national or international initiatives
- Data management including secure shared access, global scheduling, user and application support services
- Federated services to facilitate the broader use of digital repositories of scientific information

Funding Scheme

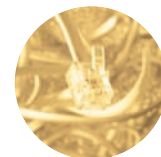
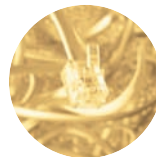
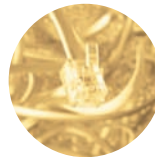
Combination of Collaborative projects and Coordination and Support Actions (CP-CSA)

Indicative Budget

EUR 23 million

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Seventh Call: tentative deadline 24 November 2009

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

Objectives

- General objectives:
 - Deploy new ecosystem of computational resources (peta-scale by 2010, exa-scale by 2020) to address needs of advanced science and industry; build on PRACE and integrate DEISA resources
- More specifically:
 - Set up and operation of new organisational structures
 - Development, adaptation and maintenance of SW (system SW and tools; tools, algorithms and standards for modelling, simulation, visualisation, etc.)
 - Technology and system evaluations to ensure deployment of leading edge technology
 - Mechanisms for industry involvement as partners
 - Training and sharing of best practices
 - Address financial and environmental sustainability

Expected impact

- Deployment of a state-of-the-art HPC capability in Europe addressing the ever growing computational and simulation requirements at peta-scale level from 2010 and moving to exa-scale by 2020
- Strengthen European international position in computational sciences



Examples of activities

- Set up of a new legal entity to manage the computational resources
- Maintenance and operation of a HPC software repository
- Development and operation of a peer review scheme for allocating computing resources
- Development, adaptation and maintenance of software for HPC systems
- Development of algorithms and standards for modelling, simulation and pre- and post-treatment of data
- Technology evaluations to roadmap future generations of HPC systems
- Partnerships with industry to develop or transfer technology

Funding Scheme

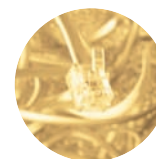
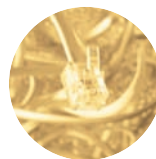
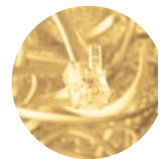
Combination of Collaborative projects and Coordination and Support Actions (CP-CSA)

Indicative Budget

EUR 23 million

Contact

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Seventh Call: tentative deadline 24 November 2009

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

Objectives

- Enhance coordination between national and pan-European e-Infrastructure initiatives and programmes
- Strengthen the innovation potential and impact of e-Infrastructures
- Establish a new e-Infrastructures scientific software strategy in Europe in order to reinforce the global position of Europe
- Coordinate a European eco-system of scientific data repositories (preservation and sharing)
- 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 roadmapping of activities with developed countries
 - Promotion of the interoperation between similar infrastructures on the global scale

Expected Impact

- More and better coordination between national and pan-European e-Infrastructure initiatives
- Further extension of e-Infrastructures to ICPC
- Improved coherence between national public policies at world level
- Interoperation between infrastructures on global scale
- More relevant and effective e-Infrastructures programme



Examples of activities

- Support to e-Infrastructure policy groups
- Assessment of alternative governance models for existing or new e-Infrastructures at pan-European level
- Establishment of appropriate indicators to measure the impact of e-Infrastructures
- Evaluation of the impact of e-Infrastructures projects and services
- Design of extensions of the high speed network infrastructure (GÉANT) to use it as a testbed for Future Internet
- Scenarios for extending the use of e-Infrastructures beyond research, e.g. in public services, education or eHealth
- Coordinate the establishment of a European eco-system of data repositories
- Study the development and deployment of a distributed facility to develop and/or maintain scientific software
- Elaborate joint collaboration roadmaps for e-Infrastructures together with other developed or emerging economies (USA, Brazil, Canada, Japan, Australia, South Africa, etc.)
- Encourage interoperation between European and other similar regional e-infrastructures in developing regions (Latin America, Asia-Pacific, Mediterranean rim)
- Assess sustainability and ownership issues of existing and new regional e-Infrastructures outside Europe that collaborate with European ones (RedClara, Eumedconenct, TEIN, C@ribnet, Ubuntunet)

Funding Scheme

Coordination and Support Action (CSA):

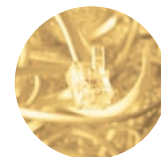
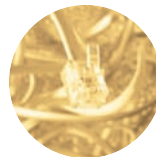
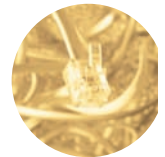
- Two instruments:
 - Coordination Action (CSA-CA)
 - Support Action (CSA-SA)

Indicative Budget

EUR 10 million

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e-Infrastructures in **FP7: Call 7** (WP2010)

European Commission
Directorate-General Information Society and Media
GÉANT & e-Infrastructure Unit



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