

ANNEX 3 TO THE DECISION

WORK PROGRAMME 2012

CAPACITIES

PART 1

RESEARCH INFRASTRUCTURES

(European Commission C(2011)xxxx of xx July 2011)

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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, and able to help industry to strengthen its base of knowledge and its technological know how.

I. CONTEXT

Policy context

The *Innovation Union* initiative¹ underlines that research and innovation are key drivers of competitiveness, jobs, sustainable growth and social progress. It highlights the increasing relevance of world-class research infrastructures to enable ground-breaking research and innovation and stresses the need of pooling resources across Europe to build and operate research infrastructures in view of their cost and complexity. It commits Member States together with the Commission to complete or launch by 2015 the construction of 60% of the priority European research infrastructures currently identified by ESFRI and to increase the potential for innovation of research infrastructures. The *Digital Agenda for Europe*², another flagship initiative of Europe 2020, highlights the role and need for reinforcement of the e-Infrastructures as well as targeted development of innovation clusters for building Europe's innovative advantage.

The work programme 2012 has been designed to support the implementation of the Innovation Union initiative and in particular to bring together research and innovation to address major challenges. It constitutes a significant change to the approach in earlier work programmes and can contribute to the innovation objectives in two ways:

1. By supporting the development of a consistent world-class eco-system of research infrastructures that will enable researchers to generate knowledge which can lead to new and more innovative products, processes and services, and can help addressing societal challenges. The focus on innovation is reflected in the description of the objectives and scope of the specific topics, as well as in the expected impact statements. The innovation dimension of the proposals will be evaluated under the evaluation criterion 'Impact'.

2. By increasing the potential for innovation of research infrastructures, in particular by reinforcing links with companies that drive innovation. Funded projects will include activities to reinforce the partnership with industry e.g. transfer of knowledge and other dissemination activities, activities to foster the use of research infrastructures by industrial researchers, involvement of industrial associations in consortia or in advisory bodies.

Information on the Risk-Sharing Finance Facility (RSFF), an innovative financial instrument under FP7, is available on line³ (see also section VII.5). The Commission will respond to further needs of potential beneficiaries for information on the RSFF (by, e.g., awareness-raising activities in conjunction with the European Investment Bank, participation to thematic events).

¹ Communication from the EC to the European Parliament, Council, European Economic and Social Committee and the Committee of the Regions, Europe 2020 Flagship Initiative Innovation Union COM(2010) 546 final

² Communication from the EC to the European Parliament, Council, European Economic and Social Committee and the Committee of the Regions, A Digital Agenda for Europe COM(2010) 245 final

³ <http://www.eib.org/products/loans/special/rsff/?lang=en> ; http://ec.europa.eu/invest-in-research/funding/funding02_en.htm

Research Infrastructures Action

Research infrastructures play an increasing role in the advancement of knowledge and technology and their exploitation. For example, radiation sources, data banks in genomics and data banks in social science, observatories for environmental sciences, systems of imaging or clean rooms for the study and development of new materials or nano-electronics, are at the core of research and innovation processes. By offering high quality research services to users from different countries, including from the peripheral and outermost regions, by attracting young people to science and by networking facilities, research infrastructures help structuring the scientific community and play a key role in the construction of an efficient research and innovation environment. Because of their ability to assemble a 'critical mass' of people, knowledge and investment, they contribute to national, regional and European economic development. They are therefore at the core of the knowledge triangle of research, education and innovation.

The development of a European approach with regard to research infrastructures, including ICT - based e-infrastructures, and the carrying out of activities in this area at a European level, can make a significant contribution to boosting European research potential, increasing the efficiency and effectiveness of research, as well as to reinforcing European research communities. Indeed, since such infrastructures are expensive and need a broad range of expertise to be developed, they should be built, used and exploited on a European or even a global scale.

While Member States remain central in the development and financing of most infrastructures, the EU can and should via FP7 play a catalysing and leveraging role by helping to ensure wider and more efficient access to and use of the infrastructures existing in the different Member States. The EU actions should also stimulate the coordinated development, deployment and networking of these infrastructures, and foster the emergence of new research infrastructures of pan-European interest within a medium to long term vision⁴.

Within the scope of this EU action, the term 'research infrastructures' refers to facilities, resources, systems and related services that are used by research communities to conduct top-level research in their respective fields. This definition covers: major scientific equipment or set of instruments; knowledge based-resources such as collections, archives or structured scientific information; ICT-based e-Infrastructures (networks, computing resources, software and data repositories) for research and education; any other entity of a unique nature essential to achieve or enable excellence in research. Research infrastructures may be 'single-sited' or 'distributed' (a network of resources).

This EU action will only address research infrastructures with a clear European dimension and added value in terms of performance and access. These infrastructures must contribute significantly to the development of European research and innovation capacities. The activities to be supported are identified under three main lines of actions as described below.

1 - Support to existing research infrastructures

The objective is to optimise the use and development of existing research infrastructures in all fields of science and technology, including e-Infrastructures, and to facilitate the access of research teams from all over the EU to these infrastructures. This line of action

⁴ Moreover, the EU also supports the development and construction of research infrastructures via Cohesion Policy.

represents the majority of the efforts (more than 60% of the operational funds) to be carried out under this part of the Specific Programme. Support will be provided for:

- *Integrating Activities*: to bring together and integrate, on a European scale, key research infrastructures in a given field, in order to promote their coordinated use and development. Integrating Activities provide researchers with a harmonised and optimised access to the best research infrastructures of a given field, independent of where the research infrastructures are located and by whom they are operated. In particular, they provide users with harmonised and enhanced interfaces, improved processing methods and optimised procedures. Integrating activities create the basis for a more rapid advancement of science in Europe, enabling the development of new advanced technologies and the associated growth of the European technology market as well as the creation of a new generation of researchers ("*generation TA*"), ready to exploit in the best way all the essential tools needed for their research. Lastly, by integrating major scientific equipment (telescopes, synchrotrons, research vessels, etc.) or set of instruments (sensors, microscopes, radars, etc.), as well as knowledge based-resources (collections, archives, structured scientific information, data infrastructures, etc.), integrating activities harmonise and organise the continuous flux of data collected or produced by these facilities and resources.
- *e-Infrastructures*: Relentless progress in ICT makes it now possible to deploy integrated ICT environments that radically transform the process of scientific and engineering research. In *eScience*, computer simulation and knowledge extraction from unprecedented amounts of data help to address scientific and global challenges of enormous complexity and scale. These ICT-based environments, commonly called e-Infrastructures, empower researchers by offering them access to facilities and resources regardless of their location. They foster the emergence of new working methods, based on the shared use of resources across different disciplines and technology domains enabling sustainable collaboration and partnerships between researchers in 'virtual research communities' in all e-Science fields, thereby creating a single European space for "online" research. e-Infrastructures are often also used beyond research, for example in education or public services. They include today high-capacity and high-performance communication networks (GÉANT), cloud and grid-empowered resource sharing infrastructures and supercomputing facilities (PRACE), combined with scientific application software, data repositories and services. The further development and adoption of e-Infrastructures requires structured interaction between computational scientists and ICT engineers and a broad range of scientific disciplines as well as catering for the specific needs of scientific and industrial user communities.

2 - Support to new research infrastructures (or major upgrades of existing ones)

The aim is to help to create in all fields of science and technology new research infrastructures of pan-European interest needed by the European scientific community in order to remain at the forefront of the advancement of research, and be able to help industry to strengthen its base of knowledge and its technological know-how. This action would also examine the opportunities to exploit the potential for scientific excellence of the convergence and outermost regions through new infrastructures. This line of action represents about one third of the total financial resources available for this part of the Specific Programme.

Support will be provided for:

- *Design Studies*: to contribute to conceptual design studies for new research infrastructures, that demonstrate a clear European dimension and interest.
- *Construction of new infrastructures (or major upgrades of existing ones)*: to provide a catalytic and leveraging support for the construction of critical new facilities building primarily upon the work conducted by the European Strategy Forum on Research Infrastructures (ESFRI)⁵. This activity will follow a two stage-approach:
 - *Stage 1 - support to the preparatory phase*: This first phase will involve, in particular, the finalisation of the legal organisation, of the management and multi-annual financial planning. Some technical work could also be considered.
 - *Stage 2 - support to the implementation phase*: this phase involves the actual construction or deployment, building on the technical, legal, administrative and financial agreement achieved during the preparatory phase between all stakeholders.

Only projects which have sufficiently progressed in the preparatory phase could proceed to Stage 2. FP7 EU financial support for the implementation phase will be limited to cases where there is a critical need and clear European added value for such a support.

3 - Support to policy development and programme implementation

The aim is to enhance the effectiveness and coherence of national and EU research policies and the international cooperation in the field of research infrastructures.

Approach for 2012

The work programme for 2012 will build on the strategic approach for existing and new research infrastructures undertaken in previous years, taking into account the new orientations set out by the *Europe 2020* strategy and its two flagship initiatives: *Innovation Union* and *Digital Agenda*. The foreseen actions will help overcome the fragmentation of efforts and will contribute to the development of technological capacity, scientific performance and **innovative advantage** in Europe. They will contribute thereby to the development of a more efficient and attractive European Research Area.

- **Innovation dimension**

The 2012 work programme will specifically contribute to three *Innovation Union* commitments and to one of the key actions of the *Digital Agenda*.

The Commitment n. 4: "*Opening of Member State operated research infrastructures to the full European user community*" will be directly addressed by the Call N° 10 for *Integrating Activities* paying particular attention to the transnational and on-line access of researchers to the best research facilities in Europe. This will enable researchers to make decisive contributions to the grand societal challenges, for example, energy supply, climate change and health and population ageing. Examples of relevant topics are: *Carbon Capture and Storage facilities for energy research, Atmospheric simulation chambers, Facilities for translational research in medicine, Research infrastructures for the study of poverty, working life and living conditions.*

⁵ <http://cordis.europa.eu/esfri/home.html>

The Commitment n. 5: "*to complete or launch the construction of 60% of the ESFRI projects by 2015*" will be directly addressed by the Call N° 10 for the *Construction-Preparatory Phase* for 6 projects in the specific fields of energy, biological and medical sciences that appear in the 2010 update of ESFRI Roadmap and for the third *Construction - Implementation Phase* of PRACE.

The Commitment n. 32: "*to step up European Union cooperation on the roll-out of the global research infrastructures*" will be directly addressed by Call N° 10 supporting cooperation with the USA to address global scientific challenges through interoperable research infrastructures across the Atlantic.

The following aspects of the *Digital Agenda* will be directly addressed:

- "Leveraging more private investment (Key Action 9) through the strategic use of pre-commercial procurement": the third *Construction - Implementation Phase* of PRACE
- "Ensure sufficient financial support to joint ICT research infrastructures and innovation clusters": the third *Construction - Implementation Phase* of PRACE
- "Develop further e-Infrastructures and establish an EU strategy for cloud computing notably for government and science": *Coordination and support actions* for policy development in e-Infrastructures, such as feasibility studies for e-Infrastructures that would be deployed in 2014-20; strategies for extremely large scientific databases and European exa-scale computing efforts and communities; and promotion of trust building and standards in open data e-Infrastructures including grids and clouds.

The innovation dimension will be stressed for all activities to increase the potential for innovation of the involved research infrastructures. The innovation dimension of the proposals will be evaluated under the evaluation criterion "Impact".

➤ Dissemination actions

In line with the political context set out by Innovation Union a specific work package on innovation will be requested, whenever appropriate, in all Integrating Activities and Preparatory Phase projects. This work package would cover activities to reinforce the partnership with industry, e.g. transfer of knowledge and other dissemination activities, activities to foster the use of research infrastructures by industrial researchers, involvement of industrial associations in consortia or in advisory bodies.

Open Access Pilot in FP7: Beneficiaries funded partially or entirely by the Capacities Programme under the e-Infrastructures activities are required to deposit peer-reviewed articles resulting from projects to an institutional or subject-based repository, and to make their best efforts to ensure open access to these articles within six months.

➤ International Cooperation

Call N° 10 will support cooperation with the USA to address global scientific challenges through interoperable research infrastructures across the Atlantic. The emphasis will be on scientific data management issues. This will be implemented through a non-binding partnership with the National Science Foundation, USA, where each side will provide funds for their own projects based on their respective granting guidelines, policies and procedures, and the investigators will work on areas of mutual interest.

This work programme will also support a major *International conference on research infrastructures under the Danish Presidency* addressing the international cooperation dimension of research infrastructures and its future developments. The event, jointly organised with the European Commission, will be supported through a grant to named beneficiaries.

II. CONTENT OF CALLS

This section describes all the topics for which proposals will be called in this work programme. This concerns only the content of the calls. For all practical modalities related to these calls, please refer to section III 'Implementation of calls'. For actions not implemented through calls for proposals, please refer to section IV 'Other actions'.

1.1 Support to existing research infrastructures

1.1.1 Integrating Activities

The aim of *Integrating Activities* is to bring together and integrate, on a European scale, key research infrastructures, in order to promote their coordinated use and development. This will ensure that European researchers have a wider and more efficient access to the high performing research infrastructures they require to conduct their research, irrespective of the location of the infrastructures. The main characteristic of an Integrating Activity will be its capacity to mobilise a comprehensive consortium of several research infrastructures⁶ in a given field and other stakeholders (e.g. public authorities, technological partners, research institutions), from different Member States, Associated Countries and other third countries when appropriate. An Integrating Activity shall combine, in a closely co-ordinated manner, following the Integrated Infrastructures Initiatives (I3) model:

- (i) *Networking activities*, to foster a culture of co-operation between research infrastructures and scientific communities and help developing a more efficient and attractive European Research Area;
- (ii) *Trans-national access and/or service activities*, to support scientific communities in their access to the identified research infrastructures;
- (iii) *Joint research activities*, to improve, in quality and/or quantity, the services provided by the infrastructures.

All three categories of activities are mandatory as synergistic effects are expected from these different components. Further details about the I3 model are provided in section VII.

Consortia are encouraged, whenever appropriate, to give due attention to international related initiatives, foster the use and deployment of standards, carry out research on impacts of the involved research infrastructures (direct and indirect, on social, environmental and economic levels) as well as of the project itself and build on e-Infrastructure standards and services, when available. Consortia are also encouraged to organise, whenever appropriate, the efficient curation, preservation and provision of access to the data collected or produced under the project. In line with the political context set out by *Innovation Union* a specific work package on innovation is requested in all *Integrating Activities* projects to increase the potential for innovation, including social innovation, of the related infrastructures. This work package

⁶ Exceptionally, the consortium may include only one research infrastructure providing access, if this facility is of a truly unique nature. Other participants (e.g. technological partners, research institutions) must be included for the implementation of the other two mandatory categories of activities (networking and joint research).

would cover activities to reinforce the partnership with industry, e.g. transfer of knowledge and other dissemination activities, activities to foster the use of research infrastructures by industrial researchers, involvement of industrial associations in consortia or in advisory bodies. The activities for innovation will be evaluated under the evaluation criterion "Impact".

Implementation and management: The following recommendations are not to be applied as formal eligibility criteria. The recommended duration for an *Integrating Activities* project is 4 years. It is recommended that at least one third of the EU contribution is allocated to the transnational access/service activities. In general, each topic corresponds to a given class of research infrastructures and consortia are encouraged to be as comprehensive as possible on a European scale. Therefore competing proposals are not expected under the same topic. In the context of developing synergies and complementarities between FP7 and cohesion policy, projects applicants are encouraged to check the operational programme for Structural Funds applicable in their regions and to contact the related managing authorities for complementary or alternative support (see: http://ec.europa.eu/regional_policy/atlas2007/index_en.htm).

Note that specific eligibility criteria apply to this part, see section III.

Expected impact: Integrating Activities are expected to have a structuring impact on the ERA and on the way research infrastructures operate, evolve and interact with similar facilities and with their users. Operators of infrastructures will develop synergies and complementary capabilities in such a way as to offer an improved access to researchers and to develop their innovation potential. Likewise, a more co-ordinated approach between infrastructure operators, users and public authorities will enable to optimise the development, use and sustainable operation of the identified research infrastructures. In addition, a closer interaction between a large number of researchers active in and around a number of infrastructures will facilitate cross-disciplinary fertilisations and a wider sharing of knowledge and technologies across fields and between academia and industry. Integrating Activities should also contribute to increase the potential for innovation of the related research infrastructures, in particular by reinforcing the partnership with industry, through e.g. transfer of knowledge and other dissemination activities, activities to foster the use of research infrastructures by industrial researchers, involvement of industrial associations in consortia or in advisory bodies. The focus on innovation should be reflected in the description of the objectives of the proposed actions.

Topics opened in Call FP7-INFRASTRUCTURES-2012-1 (call N° 10):

Social Sciences and Humanities

- **INFRA-2012-1.1.1. Research infrastructures for the study of poverty, working life and living conditions.** *Improved employability and social cohesion are among the main objectives of the EU2020 strategy. The aim of this integrating activity is to bring together research infrastructures serving European and international research in the fields of poverty, working life, including safety and health at work, and living conditions. By doing so, this activity will contribute to understanding how vulnerable groups face economic changes and cope with it. This integrating activity will provide inventories of national or EU data sources covering this topic and of national or EU programs to fight poverty (including through social innovation). It will compile historical data, produce metadata and provide training to researchers interested in using these data sets. It should also provide instruments for the analysis of the effects of employers' behaviour and the evaluation of labour market and social policies targeted to these vulnerable groups as well as offer training to researchers interested in the use of these instruments.*

- **INFRA-2012-1.1.2. Research infrastructures for the assessment of science, technology and innovation policy.** *European Science, Technology and Innovation policy is a growing research field in the EU and beyond. Existing infrastructures appear to be fragmented and uncoordinated. There is need for improved European data infrastructure for European and international comparative research and for representative studies that have a large scope and are not restricted in few country cases. The aim of this integrating activity is to bring together organizations and institutions with different expertise and data in the field of science, technology and innovation (including social innovation). By doing so, it will work as a catalyst for improving the data quality. It will explore the possibilities to follow up in time the behaviour of actors in the innovation system and to link data from different data sources at the industry level, at the regional level or at the individual level and it will support the opening up of the skills and data to the wider community in this field.*
- **INFRA-2012-1.1.3. Research infrastructures for archaeological datasets and related technologies.** *Archaeological research frequently poses questions which cross over modern political boundaries which were irrelevant for most of the archaeological past. Archaeological data are often the primary record of excavated sites, and are increasingly born digital, comprise a rich variety of data types, and are vulnerable to loss. This activity will focus upon integrating datasets and facilitating cooperation pertaining to all fields of archaeology (from prehistory to contemporary society) and including the archaeology of Europe, as well as European archaeology abroad. The action should promote closer collaboration between researchers, policy makers, and other stakeholders by providing a framework for dialogue on key archaeological, conservation and heritage issues. The activity may promote the development and dissemination of good practice for digital data preservation, interoperability (including metadata and data standards). The activity may also include the development of integrating technologies, including but not limited to Geographical Information Systems, data mining, and Linked Data applications. It will promote open access to archaeological data (both above and below ground) for researchers, professionals, and the general public.*

Life Sciences

- **INFRA-2012-1.1.4. Mouse archives and centres for phenotyping mouse models.** *A project under this topic should aim at integrating key European mouse archives and phenotyping centres. The project must facilitate the access of researchers to mouse lines and data (including from phenotyping). The project must facilitate the archiving and phenotyping of mouse lines generated by research teams outside the consortium and of interest for the scientific community. The project must also facilitate the generation and phenotyping of lines derived from ES cells and of interest for the scientific community. Research activities will focus on novel technologies for phenotyping and archiving. It is expected that a project under this topic will build on the ESFRI Infrastructure for Phenotyping and Archiving of Model Mammalian Genomes ("Infrafrontier"). The project should integrate Infrafrontier with new European participants with a long term perspective and should develop the necessary collaborations outside Europe, towards a global sharing of available resources.*
- **INFRA-2012-1.1.5. Facilities for translational research in medicine.** *A project under this topic should aim at integrating and facilitating access to the key European research infrastructures dedicated to translating basic discoveries into clinical practice. The project will develop common technical procedures within each of the different services offered and common quality assurance and quality control procedures across facilities. It*

is expected that such a project will build on the ESFRI European Advanced Translational Research Infrastructure in Medicine ("EATRIS").

- **INFRA-2012-1.1.6. Biological Resources Centres for micro-organisms.** *A project under this topic must provide and facilitate access to the key micro-organism resources in Europe. Collections concerned will range from virus archives, bacterial collections (including cyanobacteria), to fungi collections. The project must facilitate the access of researchers to strains as well as the access to expertise and tools for the genotyping and phenotyping of strains. It should also include activities addressing culture methods for difficult strains. It is expected that a project under this topic will build on the ESFRI Microbial Resource Research Infrastructure ("MIRRI"). The project should develop the necessary collaborations outside Europe, towards a global sharing of available resources.*
- **INFRA-2012-1.1.7. Experimental facilities for animal disease infectiology.** *A project under this topic must provide and facilitate access to the key experimental facilities under BSL3 conditions in Europe for animal and zoonotic infectious diseases. It will also include key collections of samples necessary for research on animal and zoonotic infectious diseases. The project should aim to integrate these facilities and resources with a long term perspective. It should also develop the necessary collaborations outside Europe, towards a global sharing of available resources.*
- **INFRA-2012-1.1.8. Stem cell banks.** *A project under this topic should aim at integrating, updating and standardising existing and new stem cell banks and registries to create at the European level a stem cell resource that will catalyse research in this field. This European stem cell bank should distribute upon request banked stem cell lines to any potential users. The project will establish a comprehensive and searchable database for stem cells of all types including adult, embryonic and iPS lines. The project will develop standardised operating procedures and high quality control standards for the freezing, storage and distribution of stem cell lines. Such a project should also contribute to the characterisation and phenotyping of these lines. Links will also be developed with the ESFRI Biobanking and Biomolecular Resources Research Infrastructure ("BBMRI").*
- **INFRA-2012-1.1.9. Large-scale prospective cohort studies.** *A project under this topic should aim at better coordinating the largest European prospective studies, i.e. comprising or aiming at hundreds of thousands of subjects, recording lifestyle and environmental information, recording medical history over several decades, and storing bio-specimens. The project must provide and facilitate access of researchers to these resources and related data, in an integrated manner. The project will be organised in coordination with and in support to the ESFRI Biobanking and Biomolecular Resources Research Infrastructure ("BBMRI").*
- **INFRA-2012-1.1.10. Plant Genetic Resources Centres.** *A project under this topic should aim at integrating and facilitating access to the key European research infrastructures for holding genetic resources from crops and wild plants. It would cover native seed banks, gene and DNA banks and germplasm collections as well as related data resources. It will facilitate access to expertise and tools for the genotyping of accessions, and will devise methods to maximise the utility of the collections for the identification of useful mutations in genes relevant to breeding. The project will also develop activities for the identification and rescue of endangered resources. It should develop the necessary collaborations inside Europe with the plant phenotyping infrastructures and outside Europe, towards a global sharing of available resources.*

Environmental Sciences and Earth Sciences

- **INFRA-2012-1.1.11. Fixed point open ocean observatories.** *A project under this topic should integrate and improve access to the key infrastructures in Europe which make sustained time series observations in the open seas and ocean at fixed critical locations. These infrastructures should support fully multidisciplinary research on the entire oceanic environment, from sea floor to the air-sea interface, including carbon fluxes. The project should build on the investments and expertise developed by EuroSITES, ESONET and CARBOOCEAN projects and could consider expanding geographic coverage. It should also link to planned ESFRI infrastructures, such as EMSO and ICOS, as well as to other relevant initiatives. Data management should be addressed by ensuring compliance with SeaDataNet standards and contribution to the GMES initiative. Links with international initiatives including compliance with GEOSS principles and requirements (data sharing, compatibility) should also be reinforced. Particular attention should be paid to the involvement of European SMEs for the application of innovative technologies for in situ measurements and scientific services (this will be assessed under "Impact" criterion).*
- **INFRA-2012-1.1.12. Research Vessels.** *A project under this topic should aim at integrating and improving access, on basis of scientific excellence, to the key European research vessels and associated heavy equipment, in particular those that are sailing on all world oceans, including polar regions, but not commonly available at the national level. Building on EUROFLEETS, it would optimise availability to all European researchers through integrated calls and would optimise shiptime allocation. The project would contribute moving from the strategic co-ordination vision being developed in EUROFLEETS to its effective implementation by 'pioneering groups' exploring and experimenting new integrating tools such as virtual joint fleet or shared scientific evaluation. Interoperability and standardisation of research vessels and associated equipment, remote access, and ship based training of users and technical staff at the European level should be addressed. Opportunities for international cooperation should be explored, including for polar research vessels. When relevant, the involvement of European SMEs for the development of innovative technologies should be considered (this will be assessed under "Impact" criterion).*
- **INFRA-2012-1.1.13. Research Aircrafts.** *A project under this topic should integrate key research aircrafts and improve their availability to European researchers from larger multidisciplinary scientific communities. Building on the former integrating initiatives, the development of a strategic integrating structure should be considered. The project should also improve research services for users of instrumented research aircrafts and relating research infrastructures, e.g. in the field of remote sensing. Fields covered would be atmospheric, meteorological research and remote sensing. When relevant, the involvement of European SMEs for the development of innovative technologies should be considered (this will be assessed under "Impact" criterion).*
- **INFRA-2012-1.1.14. Atmospheric simulation chambers.** *A project under this topic should further integrate key instrumented environmental chambers and improve access to them for atmospheric research, including model development, while expanding to larger scientific communities and interdisciplinary research fields. By developing their complementary nature, the different research infrastructures should answer broad scientific needs such as studies of the impact of atmospheric processes e.g. on regional photochemistry, global change, as well as cultural heritage and human health effects. Building on the former integrating initiatives, the development of a strategic integrating structure should also be considered.*

- **INFRA-2012-1.1.15. Research Infrastructures for Climate Earth System modelling.** *A project under this topic should further integrate the research infrastructures used by the climate modelling community in Europe and promote the development of a common distributed modelling research infrastructure. It should improve access to the research infrastructures for climate research and modelling (e.g. scientific repositories, climate models, etc.), while, when relevant, expanding to larger scientific communities and interdisciplinary research fields. It should optimise and harmonise the use of these infrastructures by developing appropriate software, data environments and models and strive to achieve global interoperability (model and data interoperability). Building on former IS-ENES project, the development of a strategic integrating structure should be considered, aiming at sustainability of the infrastructures and of their future development.*
- **INFRA-2012-1.1.16. Natural History Collections.** *A project under this topic should integrate and improve access to key European Natural History collections and to their related instrumentation facilities. Building on the former SYNTHESYS integrating activities, the development of a strategic integrating structure should be considered. The project should further develop and integrate common tools, transfer results to other valuable collections in Europe to improve accessibility to collections throughout Europe to a wide range of environmental scientists (from physical to biological) and develop innovative research services to answer the needs of a broader scientific community of users from climate change to human health and food security. Links will also be further developed with the ESFRI Research Infrastructures Network for Research in Biodiversity ("Life Watch").*

Energy, Engineering, Material Sciences, Analytical Facilities

- **INFRA-2012-1.1.17. Research Infrastructures for Solar Energy: Concentrating solar power.** *A project under this topic should bring together the key European research infrastructures in solar concentrating systems (solar concentrators and relating research infrastructures) for carrying out energy- and materials research and research in other fields using the extreme temperature conditions in solar concentrators.*
- **INFRA-2012-1.1.18. Carbon Capture and Storage (CCS) facilities for energy research.** *A project under this topic should aim at integrating the key research infrastructures in Europe for all aspects of Carbon Capture, Sequestration and Storage as well as of CCS facilities from large point sources such as fossil power plants and storage. Environmental and safety aspects of CCS should be addressed. The project is expected to be complementary to existing activities in the field.*
- **INFRA-2012-1.1.19. Research Infrastructures for Distributed energy resources – smart electricity grids.** *A project under this topic should bring together key research infrastructures for research in the field of distributed energy resources and Smart Energy Networks.*
- **INFRA-2012-1.1.20. Infrastructures for studying turbulence phenomena and applications.** *There is a need for detailed understanding of turbulence phenomena. A project under this topic should aim at bringing together key facilities addressing the turbulence phenomena in various areas of science and technology. A combination of modelling and experimental in situ testing is needed.*
- **INFRA-2012-1.1.21. Research infrastructures for integration of processing, analysis and characterisation of nano-scale materials and structures.** *A project under this topic will aim at integrating nano-science laboratories (foundries, nano-fabrication) with co-located large scale facilities for fine analysis (nano-characterisation laboratories,*

synchrotron radiation sources, neutron sources, free electron laser sources and advanced modelling simulation facilities). The project will build on the NFFA FP7 project achievements.

- **INFRA-2012-1.1.22. Imaging, Diffraction and Spectroscopy using Electrons.** *A project under this topic should integrate key facilities and state-of-the-art technologies in the field of electron-based analytical approaches.*
- **INFRA-2012-1.1.23. Synchrotron radiation sources and Free Electron Lasers.** *A project under this topic must bring together the key research facilities of pan-European interest based on Synchrotron and Free Electron Laser light sources. These facilities should effectively integrate and sustain their joint development and usage, with a long term perspective. The project shall in particular simplify the access modalities, to offer a single entry point for European users, and to facilitate access for a wide range of research communities.*

Physics and Astronomy

- **INFRA-2012-1.1.24. Accelerator physics.** *A project under this topic should facilitate access to state of the art facilities to develop new techniques for improving the performance of existing and future accelerators. It should include accelerators for nuclear and particle physics and accelerator-based photon sources. It should complement the activities addressed in the Test Infrastructure and Accelerator Research Area (TIARA) project.*
- **INFRA-2012-1.1.25. Research Infrastructures for optical/IR astronomy.** *A project under this topic must provide and facilitate access to the key research infrastructures in Europe for optical and infrared astronomy. It should aim to integrate these facilities and resources with a long term perspective. A project under this topic should also stimulate new scientific activities aimed at taking full advantage of new experimental possibilities which will be offered by the future European Extremely Large Telescope ("E-ELT").*
- **INFRA-2012-1.1.26. Research Infrastructures for High-Resolution Solar Physics.** *A project under this topic should aim at integrating key research infrastructures in the field of high resolution solar physics. It should contribute to the realisation of the future large European ground- and space-based solar telescopes and to a Solar Virtual Observatory. It should foster cooperation between theory and observations and should enhance synergies with other projects and scientific communities such as the Solar Atmospheric and Interplanetary Research training network (SOLAIRE), the Optical Infrared Coordination Network for astronomy (OPTICON), and stellar physics.*
- **INFRA-2012-1.1.27. Research Infrastructures for space weather.** *A project under this topic should aim at integrating the key research infrastructures in Europe for the observation and study of the ionosphere and magnetosphere. Infrastructures of relevance include the European Incoherent Scatter radar system (EISCAT) and other incoherent scatter radar systems, satellites, solar ground based-observatories, ionospheric sounders, Global Navigation Satellite Systems (GNSS) receivers and ground magnetometers. The project will facilitate access to these research infrastructures and to standardized and validated observational data in particular real-time data. The research supported in this field should result in models and databases that also could be a basis for operational forecasts and warnings to society.*

1.1.2 ICT-based e-Infrastructures

The e-Infrastructures activity supports a number of interrelated topics designed to foster the emergence of new research environments in which 'virtual communities' of scientists and engineers are empowered to share and exploit the collective power of the European ecosystem of scientific and engineering facilities. Activities related to socio-economic impact assessment and evaluation should be also foreseen where appropriate. Projects must implement (i) *Networking Activities*, (ii) *Service Activities* and (iii) *Joint Research Activities* in a closely coordinated manner following the I3 model (see section VII).

There is no call for proposals for this activity in the current work programme. The next call envisaged for the work programme 2013 will address the deployment, operation and evolution of the pan-European high-capacity and high-performance communication networking (GÉANT).

1.2 Support to new research infrastructures

1.2.1 Design Studies

The aim of this activity is to support conceptual design studies for new European research infrastructures. Major upgrades of existing infrastructures may also be considered, when the end result is the development of a new type or form of research infrastructure with a clear added value at European level.

There will no further call for proposals for 'Design Studies' under FP7.

1.2.2 Construction of new infrastructures (or major upgrades) - preparatory phase

The purpose of this activity is to provide catalytic and leveraging support for the preparatory phase leading to the construction of new research infrastructures or major upgrades of existing ones. The preparatory phase aims at bringing the project for the new or upgraded facility/research infrastructure to the level of legal and financial maturity required to implement it. The preparatory phase may also include technical work. Project consortia should involve all the stakeholders necessary to make the project move forward, to take decision and to make financial commitments before construction can start (e.g. national/regional ministries/governments, research councils, funding agencies). Appropriate contacts with Ministries and decision makers should be continuously reinforced allowing further strengthening of the consortia. Operators of research facilities, research centres, universities, and industry may also be involved whenever appropriate. During the preparatory phase the European Commission may act as a 'facilitator', in particular with respect to the financial engineering needed for the construction phase. The preparatory phase could include (non exhaustive list):

- Management and logistical work, i.e. (1) plans, in terms of construction (or major upgrade) and operation of the new research infrastructure(2) planning (timing, resources) of staff recruitment to operate the new facility; (3) organisation of the logistic support for researchers, including informatics, etc.;
- Governance work, i.e. plans, in terms of decision-making, management structure, advisory body, IPRs, access rules for researchers, etc.;
- Financial work, i.e. (1) the financial arrangements for the construction, operation and decommission of the facility, using notably the complementarities between national and

- EU instruments (such as the Structural Funds or the European Investment Bank); (2) studying new mechanisms, e.g. pre-commercial procurement processes, by which public authorities may develop new approaches for financing innovative solutions;
- Legal work, i.e. (1) for the setting-up, construction and operation of the research infrastructure; and (2) the draft agreement between committed countries, in the form of a 'signature-ready' document for the setting-up and the actual implementation.
 - Strategic work, i.e. (1) analysis of the socio-economic impact of the new infrastructure; (2) plan to integrate harmoniously the new entity in the European fabric of related facilities in accordance with the objective of balanced territorial development; (3) to create or consolidate centres of excellence and/or "regional partner facilities"; (4) the identification of the best possible site(s) to set up the new facility(-ies) and its next generations;
 - Technical work, i.e. (1) final prototypes for key enabling technologies and implementation plans for transfer of knowledge from prototypes to the new facility; (2) technical work to ensure that the beneficiary research communities exploit the new facility from the start with the highest efficiency, including the introduction of new processes or software.

In line with the political context set out by *Innovation Union* a specific work package on innovation is requested in all *Preparatory Phase* projects to increase the potential for innovation, including social innovation, of the related infrastructure. This work package would cover activities such as networking with industries (including SMEs), dissemination of research outcome and technology transfer. The activities for innovation will be evaluated under the evaluation criterion "Impact".

Implementation and management: The following recommendations are not to be applied as formal eligibility criteria.

It is recommended that the duration of a preparatory phase project is 3-4 years with a requested EU contribution in the range of EUR 3 million to 6 million.

In the context of developing synergies and complementarities between FP7 and cohesion policy, projects applicants are encouraged to check the operational programme for Structural Funds applicable in their regions and to contact the related managing authorities for complementary or alternative support (see: http://ec.europa.eu/regional_policy/atlas2007/index_en.htm).

Expected impact: This activity should help the majority of projects for new research infrastructures identified in the periodic updates of the ESFRI roadmap to reach the level of technical, legal and financial maturity required to enable the construction work to start. Thereby it will contribute to the technological development capacity and to the scientific performance and attractiveness of the European Research Area. It will also contribute to the *Innovation Union* commitment **to complete or launch by 2015 the construction of 60% of the priority European research infrastructures currently identified by ESFRI, and to increase the potential for innovation of research infrastructures.**

Topics opened in Call FP7-INFRASTRUCTURES-2012-1 (call N°10):

- **INFRA-2012-2.2.1: EU-SOLARIS - The European SOLAR Research Infrastructure for Concentrating Solar Power**
- **INFRA-2012-2.2.2: Windscanner -The European WindScanner Facility**

- **INFRA-2012-2.2.3: ECCSEL (European Carbon Dioxide Capture and Storage Laboratory Infrastructure)**
- **INFRA-2012-2.2.4: ISBE - Infrastructure for Systems Biology-Europe**
- **INFRA-2012-2.2.5: MIRRI - Microbial Resource Research Infrastructure**
- **INFRA-2012-2.2.6: ANAEE - Infrastructure for Analysis and Experimentation on Ecosystems**

1.2.3 Construction of new infrastructures - implementation phase

Following the successful completion of the preparatory phase, the purpose of this activity is to support the actual implementation of new research infrastructures (or major upgrades of existing ones). The implementation phase should include all appropriate coordination activities as well as the relevant technical work.

Topics opened in Call FP7-INFRASTRUCTURES-2012-1 (call N° 10):

- **INFRA-2012-2.3.1: Third implementation phase of the European High-Performance Computing (HPC) service PRACE**

This supercomputing infrastructure addresses the ever growing computational and simulation requirements of science and engineering communities to allow them to stay at the forefront of research; as well as those of industry to boost its innovation capabilities. Special objectives in the third implementation phase are: (i) to pilot and evaluate joint pre-commercial procurement⁷ and (ii) to deploy services for industrial users, including SMEs. The joint pre-commercial procurement is carried out with a view to develop, test and evaluate the required mechanisms in PRACE, increase the financial resources devoted to HPC R&D in Europe, and ensure that European HPC procurement benefits the development of systems and software in Europe. The eco-system of HPC resources comprises:

- (a) Hardware components and platforms (current and future national and European HPC installations);
- (b) A networking and middleware infrastructure interlinking the computational resources (already largely available through the GÉANT network) with the aim to provide a seamless and efficient service to users;
- (c) System software and tools, from operating systems and software accelerators to parallelising compilers, which are adapted to multi-peta-flop performance;
- (d) Software tools, algorithms and standards for modelling, simulation and related pre- and post-treatment (e.g. visualisation) for state-of-the-art supercomputing environments, including tools for the validation and verification of application programmes;
- (e) Scientific software for a broad range of applications that runs efficiently on machines for state-of-the-art supercomputing environments;
- (f) A framework to conduct technology evaluations and prototyping of hardware components, systems and software;
- (g) Training that enables both the academic and industrial research communities to stay at the forefront of scientific breakthroughs;

⁷ COM(2007) 799

(h) Mechanisms to share best practice and operational procedures across HPC systems.

Coverage in the proposal of all strategic, policy, technical, financial and governance aspects of providing the above supercomputing ecosystem is indispensable. Proposers should also address the following issues: the articulation of the European supercomputing infrastructure with national HPC installations and their evolution in time; effective mechanisms of access to the infrastructure, including by publicly funded European projects; policies for the upgrade, maintenance and sharing of scientific and system software and tools, including clear criteria for selecting the application codes to be ported to HPC systems; policies for the provision of services, notably simulation; an operational implementation of an HPC service targeted both at large industry and at SMEs; an approach to international cooperation; and financial and environmental sustainability ("green computing").

In addition to addressing the above mentioned topics, work to be funded must concern:

- (1) To pilot and evaluate joint pre-commercial procurement⁸ and joint ownership by PRACE of HPC resources described under (a) and (c) above. The "co-design" approach should be adopted.
- (2) Deployment of HPC services, e.g. for simulation and product prototyping, to European industrial users, including SMEs. Governance and charging for these services may need to be separate from those for services to academic users.
- (3) Support to the scaling of applications and to the development of new utilities and algorithms in order to address major socioeconomic challenges. The socio-economic challenges to be addressed should be detailed in the proposal or left to be decided within the project through an open and transparent process. New tools should be made widely available under an open license scheme.
- (4) Broad training and outreach activities to engage more user communities including industry, and to ensure sufficient availability of human resources in HPC.

Implementation and management:

EU requested funding to activity (1) above should be 25-50% of the overall project funding, and cover up to 50% of the procurement cost (Joint Research Activities in the case of pre-commercial procurement, Service Activities for procurement).

In the context of developing synergies and complementarities between FP7 and cohesion policy, projects applicants are encouraged to check the operational programme for Structural Funds applicable in their regions and to contact the related managing authorities for complementary or alternative support (see: http://ec.europa.eu/regional_policy/atlas2007/index_en.htm).

Expected impact: Help Europe stay at the forefront of scientific breakthroughs, strengthen its international position in computational sciences and intensify the exploitation of the benefits of computing by its scientific and industrial users. The emphasis on the joint pre-commercial procurement of HPC systems will ensure the most efficient and effective use of resources available across Europe, and will strengthen EU's innovation capabilities as a supplier across the full spectrum of HPC technologies and systems.

⁸ See section VII.4 for specific details on pre-commercial procurement.

1.3 Support to policy development and programme implementation

The aim is to reinforce cooperation with the USA in jointly addressing global scientific challenges through interoperable research infrastructures across the Atlantic. The emphasis will be on scientific data management issues including the development of common policies which address the full life cycle of data (topic 3.1) and promote interoperable e-Infrastructures services for scientific data (topic 3.2). This will be implemented through a non-binding partnership with the National Science Foundation, USA, where each side will provide funds for their own projects based on their respective granting guidelines, policies and procedures, and the investigators will work on areas of mutual interest. Projects selected under topics 3.1 and 3.2 will be, to the extent possible, complementary and interlinked.

Furthermore, under topic 3.3 this work programme calls for coordination and support actions in e-Infrastructures.

Expected impact: Support measures are expected to strengthen the development of a consistent and dynamic European policy for research infrastructures including the data produced by this infrastructure.

Under *topics 3.1 and 3.2* support should help to address specific needs of international cooperation in the field of scientific data management, thus achieving critical mass and driving global policies. These bilateral collaborations would speed up the development of a common vision for the next decades, identifying existing gaps and creating the opportunities to better face global challenges. Thereby they will contribute to the *Innovation Union* commitment **to step up European Union cooperation on the roll-out of the global research infrastructures.**

Under *topic 3.3*, support measures for strategies and studies are expected to provide solid ground for future choices and help in decision making and deployment concerning e-Infrastructures. The feasibility studies should establish implementable concepts for future e-Infrastructures. Dissemination actions should raise the visibility of the e-Infrastructures activity towards wider audiences. International cooperation activities should provide for effective support to efforts to develop globally connected and interoperable e-infrastructures, in particular between the EU and developing regions in the world. Activities related to development aid projects should provide software tools to support the identification and rationalisation of interventions of the different donors and other funding schemes in the targeted regions.

Topics opened in Call FP7-INFRASTRUCTURES-2012-1 (call N° 10):

- **INFRA-2012-3.1: International cooperation with the USA on common data policies and standards relevant to global research infrastructures in the environment field.**
The project to be supported under this topic should aim at the development of common data policies and standards in the field of environmental research, in particular related (but not exclusively) to space weather facilities (two examples of such facilities are EISCAT (EU) and AMISR (USA)), atmospheric observatories (ICOS (EU), NEON (USA)), ocean observatories (EMSO (EU), OOI (USA)) or tectonics-related observatories (EPOS (EU), Earthscope (USA)). The project should assist in the creation of a long-term sustainable framework (i.e. full life cycle of data) for the coordination of actions at global level, as well as address interoperability (including compliance with GEOSS principles), harmonisation of data formats, data validation and curation. The project should clearly describe its complementarity and collaboration with the

correspondent USA project(s) that is or may be funded by NSF. The outcomes should be readily extendable to other international communities wishing to join the initiative. When appropriate, the work should build on and extend the activities of existing European projects⁹ in the field.

INFRA-2012-3.2: International cooperation with the USA on common e-Infrastructure for scientific data. The objective is to establish an EU/USA coordination platform aiming at full interoperability of scientific data infrastructures, and to demonstrate this coordination through several joint EU-USA prototypes that would ensure persistent availability and effective sharing of data across scientific domains, organisations and national boundaries. The platform should provide for: the collection of requirements and approaches for standardisation (development, promotion, adoption and maintenance); common ICT infrastructure approaches (technical, semantic, reference architecture, financing models, etc) in order to lower access barriers; harmonisation of intellectual property frameworks for scientific information; and mechanisms for international networking of experts and multidisciplinary communities. The joint prototypes should leverage and build upon similar initiatives in Europe and USA. The proposal should clearly describe synergies and collaboration with corresponding existing or potential NSF-funded initiatives.

INFRA-2012-3.3: Coordination actions, conferences and studies supporting policy development, including international cooperation, for e-Infrastructures

Proposals will aim at providing support for e-Infrastructures, in one or more of the following domains:

- (a) Developing strategies and/or establishing coordination structures, e.g.
 - to support the European exa-scale computing research community in international efforts on the development of future extreme-performance computing systems
 - for extremely large or highly distributed and heterogeneous scientific databases (including service architectures, applications and standardisation) in order to manage the upcoming data deluge
 - actions aiming at coordination between e-infrastructure operators
- (b) Feasibility and conceptual design studies for e-Infrastructures that would be deployed in the 2014-20 timeframe in areas such as: comprehensive data infrastructures including trust and authentication, accreditation of data repositories, authorisation and accounting (AAA) aspects; cloud infrastructures based on PPP's; infrastructures supporting simulation and prototyping services to industry, including SMEs; and software infrastructures including aspects such as software certification. Stakeholder consultations may be foreseen where appropriate.
- (c) Studies and actions, e.g. to
 - analyse and promote trust building towards open scientific data e-infrastructures covering organisational, operational, legal and technological

⁹ Projects relevant for this topic are, for example, SeaDataNet, NERA, NERIES, ACTRIS, GeoSeas, GENESI-DEC, METAFOR, D4SCIENCE, 4D4LIFE and others

aspects, including authentication, authorisation and accounting (AAA) as well as licensing and tools.

- promote future interoperability (technical, semantic, reference architecture, etc) in the scientific data domain. Activities should include the promotion, monitoring the development and adoption of common standards.
 - analyse and evaluate possible business models for supporting Open Science in view of achieving financial sustainability.
 - promote the development of standards and interoperability in the area of grids and clouds and the creation of frameworks useful for procurement of computing services suitable for e-Science. These activities could include promotion, development monitoring and adoption of common standards, and should involve relevant actors like e.g. standard organisations and procurers.
- (d) Dissemination of results and success stories of European e-Infrastructure projects to a wider audience. Coordination and community-building to engage citizen-scientists with the e-Science activities and exploit the e-Infrastructures.
- (e) Actions towards developing education-related e-Infrastructures, in particular linking scientific repositories and research data infrastructures to learning resources for development of skills and curricula for information and data scientists, and online platforms for supporting student exchanges (e.g. Erasmus).
- (f) International cooperation in e-Infrastructures, including:
- supporting the identification and synergy between projects related to ICT infrastructures and e-Infrastructures-based research, funded by international development aid agencies in one or more developing regions,
 - promoting the identification, development, integration and exploitation of e-Infrastructures of common interest to Europe and to developing regions, (e.g., connectivity with Latin America)
 - contribution to efforts in international organisations and fora for the coordination and interoperability of e-Infrastructures for global research communities.

III. IMPLEMENTATION OF CALLS

For description of the topics of the calls, please refer to section II 'Content of calls'

Call title: Call N° 10 - FP7-INFRASTRUCTURES-2012-1

- **Call identifier:** FP7-INFRASTRUCTURES-2012-1
- **Date of publication**¹⁰: 20 July 2011
- **Deadline**¹⁰: 23 November 2011, at 17.00.00, Brussels local time.
- **Indicative budget**¹¹: EUR 90.30 million¹²

Line of action/Activity	Funding scheme(s)	EUR million indicative
1.1 Support to existing research infrastructures		
1.1.1 Integrating Activities	Combination of Collaborative projects and Coordination and Support Actions (CP-CSA) <i>The requested EU contribution shall not exceed EUR 10 million</i> <i>Proposals must address all the 3 categories of activities of the I3 model</i>	30.00
1.2 Support to new research infrastructures		
1.2.2 Construction of new infrastructures (or major upgrades) – preparatory phase	Combination of Collaborative projects and Coordination and Support Actions (CP-CSA)	22.30
1.2.3 Construction of new infrastructures – implementation phase		20.00
1.3 Support to policy development and programme implementation		
INFRA-2012-3.1: International cooperation with the USA on common data policies and standards relevant to global research infrastructures in the environment field	Coordination and Support Actions – coordinating actions (CSA-CA)	2.00
INFRA-2012-3.2: International cooperation with the USA on common e-infrastructure for scientific data	Coordination and Support Actions – coordinating actions (CSA-CA)	2.00
INFRA-2012-3.3: Coordination actions, conferences and studies supporting policy development, including international cooperation, for e-Infrastructures	Coordination and Support Actions (CSA-CA or CSA-SA)	14.00

¹⁰ The Director-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication. Also, the Director-General responsible may delay this deadline by up to two months.

¹¹ The budget for this call is indicative. The final budget awarded to actions implemented through calls for proposals may vary: the final budget of the call may vary by up to 10% of the total value of the call and any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.

¹² Under the condition that the draft budget for 2012 is adopted without modifications by the budgetary authority. A substantial amount from the 2013 budget is expected to be added to this call, in particular for Integrating Activities, for which a new financing decision to cover the budget for that year will be requested at the appropriate time.

- **Topics called**

1.1.1 Integrating Activities

Social Sciences and Humanities

- INFRA-2012-1.1.1. Research infrastructures for the study of poverty, working life and living conditions
- INFRA-2012-1.1.2. Research infrastructures for the assessment of science, technology and innovation policy
- INFRA-2012-1.1.3. Research infrastructures for archaeological datasets and related technologies

Life Sciences

- INFRA-2012-1.1.4. Mouse archives and centres for phenotyping mouse models
- INFRA-2012-1.1.5. Facilities for translational research in medicine
- INFRA-2012-1.1.6. Biological Resources Centres for micro-organisms
- INFRA-2012-1.1.7. Experimental facilities for animal disease infectiology
- INFRA-2012-1.1.8. Stem cell banks
- INFRA-2012-1.1.9. Large-scale prospective cohort studies
- INFRA-2012-1.1.10. Plant Genetic Resources Centres

Environmental Sciences and Earth Sciences

- INFRA-2012-1.1.11. Fixed point open ocean observatories
- INFRA-2012-1.1.12. Research Vessels
- INFRA-2012-1.1.13. Research Aircrafts
- INFRA-2012-1.1.14. Atmospheric simulation chambers
- INFRA-2012-1.1.15. Research Infrastructures for Climate Earth System modelling
- INFRA-2012-1.1.16. Natural History Collections

Energy, Engineering, Material Sciences, Analytical Facilities

- INFRA-2012-1.1.17. Research Infrastructures for Solar Energy: Concentrating solar power
- INFRA-2012-1.1.18. Carbon Capture and Storage (CCS) facilities for energy research
- INFRA-2012-1.1.19. Research Infrastructures for Distributed energy resources – smart electricity grids
- INFRA-2012-1.1.20. Infrastructures for studying turbulence phenomena and applications
- INFRA-2012-1.1.21. Research infrastructures for integration of processing, analysis and characterisation of nano-scale materials and structures
- INFRA-2012-1.1.22. Imaging, Diffraction and Spectroscopy using Electrons
- INFRA-2012-1.1.23. Synchrotron radiation sources and Free Electron Lasers

Physics and Astronomy

- INFRA-2012-1.1.24. Accelerator physics
- INFRA-2012-1.1.25. Research Infrastructures for optical/IR astronomy
- INFRA-2012-1.1.26. Research Infrastructures for High-Resolution Solar Physics
- INFRA-2012-1.1.27. Research Infrastructures for space weather

1.2.2 Construction of new infrastructures (or major upgrades) - preparatory phase

- INFRA-2012-2.2.1. EU-SOLARIS - The European SOLAR Research Infrastructure for Concentrating Solar Power
- INFRA-2012-2.2.2. Windscanner -The European WindScanner Facility
- INFRA-2012-2.2.3. ECCSEL (European Carbon Dioxide Capture and Storage Laboratory Infrastructure).

<ul style="list-style-type: none"> ○ INFRA-2012-2.2.4. ISBE - Infrastructure for Systems Biology-Europe ○ INFRA-2012-2.2.5. MIRRI - Microbial Resource Research Infrastructure ○ INFRA-2012-2.2.6. ANAEE - Infrastructure for Analysis and Experimentation on Ecosystems
1.2.3 Construction of new infrastructures - implementation phase
<ul style="list-style-type: none"> ○ INFRA-2012-2.3.1. Third implementation phase of the European High Performance Computing (HPC) service PRACE
1.3 Support to policy development and programme implementation
<ul style="list-style-type: none"> ○ INFRA-2012-3.1. International cooperation with the USA on common data policies and standards relevant to global research infrastructures in the environment field ○ INFRA-2012-3.2. International cooperation with the USA on common e-infrastructure for scientific data ○ INFRA-2012-3.3. Coordination actions, conferences and studies supporting policy development, including international cooperation, for e-Infrastructures

• **Eligibility criteria:**

- The general eligibility criteria are set out in Annex 2 of this work programme and in the guide for applicants. Please note that the completeness criterion also includes that part B of the proposal shall be readable, accessible and printable.
- The minimum number of participating legal entities required, for all funding schemes, is set out in the Rules for Participation and presented in the table below.

Funding scheme	Minimum conditions
Combination of Collaborative projects and Coordination and Support Actions (CP-CSA)	At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC.
Coordination and Support Actions - coordinating action (CSA-CA)	At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC.
Coordination and Support Actions - supporting action (CSA-SA)	At least 1 independent legal entity.

- Only information provided in part A of the proposal will be used to determine whether the proposal is eligible with respect to any budget thresholds and/or minimum number of eligible participants.
- For activity 1.1.1 (Integrating Activities) the following additional eligibility criteria apply in this call:
 - The requested EU contribution shall not exceed EUR 10 million.
 - Proposals must address all the three categories of activities (*networking activities, trans-national access and/or service activities, and joint research activities*) of the I3 model as defined in Section VII.

- **Evaluation procedure:**

- The evaluation criteria and scoring scheme are set out in Annex 2 of the work programme.
- Proposal page limits: Applicants must ensure that proposals conform to the page limits and layout given in the Guide for Applicants, and in the proposal part B template available through the EPSS. The Commission will instruct the experts to disregard any pages exceeding these limits. The minimum font size is 11. All margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).
- A one stage submission procedure will be followed.
- Experts will carry out the individual evaluation of proposals remotely.
- A separate ranking list, based on evaluation scores, will be established for each of the indicative budgets as indicated in the table above. Proposals will be selected within each ranking list according to their ranked order, and provided that the proposal has a score above threshold, until the available budget is committed.
- The procedure for prioritising proposals with equal scores is described below. It will be applied successively for every group of ex aequo proposals requiring prioritisation, starting with the highest scored group, and continuing in descending order:
 - (i) Proposals that address topics not otherwise covered by more highly-rated proposals will be considered to have the highest priority.
 - (ii) These proposals will themselves be prioritised according to the scores they have been awarded for the criterion *impact*. If necessary, any further prioritisation will be based on other appropriate characteristics, to be decided by the panel, related to the contribution of the proposal to the European Research Area and/or general objectives mentioned in the work programme.
 - (iii) The method described in (ii) will then be applied to the remaining ex aequos in the group.
- Specific selection and award criteria for activities 1.1.1, 1.2.2 and 1.2.3 are set out in section VII.2 and VII.3 replacing those of annex 2 to the Capacities work programme.
- A reserve list may be produced of projects that pass the evaluation but fall below the available budget in case additional budget becomes available.

- **Indicative timetable:**

- Evaluation results: estimated to be available within some 4 months after the closure date.
- Grant Agreement signature: it is estimated that the first grant agreements related to this call will come into force before the end of 2012.

- **Consortia agreements:** Participants in activities 1.1.1, 1.2.2 and 1.2.3 are required to conclude a consortium agreement.

- **The forms of grant and maximum reimbursement rates** which will be offered are specified in Annex 3 to the Capacities work programme.

- **Flat rates to cover subsistence costs:** In accordance with Annex 3 of this work programme, this call provides for the possibility to use flat rates to cover subsistence costs incurred by beneficiaries during travel carried out within grants for indirect actions. For further information, see the relevant Guides for Applicants for this call. The applicable flat rates are available at the following website: http://cordis.europa.eu/fp7/find-doc_en.html under 'Guidance documents/Flat rates for daily allowances'.

- **Dissemination.** Grant agreements of projects financed under topics INFRA-2012-2.3.1, INFRA-2012-3.2 and INFRA-2012-3.3 of this call for proposals will include the special clause 39 on the "Open Access Pilot in FP7". Under this clause, beneficiaries are required to make their best efforts to ensure free access to peer-reviewed articles resulting from projects via an institutional or subject-based repository.

IV. OTHER ACTIONS (not implemented through calls for proposals)

- **Grants to named beneficiaries: Conferences on Research Infrastructures**

Following the Spanish Presidency Conference, which took place in June 2010 in the context of the rotating Presidency of the Union, the Research Infrastructure action would support in 2012 one major *International conference on research infrastructures under Danish Presidency*. This event, jointly organised with the European Commission, is outside the scope of call for proposals. It is supported using Coordination and Support Actions. The general selection and award criteria are those set out in annex 2 to this work programme.

The beneficiary of the grant will be the Forsknings- og Innovationsstyrelsen (Danish Agency for Science, Technology and Innovation), Bredgade 40, 1260 Copenhagen (DK). The conference will take place around March 2012 in Copenhagen. It should be a two and a half-day event for approximately 650 participants. The objectives of the conference are (1) to highlight the essential role of world-class research infrastructures in addressing grand challenges at all scales: national, regional, European and global scale; (2) to reflect on development and operation of world-class research infrastructures at national, European and international level; (3) to present possible actions for research infrastructures under the next Common Strategic Framework for Research and Innovation and underline their relevance at international level.

The rate of EU co-financing will be up to 75 % of the total eligible costs for a maximum EU funding of EUR 220 000.

Indicative budget: EUR 0.22 million

Funding scheme: *Coordination and support actions*¹³

- **External expertise**

- The use of appointed independent experts for the evaluation of project proposals and, where appropriate, for the reviewing of running projects.
- The set up of groups of independent experts to advise on or support the design and implementation of EU research policy.

Indicative budget: EUR 0.20 million

Funding scheme: *Coordination and support actions*¹⁴ - *Expert contracts*

- **Studies**

One or more studies addressing the scoping and road-mapping of Research Infrastructures (including e-Infrastructures) future activities and the assessment of impact of past activities. DG INFSO plans to launch the call for tenders for a service contract during the first semester 2012, and conclude indicatively the contract before year end.

Indicative budget: EUR 0.50 million

Funding scheme: *Coordination and support actions*¹⁵ - *Procurement*

¹³ In compliance with Article 14(a) of the Rules of Participation and Article 168 of the Implementing Rules of the Financial Regulation.

¹⁴ In compliance with Article 14(c) of the Rules of Participation.

¹⁵ In compliance with Article 14(b) of the Rules of Participation.

V. BUDGET

Research Infrastructures - Indicative budget

	Budget 2012 EUR million¹⁶
FP7-INFRASTRUCTURES-2012-1	90.30 ¹⁷
Other actions <ul style="list-style-type: none"> • Independent experts (EUR 0.20 million) • Grants to identified beneficiaries: Danish Presidency Conference on Research Infrastructures (EUR 0.22 million) • Studies (EUR 0.50 million) 	0.92
Estimated total budget allocation	91.22

Budget figures in this work programme

All budgetary figures given in this work programme are indicative. The final budgets may vary following the evaluation of proposals.

The final budget awarded to actions implemented through calls for proposals may vary:

- The total budget of the call may vary by up to 10% of the total value of the indicated budget for each call; and
- Any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget for the call.

For actions not implemented through calls for proposals:

- The final budgets for evaluation, monitoring and review may vary by up to 20% of the indicated budgets for these actions;
- The final budget awarded for all other actions not implemented through calls for proposals may vary by up to 10% of the indicated budget for these actions.

¹⁶ Under the condition that the draft budget for 2012 is adopted without modifications by the budgetary authority

¹⁷ A substantial amount from the 2013 budget is expected to be added to this call for which a new financing decision to cover the budget for that year will be requested at the appropriate time.

VI. INDICATIVE PRIORITIES FOR FUTURE CALLS

The table below provide information about calls already published and indicative priorities for futures calls. Dates indicated for future calls are tentative call deadline.

Activity	Call 1 Feb07	Call 2 Sep07	Call 3 Feb08	Call 4 Sep08	Call 5 Mar09	Call 6 Dec09	Call 7 Nov09	Call 8 Nov10	Call 9 Nov10	Call 10¹⁸ Nov11	Call 11¹⁹ Nov12
Integrating activities			278			168		107.5		30	
e-Infrastructures	44	50		115	4		85		70		39
Design studies	29							17.7			
Construction – support to the preparatory phase	147					44				22.3	
Construction – support to the implementation phase							20	32.2	20	20	
Support to policy development	8	13	4		5	5	10	6.1	5	18	
Budget (EUR million)	227	63	281	115	10	217	115	163.5	95	90.3	39

¹⁸ Under the condition that the draft budget for 2012 is adopted without modifications by the budgetary authority. A substantial amount from the 2013 budget is expected to be added to this call for which a new financing decision to cover the budget for that year will be requested at the appropriate time.

¹⁹ This is an indicative budget without prejudice to the amount indicated in the draft budget 2013 and Work Programme 2013.

VII. COMPLEMENTARY INFORMATION

1. The Integrated Infrastructure Initiative (I3) model

Integrated Infrastructure Initiatives (I3) should combine, in a closely co-ordinated manner: (i) *Networking activities*, (ii) *Trans-national access and/or service activities* and (ii) *Joint research activities*. All three categories of activities are mandatory as synergistic effects are expected from these different components.

(i) *Networking activities*. To foster a culture of co-operation between the participants in the project and the scientific communities benefiting from the research infrastructures and to help developing a more efficient and attractive European Research Area. Networking activities could include (non exhaustive list):

- joint management of access provision and pooling of distributed resources;
- dissemination and /or exploitation of project results and knowledge, outreach toward industry, contribution to socio-economic impacts, promotion of innovation;
- strengthening of virtual research communities;
- definition of common standards, protocols and interoperability; benchmarking;
- development and maintenance of common databases for the purpose of networking and management of the users and infrastructures;
- spreading of good practices, consultancy and training courses to new users;
- foresight studies for new instrumentation, methods, concepts and/or technologies;
- promotion of clustering and coordinated actions amongst related projects;
- coordination with national or international related initiatives and support to the deployment of global and sustainable approaches in the field;
- promotion of long term sustainability, including the involvement of funders and the preparation of a business plan beyond the end of the project.

(ii) *Trans-national access and/or service activities*.

Trans-national access activities

To provide trans-national access to researchers or research teams to one or more infrastructures among those operated by participants. These access activities should be implemented in a coordinated way such as to improve the overall services available to the research community. Access may be made available to external users, either in person ('hands-on') or through the provision of remote scientific services, such as the provision of reference materials or samples or the performance of sample analysis. EU financial support should never exceed 20% of the annual operating costs of the infrastructure to prevent it from becoming dependent on the EU contribution and should not include capital investments. This financial support will serve to provide access 'free of charge' to external users, including all the infrastructural, logistical, technological and scientific support (including training courses, travel and subsistence for users). Access costs will be defined on the basis of 'user fees' related to the operating costs of the infrastructure.

The research infrastructures must publicise widely the access offered under the grant agreement to ensure that researchers who might wish to have access to the infrastructure are made aware of the possibilities open to them. They must maintain appropriate documentation to support and justify the amount of access reported. This documentation shall include records of the names, nationalities, and home institutions of the users within the research teams, as well as the nature and quantity of access provided to them.

The selection of researchers or research teams shall be carried out through an independent peer-review evaluation of their research projects. The research team, or its majority, must come from countries other than where the operator of the infrastructure is established (when the infrastructure is composed of several research facilities, operated by different legal entities, this condition shall apply to each facility) except in the case of a distributed set of resources or facilities offering remote access to the same services. Provided that the majority of users are from Member States or Associated Countries, other third country users can be part of an eligible user team. Only research teams, including industrial users, that are entitled to disseminate the knowledge they have generated under the project are eligible to benefit from research services to the infrastructure under the grant agreement. The duration of stay at a research infrastructure shall normally be limited to three months.

Service activities for Integrating Activities

To provide access to scientific services freely available through communication networks (e.g. databases available via Internet). Only services widely used by the community of European researchers will be supported. In such case, projects of potential users would not normally be subject to peer review. However, in such cases, the services offered to the scientific community will be periodically assessed by an external board.

Service activities for e-Infrastructures

To provide specific research infrastructure related services to the scientific community. This may include (non exhaustive list):

- procurement and upgrading communication infrastructure, network operation and end-to-end services;
- distributed computing infrastructure support, operation and management; integration, test and certification; services deployed on top of generic communication and computing infrastructures to build and serve virtual communities in the various scientific domains;
- deployment, quality assurance and support of middleware component repositories;
- data and resources management (including secure shared access, global scheduling, user and application support services) to foster the effective use of distributed supercomputing facilities; federated and interoperable services to facilitate the deployment and wide use of digital repositories of scientific information.
- vertical integration of the different services in support of specific virtual research communities, including virtual laboratories for simulation and specific workspaces.

(iii) *Joint Research activities*. These activities should be innovative and explore new fundamental technologies or techniques underpinning the efficient and joint use of the participating research infrastructures. To improve, in quality and/or quantity, the services provided by the infrastructures, these joint research activities could address (non exhaustive list):

- higher performance methodologies and protocols, higher performance instrumentation, including the testing of components, subsystems, materials, techniques and dedicated software;
- integration of installations and infrastructures into virtual facilities;
- innovative solutions for data collection, management, curation and annotation;
- innovative solutions for communication network (increasing performance, improving management, exploiting new transmissions and digital technologies, deploying higher degrees of security and trust) and introduction of new end-to-end services (including dynamic allocation of resources and innovative accounting management);

- novel grid architecture frameworks and policies, innovative grid technologies, or new middleware solutions driving the emergence of high level interoperable services;
- advanced Service Level Agreements and innovative licensing schemes, fostering the adoption of e-Infrastructures and the use of other types of Research Infrastructures by industry;
- innovative software solutions for making new user communities benefit from computing services.

2. Evaluation criteria for Integrating Activities and ICT based e-Infrastructures

1. Scientific and/or technological excellence (relevant to the topic addressed by the call) (award)

- Soundness of concept and quality of objectives
- Progress beyond the state-of-the-art (e.g. improved performance and capacity of the proposed integrated Research Infrastructures and e-infrastructures)
- Quality and effectiveness of the methodology to achieve the objectives of the project, in particular the provision of integrated services.
- Quality and effectiveness of the Networking Activities and associated work plan. The extent to which the co-ordination mechanisms will foster a culture of co-operation between the participants, and enhance the services to the users.
- Quality and effectiveness of the Trans-national Access and/or Services, and associated work plan. The extent to which the activities will offer access to state-of-the-art infrastructures, high quality services, and will enable users to conduct high quality research.
- Quality and effectiveness of the Joint Research Activities and associated work plan. The extent to which the activities will contribute to quantitative and qualitative improvements of the services provided by the infrastructures.

2. Quality and efficiency of the implementation and the management (selection)

- Appropriateness of the management structure and procedures.
- Quality and relevant experience of the individual participants
- Quality of the consortium as a whole (including complementarity, balance, critical mass).
- Appropriate allocation and justification of the resources to be committed (staff, equipment...), by work package and participant.

3. Potential impact through the development, dissemination and use of project results (award)

- Contribution to the expected impacts listed in the work programme under the relevant topic.
- Contribution at the European level towards structuring the European Research Area taking into account the EU objective of balanced territorial development for optimising the use and development of the best research infrastructures existing in Europe.
- Appropriateness of measures for the dissemination and/or exploitation of project results and knowledge and for spreading excellence.
- Contribution to socio-economic impacts, including for promoting innovation and developing appropriate skills in Europe.

Notes:

- Evaluation scores will be awarded for each of the three criteria, and not for the sub-criteria. Each criterion will be scored out of 5. No weightings will apply. The threshold for individual criteria will be 3. The overall threshold, applying to the sum of the three individual scores, will be 10.
- The second criterion corresponds to the **selection criteria** in the meaning of Article 115 of the Financial Regulations applicable to the general budget of the EU (OJ L248 16.9.2002, p.1). It will be the basis for assessing the 'operational capacity' of participants. The remaining criteria and sub-criteria correspond to the **award criteria**.

3. Evaluation criteria for Construction – preparatory and implementation phases

1. Scientific and/or technological excellence (relevant to the topic addressed by the call) (award)

- Clarity and appropriateness of the proposal to reach the fundamental objective of offering a world-level service in response to needs of users from the research community.
- Contribution to scientific European excellence and to the co-ordination of high quality research in Europe.
- Quality and effectiveness of the co-ordination mechanisms, and associated work plan, for the construction of the proposed infrastructure.

2. Quality and efficiency of the implementation and the management (selection)

- Appropriateness of the proposed management structure, procedures and implementation plan to achieve the objectives of the project.
- Quality of partnership: the extent to which the proposal demonstrates the relevant commitment and experience of participants, and brings together all relevant parties that need to work together in order to realise the proposed infrastructure, as specified by the topic.
- Appropriate allocation and justification of the resources to be committed (staff, equipment...), by task and participant, having due regard to the whole project life-cycle.

3. Potential impact through the development, dissemination and use of project results (award)

- Contribution to the expected impacts listed in the work programme under the relevant topic.
- Contribution to the realisation of the infrastructure (for example, the proposal directly addresses those critical questions that urgently need to be resolved in order to reach a European / international agreement on the joint implementation of the infrastructure).
- Contribution of the proposed infrastructure to technological development capacity, the attractiveness of the ERA and the Community objective of balanced territorial development, taking into account the potential of the convergence regions as well as the outermost regions; contribution to the reinforcement of research-based clusters of excellence around such new infrastructure(s) and contribution to socio-economic impacts.
- Added Value of the Community financial support: the extent to which the proposal demonstrates a catalytic and leveraging effect of the EC involvement and the inability of existing mechanisms at national level to achieve the objective.

Notes:

- Evaluation scores will be awarded for each of the three criteria, and not for the sub-criteria. Each criterion will be scored out of 5. No weightings will apply. The threshold for individual criteria will be 3. The overall threshold, applying to the sum of the three individual scores, will be 10.
- The second criterion corresponds to the **selection criteria** in the meaning of Article 115 of the Financial Regulations applicable to the general budget of the EU (OJ L248 16.9.2002, p.1). It will be the basis for assessing the 'operational capacity' of participants. The remaining criteria and sub-criteria correspond to the **award criteria**.

4. Specific Requirements for the implementation of Pre-Commercial Procurement

The following requirements are applicable to Pre-Commercial Procurement (PCP) calls for tender launched under actions requiring PCP to ensure that the conditions for the Article 16f/24e exemption of the public procurement directives²⁰ are respected, that the risk-benefit sharing in PCP takes place according to market conditions and that the Treaty principles²¹ are fully respected throughout the PCP process:

- The public purchaser(s) should verify that the topic proposed for the joint PCP call for tender would **fit the scope of an R&D²² services contract²³**.
- **The practical set-up foreseen for the PCP** shall be clearly announced in the PCP contract notice. This shall include the intention to select multiple companies to start the pre-commercial procurement in parallel, as well as the number of phases and the expected duration of each phase.
- **Functional specifications** shall be used in order to formulate the object of the PCP tender as a problem to be solved without prescribing a specific solution approach to be followed.
- In view of triggering tenderers to send in innovative offers that include R&D that can bring breakthrough improvements to the quality and efficiency of public services, the selection of offers shall not be based on lowest price only. The PCP contracts shall be awarded to the tenders offering best value for money, that is to say, to the tender offering the best price-quality ratio, while taking care to avoid any conflict of interests²⁴.
- In respect of the Treaty principles the public purchaser(s) shall ensure EU wide publication for the PCP call for tender²⁵ in at least English and shall evaluate all offers according to the same objective criteria regardless of the geographic location of company head offices, company size or governance structure. The PCP process should be organised so as to stimulate companies to locate a relevant portion of the R&D and operational activities related to the PCP contract in the European Economic Area or a country having concluded a Stabilisation and Association Agreement with the EU.
- In PCP, the public purchaser(s) does (do) not reserve the R&D results exclusively for its (their) own use. To ensure that such an arrangement is beneficial both for the public purchaser and for the companies involved in PCP, R&D risks and benefits are shared between them in such a way that both parties have an incentive to pursue wide

²⁰ Directives 2004/18/EC and 2004/17/EC

²¹ In particular the fundamental Treaty principles on the free movement of goods, the free movement of workers, the freedom to provide services, the freedom of establishment and the free movement of capital, as well as the principles deriving there from, such as the principles of non-discrimination, transparency and equal treatment

²² R&D can cover activities such as solution exploration and design, prototyping, up to the original development of a limited volume of first products or services in the form of a test series. Original development of a first product or service may include limited production or supply in order to incorporate the results of field testing and to demonstrate that the product or service is suitable for production or supply in quantity to acceptable quality standards. R&D does not include commercial development activities such as quantity production, supply to establish commercial viability or to recover R&D costs, integration, customisation, incremental adaptations and improvements to existing products or processes.

²³ Contracts providing more than only services are still considered a public service contract if the value of the services exceeds that of the products covered by the contract.

²⁴ For more info refer to Staff Working Document on PCP: SEC (1668) 2007

²⁵ Through the Official Journal of the European Union (OJEU), using the TED (Tenders Electronic Daily) web portal

commercialisation and take up of the new solutions. Therefore, for PCP, ownership rights of IPRs generated by a company during the PCP contract should be assigned to that company. The public purchaser should be assigned a free licence to use the R&D results for internal use as well as the right to require participating companies to license IPRs to third parties under fair and reasonable market conditions. A call-back provision should ensure that IPRs from companies that do not succeed to exploit the IPRs themselves within a given period after the PCP project return back to the public purchaser(s).

- In order to enable the public purchaser(s) to establish the correct (best value for money) market price for the R&D service, in which case the presence of State aid can in principle be excluded according to the definition contained in Art. 107 of the Treaty on the functioning of the European Union, the distribution of rights and obligations between public purchaser(s) and companies participating in the PCP, including the allocation of IPRs, shall be published upfront in the PCP call for tender documents and the PCP call for tender shall be carried out in a competitive and transparent way in line with the Treaty principles which leads to a price according to market conditions, and does not involve any indication of manipulation. The public purchaser(s) should ensure that the PCP contracts with participating companies contain a financial compensation according to market conditions²⁶ compared to exclusive development price for assigning IPR ownership rights to participating companies, in order for the PCP call for tender not to involve State aid.
- The PCP contract that will be concluded with each selected organisation shall take the form of one single framework contract covering all the PCP phases, in which the distribution of rights and obligations of the parties is published upfront in the tender documents and which does not involve contract renegotiations on rights and obligations taking place after the choice of participating organisations. This framework contract shall contain an agreement on the future procedure for implementing the different phases (through specific contracts), including the format of the intermediate evaluations after the solution design and prototype development stages that progressively select organisations with the best competing solutions.

²⁶ The financial compensation compared to exclusive development cost should reflect the market value of the benefits received and the risks assumed by the participating company. In case of IPR sharing in PCP, the market price of the benefits should reflect the commercialisation opportunities opened up by the IPRs to the company, the associated risks assumed by the company comprise for instance the cost carried by the company for maintaining the IPRs and commercialising the products.

5. Risk-Sharing Finance Facility

Innovation Union aspects

Enhancing access to finance for Research and Innovation (R&I) activities is key to achieve the objective of the Innovation Union Flagship Initiative²⁷ and bring 'ideas to market'. The European added-value of public support consists in overcoming market deficiencies for the financing of riskier European actions R&I, which often involve a high level of risk.

The Innovation Union initiative underlines that research and innovation are key drivers of competitiveness, jobs, sustainable growth and social progress. The RSFF work programme 2012 has been designed to support the implementation of the Innovation Union Initiative, in particular to bring together research and innovation to address major challenges and to enhance access to finance for Research Infrastructures.

Access to finance to support investments in Research and Innovation (RDI) is indeed an integral part of the Innovation Union Flagship Initiative, which contains a commitment that by 2014, on the basis of Commission proposals, the EU should put in place financial instruments to attract a major increase in private finance and close market gaps in investing in R&I.

The work programme can contribute to the innovation objective in two ways, and constitutes a significant change from the approach of earlier work programmes:

1/ By supporting more topics aimed at generating knowledge to deliver new and more innovative products, processes and services. This will include pilot, demonstration and validation activities.

2/ By identifying and addressing exploitation issues, like capabilities for innovation and dissemination.

The European Council, in its conclusions of 4 February 2011 on Innovation²⁸, invited the Commission to present proposals by the end of 2011 for scaling-up the Risk-Sharing Finance Facility (RSFF). This will be done in particular in the context of the Commission proposal for a Common Strategic Framework for EU research and innovation funding instruments. However, the RSFF 2012 work programme will already contribute to the innovation objective by enhancing access to finance for RDI activities of specific target groups, and in particular of Research Infrastructures.

Information on the Risk-Sharing Finance Facility (RSFF), an innovative financial instrument under FP7, is available online²⁹. The Commission will respond to further needs of potential beneficiaries for information on the RSFF (by, e.g., awareness-raising activities in conjunction with the European Investment Bank, participation to thematic events).

Approach for 2012

Private investment in research and innovation in Europe remains below the level necessary to achieve the ambitions of the 'Europe 2020 strategy'. In addition to grants, other mechanisms – in the form of financial instruments including the RSFF – have proven effective in leveraging private investment by firms, thus mobilising the financial markets and diversifying funding sources for European RDI actions.

²⁷ European Commission Communication on 'Europe 2020 Flagship Initiative Innovation Union' (COM(2010) 546 final, 6 October 2010).

²⁸ Doc EUCO 2/11.

²⁹ <http://www.eib.org/products/loans/special/rsff/?lang=en> and http://ec.europa.eu/invest-in-research/funding/funding02_en.htm

The financial crisis has made access to finance for innovative companies even more difficult as banks have become more than ever risk-adverse. As a result, risk capital for private investments in RDI is very scarce. In addition, public financial support for RDI at national level is scarce, very fragmented and cyclical depending on the availability of budget resources in the EU Member States. Thus, targeted and coherent funding for RDI is not available in most EU countries.

Improving access to loans for R&I actions requires public support to overcome market deficiencies for the financing of European RTD actions, which often involve a high level of risk. One of the key challenges to be addressed through the 2012 RSFF work programme is to improve access to the appropriate forms of finance to increase investment, especially private one, in RDI in Europe. This notably concerns research infrastructures, subject to specific obstacles to be addressed.

The 2012 RSFF work programme is responding to the recommendations of the independent experts group (IEG) in charge of the interim evaluation of the RSFF³⁰ relating to the period 2012 – 2013 and contributes to preparing the next programming period. The IEG was *'highly positive about the first rolling out phase of the RSFF'* and considered the RSFF as *'a uniquely innovative, demand driven instrument, successfully introduced in the European Union's research funding within FP7 and having dramatically expanded the financing for RDI'*. Experts therefore recommended the release of the EU contribution of up to EUR 500 million to the RSFF for the period 2011-2013 under the conditions foreseen in the FP7 legal basis. They also recommended improvements to be implemented for some already supported target groups (in particular Research Infrastructures).

Responding to the recommendation of the independent expert group in charge of the interim evaluation of the RSFF for a better support to Research Infrastructures, the Commission fully endorses the recommendations of the experts to address the needs of currently underrepresented groups in RSFF (e.g research infrastructures) before end of 2013. The 2012 RSFF work programme will therefore prepare to enhance the access to RSFF finance for Research Infrastructures through the introduction of improvements, such as specific approaches and change of risk-sharing. EIB has to preserve its excellent rating on the financial market despite the current context of extensive demand for risk-taking coverage. As a consequence, the EIB has currently to bind its risk-taking capacity. As compensation, the EU financial contribution within the present RSFF Agreement could be used as a first-loss piece³¹.

Innovation dimension of the activities

RSFF activities contribute to achieving the objective of the Innovation Union, as they attract a major increase in private finance and close the market gaps in investing in RDI.

³⁰ See Report of the Independent Expert Group in charge of the RSFF evaluation:

http://ec.europa.eu/research/evaluations/index_en.cfm?pg=rsff

and the response: European Commission Communication COMM (2011)52 *'On the Response to the Report of the Expert Group on the Interim Evaluation of the Seventh Framework Programme for Research, Technological Development and Demonstration Activities and to the Report of the Expert Group on the Interim Evaluation of the Risk-Sharing Finance Facility'*:

http://ec.europa.eu/research/evaluations/pdf/archive/other_reports_studies_and_documents/commission_response_fp7_ie_report_2011.pdf#view=fit&pagemode=none

³¹ The EU contribution would be used **first** to cover potential losses for a portfolio of loans provided to a specific target group, up to a defined percentage of losses ("first-loss" cushion). Only if potential losses were to exceed the EU contribution, the EIB contribution to the RSFF would be used to cover such further losses on an agreed basis.

The risk-sharing arrangement concluded between the EC and the EIB ensures that activities covered by an RSFF Operation can be from any part of the whole value-chain (e.g. from "blue-sky" research to commercialisation activities, encompassing innovation). The RSFF interim evaluation showed that for the period 2007-2009 the majority of the approved loans were dedicated to technological development and innovation activities.

As far as the use of the EU financial contribution is concerned, costs related to Innovation activities are eligible for EC RSFF Operations provided they comply with the provisions of the RSFF Co-operation Agreement between the European Union and the European Investment Bank (as stated in the article A4.6.2: '*Selection of Projects for Financing and the Eligibility Criteria*').

Modalities of RSFF implementation

Within the framework of a maximum contribution of EUR 1 billion for the period 2007-2013, the European Union has provided its first contributions (Coordination and Support Action) to the EIB for RSFF for a maximum amount of EUR 501.5 million for the period 2007-2010³², EUR 101.5 million of which coming from the Capacities Specific Programme (Research Infrastructures). For the period 2011-2013, following the positive results of the RSFF interim evaluation, the EU is expected to release a contribution of EUR 500 million to RSFF, as foreseen in the RSFF legal basis³³. For the period 2012-2013, it is expected that the EU will transfer EUR 50 million (broken down as follows: in 2012: EUR 0 million; in 2013: EUR 50 million) to the EIB³⁴ from the Capacities Specific Programme (Research Infrastructures). The EIB Group is the sole beneficiary of this European Union action. Pursuant to a decision by the EIB Board of Directors, endorsed by the Bank's Governors on 9 June 2006, the EU contribution will be matched by an equivalent amount from the EIB (up to EUR 1 billion for the period 2007-2013).

The co-operation agreement between the European Union (EU) and the European Investment Bank (EIB) in respect of the Risk-Sharing Finance Facility (RSFF) – the RSFF Co-operation agreement – was signed on 5 June 2007 between the EIB and the Commission and amended by the Commission (on the basis of the Commission Decision C(2008) 8058 of 12 December 2008 authorising the Director-General of the Directorate-General for Research to conclude further amendments of the Agreement on behalf of the Commission on a number of points specified in the decision). A first amendment entered into force on 26 February 2009, a second one on 8 September 2009 and a third one on 22 December 2010, in compliance with the 2009 budgetary authority request.

³² For the record, an amount of EUR 70 million was front-loaded from the 2010 budget to the 2009 budget in response to the financial and economic crisis for the Cooperation Specific Programme. An additional contribution of EUR 1.5 million in 2009 was requested by the budgetary authority for the Capacities Specific Programme, consequently increasing the total EU contribution for 2007-2010 to EUR 501.5 million.

³³ The EU contribution to RSFF is expected to come from the following sources for the period 2011-2013: EUR 400 million from the Specific Programme "Cooperation" and EUR 100 million from the Specific Programme "Capacities".

³⁴ Under the condition that the legislative authority releases the overall budgetary envelope of EUR 200 million for the RSFF for the period 2007-2011, as specified under Annex II of the Specific Programme "Capacities", among which EUR 150 million have been committed in the 2007-2011 period.. This amount for 2013 corresponds to primary-credit appropriations. It will be complemented by an additional amount (corresponding to the allocation to RSFF of the EFTA credits.) It may be further increased by other Third Countries appropriations

This Agreement defines terms and conditions related to RSFF and, in particular, to the use of the European Union contribution in RSFF, the risk-sharing methodology, the indicative annual budget, the reporting conditions, the governance, the rules for establishment of network of financial intermediaries in all Member States and Associated Countries and its relating conditions. The first amendment seeks to simplify and harmonize the financial reporting requirements and rules for asset management with other Commission funds managed by the EIB. The second technical amendment specifies the EU contribution for 2009 and simplifies reporting dates. The third technical amendment specifies the EU contribution for 2010, in compliance with the 2009 budgetary authority request.

In compliance with the recommendations of the Independent Experts Group (IEG) in charge of the RSFF interim evaluation, endorsed by the Commission in its Communication of 9 February 2011 (COM(2011) 52), the level of the European Union risk coverage, as well as the risk-sharing methodology established in the Agreement between the EC and the EIB for the RSFF implementation will be reviewed. In particular, but not exclusively, the RSFF could move from the current project-by-project approach to the use of more pooling of risk through a portfolio approach in duly justified cases, to better address financing needs of specific groups, like Research Infrastructures.

International Co-operation

In accordance with the provisions of the Specific Programme, the EIB may only use the European Union contribution to RSFF to cover risk of operations limited to those borrowers or beneficiaries of guarantees from legal entities from third countries other than Associated Countries who participate in FP7 projects and whose costs are eligible for European Union funding or, in the case of Research Infrastructures, if the beneficiary is able to demonstrate that either the infrastructure(s) ownership or operation(s) (will) involve independent legal entities in at least three Member States or Associated Countries, or the infrastructure(s) services are (will be) used or requested for use by research communities from at least three Member States or Associated Countries.

Dissemination actions

Since 2006, assisted by the Commission services, the EIB has carried out an intensive awareness raising campaign to reach stakeholders in as many Member States and Associated Countries as possible. Such awareness-raising actions will continue in 2012, with special focus on the most RDI-intensive sectors in Europe and, in the case of Research Infrastructures, on the ESFRI Roadmap.

RSFF will involve the development of financial engineering solutions adapted to the needs of European research infrastructures. The EIB has already introduced a dedicated instrument under RSFF, the ESFRI Risk Capital Facility (ERCF) – to provide financing to research infrastructure projects helping to bridge temporary financing gaps. This scheme could be reviewed or other innovative more relevant solutions could be implemented in 2012 in compliance with the recommendations issued from the RSFF interim evaluation.

A number of workshops for representatives of the Member States and Associated Countries have been held since the launch of the RSFF to disseminate such financial engineering solutions and seek other co-operation opportunities. Initiatives of this kind will be continued in 2012, both at European and national level.

Overall expected impact

In terms of current impact, the Independent Experts Group in charge of the RSFF interim evaluation in 2010 (IEG) notably underlined that *"the RSFF has been one of the most successful instruments for addressing market imperfections in the debt financing of RDI investments in Europe. As the financial crisis unfolded, the market imperfections with respect to loan finance for RDI investments did not just increase substantially, they became to some extent ubiquitous. RSFF remained one of the few financial instruments available to innovative firms and organisations. RSFF helped many European research intensive firms to maintain RDI activities in period of major financial stress (...)"*.

Following the experts' recommendations on Research Infrastructures, it is expected that the amendments to be proposed will help finance more operations, thus contributing to the diversification of long-term private-financing sources for Research Infrastructures.

Contacts with potential clients

The awareness raising activities started in 2006 have resulted in concrete discussions, negotiations and also applications for financing from promoters of European research infrastructures. In parallel, the EIB has addressed research infrastructure promoters, both public and private, directly to discuss their very concrete financing needs. This has resulted in the signature of a first RSFF loan allocated to a Research-Infrastructure project in 2009 and the approval of several other projects.

The objective is to increase the participation in RSFF in as many Member States and Associated Countries as possible in order to ensure that all types of legal entities, irrespective of size (including SMEs and research organisations, including universities) in as many Member States and Associated Countries as possible, may benefit from this facility for the funding of their activities in eligible actions. Specific efforts will also be made to address financing needs of Research Infrastructures, notably, but not only, from the ESFRI roadmap.

Governance

RSFF implementation is managed by the EIB in accordance with its own rules and procedures, with due regard to terms and conditions of the RSFF Cooperation Agreement (and its subsequent amendments) between the Commission and the Bank. RSFF implementation, and in particular the use of the European Union Contribution, is supervised by a Steering Committee, consisting of at least four members appointed by the Commission at Director level and at least four members appointed by the Bank at Director level.

The Commission will continue to closely monitor the effective use of the European Union Contribution, including ex-post assessments of the successful features of the action, and to regularly report to the Programme Committee. In addition, the Commission will include main findings in this respect to the annual report on research and technological development activities which it will send to the European Parliament and the Council pursuant to Article 190 TFEU. In this context, it is interesting to note that the RSFF interim evaluation carried out with the assistance a group of independent experts in 2010 concluded very positively on the implementation phase and governance of the RSFF also making specific recommendations for the future notably regarding Research Infrastructures.

Selection of Projects for Financing and the Eligibility Criteria

The EIB was recognised as a beneficiary of the European Union action in the Council and Parliament decision adopting the 7th Framework Programme. In accordance with the principles established in the Specific Programme, the EIB will use the European Union contribution on a 'first come, first served basis,' as provisions and capital allocation within the Bank to cover part of the risks associated with its operations supporting eligible research infrastructures.

The development of research infrastructures funded by the European Union shall be automatically eligible. Other research infrastructures, located within or outside the territory of the European Union, shall be eligible if they demonstrate that their ownership or operation (will) involve entities in at least three Member States or Associated Countries and that their services are (will be) used or requested for use by research communities from at least three Member States or Associated Countries.

The EU contribution to RSFF may only be used to support activities which can be classified as 'fundamental research', 'industrial research' or 'experimental development' as defined in the European Union Framework for State Aid for Research and Development and Innovation. Prototypes and pilot projects, which are part of 'experimental development', may be eligible if they fulfil the conditions specified therein. Innovation activities intended to prepare the commercial use of research results (such as training, technology management and transfer) are eligible if they are linked to and complementary to research, technological development and demonstration activities, the later constituting the bulk of any eligible European RTD action. Other innovation activities of a commercial nature are eligible for RSFF only via the use of the EIB's own contribution.

The RSFF Cooperation Agreement with the Bank comprises a list of exclusions from financing with support of the European Union contribution, reflecting political agreement between the Commission, the Member States and the European Parliament as documented in the Seventh Framework Programme and the Specific Programme 'Capacities'.

The Commission Right to Object to the Use of the European Union Contribution

The Commission has a right to express its opinion on each and every financial operation proposed by the EIB to its Board for decision under Article 21 of the EIB Statutes. Where the Commission delivers an unfavourable opinion, the EIB Board may not grant the loan or guarantee concerned, unless it votes unanimously in its favour, the Commission nominee abstaining. Should the Bank proceed with financing despite the Commission's negative opinion the European Union contribution to RSFF may not be used. In accordance with Rules of Participation, the Commission may object, in duly justified cases, the use of the European Union contribution for provisioning and capital allocation for a loan or a guarantee proposed by the EIB. If such a case arises the Commission may conduct an independent, internal or external, review of such a case.

European Union Financial Contribution to RSFF in 2012³⁵

As foreseen in RSFF legal basis and following the positive outcome of the RSFF interim evaluation, the EU contribution is expected to come from the following sources for the period

³⁵ Under the condition that the legislative authority releases the overall budgetary envelope of EUR 200 million for the RSFF for the period 2007-2011, as specified under Annex II of the Specific Programme "Capacities", among which EUR 150 million have been committed in the 2007-2011 period and possibly subject to internal discussions on a potential revision of the allocation of the EU contribution.

2011-2013: EUR 400 million from the Cooperation Specific Programme and EUR 100 million from the Capacities Specific Programme. Under the Capacities Programme, only the Research Infrastructures Action contributes to RSFF. The European Union financial contribution to RSFF from the Research Infrastructures actions of the Capacities Programme may reach a maximum amount of EUR 200 million for 2007-2013.

Following the interim evaluation of the RSFF, as stated in Annex II to FP7, the Commission endorsed the recommendation of the group of independent experts to release up to EUR 500 million for the period 2011-2013. By voting the EU budget 2011 (EUR 250 million for the RSFF), the Council and the European Parliament have provided their agreement of principle for the release of the second tranche. Moreover, in the conclusions of the Competitiveness Council of 9 March 2011, the Council agreed with the recommendation of the Independent Expert Group, also supported by the Commission, to release an additional EU contribution of up to EUR 500 million for the period 2011-2013.³⁶

As from 2009 the Commission proceeds annually with an equal amount of commitment and payment of the European Union contributions to RSFF, based on the EIB's activity and forecast report and its request for the amount of the contribution estimated necessary for the following year.

In compliance with Annex II to the Seventh Framework Programme, the Commission will commit, for the period 2012-2013, an amount of EUR 50 million (broken down as follows: in 2012: EUR 0 million; in 2013: EUR 50 million) coming from the Research Infrastructures Programme.

Process for Recovering and Reallocating Unused European Union Funds

In order to mitigate the risk of accumulation of unused funds the multi-annual planning will be adjusted on the basis of reports including pipeline report (summary of information on projects considered for financing) and demand forecasts. Amounts committed but not earmarked, blocked or paid to the EIB – i.e. not used for the operations of RSFF – will be reallocated to other activities of the contributing themes.

Notwithstanding the above and unless the Council and the European Parliament adopting Common Strategic Framework for the period post 2014 decide otherwise the Commission will recover from the EIB any unused funds of the European Union contribution (including interest and income) which on 31 December 2013 have not been used or committed to be used or are required to cover eligible costs, as defined in the RSFF Cooperation Agreement.

³⁶ See final Council conclusions on the interim evaluation of the RSFF on 04/03/2011: "*Regarding the role of the Risk-Sharing Finance Facility (RSFF) in FP7, the Council WELCOMES the finding of the Independent Experts Group (IEG) that RSFF has been a success, both in quantitative and qualitative terms and that very considerable results on an EU-wide scale have been achieved since its launch. The Council therefore AGREES with the recommendation of the IEG, also supported by the Commission, to release an additional EU contribution of up to EUR 500 million for the period 2011-2013 under the conditions foreseen in the FP7 Decision in accordance with the applicable procedures. The Council CALLS ON the Commission, in liaison with the European Investment Bank, to urgently examine ways and means to improve the take-up by currently underrepresented target groups, in particular SMEs, universities and research infrastructures with a view to achieving significant progress in 2012. A specific SME lending mechanism within the current facility is being designed by the Commission, the European Investment Fund and the EIB in this respect. The Council is looking forward to the Commission proposals called for by the European Council for scaling up the RSFF*".