Research Infrastructures in Horizon 2020

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Research Infrastructures

Research infrastructures are facilities, resources and services used by the research communities to conduct research and foster innovation.

Knowledge-based resources

Major scientific equipments

e-infrastructures
Why an EU approach for Research Infrastructures?

- To address collectively the complexity and cost of the design and development of new world class research infrastructures
- To open access to the research infrastructures existing in the individual Member State to all European researchers
- To avoid duplication of efforts and to coordinate and rationalise the use of these research infrastructures
- To trigger the exchange of best practice, develop interoperability of facilities and resources, develop the training of the next generation of researchers
- To connect national research communities and increase the overall quality of the research and innovation
- To help pooling resources so that the Union can also develop and operate research infrastructures globally
Commitments within the Innovation Union

- By 2015 (...) have completed or launched the construction of 60% of the priority European research infrastructures currently identified by ESFRI (...).
- ... opening of Member State operated research infrastructures to the full European user community ...
- The European Union should step up its cooperation on the roll-out of the global research infrastructures ...
ESFRI roadmap 2010

10+38 new - or major upgrade of - Research Infrastructures of pan-European interest
(+ 3 additional projects from the CERN Council strategic roadmap for particle physics *)

<table>
<thead>
<tr>
<th>Social Sc. &amp; Hum. (5)</th>
<th>Life Sciences (13)</th>
<th>Environmental Sciences (9)</th>
<th>Energy (7)</th>
<th>Material and Analytical Facilities (6)</th>
<th>Physics and Astronomy (10)</th>
<th>e-Infrastructures (1)</th>
</tr>
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<tbody>
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<td>SHARE</td>
<td>BBMRI</td>
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<td>ICOS</td>
<td>EU-COS</td>
<td>EUFEL</td>
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<td>ESS Survey</td>
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ERI established

ERI in preparation

RIs in the implementation phase

Distributed research infrastructures
Single sited research infrastructures
From FP7 to Horizon 2020

- More focused support to the implementation and operation of world-class infrastructures such as ESFRI projects
- Broader access to and deeper integration of European research infrastructures
- Foster the innovation potential of research infrastructures
- Widen the participation to pan-European research infrastructures
- More support to einfrastructures
- Reinforce policy support to European strategy on research infrastructures
- Develop international dimension of the actions

Excellent science

- European Research Council
- Future and Emerging Technologies
- Marie Curie actions
- European Research infrastructures (including e-infrastructures) – 2.488 M€

Societal challenges

- Health, demographic change, wellbeing
- Food security, sustainable agriculture, marine - maritime research, bio-economy
- Secure, clean and efficient energy
- Smart, green, integrated transport
- Climate action, resource efficiency, raw materials
- Inclusive, innovative and reflective societies
- Secure societies
  - Spreading excellence & Widening Participation
  - Science with and for Society

Industrial leadership

- Leadership in enabling and industrial technologies (ICT, space, nanotechnologies, advanced materials and advanced manufacturing and processing, biotechnology)
- Access to risk finance
- Innovation in SMEs
Research Infrastructures in Horizon 2020

1. Developing the European RIs for 2020 and beyond
   - Developing new world-class RIs
   - Integrating and opening national and regional RIs of European interest
   - Development, deployment and operation of ICT based e-Infrastructures

2. Fostering the innovation potential of RIs and their human resources

3. Reinforcing European RI policy and international cooperation
RI Lines of Action in Horizon 2020

- Developing new world-class RI
- Fostering the Innovation Potential of Research Infrastructures and their Human Capital
- Integrating and Operating national and regional RI
- Reinforcing European Research Infrastructure Policy and International Cooperation
- Development, Deployment & Operation of e-Infrastructures
A Coherent Toolbox of Activities

EU Structural Funds & National Funding

Concept
Preparation
Implementation
Operation

Design Study
Preparatory Phase
Support to Implementation & Operation

ESFRI & Other World Class RI (OWCRI) of pan European interest

Individual projects - Clusters

Integrating Activities
Innovation & Human resources
Policy support actions – International Cooperation
Research Infrastructures – Calls

4 Calls - 22 topics in total

1. Developing new world-class Research Infrastructures
2. Integrating and Opening RI of European Interest
3. e-Infrastructures
4. Support to Innovation, Human resources, Policy and International cooperation
Call 1 - Developing new world-class RI

4 topics

1. Design studies
2. Preparatory Phase of ESFRI projects
3. Individual implementation and operation of ESFRI projects
4. Implementation and operation of cross-cutting services and solutions for clusters of ESFRI and other relevant pan-European RI initiatives
Call 1 - Developing New world-class RI

*Design & Preparatory Phases*

To help Europe to respond to challenges in science, industry & society:

- Support the *conceptual or technical design* of new research infrastructures, which are of a clear European dimension and interest (topic 1):
  - *bottom-up process*

- Support the *preparatory or pre-implementation phase* of ESFRI projects (topic 2):
  - *linked to prioritisation exercise*
Call 1 - Developing New world-class RI

**Implementation & Operation Phases**

To facilitate and support the implementation, long-term sustainability and efficient operation of the ESFRI & OWCRI:

- **Individual ESFRI projects** and selected OWCRI with established (or establishing a) legal structure and governance such as ERIC (topic 3):
  - linked to prioritisation exercise

- **Clusters**: joint activities and implementation of common solutions for pan-European RI initiatives in specific domains (topic 4):
  - targets ESFRI together with OWCRI, ERICs, IA, e-infrastructures
Call 1 - Developing New world-class RI

**Design studies – Specific features**

Technical, legal and financial feasibility of new or upgraded facilities, leading to a *conceptual or technical design report*

- **Scientific and technical work**
  - drafting of concepts and engineering plans for the construction
  - creation of final prototypes for key enabling technologies
  - implementation plans for moving from prototypes to the new facility
  - components for an optimized service to targeted communities

- **Strategic work**
  - integration of the new RI into the European RI landscape
  - identification of the best possible site(s)
  - design of a workable legal (e.g. an ERIC) and governance structure
  - planning of research services to be provided at international level
  - estimation of budget for construction and operation
Call 1 - Developing New world-class RI

Preparatory phase activities – Specific features

- **Legal work** for the setting-up of the RI;
- **Management and logistical work** incl. planning (timing, resources), organisation of the logistic support ...;
- **Governance work** i.e. management structure, advisory body…;
- **Financial work** i.e. the financial arrangements for the construction, operation and decommission of the facility;
- **Strategic work** i.e. analysis of the socio-economic and local/regional impact of the new infrastructure;
- **Technical work** i.e. final prototypes for key enabling technologies and implementation plans for transfer of knowledge from prototypes to the new facility;
Call 1 - Developing New world-class RI

Support to individual ESFRI projects – Specific features

- **Central management** and coordination activities;
- **Enhancement** of the technical architecture, R&D and engineering work; users' access;
- **Data management** (including possible open access to data);
- **Inter-operability, standardisation, outreach, training** and international cooperation;
- Development of **innovative components** and **technology transfer** activities;
- Integration of **new members** and development of **Regional Partner Facilities**.
Call 1 - Developing New world-class RI

Clusters – Specific features

Exploit synergies for joint activities, optimise technological implementation of common solutions, ensure a larger harmonisation, interoperability between research facilities

• **Centred around ESFRI projects but involving other relevant pan-European RI initiatives**

• **Gathering critical mass in a specific thematic area for the implementation of a coherent set of common activities:**
  - Development of common critical components for data handling and/or common devices
  - Development of services interoperability and common data and access policies
  - Development of the innovation capacities of RI
  - Training of RI managers
## Call 1 Summary

<table>
<thead>
<tr>
<th>Research Infrastructures (RTD)</th>
<th>2014</th>
<th>2015</th>
<th>TOTAL</th>
<th>Single grant</th>
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<tbody>
<tr>
<td>CALL 1 - H2020-INFRADEV-2014/2015</td>
<td>70</td>
<td>129</td>
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<td>Design studies</td>
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<td></td>
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<td>From 1 to 3 M€</td>
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<td>Preparatory Phase</td>
<td>14</td>
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<td>Up to 2 or 5 M€</td>
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<tr>
<td>Implementation &amp; Operation - Individual</td>
<td>90</td>
<td>90</td>
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<td>Up to 15 M€</td>
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<tr>
<td>Implementation &amp; Operation - Cluster</td>
<td>55</td>
<td>25</td>
<td>80</td>
<td>From 6 to 15 M€</td>
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</table>

**Deadlines:**
- **2 September 2014**
- **14 January 2015**
Call 2 - Integrating and opening RI of European interest

*Integrating Activities*

To open up key national and regional research infrastructures to all European researchers and to ensure their optimal use and joint development:

*Three mandatory components:*

- Networking;
- Transnational / Virtual Access;
- Joint Research Activities for the improvement of RI services.

*Emphasis on management efficiency, innovation capacity (technology transfer, participation of SMEs, instrumentation development), international dimension, management of generated data…*
Call 2 - Integrating and opening RI of European interest

**Integrating Activities – target communities**

- **Starting communities:** new to the EU RI action
  *Emphasis on networking, standardisation and common access procedure*

- **Advanced communities:** already involved in previous IA projects
  *Emphasis on access, joint activities, broadening of the consortium, international cooperation, participation of industry and technology transfer*

- max one proposal per area is expected to be funded, as IAs aim to coordinate & integrate key RI in given fields avoiding duplicate efforts

- proposals should take into due account all relevant ESFRI RI to exploit synergies and to ensure coherency in the EU RI landscape
Call 2 - Integrating and opening RI of European interest

**Integrating Activities – new features for access**

- Specific provisions for Access in **art. 16 of the MGA** and in a Commission decision on TA **Unit cost**: no more Annex III and SP17
- **Cost of the access** provided under the grant no more limited to 20% of the total access costs of an installation
- Three ways to **report trans-national access costs**: on the basis of unit cost, actual costs, a combination of the two
- **Unit cost** set up during GA preparation on the basis of historical data (FP6 like) and not recalculated on the basis of actual costs
- Explicit **list of categories of costs** covered by the unit cost
- **Third country users**: up to 20% of the access can be provided to user teams with a majority of users working in third countries
- Users working for **SMEs exempted** from the requirement to disseminate results generated under Trans-national access
Call 2 - Integrating & opening RI of Eur. interest

Distribution of targeted areas by domain and Summary

<table>
<thead>
<tr>
<th>Domain</th>
<th>Starting communities</th>
<th>Advanced communities</th>
<th>Number of areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bio Medical Sciences</td>
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<td>4</td>
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<tr>
<td>Energy</td>
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<td>3</td>
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<tr>
<td>Environment</td>
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<td>ICT</td>
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<td>Material and Analytical Facilities</td>
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<td>Physics</td>
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<tr>
<td>Social Sciences and Humanities</td>
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<td>4</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>19</strong></td>
<td><strong>22</strong></td>
<td><strong>41</strong></td>
</tr>
</tbody>
</table>

Research Infrastructures (RTD) 2014 2015 TOTAL Single grant

| CALL 2 - H2020-INFRAIA-2014/2015 | 90 50 | 140 | Up to 5 or up to 10 M€ |

Deadline: 2 September 2014
Call 3 – e-Infrastructures (Topic 1)
Managing, preserving and computing with big research data

Scope:

1. A federated pan-European data e-infrastructure: for cost-effective and interoperable solutions for data management and long term preservation
2. Services for quality & reliability: e.g. certification mechanisms & services
3. Federating data management and curation tools and services on the basis of an open architecture and providing support for H2020 DMP
4. Large scale virtualisation of data/compute centre resources
5. PaaS - standards-based computing platform: to be deployed on different HW & e-infrastr., to abstract application development & execution
6. Support the evolution of the European Grid Infrastructure
7. Proof of concept & prototypes of data infrastructure-enabling software: for extremely large or highly heterogeneous data sets
8. Enabling aggregation of content for textual analysis: Platform for text mining, analytics, visualisation
Call 3 – e-Infrastructures (Topic 2)
e-Infrastructure for Open Access

Scope:

- Service-driven data e-infrastructures for open access
  - linking institutional and thematic repositories across Europe
  - researcher helpdesks supporting producers and users of resources
  - promotion of technical solutions for sensitive data sharing (e.g. patient data)
  - Bibliometrics and webometrics for open access

- New services in support of open science: proof of concept and prototyping
  - New forms of publishing, innovative services based on data mining, new forms of peer review...
  - Pilot to stimulate publishing in OA journals supporting related charges

- Global interoperability of open access data e-infrastructures
  - Linking platforms across the globe
Call 3 – e-Infrastructures (Topic 3)
Towards global data e-infrastructures – RDA

Scope:

- RDA (Research Data Alliance) governance structures
- Active participation of European stakeholders organisations and individual experts) in RDA and leadership initiatives. Promotion of EU industry involvement and innovation.
- Engagement of scientific communities at early stage of data infrastructure development, in defining the best practices for data exchange
- Establishment of coordination mechanisms at European level (national research funders, European education and research associations) and with international organisations dealing with standardisation, research data and education issues (IETF, W3C, CODATA, OECD, UNESCO, ...).
Call 3 – e-Infrastructures (Topic 4)

Pan-European HPC infrastructure and services

**Scope:**

- Create a world-class pan-European infrastructure, and provide a seamless and efficient HPC Tier-0 service, for both academia and industry, promoting research excellence and innovation.
- Carry out training, service prototyping, software development and other activities that build on national HPC capabilities (Tier-1) and support a functional European HPC ecosystem;
- Pooling, integrating and rationalising HPC resources in Europe to ensure the establishment of a rich HPC environment of world-class systems with different machine architectures;
- Implement inclusive and equitable governance and a flexible business model to ensure long term financial sustainability;
- Contribute to the implementation of the EU strategy on HPC complementing the activities of the PPP in HPC.
Call 3 – e-Infrastructures (Topic 5)
Centres of Excellence for Computing applications

Scope:

- **User-driven**: application users and owners playing a decisive role in governance
- **Integrated**: encompassing not only HPC software but also relevant aspects of hardware, data management/storage, connectivity, security
- **Multidisciplinary**: with domain expertise co-located alongside HPC system, software and algorithm expertise
- **Distributed**: with a possible central hub, federating capabilities around Europe
Call 3 – e-Infrastructures (Topic 6)
Network of HPC Competence Centres for SME

Scope:

- Networking of HPC competence centres for pooling expertise and resources and exchange best practices
- Awareness raising and visibility activities of the benefits of HPC for SMEs
- Identification of pool of SMEs and matching with available expertise
- Training
Call 3 – e-Infrastructures (Topic 7)
Provision of core services across e-Infrastructures

Scope:

1. Development and promotion of the uptake of a Digital Identifier e-infrastructure for digital objects (articles, datasets, collections, software, etc) and authors;
2. Deployment and promotion of a pan-European identity federation for researchers, educators and students

Core services are services enabling e-infrastructures interoperation or services needed across a broad range of research communities and e-infrastructures
Call 3 – e-Infrastructures (Topic 8)
Research and Education Networking – GÉANT

- Call to establish a Framework Partnership Agreement to ensure longer term commitment to GÉANT
- The FPA will define the long term objective of the partnership, the nature of actions planned, and the rights and obligations of parties
- Within this Framework, the EC may award Specific Grant Agreements with or without calls
  - **25M€ in 2015** covering ~1 year of operation
  - **75M€ in 2016** is planned (subject to approval) for the next 3 years
Call 3 – e-Infrastructures (Topic 9)
Virtual Research Environments - VRE

Service-driven digital research environments, services and tools tailored to the specific needs of interdisciplinary research communities

Scope:

- Requirements from real use cases in any area of S&T
- Addressing the needs of specific scientific communities – in support of e-Science;
- Serving users from both academia and industry;
- Develop user-oriented services, providing easy-to-use functionalities to support bottom-up research
- Based on e-infrastructures & integrating resources across all layers
- Using standardised building blocks and workflows
- Defining semantics, ontologies and metadata
## Call 3 Summary

<table>
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<th>Research Infrastructures (CNECT)</th>
<th>2014</th>
<th>2015</th>
<th>TOTAL</th>
<th>Single grant</th>
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<td>Managing preserving &amp; computing big research data</td>
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<td>e-Infrastructure for open access</td>
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<td>Towards global data e-infrastructures – RDA</td>
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<td>Centres of Excellence for computing applications</td>
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<td>Provision of core services across e-Infrastructures</td>
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<tr>
<td>Research and Education Networking – GÉANT</td>
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<td>(25 M€ Specif.GA in 2015)</td>
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<td>Virtual research environments (VRE)</td>
<td>42</td>
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<td>42</td>
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**Deadlines:** 15 April 2014  2 September 2014  14 January 2015
Call 4 - Support to Innovation, Human resources, Policy and International cooperation

8 topics

- Innovation support measures (RTD)
- Innovation procurement pilot on instrumentation (RTD)
- Human Capital of research infrastructures (RTD)
- New professions and skills for e-infrastructures (CNECT)
- Policy measures for research infrastructures (RTD)
- International Cooperation for research infrastructures (RTD)
- e-infrastructure policy and international cooperation (CNECT)
- Network of national contact points - NCP (RTD)
Call 4

Innovation support measures (topic 1)

The action will support:

• the development of an opportunity portal of calls, tenders and future needs and technology transfer opportunities in RI of pan European interest
• the networking of procurement professionals to encourage exchange of good practices across RI sectors
• Awareness campaign towards industry on the potential of RIs for their activities in selected R&D areas
Call 4

Innovative procurement pilot action in the field of scientific instrumentation (topic 2)

- Pilot action in the field of scientific instrumentation exploiting the innovation potential of Research Infrastructures using Pre-Commercial Procurement (PCP) and/or Public Procurement of Innovation (PPI) schemes.
Call 4

*Strengthening the human capital of RI (topic 3)*

Support the training of staff managing and operating RI of pan-European interest, the adequate supply of human resources in key disciplines, including the emergence of specific education curricula.

- Engage with universities and prepare curricula and courses specifically for pan-European RIs
- Address intercultural and interdisciplinary nature of these RIs
- Address diversity of RIs (global, highly distributed, single site…)
- Significant use of online training material
Call 4

New professions and skills for e-infrastructures (topic 4)

Scope:
1. University curricula for e-infrastructure
2. Training programmes for e-infrastructure professionals
3. Establishment of these professions as distinct professions
4. Networking and information sharing among e-infrastructure operators
5. Awareness and promote e-infrastructures community champions

To bridge the gap between science and ICT
Call 4

Policy measures for RI (topic 5)

- Support partnerships between relevant policy makers, funding bodies or advisory groups such as ESFRI & e-IRG, support cooperation and exchange of good practices between managers of research infrastructures and stakeholder networks; support survey, monitoring and assessment of the implementation and operation of research infrastructures.

- Support the development of a comprehensive database targeted at policy-makers on research infrastructures of more than national relevance in Europe.
Call 4

*International cooperation for RI (topic 6)*

Facilitate the development of global research infrastructures and the cooperation of European RI with their non-European counterparts, ensuring their global interoperability and reach, and to pursue international agreements on the reciprocal use, openness or co-financing of infrastructures.

- Support to GSO activity on global research infrastructures
- Support bilateral cooperation with Africa, Russia (Mega Science projects)
- Support multilateral cooperation with ENP (mapping) and US, Canada, Russia etc… on Arctic research, Marine science and biodiversity
Call 4

e-Infrastructure policy development and international cooperation (topic 7)

- Optimise e-infrastructure investments in Europe
- Ensure sound evidence basis for policy development
- Identify and support innovation
- Ensure global interoperability & reach for EU e-infrastructures

Through:

- Coordination of European, national and/or regional policies and activities
- Stakeholder consultation
- Monitoring take-up and assessing impact ex-post
- Spinning innovation out of projects
- Cooperation of European e-infrastructures with their non-European counterparts
Call 4

Support to the NCP network (topic 8)

**Objective:** Facilitate trans-national co-operation between NCPs with a view to identifying and sharing good practices and raising the general standard of support to programme applicants.

**Activities:** could include benchmarking, joint workshops, enhanced cross-border brokerage events, specific training events and twinning schemes.

Restricted to the network of formally nominated NCPs in the area of research infrastructures (consortium should mix experienced and new NCP).
## Call 4 Summary

<table>
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<tr>
<th>Research Infrastructures (RTD / CNECT)</th>
<th>DG</th>
<th>2014</th>
<th>2015</th>
<th>TOTAL</th>
<th>Single grant</th>
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<td></td>
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<td>CNECT</td>
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<td>7,5</td>
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<tr>
<td>Innovation support measures</td>
<td>RTD</td>
<td>2</td>
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<tr>
<td>Innovative procurement pilot on instrumentation</td>
<td>RTD</td>
<td>14</td>
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<td>14</td>
<td>At least two proposals</td>
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<tr>
<td>Human capital of research infrastructures</td>
<td>RTD</td>
<td>2</td>
<td></td>
<td>2</td>
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<tr>
<td>New professions &amp; skills for e-infrastructures</td>
<td>CNECT</td>
<td>2,5</td>
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<tr>
<td>Policy measures for research infrastructures</td>
<td>RTD</td>
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<td>4</td>
<td>Up to two proposals</td>
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<tr>
<td>International Cooperation for RI</td>
<td>RTD</td>
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<tr>
<td>e-Infrastructure policy &amp; internat. cooperation</td>
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<tr>
<td>Network of National Contact Points</td>
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<td>One proposal</td>
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**Deadlines:**
- 14 May 2014
- 2 September 2014
- 14 January 2015
Time schedule

• Publication first calls: 11 December 2013

• Deadlines in 2014:
  15 April 2014: e-Infrastructure for open access (13 M€)
  14 May 2014: NCP network (2 M€)
  2 September 2014:
  • Design studies (15 M€), Clusters (80 M€), Integrating Activities (140 M€),
  • e-Infrastructures for Big Data (55 M€), RDA (4 M€), HPC (15 + 2 M€),
    Core services (6 M€), GEANT FPA

• Deadlines in 2015:
  14 January 2015:
  • Preparatory Phase (14 M€), Individual support to ESFRI (90 M€),
  • Centres of excellence for computing applications (40 M€), VRE (42 M€),
  • PCP/PPI pilot for instrumentation (14 M€); e-skills (2,5 M€)
Contact persons at DG RTD B4

Calls and Topics

CALL COORDINATORS: Ann Uustalu and Sebastian Jester

INFRADEV-1 (design): Project officers in their scientific area

INFRADEV-2 and 3 (PP and IP): Project officers in their scientific area

INFRADEV-4 (clusters): Lorenza Saracco

INFRAIA: Project officers in their scientific area

INFRASUP-1 and 2 (Innovation): Bernhard Fabianek

INFRASUP-3 (Training): Agnes Robin

INFRASUP-5 (policy support): Philippe Froissard and Vicky Fenton

INFRASUP-6 (INCO): Project officers in their scientific area / country

INFRASUP-8 (NCP): Janine Delahaut
Contact persons at DG RTD B4

Scientific domains

Biomedical and Life Sciences: Andreas Holtel and Ann Uustalu
Energy: Mariano Menna
Environment: Agnes Robin and Anna Maria Johansson
ICT: Lorenza Saracco
Materials and Analytical Facil.: Bernhard Fabianek and Mariano Menna
Physics: Sebastian Jester and Bernhard Fabianek
Social Sciences and Humanities: Maria Theofilotou
### e-Infrastructures: WP 2014-2015 contact points

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<td>H2020-EINFRA-2014/2015 Call e-Infrastructures</td>
<td>Darko Karacic</td>
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<td>EINFRA1</td>
<td>2014-2 Managing, preserving and computing with big research data</td>
<td>Luis Busquets Perez - Carlos Morais Pires, Jarkko Siren</td>
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<td>EINFRA2</td>
<td>2014-2 e-Infrastructures for Open Access</td>
<td>Jarkko Siren, Carlos Morais Pires</td>
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<td>EINFRA3</td>
<td>2014-2 Towards global data e-infrastructures - Research Data Alliance</td>
<td>Carlos Morais Pires, Jarkko Siren</td>
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<td>EINFRA5</td>
<td>2015-1 Centres of Excellence for computing applications</td>
<td>Aniyan Varghese, Leonardo Flores Anover, Tsvetanka Kalfin</td>
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<td>EINFRA6</td>
<td>2014-2 Network of HPC Competence Centres for SMEs</td>
<td>Tsvetanka Kalfin, Aniyan Varghese</td>
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<td>EINFRA7</td>
<td>2014-2 Provision of core services across e-infrastructures</td>
<td>Sonia Spasova, Jean Luc Dorel</td>
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<td>Jean Luc Dorel, Athina Zampara</td>
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<td>EINFRA9</td>
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<td>Antonios Barbas, Wim Jansen</td>
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<td>INFRASUPP4</td>
<td>2015-1 New professions and skills for e-infrastructures</td>
<td>Wim Jansen, Darko Karacic</td>
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<td>INFRASUPP7</td>
<td>2014-2 e-Infrastructure policy development and INCO</td>
<td>Athina Zampara - Aniyan Varghese, Anni Hellman</td>
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Thank you for your Attention!