INFRASTRUCTURES DE RECHERCHE
WORK PROGRAMME 2018-2020

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Work Programme 2018-2020

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Disclaimer: This draft has not been adopted or endorsed by the EC. Any views expressed are the views of the EC services and may not in any circumstances be regarded as stating an official position of the Commission
Strategic orientations for the RI WP 2018-20

- Addressing the **long term sustainability** of pan European Research Infrastructures through a life cycle approach;
- Supporting **Interoperability** and the **European Open Science Cloud**;
- Structuring the European landscape by **integrating and opening** Research Infrastructures of European interest;
- Demonstrating the **role of Research Infrastructures** in the translation of Open Science **into Open Innovation**;
- **Training the RI managers** of tomorrow;
- Supporting **Europe as a global leader in Research Infrastructures**.
Calls in the RI 2018-2020 WP

1. Development and long term sustainability of new pan-European RIs
2. Implementing the EOSC
3. Integrating and Opening RIs of European Interest
4. European Data Infrastructure
5. Demonstrating the role of RIs in the translation of Open Science into Open Innovation
6. Support to policy and International cooperation

Other Actions: GÉANT Partnership projects, Support to NCP

Around €1,1 billion to be awarded over 3 years
2018-2020 Work Programme

• Defining in full only 2018 and 2019 topics

• 2020 topics
  ✓ Only titles are provided in WP
  ✓ Calls with 2020 topics are duplicated in the WP with a second instance indicating "continued in 2020"
  ✓ Indicative budget for all the 2020 calls (including the continued ones) is provided in the WP
  ✓ 2020 Topics will be defined and discussed at the time of future WP amendments
Call 1
Development & LTS of new pan-European RIs

To facilitate and support preparation & implementation of the ESFRI and other world-class RIs, which will help Europe to respond to grand challenges in science, industry and society.

*Emphasis on long-term sustainability, on fostering the innovation potential, on data management and the connection to the EOSC*

1. Design studies
2. Preparatory Phase of new ESFRI projects
3. Individual support to ESFRI & OWC RIs
Support the **conceptual and technical design** of new research infrastructures, which are leading-edge user facilities of a clear European dimension and interest:

- **Conceptual and technical feasibility** of new or upgraded research user facilities, leading to a 'conceptual or technical design report'
- **Need to demonstrate relevance and advancement** wrt the state-of-art as well as the addressing of research challenges and RI landscape gaps
- **Bottom-up process**, only **one deadline** in 2019 but budget over 2 years
- **50% budget increase** for the 2019 topic with respect to the 2017 corresponding topic.
- **Indicative budget 30 M€** - EU contribution per proposal between 1-3 M€
- **Very competitive topic** as aimed at identifying the RIs that really have the potential to become the next generation of European world-class RI
INFRADEV-02-2019-2020 - Preparatory Phases

• Support the preparatory phase of ESFRI projects:
  - Targeting the new projects in the 2018 and 2020 updates of the ESFRI roadmap
  - Two deadlines: beginning of 2019 and end 2020
  - Indicative budget 48 M€ - EU contribution per proposal up to 4 M€
  - Scope of the topic could be fine-tuned through WP amendments to adapt the text to the outcomes of the roadmap updating processes
  - Coordination & Support Action (CSA)
INFRADEV-03-2018-2019

Individual support to ESFRI & OWC RI

To facilitate and support long-term sustainability and efficient operation of the ESFRI & Other World-Class RI (OWC RI):

- Targeting individual ESFRI RI and OWC RI with established legal structure and governance at EU or international level, such as ERIC. RI having submitted a first step ERIC application can apply too.
- Addressing issues highlighted in the Sustainable European RIs document
- Covering: membership enlargement, international cooperation, testing and improvement of access provision to users to increase reliability and create trust, definition of business model & service model agreements, innovation fostering, and the development & integration in the RI landscape of RPF.
- Two deadlines: in 2018 and in 2019
- Total indicative budget 60 M€ - EU contribution per proposal (RIA) 2 - 5 M€
- On a competitive basis: proposals must demonstrate their crucial need for the requested support and how this will ensure their sustainability
- Proposals must also explain complementarities with previous or current EU grants.
## Call INFRADEV Summary

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<thead>
<tr>
<th>Research Infrastructures</th>
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Call 2 – Implementing the EOSC

Topic 1: Access to commercial services through the EOSC hub

Topic 2: Prototyping new services

Topic 3: Integration of public pan-European eInfrastructure services into the EOSC basic catalogue of services

Topic 4: Connecting ESFRI RI through Cluster projects

Topic 5: EOSC governance

Topic 6: Enhancing the EOSC portal & connecting thematic clouds
To set-up a legal and technical mechanism to integrate these supplementary commercial services into the EOSC hub in order to make them available to the scientists.

- Commodity type **commercial digital services** that are necessary for interdisciplinary research activities

- Earth observation services: commercial services stemming from the use of Copernicus open data accessible through the 'DIAS' platforms

- Pan-European e-Infrastructures will act as aggregators of demand for such commercial services, run and manage the procurement contracts and integrate these services into the EOSC service catalogue.

- Indicative budget **12M€**
INFRAEOSC-02-2019

Prototyping new innovative services

To develop an agile, fit-for-purpose and sustainable service offering accessible through the EOSC hub that can satisfy scientific community evolving needs by stimulating the design and prototyping of novel innovative digital services

- Targeting gaps in the service offering of the EOSC catalogue of services
- The new services should address relevant aspects of the research data cycle (from inception to publication, curation, preservation and reuse)
- Responding initially to specific needs of particular scientific communities but in the long run they should be leveraged to become as generic as possible, serving a wider remit of research needs, as well as new users like industry and the public sector.
- Targeting services at TRL 6 with the aim to reach TRL 8 at the end of the project
- Indicative budget 28.5M€, EU contribution per proposal (RIA) 5 - 6 M€
INFRAEOSC-03-2020
Integration and consolidation of pan-European access mechanisms to public e-Infrastructures & commercial services through the EOSC hub

- Follow-up of EINFRA-12-2017
- Primarily integrate services for scalable computing, software, distributed databases and storage with services for access to and preservation of scientific information across Europe
- Covers services at TRL 8 and above
- Focus on generic services be used by as many scientific communities, and by new users like industry and the public sector
- Indicative budget 79 M€
- Scope of the topic to be fine-tuned with the WP amendment in 2019
Clusters of ESFRI, ERICs and IO infrastructures in large thematic domains for data stewardship and connection to the EOSC

- to ensure stewardship of data handled by the involved RI in line with the FAIR principles
- to expose RI data and tools under the EOSC catalogue
- to address domain-specific issues affecting data sharing and re-use
- to ensure services harmonisation, integration and interoperability of data in those domains as well as interoperability with other relevant domains

Indicative budget 95 M€; between EUR 6 and 24 million per proposal (RIA) on the basis of 1.5 -2 M€ of EU contribution per connected RI
a) **Setup the EOSC coordination structure (2018)**

b) **Coordination of EOSC-relevant national initiatives across Europe and support to prospective EOSC service providers (2018-2019)**

c) **FAIR data uptake and compliance in all scientific communities (2018)**

- Grants awarded under this topic will complement each other (collaboration agreements)
- Grants will build on the results of past, ongoing and forthcoming proposals
a) Setup the EOSC coordination structure (2018)

- Support the EOSC Executive Board overseeing the EOSC implementation and developing innovative business models for the delivery of EOSC core functions;

- Help coordinate all EOSC relevant activities funded under H2020;

- Support decision making process regarding EOSC core functions and help set rules and methods of participation;

- Structure the EOSC community of stakeholders;

- Liaise with Third Countries in policy and technical developments compatible with EOSC.

- Indicative budget 10 M€; 1 proposal expected to be funded (CSA)
b) Coordination of EOSC relevant national initiatives across Europe and support to prospective EOSC service providers (2018-19)

- Support the coordination, convergence and federation of EOSC relevant national initiatives for open research data and services;
- Support EOSC coordination structure in assessing the level of interoperability and organisational readiness of involved EOSC service providers;
- Map and harmonise the delivery of horizontal services related to research data across EOSC providers and related national initiatives
- Proposals will build on and complement related work on the EOSC Hub
- Indicative budget 30 M€, up to 6 M€ per proposal (RIA)
INFRAEOSC-05-2018-2019 - EOSC governance

c) FAIR data uptake and compliance in all scientific communities (2018)

- Implementation of a common scheme to ensure FAIR data development uptake and compliance by national and European research data providers;
- Facilitate coordination of initiatives across MS & AC;
- Develop and implement measures on FAIR data policy addressing, among others, data stewardship, data curation & creation of metadata catalogues;
- Support the co-development and implementation of standards for data management and certification schemes for data repositories;
- Organise FAIR competence centres for areas not addressed by other initiatives;
- Address the establishment of a European data science competence framework for inclusion in academic curricula.
- Indicative budget 10 M€; Coordination & Support Action (CSA)
INFRAEOSC-06-2019-2020

Enhancing the EOSC portal and connecting thematic clouds

a) Support to the EOSC Portal (2019)

b) Connecting thematic clouds into the EOSC (2020)

✓ Grants will build on the results of past, ongoing and forthcoming proposals
INFRAEOSC-06-2019-2020

Enhancing the EOSC portal and connecting thematic clouds

a) Support to the EOSC Portal (2019)

- Provide a fully functional, sustainable and comprehensive user interface to the EOSC services;
- Incorporate existing scientific gateways, data and cloud thematic platforms developed under FP7 and H2020;
- Proposals will build on the work of eInfraCentral and provide additional support for the implementation of the EOSC Hub;
- Indicative budget 2 M€, one proposal expected to be funded (RIA)
b) Connecting thematic clouds into the EOSC (2020)

- Ensure functional interoperability and gradual integration of existing thematic clouds into the EOSC;
- Proposals will complement the activities developed by the projects funded under the topic INFRAEOSC-04-2018
- Indicative budget 5 M€, 1-2 M€ per thematic cloud in the proposal (RIA)
- Scope of the sub-topic to be fine-tuned with the WP amendment in 2019
Mapping of 2018-2019 actions

EOSC
- Governance
  - Rules of engagement
  - Standard setting & certification
  - Agenda setting

EOSC Portal
- User interface
- Catalogue of services for research
- Core service provision
- Brokerage of external services

ESFRI Clusters
- Int. RI: ESFRI
  - CERN, EMBL, ...

Commercial Services

Commercial

MS

EDI

Researcher

FAIR uptake mechanism

New Services

Commercial Services

Facilities
## INFRAEOSC Summary

### Table: Research Infrastructures

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<th>Research Infrastructures</th>
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<th>2019</th>
<th>2020</th>
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Call 3 – Integrating and opening RIs of European interest

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

*Emphasis on sustainability, widening, skills, innovation and data management in compliance with the EOSC*

1. Integrating activities for **Advanced communities**
2. **Integrating activities for Starting communities** (2020)
3. **Pilot for a new model of IA**: new ways for opening and integrating at EU level RIs of European interest (2020)
INFRAIA-01-2018-2019
Integrating Activities for Advanced communities

- RI communities with an advanced degree of coordination achieved through previous IA
- Targeted approach, **one stage calls, two deadlines**: 2018 and 2019.
- Indicative total budget 226.5 M€, at least 110 M€ per deadline, up to 10 M€ of EU contrib. per GA (RIA)
- Emphasis on **novelties** with respect to previous GAs; on widening TA / VA provision in term of services, users, and served disciplines; on innovation aspects; on the contribution to a catalogue of RI services; on addressing the **sustainability** of the integrated RI services provided at EU level, on the adoption of the European Charter for Access to RI, on data stewardship & connection of data services and tools to the EOSC
Call 3 – Integrating and opening RIs of European interest (continued in 2020)

**INFRAIA-02-2020: Integrating Activities for Starting communities**
- RI Communities never supported for their integration under EU FPs
- Emphasis on networking, standardisation and common access procedure, complementarity and coherence with the existing European RI landscape

**INFRAIA-03-2020: Pilot for a new model of Integr. Activities**
- To explore new ways to support the opening of national/regional/ European RIs and the provision of integrated RI services at EU level
- One stage call. Targeted approach – 2020
- Targeting larger sets of RIs, gathering close communities, even with different degree of coordination, to develop and implement a programme focussing on access provision and integration
<table>
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<tr>
<th>Research Infrastructures</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>Total</th>
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Call 4 – European Data Infrastructure

To integrates world-class HPC capability, high-speed connectivity and leading-edge data and software services

Topic 1: Support to a Pan-European High Performance Computing infrastructure and services (PRACE)

Topic 2: Supporting Centres of Excellence on HPC that promote the use of upcoming exascale computing capabilities

Topic 3: Supporting the governance of the EDI

Topic 4: Support to Public Procurement of innovative HPC systems (2020)
INFRAEDI-01-2018: Pan-European HPC infrastructure and services (PRACE)

- Provide a seamless and efficient Europe-wide Tier-0 service to users, based on promoting research excellence and innovation
- Support software implementations, helping Tier-0 users and communities in adapting and adopting novel software solutions
- Identify new user needs and ensure openness to new user communities and new applications
- Run training and skills development programmes
- Coordinate activities with the European Technology Platform for HPC (ETP4HPC) and the Centres of Excellence in HPC applications
- Estimated budget 24 M€, between 22 and 24 M€ per proposal (RIA)
INFRAEDI-02-2018: HPC PPP - Centres of Excellence in exascale computing

(a) Supporting Centres of Excellence – CoE (RIA)
- Consolidating important domains (e.g. materials, biomolecular, weather/climate, health/medicine, Big Data)
- New CoE in key areas (e.g. engineering) and openness to new areas
- HPC applications towards exascale performance (computing and extreme data)
- Services supporting different usage models - convergence of HPC, HTC & HPDA
- Commitment to the co-design approach
- Specialised training and capacity building – PRACE
- Data management and long term data stewardship towards exascale
- Estimated budget 72 M€, between EUR 6 and 8 million per proposal

(b) CoE coordination (CSA)
- a focal point for the consulting skills and training available from the CoE and other organisations (i.e. PRACE)
- Estimated budget 2 M€, one proposal expected to be funded
INFRAEDI-03-2018: Support to the governance of HPC Infrastructure

- Support the objectives of the European Cloud Initiative by promoting a sound governance structure for the management and the development of the EDI infrastructure and services (HPC/data/connectivity), decision making on funding, long-term sustainability and security;
- Establish a communication platform for the dialogue of stakeholders involved in the implementation of the Governance of the HPC infrastructure;
- Linking with relevant national and pan-European activities in the field;
- Organize outreach events;
- The action should involve users, implementers and funders, participating in the EU funded activities of HPC and Big Data.
- Estimated budget 1,5 M€ - 3 years, one proposal expected to be funded.
INFRAEDI-EDI-04-2020: Support to Public Procurement of innovative HPC systems

- Contribute to the coordination of plans and procurements for the provision of leading-class HPC capabilities at European and national level
- Procurement of innovative HPC solutions for the deployment in Europe of two pre-exascale systems
- A substantial percentage of the new systems will be made available to European researchers in the frame of PRACE
- Diversify the available leading-class HPC capabilities and architectures, to satisfy the needs of a wider range of users in different key application areas
- Estimated budget 80 M€ (35% EU funding -> systems of ~228 M€)
- Scope to be fine-tuned with the WP amendments in 2019
## Call INFRAEDI Summary

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Call 5: Demonstrating the role of RIs in the translation of Open Science into Open Innovation

Large initiatives and support measures to foster the innovation potential of research infrastructures:

1. Stimulate the innovation potential of SMEs
2. Network of research infrastructure Industrial Liaison and Contact Officers
3. *Co-Innovation platform for research infrastructure technologies* *(2020)*
4. *Innovation pilots* *(2020)*
INFRAINNOV-01-2019

Stimulate the innovation potential of SMEs

Specific Challenge: Providing an effective mechanism for inclusion of innovative, agile SMEs in the EOSC / EDI

Stimulate the innovation potential of SMEs in the following domains:

- as users of EOSC services provided by public pan-European e-infrastructures to improve their own service offering
- as users of advanced HPC services

- The action will involve financial support to third parties in the form of grants

- Indicative budget: 8 M€, between 7 and 8 M€ per proposal (RIA)
INFRAINNOV-02-2019: Network of RI Industrial Liaison & Contact Officers

Support the establishment of a network of Industrial Liaison and Contact Officers engaged with pan-European RI, including ESFRI and other relevant world class RI of European interest

- Addressing training session & exchange of best practises across various research domains, enhanced cross-border and cross-thematic brokerage events, joint awareness campaigns towards industry (including SMEs), ...

- covering a wide range of scientific domains

- portals of calls, tenders, future needs and technology transfer opportunities per technological domain could also be developed

- Indicative budget 1.5 M€ - Coordination & Support action (CSA)
Call 5: Demonstrating the role of RIs in the translation of Open Science into Open Innovation (continued in 2020)

INFRAINNOV-03-2020: Co-Innovation platform for research infrastructure technologies

- innovation projects to integrate RIs with industry in a co-development/co-creation effort on the basis of their strategic potential to connect science, industrial leadership and societal challenges
- follow-up of the 2017 co-innovation platform for detection & imaging technologies

INFRAINNOV-04-2020: Innovation pilots

- Targeting larger communities of RIs in partnerships with industry and SMEs for the implementation of strategic roadmap and/or joint research activities in key technologies for the RI development and upgrade
- Complementary to the IA pilot action
- Targeted approach
# Call INFRAINNOV Summary

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Call 6: Policy and International cooperation

Actions to reinforce European research infrastructures policy and international cooperation, the latter with flagship initiatives *(support to Sesame in Jordan, cooperation with Russia, EU-CELAC cooperation on RIs)*.

1. Policy and international cooperation measures for research infrastructures
2. *Strengthening the human capital of research infrastructures and e-infrastructures (2020)*
INFRASUPP-01-2018-2019
Policy and international cooperation for RI


- (a) Research & Innovation actions (RIA) for the 2018 deadline
  SESAME: development and installation, in partnership with the European synchrotrons & industry, of a European beamline

- (b) Coordination & Support actions (CSA) for the 2018 deadline
  (b1) Support to the ERIC network
  (b2) International visibility of European RI and of their services through, for example, a brokerage based approach and organization of a science market place
  (b3) Catalogue of RI services, complementary and tightly linked to the EOSC catalogue
  (b4) Support to the ESFRI
  (b5) Support to the e-IRG

- Indicative budget for 2018: 12.6 M€ - Up to 6 M€ for (a); up to 1.5 M€ for proposals under (b1) to (b4); up to 0.6 M€ for proposals under (b5)
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- (c) Research & Innovation actions (RIA) for the 2019 deadline
  - Cooperation with Russia: joint research activities for the development of instrumentation between advanced Mega-science initiatives and EU facilities; joint design effort for new facilities; exchange programmes; access provision for European researchers to RU facilities

- (d) Coordination & Support actions (CSA) for the 2019 deadline
  - EU-CELAC cooperation on RIs: identification of priorities for regional and bi-regional cooperation, exchange of best practices, ...

- Indicative budget for 2019: 27 M€ - Up to 25 M€ for (c) and up to 1.5 M€ for (d)
## Call INFRASUPP Summary

<table>
<thead>
<tr>
<th>Research Infrastructures</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>Total</th>
<th>Single grant</th>
<th>Deadlines</th>
</tr>
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<tbody>
<tr>
<td><strong>CALL H2020-INFRASUPP-2018-2020</strong></td>
<td>12.6</td>
<td>27</td>
<td>1.5</td>
<td>41.1</td>
<td></td>
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<tr>
<td>INFRASUPP-01: policy &amp; INCO measures for RIs</td>
<td>(a) 6</td>
<td></td>
<td></td>
<td></td>
<td>6 up to 6 M€</td>
<td>22 Mar 2018</td>
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<td>(b) 6.6</td>
<td></td>
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<td>6.6</td>
<td></td>
<td>up to 1.5 or 0.6 M€</td>
<td>22 Mar 2018</td>
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<td>(c) 27</td>
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<td>27</td>
<td>up to 25 M€</td>
<td>20 Mar 2019</td>
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<tr>
<td>(d) 27</td>
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<td>up to 1.5 M€</td>
<td>20 Mar 2019</td>
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<td>INFRAINNOV-03: strengthening the human capital of RIs</td>
<td>1.5</td>
<td>1.5</td>
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<td>mid 2020</td>
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Other Actions: GÉANT Framework Partnership Agreement

The aim is to establish GÉANT and NREN ecosystem as the networking substrate for other e-infrastructures as well as the provider of services and applications underpinning the EOSC, exascale and any other research centric vertical solution.

a.1) Operational Services (TRL 8 or above)
- Further develop the next-generation GÉANT network; upgrade trust & identity services
- Developing new functionalities; build a test environment for services becoming operational
- Improve the minimum service level of the smaller European NRENs

a.2) Prototyping and piloting of new services (TRL 6 or above)
- Prototyping network components, modules, services and applications accessing wired/wireless infrastructures and networked resources
- Respond to the needs of extreme-scale systems and ultra-low latency applications
- Piloting the widening of user base to public sector and industry
Other Actions: GÉANT Framework Partnership Agreement

a.3) International Cooperation, skills and dissemination

- Establish new collaboration agreements and develop further existing ones with NRENs or associations of NRENs outside the EU
- Organise workshops on end user network services requirements to inform future product portfolio pipelines and help understand demand for new services
- Strengthen the community creative programme
- Organize & participate in international events to disseminate the value of NRENS and e-Infrastructures at large and their contribution to the Open Science principles

(b) Increase of long-term backbone capacity

- Restructuring the backbone network: long-term IRUs to develop a new, more extensive footprint, stimulating the market in cross-border communications infrastructure whilst decreasing the digital divide and reducing costs

Total budget (2018-2019): **128 M€** for 2 SGAs (a & b), of which at least **16 M€** for (b)
To facilitate transnational cooperation between Horizon 2020 NCPs in the area of RIs (incl. e-Infra)

Continuation of previous action, focus on:

- Identification and sharing of good practices
- Raising the general standard of support to programme applicants
- Re-inforced support to widening activities, in particular to help NCPs in those countries that have been participating at low levels in the programme up to now
- Using various mechanisms including benchmarking, joint workshops, enhanced cross-border brokerage events, and specific training linked to the RI sector

Total budget (2018) for a grant to identified beneficiaries: 0,35M€