European Commission

#HorizonEU

**HORIZON EUROPE**

**THE EU RESEARCH & INNOVATION PROGRAMME**

2021 – 2027

**RESEARCH INFRASTRUCTURES**

**PATRICIA POSTIGO**

Jornada Informativa
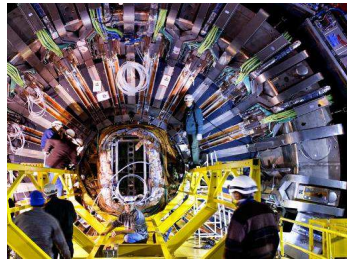
19 Diciembre 2022

Research and Innovation

# Research Infrastructures

**Facilities providing resources and services** for research communities to conduct research and foster innovation (single site, distributed, virtual). They provide **access to external users**.

*Knowledge-related facilities*          *Major scientific equipments*          *ICT infrastructures*



e.g.: archives, collections, data infrastructures, telescopes, research vessels, FEL, computing systems, communication networks

*Inter alia, RIs contribute to:*

✓ Extend the frontiers of knowledge

✓ Exchange and transmit knowledge

✓ Train the next generation of top researchers

✓ Support industrial innovation

# Research Infrastructures in Horizon Europe

## Pillar 1
### Excellent Science

European Research Council

Marie Skłodowska-Curie Actions

Research Infrastructures
EUR 2,4 bn

## Pillar 2
### Global Challenges and European Industrial Competitiveness

Clusters
- Health
- Culture, Creativity and Inclusive Society
- Civil Security for Society
- Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

Joint Research Centre

## Pillar 3
### Innovative Europe

European Innovation Council

European innovation ecosystems

European Institute of Innovation and Technology

## Widening Participation and Strengthening the European Research Area

Widening participation and spreading excellence

Reforming and Enhancing the European R&I system

# Research Infrastructures in Horizon Europe

## *Overall objective*

➢ **Fundamental knowledge creation**

➢ **Technology deployment**

➢ **Implementation of open science**

**How – coordination through ESFRI (a part of the programme supports roadmap deployment) and transnational access.**

4  **Context: policy priorities (twin transitions, ERA, innovation)**

# Research Infrastructures Work Programme 2023-2024

## *In a nutshell*

➢ **5 Destinations**: packages of actions contributing to specific objectives with expected impacts

➢ **7 calls: 4 calls in 2023 (deadline: 09/03/2023), and 3 calls in 2024 (deadline: 12/03/2024)**

➢ **27 topics**

➢ **Other actions**:

- **5 grants for identified beneficiaries:** ERIC monitoring, EOSC monitoring, 2 presidency events, enhanced depositing services;

- **1 SGA** to the FPA for Research and Education Networks;

- **External expertise**: reviewers; individual experts; ERICs evaluators.

**~654 M€ total budget**: ~320 M€ on topics/actions 2023, ~334 M€ on topics/actions 2024

# Research Infrastructures Work Programme 2023-2024

## *Main novelties*

- **Preparation of common strategies for future development of RIs technologies and services within broad RIs communities;**

- **Co-Fund action for access;**

- **Greening the research infrastructures technologies;**

- **Advancing the challenge-driven approach**

# Research Infrastructures Work Programme 2023-2024

## *Destinations*

- ➤ **INFRADEV :**   Developing, consolidating and optimising European RIs landscape, maintaining global leadership

- ➤ **INFRASERV :**   RI services to support health research, accelerate the green and digital transformation, and advance frontier knowledge

- ➤ **INFRATECH :**   Next generation of scientific instrumentation, tools and methods and advanced digital solutions

- ➤ **INFRAEOSC :**   Enabling an operational, open and FAIR EOSC ecosystem

- ➤ **INFRANET :**   Network connectivity - enabler for collaboration without boundaries *(no calls in this WP!)*

# INFRADEV 2023

# 8 topics
# Deadline 9 March 2023

# HORIZON-INFRA-2023-DEV-01-01:
## Concept development for a research infrastructure to manage, integrate and sustain large medical cohorts

### TYPE OF ACTION
- Research and Innovation Action (RIA)

### BUDGET
- Total indicative budget for the topic: EUR 3 million
- Expected EU contribution per project: EUR 1 – 3 million

### OTHER CONDITIONS
- Indicative number of projects expected to be funded: 1
- Eligible costs for lump sum reimbursement

### TIMING
- Call opening: 7 December 2022 (tbc)
- Deadline: 9 March 2023

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# HORIZON-INFRA-2023-DEV-01-02:
## Early phase implementation of ESFRI Projects which entered the ESFRI Roadmap in 2018
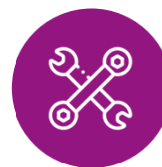
### TYPE OF ACTION

- Coordination and Support Action (CSA)

### BUDGET

- Total indicative budget for the topic: EUR 7.50 million

- Expected EU contribution per project: EUR 1.0-1.5 million

### OTHER CONDITIONS

- Indicative number of projects expected to be funded: 5

### TIMING

- Call opening: 7 December 2022 (tbc)

- Deadline: 9 March 2023

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# HORIZON-INFRA-2023-DEV-01-03:

## Consolidation of the RI landscape – Individual support for evolution and long-term sustainability of pan-European research infrastructures *funding rate 80%*

### TYPE OF ACTION

- Research and Innovation Action (RIA)

### BUDGET

- Total indicative budget for the topic: EUR 40 million

- Expected EU contribution per project: EUR 3.0-4.0 million (**80% funding rate**)

### OTHER CONDITIONS

- Indicative number of projects expected to be funded: 10

### TIMING

- Call opening: 7 December 2022 (tbc)

- Deadline: 9 March 2023

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# HORIZON-INFRA-2023-DEV-01-04:

## Consolidation of the RI landscape – development of complementarities, synergies and/or integration between a set of pan-European RIs

At least 2 ESFRI/ERICs

### TYPE OF ACTION

- Research and Innovation Action (RIA)

### BUDGET

- Total indicative budget for the topic: EUR 20 million

- Expected EU contribution per project: EUR 2.0-5.0 million

### OTHER CONDITIONS

- Indicative number of projects expected to be funded: 5

### TIMING

- Call opening: 7 December 2022 (tbc)

- Deadline: 9 March 2023

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# HORIZON-INFRA-2023-DEV-01-05:
## Preparation of common strategies for future developnmet of RI technologies and services within broad RI communities

### TYPE OF ACTION

- Coordination and Support Action (CSA)

### BUDGET

- Total indicative budget for the topic: EUR 12.5 million

- Expected EU contribution per project: EUR 1.5-2.5 million

### OTHER CONDITIONS

- Indicative number of projects expected to be funded: 5

### TIMING

- Call opening: 7 December 2022 (tbc)

- Deadline: 9 March 2023

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# HORIZON-INFRA-2023-DEV-01-08:
## Preparatory phase of new ESFRI research infrastructure projects

### TYPE OF ACTION

- Coordination and Support Action (CSA)

### BUDGET

- Total indicative budget for the topic: EUR 3 million

- Expected EU contribution per project: Around EUR 3 million

### OTHER CONDITIONS

- Indicative number of projects expected to be funded: 1

### TIMING

- Call opening: 7 December 2022 (tbc)

- Deadline: 9 March 2023

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# HORIZON-INFRA-2023-DEV-01-06:
## Strengthen the bilateral cooperation on research infrastructures with Latin America

### TYPE OF ACTION

- Coordination and Support Action (CSA)

### BUDGET

- Total indicative budget for the topic: EUR 3,75 million

- Expected EU contribution per project: EUR 0,75 – 1,5 million

### OTHER CONDITIONS

- Indicative number of projects expected to be funded: 3

### TIMING

- Call opening: 7 December 2022 (tbc)

- Deadline: 9 March 2023

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# HORIZON-INFRA-2023-DEV-01-07:
## Strengthening the international dimension of ESFRI and/or ERIC research infrastructures

### TYPE OF ACTION
- Coordination and Support Action (CSA)

### BUDGET
- Total indicative budget for the topic: EUR 7,8 million
- Expected EU contribution per project: EUR 1 – 1,5 million

### OTHER CONDITIONS
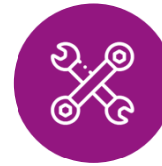- Indicative number of projects expected to be funded: 5

### TIMING
- Call opening: 7 December 2022 (tbc)
- Deadline: 9 March 2023

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# INFRADEV 2024

## 3 topics
## Deadline 12 March 2024

# HORIZON-INFRA-2024-DEV-01-01:
## Research Infrastructure Concept Development

### TYPE OF ACTION

- Research and Innovation Action (RIA)

### BUDGET

- Total indicative budget for the topic: EUR 14 million

- Expected EU contribution per project: 1 - 3 million

### OTHER CONDITIONS

- Indicative number of projects expected to be funded: 5-6

### TIMING

- Call opening: 6 December 2023 (tbc)

- Deadline: 12 March 2024

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# HORIZON-INFRA-2024-DEV-01-02:
# Strengthen bilateral RI cooperation with Africa

## TYPE OF ACTION

- Coordination and Support Action (CSA)

## BUDGET

- Total indicative budget for the topic: EUR 1,5 million

- Expected EU contribution per project: 1,5 million

## OTHER CONDITIONS

- Indicative number of projects expected to be funded: 1

## TIMING

- Call opening: 6 December 2023 (tbc)

- Deadline: 12 March 2024

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# HORIZON-INFRA-2024-DEV-01-03:
## Individual support for evolution, long term sustainability and emerging needs of pan-European RIs *funding rate 80%*

**TYPE OF ACTION**

- Research and Innovation Action (RIA)

**BUDGET**

- Total indicative budget for the topic: EUR 8 million
- Expected EU contribution per project: 2 - 4 million

**OTHER CONDITIONS**

- Indicative number of projects expected to be funded: 2-4

**TIMING**

- Call opening: 6 December 2023 (tbc)
- Deadline: 12 March 2024

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# INFRASERV 2023

# 3 topics
# Deadline 9 March 2023

# HORIZON-INFRA-2023-SERV-01-01:
## Research infrastructure services to enable R&I addressing main challenges and EU priorities

### TYPE OF ACTION

- Research and Innovation Action (RIA)

### BUDGET

- Total indicative budget for the topic: EUR 105 million

- Expected EU contribution per project: EUR 8 – 14,5 million

### OTHER CONDITIONS

- Indicative number of projects expected to be funded: 8

### TIMING

- Call opening: 7 December 2022 (tbc)

- Deadline: 9 March 2023

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# 10 areas:

**RI services to enable research linking environmental factors to human health**

**RI services for improving clinical research in the paediatric area**

**RI services for climate-change risks**

**RI services for sustainable Arctic/polar regions**

**RI services for healthy ocean and waters**

**RI services for sustainable aquaculture, fisheries and blue economy**

**RI services for renewable energy technologies and systems**

**RI services for innovative applications of nanoscience and nanotechnology**

**RI services to enhance the EU capacity for the development of semiconductors**

**RI services for shaping the future generation society**

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# Research infrastructure services to enable R&I addressing main challenges and EU priorities (<u>all areas</u>)

**Expected Outcome:**

- provision of **innovative, customised and efficient RI services** enhancing and increasing society's long-term and consistent problem-solving capacity and evidence-based policy making. *<u>+ specific outcome per area.</u>*

**Scope** (please refer to the Work Programme for full information)**:**

- **transnational access** (on-site or remote) and/or **virtual access** to integrated and customised RI services for challenge-driven R&I in each of the areas, offered by a **wide range of complementary and interdisciplinary top level research infrastructures**.(<u>also affiliated entities, third parties, or external providers of purchased services</u>);

- ad hoc **users' training** and **scientific and technical support**; <u>limited</u> development of new services; data management, interoperability, EOSC, global standards...

- *<u>+ specific scope per area.</u>*

- *Always bear in mind linkages with other HE projects in thematic pillar, connected international initiatives, focus on full value chain from materials to applications*

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# HORIZON-INFRA-2023-SERV-01-02:
# Research infrastructure services advancing frontier knowledge

## TYPE OF ACTION

- Research and Innovation Action (RIA)

## BUDGET

- Total indicative budget for the topic: EUR 25,1 million

- Expected EU contribution per project: EUR 8 – 14,5 million

## OTHER CONDITIONS

- Indicative number of projects expected to be funded: 2

## TIMING

- Call opening: 7 December 2022 (tbc)

- Deadline: 9 March 2023

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# Research infrastructure services advancing frontier knowledge

**Context:** research infrastructures are key players in the generation of **fundamental knowledge** and drivers of **scientific excellence** in Europe, enabling the advancement of **frontier knowledge** in areas complementary to those addressed through a challenge-driven approach.

**Expected Outcomes:**

- wider, simplified, and more efficient access to the best research infrastructures available to researchers to conduct curiosity-driven research, irrespective of location;
- breakthrough and leading-edge research enabled by advanced research infrastructure services made available to a <u>wider user community</u>;
- improved and harmonised RI services and broader use of RI resources across the EU and Associated Countries deriving from the exploitation of <u>synergies and complementarities</u>;
- a <u>new generation of researchers</u> trained to optimally exploit all the essential tools for their research;
- <u>cross-disciplinary fertilisations</u> and a wider sharing of information, knowledge and technologies across scientific fields fostered by closer interactions between researchers active in and around research infrastructures;
- better management, including implementing <u>FAIR data</u> principle, of the continuous flow of data collected or produced by research infrastructures.

**Scope:** RI service provision to enable curiosity driven research in 3 domains:
**Biosphere**: terrestrial biodiversity & ecosystems, including forest; **Astronomy & Astroparticle physics**; **Arts & Humanities.**

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# HORIZON-INFRA-2023-SERV-01-03:
## Research infrastructure services advancing frontier knowledge: co-fund pilots with pan-European RIs and/or national RIs

At least 3 ESFRI/ERICs/of European interest, 3 different MS/AC

**TYPE OF ACTION**

- COFUND

**BUDGET**

- Total indicative budget for the topic: EUR 12 million
- Expected EU contribution per project: EUR 2 – 5 million

**OTHER CONDITIONS**

- Indicative number of projects expected to be funded: 3

**TIMING**

- Call opening: 7 December 2022 (tbc)
- Deadline: 9 March 2023

European Commission

# Research infrastructure services advancing frontier knowledge: co-fund pilots with pan-European RIs and/or national RIs

**Context:**

- research infrastructures are key players in the generation of fundamental knowledge and drivers of scientific excellence in Europe, enabling the advancement of frontier knowledge in areas complementary to those addressed through a challenge-driven approach.

**Expected Outcome:**

- the access programmes to research infrastructures in the EU and Associated Countries enhance their openness at European level, embracing the <u>support, with national funding, to a share of trans-national users in their normal operation;</u>
- same as HORIZON-INFRA-2023-SERV-01-02: Research infrastructure services advancing frontier knowledge.

**Scope:**

- piloting the co-funding, with MS and AC, of programmes of access to research infrastructures at EU level. RI service provision to enable curiosity driven interdisciplinary research in a chosen area.

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## Additional features of co-fund pilots

- **Funding rate: 70%** of the eligible costs. Proposals must explain how the EU funding will be complemented by other national or international funding sources ;

- Access programme to RIs may be implemented either directly by the consortium, with the provision of trans-national / virtual access by beneficiaries, third parties or external providers of purchased services, or through the mechanism of "financial support to third parties" (*cascade granting*);

- national or international access programme managers, including the legal entities of distributed European RI, are expected to be core partners in the consortia;

- Proposals should include the list of services/installations made available by the action for trans-national or virtual access and the estimated amounts of units of access made available for users.

- In case of financial support to third parties:

  ✓ Description of the different types of research infrastructure services, (and ~ quantity of access), that are made available for trans-national or virtual access by the co-funded calls, including a list of examples of existing installations (e.g. those from beneficiaries/affiliated entities);

  ✓ applicants to access calls: users together with the research infrastructures they need, including nodes of distributed ESFRI or ERIC infrastructures;

  ✓ if beneficiaries/affiliated entities are recipients of the financial support, proposals must explain how they will ensure that these entities are not involved in the selection procedure of the calls, in order to avoid conflicts of interest and maintain confidentiality.

# Programme co-fund actions

Definition: *"A **programme of activities** established or implemented by legal entities managing or funding R&I programmes, other than EU funding bodies. Such a programme of activities may support: networking and coordination; research; innovation; pilot actions; innovation and market deployment; training and mobility; awareness raising and communication; and dissemination and exploitation. It **may also provide any relevant financial support**, such as grants, prizes and procurement, as well as Horizon Europe blended finance12 or a combination thereof. The actions may be **implemented by the beneficiaries directly or by providing financial support to third parties**."*

**In the case of HORIZON-INFRA-2023-SERV-01-03:**

- Activity: provision of trans-national access;

- Co-funding in order to pool the necessary financial resources to implement joint calls for the provision of access to research infrastructures;

- Financial support to third parties: allowed, but can only be provided in the form of grants;

- Research infrastructures which are beneficiaries/affiliated entities of the consortia awarded may exceptionally also be recipients of financial support to third parties.

# Programme co-fund actions

- The grant from Horizon Europe reimburses part of the eligible costs (70% in the case of INFRA-2023-SERV-01-03);

- Consortia can only report the direct costs eligible under Horizon Europe;

- Financial support to third parties (grant amounts paid to the third party (end-beneficiary) is an eligible direct costs, provided that the call has been implemented in line with the applicable provisions for financial support to third parties;

- Those costs can be declared ONLY by the beneficiary providing the financial support;

- The 25% flat for indirect costs does not apply to financial support to third parties;

- The non-reimbursed eligible costs (30% in the case of INFRA-2023-SERV-01-03) represent the co-funding from the consortium;

- The grant reimburses x% of the eligible reported costs of the consortium (within the ceiling defined in the GA). The distribution of the Union contribution among beneficiaries is up to the consortium, and should typically be agreed in the consortium agreement to manage expectations among partners, in particular if not equally distributed.

# Financial Support to third parties I ("Cascading grants")

- Please refer to the relevant parts of General Annexes of the Horizon Europe Work Programme 2023/4 and the **annotated Model Grant Agreement!!!**

  https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/aga_en.pdf

- For the costs to be eligible under the action, they must be compliant with Article 6.2.D.1 of the HE MGA, which requires in particular that the beneficiaries set and respect the criteria and procedures for giving financial support;

- Considering that these criteria and procedures should respond to the objectives set out in the call conditions, it is for the consortium to elaborate on them and to implement them. This includes ensuring that the recipients fulfil the conditions, and paying the recipients;

- All calls for third parties and all calls that are implemented by third parties must be published on the Funding & Tenders Portal, and on the beneficiaries' websites'.

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# Financial Support to third parties II

- **Proposal must detail the conditions which will apply for providing financial support to third parties;**

- **Call conditions must ensure objective and transparent selection procedures and include at least the following (for grants or similar):**

  i.   the maximum amount of financial support for each third party ('recipient'); this amount may not exceed the amount set out in the Data Sheet (see Point 3)30 or otherwise agreed with the granting authority

  ii.  the criteria for calculating the exact amount of the financial support

  iii. the different types of activity that qualify for financial support, on the basis of a closed list

  iv.  the persons or categories of persons that will be supported and

  v.   the criteria and procedures for giving financial support

# Financial Support to third parties III

- The consortium has to describe in their proposal who amongst themselves will be responsible for organising the calls for financial support to third parties;

- It is up to the consortium to define the template for the agreements between the HE beneficiaries and third parties receiving financial support;

- Beneficiaries/affiliated entities of the consortia awarded may exceptionally also be recipients of financial support to third parties:

- **➔ Proposals must explain how they will ensure that such beneficiaries/affiliated entities are not involved in the selection procedure of the calls, in order to avoid conflicts of interest and maintain confidentiality:**

- The HE beneficiaries have to provide a commitment on the availability of funds when submitting the results of the calls to the Commission;

- The costs reported have to fulfil the general conditions for actual costs to be eligible (i.e. **incurred during the action duration**, necessary, linked to the action, etc **➔ the underlying projects / financial support to third parties has to be finalised and paid within the duration of the HEU GA.**

# INFRATECH 2023

# 1 topic
# Deadline 9 March 2023

# HORIZON-INFRA-2023-TECH-01: :
# New technologies and solutions for reducing the environmental and climate footprint of RIs

*At least 3 world-class RIs: ESFRI RIs, ERICs and/or other world-class Research Infrastructures of European interest*

## TYPE OF ACTION

- Research and Innovation Action (RIA)

## BUDGET

- Total indicative budget for the topic: EUR 25 million

- Expected EU contribution per project: 5

## OTHER CONDITIONS

- Indicative number of projects expected to be funded: 5

## TIMING

- Deadline: 9 March 2023

European Commission

# New technologies and solutions for reducing the environmental and climate footprint of RIs

**Context:** European Green Deal priorities as well as issue of rising energy prices

**Expected Outcomes:**

- reduction of environmental (including climate-related) impacts;
- optimisation of resource and energy consumption integrated through the full life cycle of research infrastructures;
- increased long-term sustainability of European research infrastructures.

**Scope:**

- delivering innovative technologies and solutions which reduce the environmental and climate footprint of RIs through the full life cycle of research infrastructures
- identifying common methodologies, among the concerned RIs, to assess environmental impact and strategies to reduce it
- R&I activities, including technology validation and prototyping
- training of RI staff for the operation and use of new solutions
- At least 3 world-class RIs: ESFRI RIs, ERICs and/or other world-class Research Infrastructures of European interest

# INFRATECH 2024

## 3 topics
## Deadline 12 March 2024

# HORIZON-INFRA-2024-TECH-01-01:
## Research for the next generation of scientific instrumentation, tools, methods, solutions for RI upgrade

*At least 3 world-class RIs: ESFRI RIs, ERICs and/or other world-class Research Infrastructures of European interest*

## TYPE OF ACTION

- Research and Innovation Action (RIA)

## BUDGET

- Total indicative budget for the topic: EUR 62 million

- Expected EU contribution per project: 5-10

## OTHER CONDITIONS

- Indicative number of projects expected to be funded: 7

## TIMING

- Call opening: 6 December 2023 (tbc)

- Deadline: 12 March 2024

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# Research for the next generation of scientific instrumentation, tools, methods, solutions for RI upgrade

## Scope:

- R&D of new scientific instrumentation, tools and methods for RIs <span style="color:red">taking into account resource efficiency and environmental impacts.</span>

- Technology validation and prototyping

- Training

- Potential for applications outside the science market

- At least 3 world-class RIs: ESFRI RIs, ERICs and/or other world-class Research Infrastructures of European interest

# HORIZON-INFRA-2024-TECH-01-02:
# Development of tools, solutions, modules to enable R&I on the social aspects of the green transition

*At least 3 world-class RIs: ESFRI RIs, ERICs and/or other world-class Research Infrastructures of European interest*

## TYPE OF ACTION

- Research and Innovation Action (RIA)

## BUDGET

- Total indicative budget for the topic: EUR 5 million
- Expected EU contribution per project: 5 million

## OTHER CONDITIONS

- Indicative number of projects expected to be funded: 1

## TIMING

- Call opening: 6 December 2023 (tbc)
- Deadline: 12 March 2024

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# HORIZON-INFRA-2024-TECH-01-03:
## New digital twins for destination Earth

*TRL 6 or higher, beneficiaries must grant royalty-free access*

## TYPE OF ACTION

- Research and Innovation Action (RIA)

## BUDGET

- Total indicative budget for the topic: EUR 45 million

- Expected EU contribution per project: around 15 million

## OTHER CONDITIONS

- Indicative number of projects expected to be funded: 3

## TIMING

- Call opening: 6 December 2023 (tbc)

- Deadline: 12 March 2024

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# HORIZON-INFRA-2024-TECH-04:
## Empowered digital twins for modelling complex phenomena in new RI application areas

*TRL 6 or higher, royalty free access, include world-class RIs and industry*

## TYPE OF ACTION

- Research and Innovation Action (RIA)

## BUDGET

- Total indicative budget for the topic: EUR 24 million

- Expected EU contribution per project: around EUR 12 million

## OTHER CONDITIONS

- Indicative number of projects expected to be funded: 2

## TIMING

- Call opening: 6 December 2023 (tbc)

- Deadline: 12 March 2024

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# INFRAEOSC 2023

# 3 topics
# Deadline 9 March 2023

# HORIZON-INFRA-2023-EOSC-01-01:
## Build on the science cluster approach to ensure the uptake of EOSC by research infrastructures and research communities

### TYPE OF ACTION
- Research and Innovation Action (RIA)

### BUDGET
- Total indicative budget for the topic: EUR 25 million
- Expected EU contribution per project: Around EUR 25 million

### OTHER CONDITIONS
- Indicative number of projects expected to be funded: 1

### TIMING
- Call opening: 7 December 2022 (tbc)
- Deadline: 9 March 2023

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# Build on the science cluster approach to ensure the uptake of EOSC by research infrastructures and research communities

**Focus:** Cross-domain, cross-RI collaboration and continued EOSC alignment capitalizing on the experience gained by the H2020 science cluster projects in enabling open science practices, FAIR implementation and managing open calls for science projects.

**Expected Outcomes:**
- Support all European research communities to contribute to and benefit from a user-oriented EOSC;
- Populate EOSC Exchange with FAIR data, horizontal and thematic services;
- Develop and demonstrate scientific benefits of open science and FAIR practices through <span style="color:red">Open calls and cascading grants</span>;
- Increase operational alignment of ESFRI and international RIs on the deployment of the EOSC Core and EOSC Exchange;
- Contribute to EOSC sustainability models;
- Provide feedback and requirements for the evolution of the EOSC ecosystem.

**Scope:**
- Consolidate common EOSC approaches between the RI communities involved in the 5 science clusters; sustain composable EOSC-onboarded services; and support community-based competence centres for continued EOSC-alignment and extended outreach towards new or underrepresented user communities;
- Demonstrate and pilot the use of EOSC resources by multiple research communities through cross-RI and/or cross-domain open science projects and services [This activity should be implemented through a cascading grant mechanism].

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# HORIZON-INFRA-2023-EOSC-01-02:
# Development of community-based approaches for ensuring and improving the quality of scientific software and code
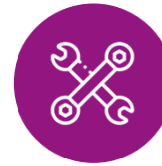
## TYPE OF ACTION

- Research and Innovation Action (RIA)

## BUDGET

- Total indicative budget for the topic: EUR 8 million

- Expected EU contribution per project: Around EUR 8 million

## OTHER CONDITIONS

- Indicative number of projects expected to be funded: 1

## TIMING

- Call opening: 7 December 2022 (tbc)

- Deadline: 9 March 2023

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# Development of community-based approaches for ensuring and improving the quality of scientific software and code

**Focus:** Improvement of the quality of software and code, as well as the quality of other digital objects based on code such as workflows, computational models, etc.

**Expected Outcomes:**

- Establish and promote a framework of community curation that ensures quality of software and code across the different disciplines.

- Deploy infrastructure, tools and services that allow researchers to properly develop, describe with proper metadata, version, archive, share and reuse research software.

- Define the notion of software quality in the context of EOSC and build upon established practices by the FAIR and other communities.

- Define baseline quality indicators along the notion of "minimum quality" for the different types of digital objects targeted.

- Improve the quality of research software, in particular for EOSC services;

- Develop software in a sustainable way and maximise its reuse.

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# Development of community-based approaches for ensuring and improving the quality of scientific software and code

**Scope:**

- Foster alignment of existing initiatives by promoting coherence and developing community guidelines;
- Promote the use of already existing common technical specifications, standards or infrastructure.
- Define software delivering and packing best practices towards software reusability;
- Ensure integration of infrastructure, tools and services that is code-based, and also ensure their flexibility and scalability by making use of cloud technologies;
- Define a baseline of Source Code quality based on coding principles and coding best practices;
- Develop minimum quality certification frameworks through automated checks, pipelines and digital badges;
- Allow for the integration of automatic testing for security vulnerability and license infringements.
- Ensure optimal and sustainable software archival practices and mainstream software citation;
- Incentivise open software development;
- Develop FAIR metrics frameworks for digital objects;
- Develop or align pre-existing training materials.

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# HORIZON-INFRA-2023-EOSC-01-03:
## Planning, tracking, and assessing scientific knowledge production

### TYPE OF ACTION

- Research and Innovation Action (RIA)

### BUDGET

- Total indicative budget for the topic: EUR 8 million

- Expected EU contribution per project: Around EUR 8 million

### OTHER CONDITIONS

- Indicative number of projects expected to be funded: 1

### TIMING

- Call opening: 7 December 2022 (tbc)

- Deadline: 9 March 2023

European Commission

# Planning, tracking, and assessing scientific knowledge production

**Focus**: *Coherent methodologies, workflows and tools for planning research activities, tracking their impact and assessing their compliance with the FAIR principles*

| Machine-actionability of Data Management Plans and their automatic evaluation | Scientific Knowledge Graphs to monitor and track events of science linked to publishing, citation, data processing, data & software usage | Visualization and traceability of a wide range of digital objects beyond publications and data |
| --- | --- | --- |

**Expected Outcomes:**

- Standardised Data Management Plans (DMPs) across disciplines.
- Automation of the evaluation of DMPs (e.g relying on semantic web technologies) and building on existing and new evaluation metrics.
- Widely adopt Scientific Knowledge Graphs (SKGs) to enable a transparent research ecosystem.
- Policies, models, licencing frameworks, workflows, and tools enable a cross-country and cross-discipline collaborative implementation of metrics to assess and improve the FAIRness of a wide range of digital objects.

**Scope:**

- Planning of research activities by using machine-actionable DMPs and Knowledge Graphs;
- Tracking research contributions and their impact by enhancing the interoperability of different SKGs to link digital objects;
- Assessing compliance with the FAIR principles that leads to FAIR-by-design digital objects

European Commission

# HORIZON-INFRA-2023-EOSC-01-04:
# Next generation services for operational and sustainable EOSC Core Infrastructure

## TYPE OF ACTION

- Research and Innovation Action (RIA)

## BUDGET

- Total indicative budget for the topic: EUR 10 million
- Expected EU contribution per project: Around EUR 10 million

## OTHER CONDITIONS

- Indicative number of projects expected to be funded: 1

## TIMING

- Call opening: 7 December 2022 (tbc)
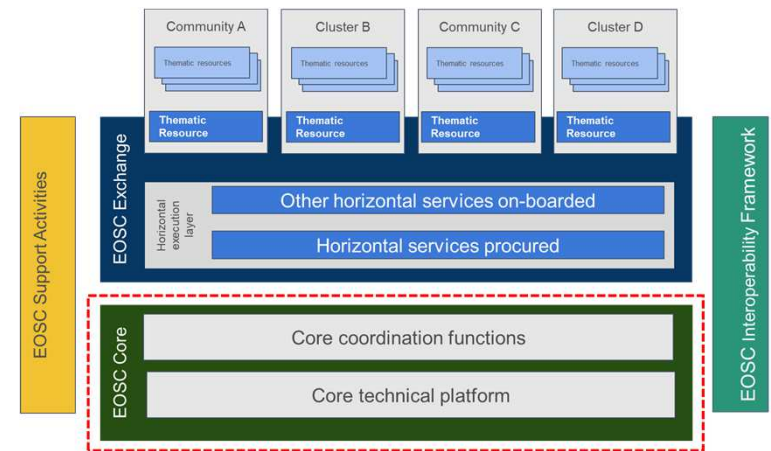- Deadline: 9 March 2023

European Commission

# Next generation services for operational and sustainable EOSC Core Infrastructure

**Context:**

- Data-driven user experience as a fundamental aspect for further development of the EOSC Core, allowing user feedback for the continuous improvement of the EOSC platform's functionality in an open manner.

**Expected Outcomes:**

- Next generation of enabling infrastructure and services for EOSC Core, beyond the current Minimum Viable EOSC platform.

- Enhanced design of the EOSC Core functionalities taking into account the need of the data-driven scientific use cases and multi-disciplinary research projects.

- Advanced integration and composability of data sources, software tools, research outcomes and other assets within the EOSC execution framework that is enabled and supported by the next-generation of EOSC Core infrastructure.

- Sustainable service incubation and technology testbed infrastructure for developing and testing the next generation of the EOSC Core functionalities integrated and staged into the operational EOSC Core platform in production.

# Next generation services for operational and sustainable EOSC Core Infrastructure

**Scope:**

- Improve the EOSC Core execution framework;

- Design and develop components of a comprehensive EOSC Integration Service suite as part of the next-generation EOSC Core;

- Provide open API registry, management, development and testing workflow, platform and tools for EOSC Core service users;

- Support custom-made front-end portal development environment for various scientific communities, utilizing the EOSC Core portal back-end functions via integration services;

- Facilitate an independent EOSC service incubator and technology development environment that can serve as an open experimentation "testbed" for the EOSC stakeholders;

- Ensure financial sustainability assurance and readiness assessment processes, tools, workflows and services applied for the next-generation of EOSC Core and horizontal services.

# HORIZON-INFRA-2023-EOSC-01-05: EOSC Architecture and Interoperability Framework

**TYPE OF ACTION**

- Coordination and Support Action (CSA)

**BUDGET**

- Total indicative budget for the topic: EUR 3 million
- Expected EU contribution per project: Around EUR 3 million

**OTHER CONDITIONS**

- Indicative number of projects expected to be funded: 1

**TIMING**

- Call opening: 7 December 2022 (tbc)
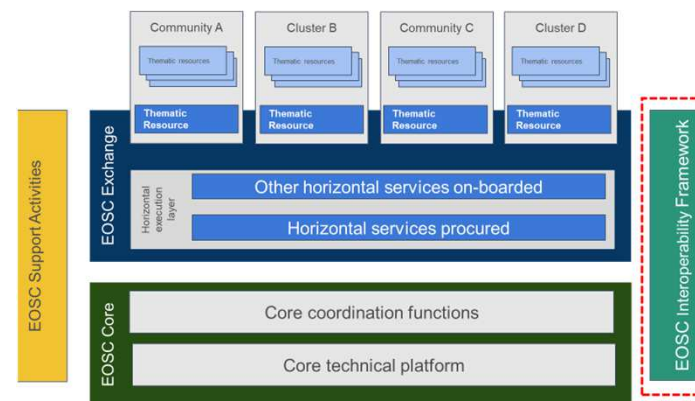- Deadline: 9 March 2023

European Commission

# EOSC Architecture and Interoperability Framework

**Context:**

- The EOSC Architecture and Interoperability Framework coordination and governance seeks to ensure that interoperability is built, encouraged and maintained with structure, fairness and transparency.



**Expected Outcomes:**

- Robust governance structure, coordination and maintenance of the EOSC Interoperability Framework and guidelines to support operations;

- Well-established design, specification and review processes for the EOSC architectural building blocks that compose the EOSC Interoperability Framework;

- Independent, multi-stakeholder Architecture Board collecting feedback and functional requirements from cross-community use cases to share, access, analyse and re-use resources via services;

- Support for standards development, adoption and certification. EOSC cannot enable FAIR and support interoperability without standards to describe and understand digital objects;

- Scientific and research community engagement for the EOSC Interoperability Framework.

# EOSC Architecture and Interoperability Framework

**Scope:**

- Provide structure to manage, update, circulate and promote the EOSC IF and guidelines to support and enable interoperability within EOSC;

- Coordinate the establishment of IFs and the making of existing IFs available through a library/repository, support the dialogue on establishing Ifs;

- Support communities in making their IFs available through EOSC IF library;

- Provide organizational framework for establishing an independent, multi-stakeholder Architecture Board that can collect feedback and recommendations from the stakeholders, oversee and advice the EOSC MVE deployment and operation;

- Define processes and guidelines to enable EOSC Core delivery and to ensure openness of EOSC so that it can adapt with the evolving requirements of the EOSC stakeholders.

European Commission

# HORIZON-INFRA-2023-EOSC-01-06:
# Trusted environments for sensitive data management in EOSC

## TYPE OF ACTION

- Research and Innovation Action (RIA)

## BUDGET

- Total indicative budget for the topic: EUR 15 million
- Expected EU contribution per project: Around EUR 5 million

## OTHER CONDITIONS

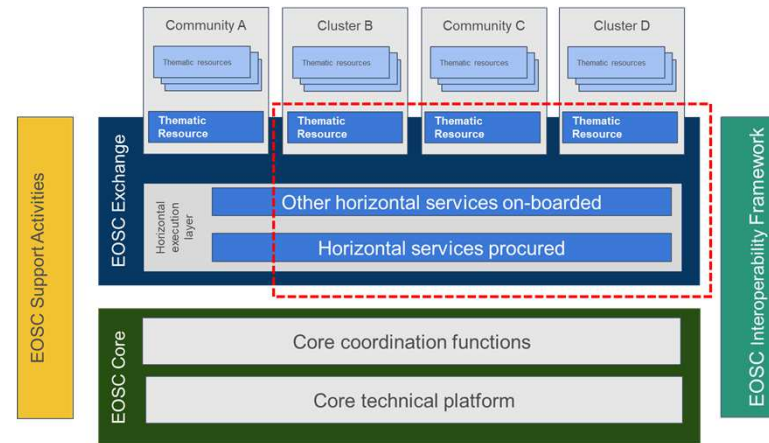- Indicative number of projects expected to be funded: 3

## TIMING

- Call opening: 7 December 2022 (tbc)
- Deadline: 9 March 2023

European Commission

# Trusted environments for sensitive data management in EOSC

**Context:**

- Developing and implementing a robust set of methods, practices and environments to effectively enable sensible data sharing/processing.

**Expected Outcomes:**

- Expansion of EOSC's access to resources provided by public authorities, including national agencies, in highly sensitive areas, such as the health sector, governmental statistics or geo-spatial applications;

- Emergence of trusted environments for management and sharing of sensitive data in order to facilitate new ways of using sensitive data sets;

- Demonstration that FAIR data workflows with sensitive data are securely possible and can benefit both the data providers and the wider science community.

# Trusted environments for sensitive data management in EOSC

**Scope:**

- Explore the possibility of creating specific Public Authorities' Government Zones in EOSC, providing tailored access control and engaging closely with public authorities to establish safe and secure access to their data for FAIR data processing.

- Focus on: secure data storage, data anonymization and publishing anonymized data into compliant repositories, processing workflows for sensitive data, using sensitive data in cloud hosted workflows across computer centers in different countries/regions.

European Commission

# INFRAEOSC 2024

# 5 topics
# Deadline 12 March 2024

# HORIZON-INFRA-2024-EOSC-01-01:
# FAIR and open data sharing in support of the mission adaptation to climate change

## TYPE OF ACTION
- Research and Innovation Action (RIA)

## BUDGET
- Total indicative budget for the topic: EUR 16 million
- Expected EU contribution per project: 6 – 8 million

## OTHER CONDITIONS
- Indicative number of projects expected to be funded: 2

## TIMING
- Deadline: 12 March 2024

European Commission

# HORIZON-INFRA-2024-EOSC-01-02:
## Supporting the EOSC partnership in further consolidating the coordination and sustainability of the EOSC ecosystem

**TYPE OF ACTION**

- Coordination and Support Action (CSA)

**BUDGET**

- Total indicative budget for the topic: EUR 4 million

- Expected EU contribution per project: Around EUR 4 million

**OTHER CONDITIONS**

- Indicative number of projects expected to be funded: 1

**TIMING**

- Deadline: 12 March 2024

European Commission

# HORIZON-INFRA-2024-EOSC-01-03:

**Enabling a network of EOSC federated and trustworthy repositories and enhancing the framework of generic and discipline specific services for data and other research digital objects**

## TYPE OF ACTION

- Coordination and Support Action (CSA)

## BUDGET

- Total indicative budget for the topic: EUR 5 million

- Expected EU contribution per project: Around EUR 5 million

## OTHER CONDITIONS

- Indicative number of projects expected to be funded: 1

## TIMING

- Deadline: 12 March 2024

European Commission

# HORIZON-INFRA-2024-EOSC-01-04:
# Long-term access and preservation infrastructure develop,ent for EOSC, including data quality aspects

## TYPE OF ACTION

- Research and Innovation Action (RIA)

## BUDGET

- Total indicative budget for the topic: EUR 8 million

- Expected EU contribution per project: Around EUR 8 million

## OTHER CONDITIONS

- Indicative number of projects expected to be funded: 1

## TIMING

- Deadline: 12 March 2024

European Commission

# HORIZON-INFRA-2024-EOSC-01-05:
# Innovative and customizable services for EOSC exchange

## TYPE OF ACTION

- Research and Innovation Action (RIA)

## BUDGET

- Total indicative budget for the topic: EUR 28 million

- Expected EU contribution per project: Around EUR 7 million

## OTHER CONDITIONS

- Indicative number of projects expected to be funded: 4

## TIMING

- Deadline: 12 March 2024

European Commission