

Action 8. Strengthen sustainability, accessibility and resilience of research infrastructures in the ERA

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1. Description

The creation of the European Research Area (ERA), through European-level activities in the area of research infrastructures, such as the ESFRI Roadmaps and the ERIC Legal Framework, have radically transformed the availability of state-of-the-art facilities for scientists and innovators, reinforcing Europe's strong research and innovation system.

As the maturity of the research infrastructure landscape grows, new challenges emerge which require maintaining excellence and competitiveness of the ERA in the long term while better addressing scientific and political needs, notably key societal challenges. For that purpose, we must take stock of the European research infrastructure landscape and identify possible gaps and directions for future development, ensure that all researchers and innovators in Europe can access research infrastructures to address their needs and increase the impact on the economy and society.

This action consists of a set of activities specifically aimed at addressing the above objectives and strengthening the European research infrastructure 'ecosystem'.

- **Strategic analysis of the European Research Infrastructure landscape**

This activity encompasses a process to identify current and emerging scientific and societal needs and priority settings as a reference. A gap analysis of the landscape will be conducted against this reference taking into account the European and global research infrastructure landscape as well as the national and, when relevant, interregional initiatives. It must provide a framework for the next ESFRI Roadmap, the implementation of the EOSC Strategic Research and Innovation Agenda and for the development of new research infrastructure services including, when needed, infrastructure clustering for pan-European thematic or interdisciplinary services.

In practice, a new streamlined methodology will be developed, building on the ESFRI experience in the landscape analysis and relevant national activities. The methodology will be implemented and will also be complemented by a gap analysis in key areas to be selected, such as climate, health or digital, keeping in view political and societal challenges. Based on the gap analysis, the direction of one or few pilot research infrastructures services in these areas will be proposed and considered for more elaborated design (e.g. under Horizon Europe). Lessons learnt will help to validate and improve the landscape analysis methodology.

- **Broader and more sustainable access for all countries to European research infrastructures and their services and revision of the European Charter of Access to Research Infrastructures**

This activity will address the continuing challenges on access to European research infrastructures. Legal or technical issues will be considered such as appropriate and interoperable interfaces for users,

	<p>including from industry, issues related to digitalisation, knowledge management and innovation. In addition, new funding models will be explored and piloted (including for cross-research infrastructure service provision e.g. through the EOSC). Taking stock of best practices, the Charter will be revised.</p> <p>This activity will include an Experts' analysis and stakeholders' consultation on access challenges and how to address them. This will be the basis for proposing new access models and a revision of the Charter. When relevant, pilots of new access models will be implemented.</p> <ul style="list-style-type: none">• Update of the ESFRI Roadmap and implementation of the research infrastructures performance monitoring framework <p>The ESFRI Roadmap methodology will be reviewed taking into account the lessons learnt from the last roadmap cycle (2016-2021), as well as the abovementioned strategic analysis of the European research infrastructure landscape. An official roadmap update process will then be launched.</p> <p>As a growing number of European research infrastructures become operational, including as European Research Infrastructure Consortia (ERICs), the importance and value of their ongoing monitoring is increasing both at European and at national level. Building on the ESFRI report on 'Monitoring of Research Infrastructure Performance' and the consequent development of implementation methodology, the design of a performance monitoring system for the European research infrastructures will be completed, in close collaboration with the research infrastructures and their funders. The monitoring system will then be rolled out for the operational ESFRI Landmarks, following the agreed methodology, with the use of qualitative information and key performance indicators. Synergies will also be explored with the envisaged ERIC Observatory and the general ERA monitoring framework.</p> <ul style="list-style-type: none">• Report on the ERIC Framework <p>With 23 ERICs established and several more expected in 2022, the ERIC legal framework is instrumental in integrating and structuring the European research infrastructure landscape. Building on the assessment of the ERIC Regulation by the Commission Expert Group 'EGERIC' and on a stakeholders consultation, the Commission will report on the implementation of the ERIC Regulation to the Council and to the European Parliament as invited by the Council in November 2018 and provide a long-term vision for ERICs. This is complementary to the monitoring of the individual performance of ERICs and other research infrastructures.</p> <p>The activity will include proposals on how to address findings of the EGERIC assessment and other relevant implementation aspects identified notably by the ERIC Committee, followed by a consultation of stakeholders. This will be the basis for the Commission report on the implementation of the Regulation and future orientation on the ERICs.</p> <ul style="list-style-type: none">• Increased cooperation between research infrastructures, e-
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	<p>infrastructures and stakeholders, including through EOSC</p> <p>The abovementioned activities including the impact on European society and the economy and the performance of the research infrastructures and e-infrastructures ecosystem, each of which are drivers of multidisciplinary and data-intensive science, will require an increased cooperation across research infrastructures and further engagement with stakeholders, including from industry and society at large and international partners.</p> <p>This action will foster the engagement of research infrastructures and their umbrella organisations with the broad range of research and innovation stakeholders including user organisations and broader scientific communities, organisations and networks of research performing organisations, actors in the innovation ecosystem, stakeholders from business communities as well as national and regional authorities and funding bodies. A key element of this action will be the adoption and implementation of a comprehensive ESFRI strategy for stakeholder engagement. This will include, among others, the launch of the ESFRI Stakeholder Forum, development of its activities together with stakeholders and their consequent implementation.</p> <p>The activity will seize opportunities from ESFRI and the EOSC tripartite governance to expand and accelerate cooperation among generic and thematic infrastructures across the institutional, national, regional, and European levels and a further engagement with stakeholders and international partners. It will also strengthen the impact of European research infrastructures and the EOSC on the long tail of science, opening up data and digital services to all European researchers.</p>
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2. Actors	<ul style="list-style-type: none">- All relevant actors will be involved in the implementation of the action and its different components: the Commission and Member States, including through the Council, the ERIC Committee, ESFRI and the EOSC tripartite governance and the new ERA governance more broadly; stakeholders, research infrastructures and their umbrella organisations as well as broader R&I stakeholders; possibly also associated countries and third countries linked to the research infrastructures themselves.- Coordination of the different elements of the action will be assumed depending on their specificities and the mandate of different actors and will be pursued in close cooperation with Member States and stakeholders. In particular, a non-exhaustive list of key actions and responsibilities can be as follows:<ul style="list-style-type: none">○ The Commission will coordinate the preparation of the ERIC Report, the revision of the European Charter for Access to Research Infrastructures, relying on expert advice. The Commission will also contribute to the process of identifying needs and priority setting at EU level as part of the landscape analysis. ESFRI (Member States, Commission) will coordinate the preparation of the next research infrastructure roadmap, the landscape analysis and implementation of the research infrastructures monitoring framework consulting stakeholders and associated/third countries as relevant.○ Member States, through the Horizon Europe Programme Committee, and the Commission will coordinate the preparation of relevant Horizon Europe work programme actions.○ EOSC tripartite governance will coordinate the multi-annual monitoring process of EOSC-related investments and policies in the context of the EOSC European partnership.○ Member States will also contribute to the landscape analysis and monitoring with input on relevant national facilities and national nodes.○ Associated Countries will be involved in ESFRI in line with the new ERA and will be consulted in view of the preparation of the ERIC Report.○ Research infrastructures (notably ESFRI Landmarks, ESFRI Projects and ERICs), their umbrella organisations, such as the ERIC Forum, ERF, LEAPS, LENS, among others, as well as appropriate international organisations will be consulted for all relevant activities.
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<p>3. Timing and milestones</p>	<p>The implementation of the different components of this action is planned as follows (timing can be adjusted e.g. according to ESFRI process when relevant):</p> <ul style="list-style-type: none"> • Strategic analysis of the European Research Infrastructure landscape (Q4 2023) <ul style="list-style-type: none"> - Review of the state of the art, consultation, exchange of practices (Q3 2022) - EOSC Steering Board first annual survey (Q2 2022) - Methodology (Q4 2022) - Implementation of the landscape analysis and preparation of the report (Q4 2023) - Gap analysis in selected areas (Q2 2024) and direction of one or few pilot services (Q4 2024) • Broader and more sustainable access to European research infrastructures and their services: <ul style="list-style-type: none"> - Experts analysis (Q3 2022) - Stakeholders consultation (Q4 2022) - Report on access models (Q2 2023) - Demonstration of a fully functional EOSC platform (Q3 2023) - Commission Proposal for a European Charter for Access to Research Infrastructures (Q4 2023) - New access models concepts and pilots (Q4 2024) • ESFRI Roadmap: <ul style="list-style-type: none"> - Implementation of the research infrastructures performance monitoring framework (first phase Q4 2022, full cycle completed Q4 2024) - Updated methodology of the ESFRI Roadmap (Q2 2024) - Launch of the ESFRI Roadmap update (Q3 2024) • Report on the ERIC Framework (Q3 2022) <ul style="list-style-type: none"> - Consultation with experts and the ERIC Committee (Q2 2022) - Consultation with stakeholders – workshop (Q2 2022) - Adoption of the ERIC Framework Report by the Commission (Q3 2022) - Council conclusions – adoption by CZ Presidency (Q4 2022) - As of 2023, implementation of new political orientations based on Council Conclusions • Increased cooperation between research infrastructures, e-infrastructures and stakeholders, including through EOSC: <ul style="list-style-type: none"> - Involvement of research infrastructures' stakeholders in ERA Forum (Q1 2022) - Launch of the ESFRI Stakeholders Forum (Q1 2022) - Adoption of ESFRI strategy for stakeholder engagement (Q3 2022) - Annual Additional Activity Plans (AAP) of the EOSC European partnership (Q2 2022, 2023, 2024) - Full roll-out of the ESFRI Stakeholder Forum and digital platform (Q4 2022)
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<p>4. Funding</p>	<p>Most activities planned under this action do not require additional sources of funding. Resources needed for their implementation are already available and assigned under ESFRI and EOSC (national and Horizon Europe funding) and the Commission (external expertise already contracted).</p> <p>Activities under Horizon Europe will build to a large extent upon the process and outcomes developed under this action..</p> <p>Synergies with national and regional funding will also be mobilised. A methodology to link funding related to action 8 to the investment targets of the European Research Area must be developed as well, including in the context of the use of structural funds for research infrastructures.</p>
<p>5. Expected impact</p>	<p>Key expected impacts of the action include:</p> <ul style="list-style-type: none"> - Strengthened research infrastructure services, better adapted to user needs, in the context of contemporary and emerging scientific challenges and EU policy priorities such as the green and digital transition; - Increased sustainability of individual European research infrastructures (ERICs and others) and the European research infrastructure system as a whole; - Stronger engagement of stakeholders in research infrastructures activities; - Better accessibility of European research infrastructures and their services to users across the EU, including through the EOSC; - Improved priority setting in existing and new research infrastructures, reflecting the evolving R&I landscape; - Identification of opportunities for research infrastructure clustering; - Enhanced impact on society, skills and talents; - Strengthened engagement with industry, improved interface with landscape of technology infrastructures and positive impact on economy; - Improved investment strategy and associated process taking into account synergies among different sources of funding. <p>Overall, these individual impacts will lead to increased excellence, competitiveness and inclusiveness of the ERA.</p>

<p>6. Monitoring</p>	<p>Each planned outcome consists of one or more specific milestones, as indicated under point 3 above. Achievement of these milestones will enable robust monitoring of the implementation of the action.</p> <p>At the same time, a number of qualitative and quantitative elements could be explored to contribute to this monitoring:</p> <ul style="list-style-type: none"> - Data on annual national investments (including in-kind contributions) and resources attributed to European research infrastructures; - Development of an ERIC Observatory facilitating the monitoring of the implementation of the ERIC regulation; - Number of units of access provided to research infrastructures, including through new access schemes in addition to EU funded research infrastructures access programmes; - Analysis of the broader socio-economic impacts of European research infrastructures; - Analysis of stakeholder engagement in the activities of the ESFRI Stakeholder Forum; - Monitoring of the effectiveness of the methodology in place and of the implementation of the actions; - EOSC European Partnership planning, monitoring and reporting; - Uptake of the updated European Charter for Access to Research Infrastructures. <p>Monitoring is also part of the action itself (i.e., monitoring of the performance of the ESFRI/ERICs research infrastructures, of EOSC as well as monitoring of the implementation of the ERIC Regulation), therefore different levels of monitoring of and within the action will be inter-linked.</p>
<p>7. Communication</p>	<p>Communication actions already planned in 2022:</p> <ul style="list-style-type: none"> - French Presidency conference celebrating 20 years of ESFRI (25 March 2022) - ESFRI Workshop on monitoring of RI performance (Q1 2022) - ESFRI Workshop on research infrastructures landscape analysis (April 2022) - 1st ESFRI Stakeholder Forum meet-up (Q2 2022) - Proposed launch of the ESFRI stakeholder digital platform (Q4 2022) - International Conference on Research Infrastructures under the Czech Presidency (19-21 October 2022) - EOSC Symposium (November 2022) - Active use of websites dedicated to research infrastructures (such as www.esfri.eu and the Commission's website) - Active use of social media of the Commission and of ESFRI (Twitter, LinkedIn) <p>Other actions to be considered in 2022:</p> <ul style="list-style-type: none"> - Stakeholder consultation on the European Charter for Access to Research Infrastructures (Q4 2022) - Public presentation of the ERIC Report (Q3 2022)

8. Additional information	<p>This action addresses European research infrastructures and the appropriate interface with technology infrastructures. Technology infrastructures, directly linked to Industrial policy, are addressed under ERA Policy Agenda action 12, <i>Accelerating the green/digital transition of Europe's key industrial ecosystems</i>.</p> <p>References:</p> <p>ESFRI Roadmap 2021 - Strategy Report on Research Infrastructures</p> <p>Assessment on the Implementation of the ERIC Regulation</p> <p>MAKING SCIENCE HAPPEN - A new ambition for Research Infrastructures in the European Research Area - ESFRI WHITE PAPER 2020</p> <p>Supporting the transformative impact of research infrastructures on European research</p> <p>ESFRI Report 'Monitoring of Research Infrastructures Performance'</p>
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