

# Distributed Research Infrastructures in Europe Workshop 2025

*Impact, Industry Engagement, Research Security and Dual  
Use*

Copenhagen, October 20 – 21

# RI Strategy

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN  
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL  
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**A EUROPEAN STRATEGY ON RESEARCH AND TECHNOLOGY  
INFRASTRUCTURES**

# EC strategy

- The EU needs to invest boldly - on a scale and coherence not seen before - in new capacities for best-in-class research infrastructures, to consolidate Europe's position as a global leader in science and innovation and attract top talent. In parallel, increased investment in strategically important technology infrastructures fit for driving EU's competitiveness, resilience and technological sovereignty is needed to translate research into market-ready innovation. They are key for new strategic technologies to be developed and deployed in Europe. **In particular, deep-tech startups and scaleups rely disproportionately on access to technology infrastructures to test and validate their innovative technologies.**
- This European strategy for research and technology infrastructures sets out a long-term vision to expand and strengthen this ecosystem, maximising its contribution to Europe's scientific, technological and industrial future.
- The strategy is in line with the high ambition for infrastructures of the proposal for Horizon Europe in the EU's next Multiannual Financial Framework (2028-2034) as well as the proposal for the European Competitiveness Fund. It provides a comprehensive strategic framework for guiding the implementation of the relevant research and technology infrastructure actions

# EC Strategy

## ■ Research Infrastructures

- For decades, Europe has been home to a constellation of world-class research infrastructures, from large single-sited facilities to distributed organisations collaborating across the continent. They form the foundation of Europe's R&I ecosystem. They are the data producers for science, generating and managing vast amounts of reliable data that drive fundamental research and are indispensable for addressing global challenges such as tackling climate change, pandemic preparedness and combatting hybrid threats.
- The primary purpose of research infrastructures is to pursue scientific excellence by ensuring that researchers have access to state-of-the-art equipment, laboratories, and digital resources, particularly those that would be too costly or complex for individual institutions to develop. They include, amongst others, major equipment or set of instruments, collections, archives and scientific data infrastructures, generally publicly owned and sustained.

# EC Strategy

- Since the ERA was launched in 2000, over 60 new pan-European research infrastructures have been established—ranging from large-scale facilities like synchrotrons and lasers to distributed platforms in life sciences, energy, the environment, and the social sciences and humanities. Many operate as European Research Infrastructure Consortia (ERICs), a unique legal framework for research infrastructures of pan-European relevance.
- Since 2002 the European landscape is governed by the European Strategy Forum on Research Infrastructures (ESFRI). The roadmaps and landscape analyses of ESFRI guide strategic investment, with the current roadmap representing over EUR 25 billion in investment and more than EUR 2 billion in annual operating costs. EU funding for 2021–2027 adds EUR 2.4 billion to support the scientific instrumentation, access, and design of new infrastructures. ESFRI's recent analysis maps the ecosystem and identifies critical gaps, increasingly informing national strategies. The European Regional Development Fund has also played an important role in strengthening regional R&I capacity through research infrastructure investment.

# Technology Infrastructures

- Alongside research infrastructures, an emerging landscape of technology infrastructures, both in the civilian and military domains, completes a range of facilities and services supporting technology development, testing, validation and scaleup, accelerating the market uptake of research results.
- Technology infrastructures are facilities, equipment, capabilities and resources required to develop, test, upscale and validate technology. They include, amongst others, test beds, pilot lines, pilot plants and demonstration facilities, cleanrooms, and living labs. Their primary purpose is to enable and accelerate technological innovations towards societal/market adoption, boosting industrial competitiveness.

- Research and technology infrastructures are vital to tackling complex, interdisciplinary scientific questions and unlock the potential of emerging technologies like advanced materials, biotech, and AI. They must also serve a wider range of users—innovative small and medium-sized enterprises (SMEs), startups, scaleups, and diverse research communities.

# Challenges and the need for action

- Research and technology infrastructures are vital to tackling complex, interdisciplinary scientific questions and unlock the potential of emerging technologies like advanced materials, biotech, and AI. They must also serve a wider range of users—innovative small and medium-sized enterprises (SMEs), startups, scaleups, and diverse research communities.

# Challenges and the need for action

Yet Europe's ability to build a strong infrastructure ecosystem is being held back:

- · Fragmented policies and funding across the EU: While research infrastructures benefit from strategic planning via ESFRI, technology infrastructures lack a coherent EU approach to investment. Budget constraints, scattered funding, and limited private investment are slowing progress.
- Limited collaboration across infrastructures: Cross-sector, and cross-border synergies remain underused, restricting access, missing opportunities and reinforcing regional disparities.
- Insufficient access opportunities and complex access procedures: Complex procedures, high costs, and poor visibility limit accessibility to researchers and companies. This is particularly the case for startups as flagged in the EU Startup and Scaleup Strategy.
- Skills gaps: Rapid technological change and an increasingly diverse user base demands constant upskilling to keep infrastructures at the cutting edge, ensure they are attractive to top talent and enrich the experience of their partners
- Untapped potential of digitalisation and AI adoption: increasing digitalisation, data sharing, and the use of AI by infrastructures are needed to strengthen their functionality and resilience and reducing costs of operation and access.

# Objectives of the Strategy

- The strategy's overarching objective is to ensure that scientists, researchers, innovators, inventors, and industry in Europe have at their disposal easily accessible, cutting-edge facilities, high-quality data and tailored services that drive scientific and technological excellence, industrial competitiveness and well-being of people. This entails:
- (1) strengthening the European ecosystem of research and technology infrastructures through a holistic approach to capacity building and mobilising investments, improving the alignment of user needs and available facilities and services, while ensuring alignment with EU strategic priorities.
- (2) bolstering the accessibility of research and technology infrastructures as a continuum of complementary services for researchers and innovative companies, including startups and scaleups, across the EU, in order to support scientific breakthroughs and boost technology development, testing and validation, accelerating their societal and market-readiness,
- (3) attracting and cultivating talent in Europe through strong career pathways in research and technology infrastructures, from technicians to scientific leaders, developing new skills and competences, benefitting from the wider Choose Europe,
- (4) improving and simplifying the governance framework for research and technology infrastructures to support long-term investment decisions and promote the alignment of priorities among the EU Member States and stakeholders, strengthening coordination across funding sources and increasing the impact of public investment.
- (5) improving the international dimension and resilience of research and technology infrastructures through cooperation with strategic partners addressing global societal challenges, improving the integration of candidate and associated countries<sup>7</sup> in the ERA, while at the same time supporting management of risks, in particular related to access to critical data and facilities, fostering EU's sovereignty in critical technologies.

# What will EC do?

- To increase capacities and investments in European research and technology infrastructures, the Commission will work jointly with Member States and stakeholders to:
- 1. Develop criteria for identifying technology infrastructures of European interest, in synergy with the ESFRI roadmap for research infrastructures.
- 2. Map and assess the research and technology infrastructures capacities in Europe in the context of global competition, policy priorities and user needs, and develop joint capacities investment roadmaps, identifying priority areas for targeted investments in a continuum from research infrastructures to technology infrastructures, including in EU-level sectoral initiatives.
- 3. Invest in building and sustaining critical new capacities for world-class research and technology infrastructures in Europe, spearheaded by EU priorities, facilitating the implementation of strategic initiatives aimed at ensuring long-term global leadership.
- 4. Increase funding opportunities for research and technology infrastructures at EU level and propose specific funding and financing models to encourage a more effective pooling of public and private funding for investments, leading to better exploitation of existing funding frameworks, while also addressing the need to reduce regional disparities.

# What will EC do?

To further strengthen pan-European research infrastructure capacities, the Commission will:

- 5. Provide a stable framework for maintaining and upgrading world-class research infrastructures by providing the support to the implementation of existing and new roadmaps for research infrastructure technologies, responding to jointly identified needs and commonalities across research infrastructures and, where applicable, across domains; support the roadmapping for new technology needs, taking into account aspects of digitalisation of operation, standardisation, interoperability, resilience and sustainability of research infrastructures.
- 6. Support the mapping of research infrastructure funding sources at national, regional and EU level and promote synergies among complementary funding instruments by promoting good practice and appropriate guidance; where applicable, explore adjusting the conditions and rules of EU funding instruments for combined and complementary funding, notably for research infrastructures regarded as essential infrastructures for EU operational or deployment programmes.
- 7. Propose a revision of the ERIC Regulation on specific aspects that cannot be addressed by revised Practical Guidelines such as facilitating the participation of international partners, promoting this legal framework as a reliable vehicle for joint investments.

# What will EC do?

To improve and optimise the services of European technology infrastructure, the Commission will work with Member States and stakeholders to:

8. Support and implement measures facilitating transnational and multisite collaboration among technology infrastructures, developing coordinated service offers in strategic technologies, including for defence, and promoting their visibility and uptake.
9. Sustain and enhance the EOSC Federation as Europe's research and innovation data space, enabling sharing and reuse of high-quality, FAIR research data, scientific results and digital services.
10. Support compliance with FAIR principles, increasing FAIR data productivity, and connections to EOSC and other relevant data spaces.
11. Support the pooling and development of AI-ready research data as well as tools and services that enable the development of scientific AI models, and their technological applications, accelerating the use of AI in science and, through it, contributing to the pilot phase of RAISE.

# BOLSTERING THE ACCESSIBILITY OF RESEARCH AND TECHNOLOGY INFRASTRUCTURES AS A CONTINUUM OF COMPLEMENTARY SERVICES

- **Transnational access to research infrastructures**, based on scientific excellence, has been a longstanding feature of successive EU R&I framework programmes. It enables researchers to use cutting-edge facilities beyond their home countries – a cornerstone of the ERA. These schemes benefit less research-intensive countries greatly and thus help close the innovation gap, as Figure 4 shows. However, access remains fragmented and short-term. There is a need for more sustainable schemes, greater visibility – especially for distributed ERICs – and better outreach to new communities and industry. Consultations highlight the importance of expanding remote and virtual access, and of developing common access policies and user-friendly, interoperable service catalogues. **A long-term, one-stop-shop European access scheme would be transformative.**
- **Technology infrastructure accessibility** is primarily oriented towards industrial players, as they strive to meet the specific needs of innovative companies, including startups and scale-ups which often face uncertainties about their technological challenges.

# EC plans

- To improve and simplify access to research and technology infrastructures, the Commission will work with Member States and stakeholders to:
- 12. Support the development of an integrated and sustainable scheme for access to state-of-the-art research infrastructures of European interest, offering a ‘one-stop-shop’ for access to them, and to a single European portfolio of complementary and cross-domain R&I services of European interest, including AI assisted research infrastructure service navigation.
- 13. Implement pilot access schemes to technology infrastructures for startups and scaleups, with the view to scaling-up future implementation.
- 14. Test joint research and technology infrastructures transnational access schemes addressing priority areas e.g. advanced materials, clean energy, quantum technologies, AI or health and biotechnology.

# Cross Disciplinary

- ATTRACTING AND GROWING TALENT IN EUROPE
- The Commission will:
- 15. Develop research and technology infrastructures strategies for attracting talent from outside Europe, in line with the Choose Europe approach.
- 16. Support the training of research infrastructure and technology infrastructure staff, while promoting the recognition of their diverse contributions in research assessment:
  - (i) professionalising the training of managerial and leadership staff, (ii) improving skills and career profiles of technical staff to address evolving needs such as research security, data management, quality assurance, etc, (iii) promoting entrepreneurial skills to capture the potential of infrastructures as centres in deep-tech innovation ecosystems, and (iv) establishing mechanisms for staff exchanges between infrastructures and organisations operating in innovation ecosystems.

# IMPROVING AND SIMPLIFYING THE GOVERNANCE FRAMEWORK OF THE RESEARCH AND TECHNOLOGY INFRASTRUCTURES ECOSYSTEM

- To strengthen the governance framework for research and technology infrastructures, the Commission will:
- 17. Propose an overarching EU coordination framework for the research and technology infrastructures ecosystem steering a holistic, synergy-based approach, while recognising the different missions, objectives and policy contexts of these infrastructures
- 18. Implement a governance mechanism, in collaboration with Member States and stakeholders, that will provide a common framework for a European approach to technology infrastructures.
- 19. Encourage ESFRI, to engage further with relevant stakeholders and review its landscape analysis methodology and long-term vision accordingly. Propose indicators to assess and raise awareness on the strategic relevance of ESFRI Landmarks and ERICs or of their services according to EU priorities, including economic security.

# STRENGTHENING THE INTERNATIONAL DIMENSION AND RESILIENCE OF EUROPEAN RESEARCH AND TECHNOLOGY INFRASTRUCTURES

- To strengthen European research and technology infrastructures in the international arena, the Commission will work with Member States to:
- 20. Strengthen the international dimension of pan-European research infrastructures and their role for science diplomacy notably through enlarging geographical coverage in high-priority scientific fields, promoting European standards and approaches to access, data management and open science globally, promoting reciprocal access for EU researchers, facilitating exchange of best practices, while ensuring the appropriate levels of security/confidentiality.
- 21. Develop actions to support: (i) the implementation of risk management, mitigation and contingency measures for infrastructures, (ii) aligning and coordinating investments across Europe for trusted and secure storage, processing and sharing of critical data including through EOSC, and (iii) the development of data sovereignty frameworks for secure and efficient data sharing. These will also benefit by cooperating with the EU Observatory on Critical Technologies and relevant research security initiatives of the Protect EU strategy.
- 22. Promote the integration of candidate countries, potential candidate and associated countries, with a focus on Ukraine, into the ERA, by supporting cooperation among research and technology infrastructures, and their host organisations, and by facilitating access to European research and technology infrastructures where appropriate.

# Annex 1. Timeline for implementation of actions

| Increasing capacities and mobilising investment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1. Develop <b>criteria for identifying technology infrastructures of European interest</b> , in synergy with the ESFRI roadmap for research infrastructures                                                                                                                                                                                                                                                                                                                                                                                                                             | 2025 |
| 2. Map and assess the <b>research and technology infrastructures capacities</b> in Europe in the context of global competition, policy priorities and user needs, and develop <b>joint capacities investment roadmaps, identifying priority areas</b> for targeted investments in a continuum from research infrastructures to technology infrastructures, including in EU-level sectoral initiatives.                                                                                                                                                                                  | 2026 |
| 3. <b>Invest in building and sustaining critical new capacities</b> for world-class research and technology infrastructures in Europe, spearheaded by EU priorities, facilitating the implementation of strategic initiatives aimed at ensuring long-term global leadership.                                                                                                                                                                                                                                                                                                            | 2027 |
| 4. <b>Increase funding opportunities</b> for research and technology infrastructures at EU level and propose specific funding and financing models to encourage a more effective <b>pooling of public and private funding</b> for investments, leading to better exploitation of existing funding frameworks, while also addressing the need to reduce regional disparities.                                                                                                                                                                                                            | 2026 |
| 5. Provide a <b>stable framework for maintaining and upgrading world-class research infrastructures</b> by providing the support to the <b>implementation of existing and new roadmaps</b> for research infrastructure technologies, responding to jointly identified needs and commonalities across research infrastructures and, where applicable, across domains; support the <b>roadmapping for new technology needs</b> , taking into account aspects of digitalisation of operation, standardisation, interoperability, resilience and sustainability of research infrastructures | 2025 |
| 6. Support the <b>mapping of research infrastructure funding sources</b> at national, regional and EU level and promote synergies among complementary funding instruments by promoting good practice and appropriate guidance; where applicable, explore adjusting the conditions and rules of <b>EU funding instruments</b> for combined and complementary funding, notably for research infrastructures regarded as <b>essential infrastructures</b> for EU operational or deployment programmes.                                                                                     | 2025 |
| 7. Propose a <b>revision of the ERIC Regulation</b> on specific aspects that cannot be addressed by revised Practical Guidelines such as facilitating the participation of international partners, promoting this legal framework as a reliable vehicle for joint investments.                                                                                                                                                                                                                                                                                                          | 2026 |
| 8. Support and implement measures facilitating <b>transnational and multisite collaboration among technology infrastructures</b> , developing coordinated service offers in strategic technologies, including for defence, and promoting their visibility and uptake.                                                                                                                                                                                                                                                                                                                   | 2026 |
| Maximising the potential of digitalisation and AI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
| 9. Sustain and <b>enhance the EOSC Federation</b> as Europe's research and innovation data space, enabling sharing and reuse of high-quality, FAIR research data, scientific results and digital services.                                                                                                                                                                                                                                                                                                                                                                              | 2025 |
| 10. Support <b>compliance with FAIR principles</b> , increasing FAIR data productivity, and connections to EOSC and other relevant data spaces.                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2025 |
| 11. Support the pooling and development of <b>AI-ready research data</b> as well as tools and services that enable the development of scientific AI models, and their technological applications, accelerating the use of AI in science and, through it, contributing to the pilot phase of RAISE.                                                                                                                                                                                                                                                                                      | 2025 |

| Bolstering accessibility                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 12. Support the development of an <b>integrated and sustainable scheme for access to state-of-the-art research infrastructures</b> of European interest, offering a 'one-stop-shop' for access to them, and to a single European portfolio of complementary and cross-domain R&I services of European interest, including <b>AI assisted research infrastructure service navigation</b> .                                                                                                                                                                                         | 2025 |
| 13. Implement <b>pilot access schemes to technology infrastructures for startups and scaleups</b> , with the view to scaling-up future implementation.                                                                                                                                                                                                                                                                                                                                                                                                                            | 2026 |
| 14. Test <b>joint research and technology infrastructures transnational access schemes</b> addressing priority areas e.g. advanced materials, clean energy, quantum technologies, AI or health and biotechnology.                                                                                                                                                                                                                                                                                                                                                                 | 2027 |
| Attracting and growing talent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |
| 15. Develop research and technology infrastructures strategies for <b>attracting talent from outside Europe</b> , in line with the <a href="#">Choose Europe</a> approach.                                                                                                                                                                                                                                                                                                                                                                                                        | 2026 |
| 16. Support the <b>training of research infrastructure and technology infrastructure staff</b> , while promoting the recognition of their diverse contributions in research assessment                                                                                                                                                                                                                                                                                                                                                                                            | 2026 |
| Improving and simplifying the governance framework                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |
| 17. Propose an <b>overarching EU coordination framework for the research and technology infrastructures ecosystem</b> steering a holistic, synergy-based approach, while recognising the different missions, objectives and policy contexts of these infrastructures.                                                                                                                                                                                                                                                                                                             | 2026 |
| 18. Implement a <b>governance mechanism</b> , in collaboration with Member States and stakeholders, that will provide a common framework for a European approach to <b>technology infrastructures</b>                                                                                                                                                                                                                                                                                                                                                                             | 2026 |
| 19. Encourage ESFRI to engage further with relevant stakeholders and <b>review its landscape analysis methodology</b> and long-term vision accordingly. Propose <b>indicators to assess and raise awareness</b> on the strategic relevance of ESFRI Landmarks and ERICs or of their services according to EU priorities, including economic security.                                                                                                                                                                                                                             | 2025 |
| Strengthening the international dimension and resilience                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |
| 20. Strengthen the <b>international dimension of pan-European research infrastructures</b> and their role for science diplomacy notably through enlarging geographical coverage in high-priority scientific fields, promoting European standards and approaches to access, data management and open science globally, promoting reciprocal access for EU researchers, facilitating exchange of best practices, while ensuring the appropriate levels of security/confidentiality.                                                                                                 | 2025 |
| 21. Develop actions to support: (i) the implementation of <b>risk management, mitigation and contingency</b> measures for infrastructures, (ii) aligning and coordinating investments across Europe for <b>trusted and secure storage</b> , processing and sharing of critical data including through EOSC, and (iii) the development of <b>data sovereignty</b> frameworks for secure and efficient data sharing. These will also benefit by cooperating with the EU Observatory on Critical Technologies and relevant research security initiatives of the Protect EU strategy. | 2025 |
| 22. Promote the <b>integration of candidate countries potential candidate and associated countries, with a focus on Ukraine</b> , into the ERA, by supporting cooperation among research and technology infrastructures, and their host organisations, and by facilitating access to European research and technology infrastructures where appropriate.                                                                                                                                                                                                                          | 2025 |

## So debate ...

- We need to work together to respond to EC
- But also provide information to community and get feedback