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From: General Secretariat of the Council
To: Delegations
Subject: Research Infrastructures as Strategic Investments

European Research and Innovation Area Committee (ERAC) delegations will find attached a note on 'Research Infrastructures as Strategic Investments', prepared by the Commission, with a view to the ERAC plenary meeting on 26 June 2024.

Research Infrastructures as strategic investments

1. Empowering Research Infrastructures as strategic assets

Research Infrastructures (RI) take increasingly strategic positions within diverse R&I ecosystems and value-chains. They are strategic assets for R&I contributions to European competitiveness and for tackling societal challenges. Europe is world-leading in developing research facilities. They provide researchers in Europe with the tools and services to perform cutting-edge research, leading to fundamental discoveries and underpinning deep tech developments and innovation, while at the same time, attracting and developing talents. If these facilities and knowledge sources would run dry, we would put at risk our objectives of strategic autonomy, effecting our capacity to master critical technologies and develop innovative solutions to societal challenges.

The EU needs a long-term strategy to ensure that the best facilities are built, operated, and maintained in Europe and that high-quality services are offered to researchers and innovators. The strategy shall streamline the RI landscape and identify and prioritise the RI services and technologies necessary for strengthening the EU S&T competitiveness and strategic autonomy and its capacity to solve societal challenges. It shall contribute to the Union's policy objectives and consolidate Europe's lead in world-class infrastructures.

Prioritisation involves better exploiting and inter-connecting existing European and national RI, and, where needed, promoting new infrastructure capacity and capability. The aim shall be to establish a pan-European network of RI and services, based on the ESFRI Roadmap and Landscape Analysis, and taking account of national RI landscape analyses, and input from RI and R&I communities. The ERIC legal instrument and its ability to integrate national, regional, and local capacities shall be further exploited, and the evolution of the ERIC framework should be discussed in this context, while also investigating its international dimension, considering also the recommendations of the latest ERIC Report.

As budget constraints are increasingly hindering the operation, maintenance and upgrades of RI and the effective access to their services, the strategy shall exploit the possibility for a new funding model and how to promote synergies and joint investments between institutional, regional, national, European and global funding streams. This should optimise and sustain investments, while at the same time strengthen RI's resilience regarding e.g. the need of critical resources and materials for their operation. It also involves revisiting the level and support for RI through EU R&I FPs that currently is limited to concept development and early phase implementation of new RI capacity, consolidation of existing RI, transnational access to RI and their services, and co-development of new RI instrumentation and tools.

How can we best empower Research Infrastructures as strategic assets for Europe, so that we equip research communities in Europe with tools to perform cutting-edge research, master critical technologies and achieve strategic autonomy, and contribute to European competitiveness and tackling our societal challenges? How can the EU and Member States best support the streamlining of the RI landscape and the prioritisation of RI services?

2. Reinforcing transnational access to RI and adapting to new user communities

Researchers in Europe should have effective access to state-of-the-art RI. They should have integrated and sustained access opportunities, with harmonised conditions and procedures, considering needs ranging from frontier to applied and interdisciplinary research. Support to transnational access should move to a more effective, integrated and cross-domain scheme acting as a one-stop shop for access to RI. Longer term, transnational access schemes should be mainstreamed into national science systems.

European RI should be supported in their role as hubs for international research collaboration, and European researchers should have the opportunity to access world-class instruments and services in other world regions. This implies considerations for the need to strengthen interactions between research communities and for addressing issues of research security, economic competition, and regulatory barriers.

To optimise the use of RI, the approach should also facilitate tailored access and services to new users, including to new research communities and industry. Such opening up of RI to non-expert users require a change in operations with considerable ramifications, such as outreach to new stakeholder groups, new training offers for non-experts, more counselling and support during the course of experiments and for data analysis, and simplified, customised and/or fast-track access procedures including for simultaneous or synchronised access to different RI. It also brings challenges on the RI staff as well as further exploiting the training potential of access to RI for new users including early-stage career researchers.

How can the EU and Member States best support a reinforcement of transnational access to Research Infrastructures? How can we best support RI adapting to new user communities?

3. Making full use of digital technologies, notably AI

Digitalisation is increasingly central to the operations of many RI. The subject was on the ERAC agenda in 2022. Since then an EOSC-ESFRI task force was set up and is now focusing on two strands: (i) the use of AI to help in the process of making data FAIR, data curation and data quality, and (ii) making combined data from RI in scientifically neighbouring domains ‘AI-ready’. In addition, a number of Horizon Europe calls has promoted the digitalisation of European RI, including for digital access and greening of RI, the development of EOSC and the connection with or development of relevant digital resources.

Further developments are needed on a number of aspects in the digitalisation of instrumentation, equipment, experiment design, and experiment control. Digitalisation in the handling of experimental data acquisition and storage needs to be strengthened so that acquired data can be readily compliant with FAIR requirements, and so as to facilitate the use of AI for advanced data processing and optimisation of RI use. This requires capacity building across the AI value chain, from FAIR data and computing, to skills development, as well as optimising the use of RI data and resources relevant to new AI tools developments.

How can the EU and Member States best support RI in making full use of digital technologies, notably AI?