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WORKING DOCUMENT

From: General Secretariat of the Council
To: ERAC (European Research Area and Innovation Committee)

Subject: European Research Infrastructures: Digital Transition

Delegations will find attached document on the above mentioned subject with the view to the meeting of the European Research Area and Innovation Committee (ERAC) on 13-14 September 2022.

Agenda point for the ERAC Plenary:

“European Research Infrastructures: Digital Transition”

A well-functioning European ecosystem of research infrastructures, integrating European large-scale research infrastructures and complementary national, mid- and small-sized research infrastructures, plays a key role in Europe’s ability to address major scientific, environmental and societal challenges and can strongly impact Europe’s scientific competitiveness and Europe’s industrial value chains. A cornerstone of this ecosystem is its digital development.

Many European research infrastructures (RIs) are among the most advanced organisations when it comes to digitalisation, be it for their own operation, equipment and instrumentation, for the access and services they provide as well as for the data and results they generate. They are also both key users and providers at the forefront of the development of the European Open Science Cloud (EOSC), which aims at delivering a “Web of FAIR Data and Services” for Science. In addition, as many R&I actors, research infrastructures also rely on cross-cutting digital infrastructures (“e-Infrastructures”) such as high-speed connectivity networks, high performance computing, clouds and other digital resources, including, when relevant, through EOSC.

Yet to exploit fully the value of research infrastructures, we must foster and accelerate this digital transition based on specific requirements and adaptation stemming from the research infrastructures and their respective objectives. Moreover, a systematic approach at EU level, taking into account relevant organisational, funding and expertise needs, would help ensuring economies of scale, avoiding duplication of efforts and strengthening interoperability building on European best practices and investments made for the digital infrastructures. This requires (i) a European strategy towards the digital transition of research infrastructures, (ii) associated implementation and funding aspects addressing the evolution of digital infrastructures on the basis of user requirements, and (iii) a strengthened interface between the European Strategy Forum on Research Infrastructures (ESFRI) and the EOSC governance ensuring both the appropriate policy drivers as well as effective operational interaction.

Guidance from ERAC is sought on the following topics and the results of the discussion should feed into the work of the current CZ Presidency:

1. Fostering and accelerating the digitalisation of research infrastructures

To remain competitive and attractive in the global landscape, including in their potential for excellent science and for innovation, European research infrastructures (digital or physical) are subject to the fast digital transition. Recent consultations show that this needs to be strengthened and adequately prepared aiming for economies of scale and cost-efficiency,

notably in the earlier phases of the research infrastructures life-cycle (for example to enable 'FAIRness-by-design' of research outputs)¹ building on the experience of most advanced research infrastructures on that matter.

Accordingly, an analysis is required on the needs, priorities, competitiveness issues and associated resources and steps in the short- and longer-term. Indicatively, such analysis may include different features such as:

(i) digitalisation of instrumentation, remote access to and operation of instruments in various modes (e.g. real time); (ii) integration of data and information generated by research infrastructures in the broader European digital ecosystem including digital twins, FAIR cross-border and cross-community aspects; (iii) sustainability issues; and (iv) any other relevant aspects such as the critical nature of the infrastructures, regulatory aspects, skills and competences.

The Commission could facilitate the development of a Strategy on the digital transition of research infrastructures through an inclusive approach involving Member States (ESFRI) and mobilising appropriate (thematic or cross-thematic) clusters of research infrastructures to identify specific issues in support of a shared approach and avoiding duplication of efforts. In fine, political orientation to accelerate the transition and necessary investments would be needed.

Would ERAC members agree that the digital transition of research infrastructures should be addressed at European level?

2. Fostering interconnection of digital and research infrastructures

Research infrastructures heavily rely on cross-cutting digital infrastructures. The Commission has provided recurrent support to digital infrastructures such as Géant through successive Framework Programmes. The capability of these digital infrastructures to address the research infrastructures and EOSC needs must be considered throughout the entire research infrastructures lifecycle, assessing cases for specific deployments versus more generic, common services with better economies of scale and ensured sustainability, therefore optimising national and European investments.

Better coordination and interconnection between digital infrastructures and research infrastructures, including through the EOSC ecosystem are therefore essential. Support to these cross-cutting digital infrastructures taking into account appropriate research infrastructures and EOSC roadmaps driven by user needs would strengthen the entire

¹ EOSC Strategic Research and Innovation Agenda (SRIA), doc: 10.2777/935288

European infrastructure ecosystem, increasing the quality and relevance of available services and limiting potential duplication of efforts.

The Commission should support the development of these user-driven requirements for digital infrastructures, taking into account priorities for excellent science, innovation, societal and economic challenges and Europe competitiveness. The user-driven interconnection of European digital infrastructures, research infrastructures and EOSC will lead to economies of scale.

Would the ERAC members agree on the need to better coordinate and interconnect research infrastructures with cross-cutting European digital infrastructures, taking into account the user needs? Do ERAC members have ideas on how this could be achieved, also in terms of funding?

3. Strengthening the interface between ESFRI and EOSC?

ESFRI, with representatives from EU Member States, associated countries and the Commission, is the key body developing European policy on research infrastructures, facilitating the coordination of national investments and identifying priority research infrastructures at European level. The 2021 ESFRI roadmap includes 41 ESFRI “Landmarks” (i.e. RIs under implementation or operational) and 22 ESFRI “Projects” (i.e. RIs under development). Many of these infrastructures are (will be) generating/processing massive amounts of data and need data intensive capabilities. They are therefore providers of high quality research data but also (potential) users of EOSC data and services to offer the best possible access to their user communities.

EOSC has developed a tripartite governance aiming at steering and monitoring the implementation of the EOSC objectives of making open science the new norm, federating existing research infrastructures in Europe for the benefit of European researchers and implementing a Web of FAIR data and service for science. The EOSC governance involves the Union represented by the Commission, the Member States and Associated Countries represented through the EOSC Steering Board and the wider research community through the EOSC Association.

Beyond user cases and ad-hoc cooperation, a structured interface between the ESFRI and EOSC governance will facilitate common/complementary strategies for the further deployment of open science principles as well as the federation of RIs in EOSC and the uptake of EOSC generic (horizontal) services by the RIs.

To that end, the following practical steps are proposed:

- Setting up a light coordination structure facilitating the cooperation between ESFRI and EOSC facilitating coherent and complementary strategies as well as joint activities when appropriate and
- Providing shared input to the respective ESFRI Strategy (including the Roadmap process) and EOSC Strategic Research Agenda ensuring operational consistency.

Would ERAC members agree on the proposed approach to strengthen the interaction between ESFRI and EOSC at governance and operational levels?