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INRAE position paper regarding Infrastructures in the next European Framework Programme for R&I (FP10)

INRAE recognises the key role played by the European Strategy Forum on Research Infrastructures (ESFRI) in defining a competitive, scientifically-relevant Research Infrastructure (RI) landscape. Likewise, INRAE acknowledges the crucial role of EU funding for the creation and operation of world-class RIs which are rightly considered as important enablers of European strategic autonomy and competitiveness. As a coordinator – or beneficiary – of 17 RI projects since 2021, INRAE is a significant science and technology contributor to the European RI landscape in the areas of environmental, agricultural, food, and bioeconomy sciences. Considering the recent European Strategy on Research and Technology Infrastructures[1], INRAE wishes to reaffirm its vision for the European R&I Infrastructure landscape.

The role of infrastructures in future work programs should reflect Europe's ambition to build a competitive, well-funded, and sovereign research area in the long term – one that integrates the entire TRL spectrum across all scientific disciplines, enabling both academic and industrial communities to benefit from the most advanced services and technologies. Infrastructure-supported activities are also playing a key role in shaping future societies in many domains, including food production and transformation, as well as in ensuring their sustainability.

1. **Regarding their extensive contribution to the European Research Area (ERA), it is vital that Research Infrastructures receive the financial support necessary to remain at the cutting edge of science. The future research budget must provide RIs with the means to strengthen their capabilities at all phases of their development, from design to operation. Public policy must focus on the creation of a well-integrated, dynamic, and adequately-funded RI landscape capable of providing critical support to Europe's key priorities and challenges**. Although the importance of European RIs is widely acknowledged, current financial support is not sufficient and should be better implemented. Considering the commitment of the European Commission to support RIs and provide new recognition for technology infrastructures (TIs), it is necessary to increase the overall funding and adapt financial frameworks to account for the long-term support required by both types of infrastructures. INRAE would consider it very encouraging if the 10th Framework Programme (FP10) included the maintenance of a self-standing instrument dedicated to RIs within Pillar 4. Furthermore, INRAE considers that the Commission's vision for the future European Infrastructure landscape must be sufficiently detailed and that the nature and role of TIs need to be clearly explained. In this regard, INRAE insists that the development of TIs must be considered within a consistent infrastructure landscape that includes RIs. It is vital to guarantee the creation of a knowledge and service continuum linking RIs and TIs. Finally, the European Union should encourage pan-European initiatives that explicitly rationalise the use of funding, for example by avoiding double funding. The adoption of new funding frameworks better adapted to support infrastructure sustainability should be linked to new processes purposed to monitor performance in dynamic mode.

[1] Communication "A European Strategy on Research and Technology Infrastructures". COM(2025) 497 final/2

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2. **To advance science and enable knowledge transfer, the future European Infrastructure landscape must provide the basis for a knowledge-rich innovation continuum, linking the different TRL levels.** In this respect, INRAE approves the European Commission's proposal to gather RIs and TIs within a new ERA pillar. However, to guarantee the effectiveness of this measure, it will be vital to provide sufficient financial support (both in terms of amount and duration), thus avoiding harmful competition between RIs and TIs. Moreover, to fully exploit the research to innovation continuum, it is essential that measures to connect RIs and TIs (e.g., the development of standards) are adequately supported and that the use of RIs and TIs is actively promoted by other instruments under FP10, for example collaborative projects within pillar 2.

3. **To maintain the vitality of the RI and TI landscape, bottom-up approaches must be given a key role in future infrastructure policy. Likewise, considering that over emphasis on short-term impact impoverishes science and stifles innovation, RI policy must include recognition of curiosity-driven research.** The application of a top-down approach to the strategic management of the infrastructure landscape is essential to ensure that sufficient emphasis is accorded to European ambitions and priorities in strategic fields such as agriculture and health. However, INRAE's past experience reveals that bottom-up initiatives, such as IBISBA[2], are essential to anticipate longer term needs. Therefore, it is cause for concern that since the implementation of Horizon Europe there has been a significant drop in curiosity-driven topics within the INFRASERV destination. It is important to recall that whenever RIs are given adequate means to provide access to knowledge, they not only support scientific discovery, but also provide training, boost international collaboration, support/accelerate innovation and lead partnerships with commercial players. Therefore, ignoring certain scientific fields, considered to be low priority, would deprive parts of the European scientific community from RI support and inevitably weaken the scientific relevance of the RI landscape. It may also limit the emergence of breakthrough knowledge and future innovation.

4. **To push RI strategic planning to the next level, the future European R&I program must reinforce synergies with national infrastructure strategies.** As stated in the new European strategy for RI and TI, rationalisation of the landscape requires better coordination of regional, national, and European strategies and funding mechanisms. Moroever, to strengthen and widen the European infrastructure strategy it is vital to pursue efforts to establish and improve national research infrastructure roadmaps. The regular assessment of national landscapes is crucial to identify gaps and detect new opportunities, while ensuring that all the scientific communities are considered.

5. **FP10 should reinforce application of its life cycle approach, supporting RI creation and decommissioning.** In Horizon Europe's INFRA instrument, it is common practice to include in the topic criteria the requirement to be an ESFRI Project or a Landmark. While this is consistent with the purpose of the INFRA instrument, it does not encourage the early development of new RIs. This is detrimental because it excludes certain scientific communities that wish to move to European level. INRAE believes that the future FP10 should bring the INFRAIA destination (or something similar) back, specifically with the aim to provide one-time support for the early design phase before an application to the ESFRI roadmap. On the other hand, to ensure that the RI landscape remains well-aligned with science needs and European ambitions, established landmark RIs should be regularly monitored to ensure that they deliver added value. Reaching a healthy balance

[2] Launched in 2014 by academic members of the biotechnology community, IBISBA anticipated by a decade the need to support Europe's ambition to boost biotechnology for biomanufacturing.

between RI creation and decommissioning will ensure that the European RI landscape remains fully aligned with post-2030 scientific challenges.

6. **INRAE welcomes the increasing emphasis on the environmental impact of European RIs.** Both ESFRI and European Commission are increasingly insisting on the need for RIs to measure their environmental impact. This is important to rationalise operations and prioritise data production, avoiding unnecessary energy consumption and high carbon footprints as well as other unsustainable practices (e.g., mobilization of rare earths elements or overconsumption of water). This ambition is tightly linked to the need to diminish wasteful duplication, both in terms of capital investments (e.g., equipment purchases) and operational costs (e.g., unplanned duplication of investigations at different RI sites). Diminishing the environmental impact of RIs is well accounted for in the new ESFRI methodology, with dedicated Horizon Europe calls. INRAE believes that this should remain a priority in the future.

7. **Regarding e-infrastructures and data generated by RI/TI, the EU should encourage the creation of a sustainable Artificial Intelligence (AI) ecosystem**. Building on the developments of the EOSC federation, the European strategy must be designed to achieve the efficient integration of advanced technologies such as AI. In doing so, it is vital to guarantee that these developments reconcile open science ambitions and the imperious need to apply all relevant data protection measures. To achieve this, the European Union must pursue efforts to ensure that AI models are trained in ways that avoid the generation and dissemination of erroneous information, damaging for both science and society. Additionally, it is vital that the incoming and outgoing data transactions benefit from adequate cybersecurity measures to ensure that confidentiality is maintained and data assets are safeguarded. Regarding RIs and TIs, these must be fully associated with e-infrastructure initiatives ensuring that all domains are adequately covered and supported. This is particularly important for interdisciplinary RIs and TIs which bring together several scientific communities, convey diverse and sensitive data, methods and technologies (eg socio-economic data), and whose cross-disciplinary nature does not fit precisely in EOSC e-infrastructures framework. There is therefore an urgent need to strengthen the links between the strategy deployed by ESFRI and the framework developed by EOSC which is particularly important for interdisciplinary RIs and TIs. In doing so, RIs will be fully aligned and equipped to act as FAIR and AI-ready data suppliers, facilitating data and knowledge integration by research communities.