Federal Ministry
of Education
and Research

Research infrastructures and technology infrastructures

Priorities for 10th EU Framework Programme for R&I

This paper complements the "German Discussion Paper in Preparation for the 10th EU Framework Program for Research and Innovation"[1] of the Federal Government, which was published by the Federal Ministry of Education and Research (BMBF) in May 2024 and submitted to the European Commission. It is, thus, part of a series of BMBF papers that go into more detail on individual aspects of the preliminary German position on the next EU Framework Programme for Research and Innovation.

"Europe has a unique and rich landscape of research infrastructures. Access to them is decisive in facilitating world-class scientific research. Under FP10, funding in this area must be better linked with national funding activities and other EU programmes in FP10. Technology and research infrastructures both represent important elements of the R&I ecosystem. Whilst the responsibility for building and operating the infrastructure landscape lies primarily with the Member States, support measures at European level are necessary in order to facilitate access for all Member States and aid networking-building and coordination between these infrastructures. At the same time, the future usability of research data needs to be strengthened, while taking the FAIR principles into account."

(German discussion paper on FP10, May 2024)

General information

This position paper is intended to provide impulses for research infrastructures (RIs) at an early stage in the development of the upcoming Framework Programme for Research and Innovation (FP10) and also consider the perspective of technology infrastructures (TIs). From a German perspective, these impulses must already be addressed in the design of FP10, without pre-empting the negotiations on the EU's next Multiannual Financial Framework.

A thorough European funding for suitable infrastructures is indispensable. They should provide research with the necessary tools to be able to remain first-class in global competition for world-class scientific research. The objectives must be to further strengthen basic research and also provide the best possible support for applied science. The European landscape of RIs and TIs makes this possible and contributes decisively to realising the priorities of the European Research Area (ERA). The principle of excellence should remain the most important evaluation criterion for the future funding of research infrastructures so that they remain first-class in global competition.

The distinction between RIs, RIs with TI components and TIs as well as data infrastructures and other relevant infrastructures has often been difficult. FP10 requires clearer definitions for the scope of funding in order to be able to reach the respective tasks and target groups precisely. To this end, the structure must meet the respective requirements. **As a result, the funding of TIs must not come at the expense of the funding of RIs,** so that a sustainable basis for future innovations, which often are connected with basic research at the RIs, persists in the long term. It must also be ensured that all FP10 funding is focussed on R&I activities and that objectives, thematic priorities and resources are clearly differentiated from other areas of EU funding.

1. Better consider diversity

- Preserve eligibility of other legal forms in addition to ERICs
- Provide a versatile „toolbox" of funding measures

The challenges of each type of infrastructure differ. They range across a spectrum from investment-intensive large-scale facilities to research infrastructures, some of which are virtual and distributed, and research data infrastructures from various scientific fields, such as the natural and technical sciences, health research or the socio-economic sciences and humanities. In addition, RIs may partially resemble TIs in some cases or may even be fully categorised as TIs.

Different legal forms exist throughout Europe and beyond, which are geared towards the respective needs. **In addition to the established European legal form ERIC, the diversity of other legal forms based in national law must remains eligible for funding** if they are RIs or TIs with European added value due to a high proportion of European and international users. All these institutions and their consortia with their increasingly diverse needs must be able to find

1 The following eight theses were developed on the basis of a workshop in November 2023 and interviews with relevant stakeholders in July and August 2024.

customised and coordinated access to FP10 in order to do justice to this diversity.

In FP10, infrastructures should therefore be provided with a versatile "toolbox" of funding measures in order to render the greatest possible leverage effect possible through funding at EU level. To do justice to the fundamentally different needs and user orientations, funding measures for RIs and TIs in particular should be conceived independently of each other, but in a strategically complementary manner - also based on the experiences with ERC and EIC. **They must be designed so flexibly that the framework programme can also be readjusted based on future experiences, particularly with regard to TIs.** As a basis for this, particular attention should be paid to the interim evaluation of TI funding.

2. Better link funding strategies

"FP10 therefore needs to utilise strategic portfolios and group together initiatives relating to core topics to ensure that pressing challenges are addressed comprehensively with well-coordinated funding strategies."

(German discussion paper on FP10)

- Offer calls without restrictions regarding technologies and thematic orientations in addition to calls on specific thematic priorities

Funding structures and calls for proposals in FP10 should consider the scientifically relevant infrastructures in a complementary manner in all areas from the outset. Strategic portfolios should be defined for important areas in FP10. Excellent research within these portfolios should be particularly strengthened by allowing users to plan calls for proposals with sufficient time in advance. In addition, the impact of research infrastructures for basic research, but also with regard to overcoming societal challenges, strengthening European competitiveness and possible future missions or similar approaches, should be further improved. At the same time, the portfolio approach must leave room for flexibility in order to be able to address emerging research topics. Therefore, **in addition to thematic calls for proposals, calls without restrictions regarding technologies and thematic orientationsshould be continued,** as these are central to forward-looking innovations and, thus, ultimately also to a competitive Europe.

3. Make better use of synergies

- Support coordination, further development, network-building and improvement of access between and to RIs and TIs

- Financing of construction and operation of RIs and TIs only by Member States

Systematic usage of synergies with other funding instruments at European, national and regional level must be continued and even more effectively realised. **In view of the necessary investments, the construction and operation of RIs and TIs should under no circumstances be financed from FP10, but only by Member States. We consider the main objectiveof the framework programme to support the coordination, further development, network-building and improvement of access between and to RIs and TIs.** However, measures in FP10 should ensure that the funds for construction and operation of research infrastructures from different sources are optimally complemented.

Operational programmes of the Structural Funds that provide for measures for research infrastructures should be announced at an early stage to the responsible programme committee configurations of RIs or the responsible national bodies, so that they can be supported accordingly by funding measures. In turn, RIs of European significance should, where possible, become part of the roadmaps for regional funds and be closely coordinated with possible programme components for the expansion of participation.

4. Better control of usage and capacities

- Coordination between infrastructures to provide users with optimal access to RIs and TIs according to the user needs

- Provision of a clearly visible central information and advice platform for users

User access to infrastructures must be optimised to meet the needs of the EU's strategic common objectives. Information and service offers at European level should therefore improve and simplify access via improved data on supply, demand and utilisation.

Access to infrastructures must be organised more efficiently, especially from the perspective of first-time and non-specialist users. **This requires more coordination between infrastructures to provide users optimal access to the infrastructure best suited to their questions.** Parallel structures should be abolished in order to avoid multiple applications and waiting times. The framework programme should support measures to merge or share services offered by infrastructures for easier user access.

- **Another important step is setting up a clearly visible centralised information and advice platform for users ("single point of contact")** with regard to the diverse (research) possibilities of the various infrastructures, including those in the humanities and social sciences. This should enable users from other disciplines – especially industrial users – to utilise complex infrastructures in a targeted and customised manner for their needs. This also includes removing obstacles at European level due to legal requirements in the context of state aid and VAT, which hamper cooperation with users from industry.

- In this context, networks of specific types of RIs (e.g. networks, such as LEAPS and LENS) make important contributions. We recommend promoting measures for cross-infrastructure coordination of the operation and downtimes during upgrade phases.

5. Better focus funding

- Promote measures to keep research instruments technologically and methodologically excellent and increase their economic and ecological sustainability

- Support coordination, further development, networking and improvement of access between and to RIs and TIs

- Specific measures to make better use of synergies between RIs

- Development of new funding instruments and methods for RIs to improve their long-term sustainability

In particular, the EU should also support further measures keeping research instruments technologically and methodologically excellent and increase their economic and ecological sustainability. Of particular interest are new approaches that facilitate the application of a new technology and new methods for future research infrastructures (e.g. novel detectors or accelerators for basic research in physics as well as for RIs and TIs in other disciplines). **However, we reject a contribution from FP10 to construction and operation costs and to upgrades of RIs,** as this would bind too much budget in the long term. **We consider the main objectiveof the framework programme to support the coordination, further development, network-building and improvement of access between and to RIs and TIs.**

In addition, the modernisation needs of investment-intensive research infrastructures (INFRATECH) should remain in a separate funding line and be separated from the coordination and development of joint services in distributed RIs. It should be ensured that data-intensive RIs and their users have access to the computing power required to analyse the results, including with the help of computationally intensive artificial intelligence methods. In order to consolidate the European infrastructure landscape, which leads to a more sustainable provision of services and more effective communication with user groups, **specific measures should be promoted to make better use of synergies between RIs - including the merging of methodologically and organisationally related projects.** In addition, measures to increase resilience by utilising digital resources and developing new (also digital) services for users should be planned.

Projects or structures should be created for the development of new funding instruments and methods for research infrastructures that improve their sustainability in the long term (proposal: INFRASUST or INFRAECO). The aim must be to achieve efficiency gains that substantially improve the investment and operation costs as well as the ecological footprint (in particular emissions, resource consumption, recycling) of existing and future facilities and instrumentsand provide accompanying monitoring so that the underlying measures can also be transferred to other suitable instruments and thus create additional scope for new ideas. This could also include an analysis of possible environmental and health impacts with the identification of effective countermeasures.

6. Simplify access for scientific communities

- Create a framework that ensures continuous funding of excellent applications for improved access for researchers
- Develop integrated access systems ("single point of entry")

Transnational access (TNA, INFRASERV) to research infrastructures should be promoted more sustainably, comprehensively and efficiently in FP10, particularly in the area of basic research, without neglecting important areas or creating time gaps. **A framework should be created to ensure continuous funding of excellent applications for improved access for scientists.**

Integrated access systems, such as an overarching portal ("single point of entry") for access to RIs in different research areas and co-financed projects, increase efficiency and could reduce the funding requirements in INFRASERV for the thematic areasconcerned. New organisational structures for the strategic management of the promotion of transnational access could also serve this purpose. Cross-infrastructure networks (e.g. LEAPS and LENS, see above) should also be included here.

7. Promoting industrial access in line with user needs

- Strengthen industrial access to infrastructures
- Make better use of the European Partnerships and the European Innovation Council (EIC)

In order to strengthen European competitiveness, it is particularly important to strengthen industrial access to infrastructures. Ultimately, a framework is required here that integrates the predominantly industrial target groups in line with requirements and answer questions on open science and intellectual property within the European legal framework (especially state aid and tax law) in accordance with the situation. These are currently being discussed in an expert group of the European Commission (Expert Group on Technology Infrastructures) with German participation and will be developed and addressed in an ERAC opinion paper at the beginning of 2025 and finally in a strategy of the European Commission on research and technology infrastructures. **The involvement of industry is essential and can be improved in particular via the European Partnerships and the European Innovation Council (EIC).**

8. Better exploitation of results

- Improvement of interfaces for the use of results within the R&I ecosystems
- Linking the funding of innovations to application-oriented funding

In order to transform research results into products, processes and services more quickly, FP10 must further improve the interfaces for the exploitation of results within the R&I ecosystems in order to generate broad social and economic benefits. This should go hand in hand with appropriate training for specialists aimed at making transfer and innovation systems more effective and agile, strengthening R&I ecosystems, etc.

The funding of innovations from research infrastructures (formerly INFRAINNOV) should be linked to the application-oriented funding in other parts of the programme, while explicitly involving industry. The objective must remain the application of research results and the development of innovations. Therefore, the mapping of the entire value chain on its enabling infrastructures must be considered.

As far as possible, the utilisation and traceability of research results in the spirit of open science and the usability of research data should be strengthened, taking into account the FAIR principles. **In particular, FP10 should support European RIs in better disseminating their research results, but also in better protecting them against misuse in terms of research security.** All this should always be done in accordance with the precautions taken by the Member States and their institutions. In particular, measures should also be taken to protect sensitive data that should only be accessible to authorised users for reasons of data protection or utilisation.

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