



Science Europe Policy Brief

On Research Infrastructures in
EU Framework Programming

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Introduction and Background

This policy brief is a contribution from Science Europe to the review of the positioning of Research Infrastructures (RIs) in Horizon 2020 and in future Framework Programmes. It accompanies the Science Europe Position Statement on ‘The Framework Programme that Europe Needs’.¹

The role of Member States (MSs) and Associated Countries (ACs) is central in developing and financing national and pan-European RIs. The European Union complements their actions by helping to avoid the duplication of efforts, highlighting areas of importance, promoting access to facilities, co-ordinating resources, and facilitating the creation and operation of internationally relevant RIs in the EU.

Funding for RIs, including e-infrastructures, under Horizon 2020 is provided under the first pillar, ‘Excellent Science.’ The available budget for RIs for the period 2014 to 2020 is €2.39 billion. Funding for RIs under Horizon 2020 aims to address three objectives:

1. Development of European RIs for 2020 and beyond

The objectives are the implementation and operation of RIs listed on the Roadmap of the European Strategy Forum on Research Infrastructures (ESFRI); the integration of – and access to – national RIs; and the development, deployment, and operation of e-infrastructures.

2. Fostering the innovation potential of RIs and their human capital

The goals are to encourage RIs to foster the early adoption of technology, to promote research and development partnerships with industry, to facilitate industrial use of RIs, and to stimulate the creation of innovation clusters. Training and exchanges of staff managing and operating RIs are also supported.

3. Reinforcing European RIs policy and international co-operation

The aim is to support partnerships between relevant policy makers and funding bodies, mapping and monitoring tools for decision-making and also international co-operation activities.

Importance of RIs for Europe

RIs are of utmost importance for Europe's global competitiveness. The focus on RIs in Horizon 2020 should be enhanced because:

- ▶ World-class RIs attract world-class scientists who can address the grand challenges facing society. These grand challenges trigger complex research questions, requiring the production of high-quality data and attracting the best talents to address them.
- ▶ Excellent RIs often provide a nucleus for an ecosystem of research organisations, small- and medium-sized enterprises (SMEs) and start-ups. Such an ecosystem is conducive to the creation of new jobs and growth, and provides opportunities for the training and development of staff.
- ▶ Large-scale RIs cannot typically be built by one MS or AC alone and so Horizon 2020 can play an important facilitation role in the development of such facilities. It can catalyse common investment from MSs and ACs by supporting the preparatory phase of RIs, and can help the development of ESFRI projects towards the implementation of a sustainable and long-term RI.
- ▶ One of the principal assets of Europe is its rich and diverse landscape of regional and national RIs. These RIs need to be better connected so that European researchers can access the ones they need, regardless of their location in Europe. The transnational access mechanism of Horizon 2020, if used effectively, can enrich this connection and strengthen the European Research Area (ERA).
- ▶ Horizon 2020 can improve transnational co-ordination of strategies and resources. It can engage with both research funders and the scientific community. It can also foster increased cross-border collaboration when individual RI roadmaps are being developed.

Structure of Calls and Topics

The Horizon 2020 Work Programme (WP) 2016–2017 took a positive step forward in the way calls and topics are structured. It consists of five calls with 15 topics (compared to the WP 2014–2015, which consisted of four calls for proposals and 22 topics).

Science Europe supports this new structure for the following reasons:

- ▶ The reduction of the number of topics is welcome, as too many topics and calls could lead to fragmentation and discontinuities. A balance between targeted calls and open calls should however be ensured when developing calls, in order to address the needs of the RI communities.
- ▶ The separation in the WP 2016–2017 between the calls for proposals for fostering the innovation potential of RIs and for support to policy and international co-operation is an important improvement of the rationale for RI funding under Horizon 2020.

Two additional recommendations for the structure of calls are that:

- ▶ Horizon 2020 RI calls should cater for the different stages of the RI lifecycle in order to ensure that pan-European RIs are able to develop into sustainable facilities. The transition from an RI into a legal entity can be a long process that can hinder the progress of the RI. For RIs to strive towards implementation there should be more calls supporting this aim (between preparatory and full-scale operation).

- ▶ Horizon 2020 should further support emerging communities, which are at the very start of their RI lifecycle. Additional support would not only ensure that they have the opportunity to grow, but also help to create a dynamic ERA.

▶ European Added Value

RIIs are a decisive platform in enabling impactful research and provide the bedrock for collaborative research.

Framework Programme funding mechanisms for transnational access to RIIs help ensure that European added value through RIIs becomes a reality. Success is being achieved in areas where actions at national level cannot bring the same benefits. These benefits include the reduction of fragmentation, increased critical mass in research and innovation, enhanced European competitiveness, and the creation of an attractive European labour market.

Horizon 2020 must strike the optimal balance between competition and co-operation at European level. Co-operation can be fostered through restricted calls for proposals for preparatory phases of ESFRI projects, whereas competition can be stimulated through open calls for proposals for RIIs design studies. In devising such open calls, the anticipated pool of potential applicants should be large enough to trigger effective competition of ideas and approaches.

The ‘societal challenges’ approach in Horizon 2020 allows global challenges to be tackled at a pan-European level by translating national efforts into excellent pan-European research collaborations. This impact can be further enhanced outside Horizon 2020, exploiting its synergies and complementarities with other programmes at regional, national, and European levels.

▶ Synergies and Complementarities

Simplification and consistency are needed to effectively exploit Horizon 2020 synergies with other programmes. Improved internal co-ordination amongst European Commission services could help realise the potential of RIIs as they represent a strategic element of EU policy. RIIs do not only require the development of appropriate sets of European instruments, but also their coherent implementation.

The overall design of the EU funding programmes from 2014 to 2020 foresees complementarities between funding for RIIs under Horizon 2020 and the European Structural and Investment Funds (ESIFs). Funding under ESIFs is directed towards jobs and growth, predominantly in the lesser-performing regions in Europe. This contrasts with the Horizon 2020 objectives of spreading excellence. Combining these funds is challenging and places a considerable administrative burden on RIIs. Principal difficulties arise out of the different timelines and reporting requirements.

The European Commission should therefore take responsibility in communicating – and particularly helping MSs and ACs to explore – ways in which these complementarities can be realised and then exploited.

Budget

A revision of the RI budget is urgently needed under Horizon 2020. The current overall budget of €2.39 billion for the period 2014 to 2020 is proving very limited.

The current budget is the result of several rounds of cuts in the negotiations on Horizon 2020, which hit RI funding relatively hard compared to some other areas. The combination of new communities, advanced communities, new ESFRI projects, advanced ESFRI projects and now ESFRI landmark projects, is evidence of the vast RI ecosystem in the ERA. However, this has also put a severe strain on available resources.

With regards to the budget, Science Europe recommends that:

- ▶ The budget allocation should be revised. Direct funding of running costs for RIs that are recognised as ‘of European relevance’ should be eligible in order to limit RIs’ reliance on institutional funding. Distributed and networked RIs could be further supported, as they benefit less from institutional funding for running costs and depend more on user fees and project grants.
- ▶ MSs, ACs and the European Commission should explore ERA-Net type co-funding, particularly for the emerging ‘design studies’, to ensure greater efficiency of national and European funding.
- ▶ Cross-directorate collaborative mechanisms should be explored as a means to maximise the opportunities for RI management and operation in addition to enabling the ERA to meet its prime objectives. For example, a collaborative mechanism between the RI and Marie Skłodowska-Curie Actions programmes could enable the mobility of RI managers and operators across Europe and beyond, with the principal aim of knowledge transfer and sharing best practice.
- ▶ Training and education, data management, and specific incentives (for example schemes to hire business development personnel or to support staff mobility) should be further supported by the Horizon 2020 RI budget.

Innovation Potential – Relations with Industry and Society

Horizon 2020 should foster public–private partnerships in the RI sector in general. Dedicated calls or specific support measures could be envisaged to facilitate this.

These calls should be carefully designed to provide the right incentives to tackle the barriers to collaboration between publicly-funded RIs and the private sector. Issues such as access, intellectual property rights, and possible conflicts between scientific and commercial uses should be addressed. Horizon 2020 could investigate co-funding of RIs by industry and public entities through a pilot scheme.

Increased collaboration with industry can partially help in realising the (technological) innovation potential of RIs. However, RIs’ contributions to social innovation, such as an improved understanding of societal attitudes towards grand challenges, should also be explored. RIs can also help strengthen the dialogue between research communities and society.

The European Open Science Cloud

Excellent research will rely more and more on efficient e-infrastructures. This calls for the development and adoption of common guidelines and standards for storing and archiving research data.

The European Open Science Cloud (EOSC) is a European Commission-led initiative which supports Open Science practices. It aims to provide a trusted open environment for storing, sharing, and re-using scientific data and results. EOSC will bring together existing and emerging data infrastructures. In that context, the data and governance challenges for EOSC are as prominent as the technical ones.

Data is an inherent part of RIs and the inclusion of calls in support of EOSC² in the RI remit of Horizon 2020 is welcome. These calls effectively engage the scientific communities on both the governance and content development, catering to their needs and embedding solutions that they have deployed.

The European Commission should clarify its intention to ensure that future research programmes support the converging of existing infrastructures and data outputs towards EOSC.

Conclusion

Horizon 2020 and future Framework Programmes will be instrumental in complementing regional and national efforts to ensure the long-term sustainability of the European RIs ecosystem.

European research relies on a healthy ecosystem of RIs at regional, national and international levels. Co-operation that focuses on small-scale RIs will remain just as important as the ESFRI developments.³ Both types of co-operation will call for increased prioritisation of needs, thorough evaluation of projects, and informed allocation and termination of funding.

Notes and References

1. Science Europe Position Statement 'The Framework Programme that Europe Needs – Contribution to the Horizon 2020 Interim Evaluation: Lessons Learnt and the Way Forward', available at <http://scieur.org/h2020-position>
2. In Horizon 2020 WP 2016–2017: see call topic INFRADEV-04-2016: European Open Science Cloud for Research, and call topic EINFRA-12-2017: Data and Distributed Computing e-Infrastructures for Open Science.
3. Science Europe Open Letter on Research Infrastructures in the European Research Area (June 2015): <http://scieur.org/openletter-ris-0615>

Science Europe is a non-profit organisation based in Brussels representing major Research Funding and Research Performing Organisations across Europe.

More information on its mission and activities is provided at www.scienceeurope.org.

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