



**STRATEGY FOR
NATIONAL RESEARCH
INFRASTRUCTURES
IN FINLAND 2020–2030**

Creativity, renewal
and knowledge on a
sustainable basis



ACADEMY OF FINLAND

Creativity, renewal and knowledge on a sustainable basis

Vision

Our vision is that high-class research infrastructure services increase the impact and international attraction of the Finnish research, education and innovation system.

Main strategic objectives

- Promoting the quality, renewal and competitiveness of research
- Strengthening the broad-based impact of research environments
- Increasing national and international cooperation

Strategic development areas

- Responsibility and sustainable development
- Long-term perspective and dynamism
- Ownership and know-how
- Digital platforms and data
- Open access and collaboration
- Wide and versatile impact



Introduction

Research infrastructures are an integral part of a high-quality, high-impact and internationally attractive research and innovation environment. State-of-the-art and competitive research infrastructures create a platform where research, education and innovation can cross paths and develop. For this reason, both Europe (roadmap2018.esfri.eu) and the rest of the world have identified a need to significantly step up investments in the systematic construction, use and utilisation of research infrastructures both in the scientific community and in society at large to support the work of businesses and public actors, among others.

Research infrastructures refer to a reserve of research instruments, equipment, data, materials and services that facilitates research, promotes research collaboration, reinforces research and innovation capacity, and improves skills and competences.

Research infrastructures may be single-sited, distributed, virtual or a combination of these.

The work to prepare Finland's roadmap for implementing the [vision for higher education and research in 2030](#), included broad-based cooperation to define four measures with which to develop the research infrastructure landscape:

- strengthen methods for reinforcing the planning, structures, resources and use of research infrastructures across organisational, regional and national borders
- update Finland's strategy for research infrastructures during 2019 and the related roadmap during 2020 under the leadership of the Finnish Research Infrastructure Committee
- include services needed to increase the data intensity of research in the research support services of higher education institutions and research institutes and ensure the availability of appropriate skills and structures for cross-university cooperation
- ensure sufficient storage capacity and computational resources for data-intensive research.

“ Both Europe and the rest of the world have identified a need to significantly step up investments in the systematic construction, use and utilisation of research infrastructures both in the scientific community and in society at large.

Prime Minister Sanna Marin's Government Programme 2019, “Inclusive and competent Finland – a socially, economically and ecologically sustainable society”, states that Finland will reinforce the international competitiveness and attractiveness of the Finnish research and science community by investing in research environments and infrastructure.

Provisions on the Finnish Research Infrastructure Committee are laid down in the Act on the Academy of Finland. The Committee monitors and develops Finnish and international research infrastructure activities, submits proposals to the Academy Board on long-term research infrastructure plans, selects infrastructure projects to be funded and monitors the projects. The Committee also takes care of other infrastructure tasks as assigned to it by the Academy Board.

In line with its statutory role and in order to promote the implementation of Vision 2030, the Finnish Research Infrastructure Committee has, through extensive preparation, drawn up a strategy aimed particularly at promoting the development of national nodes for national and international research infrastructures. The “Strategy for National Research Infrastructures in Finland 2020–2030” is a proposal delivered by the Committee to the Board of the Academy of Finland on a long-term plan for research infrastructures. The Board adopted the strategy on 17 December 2019.

On the basis of the strategy, the Committee will open roadmap and funding calls and, together with other actors, develop national and international research infrastructure activities in the coming years. The Committee will also draft action plans to determine the central measures to be taken to reach the strategy's objectives.

Challenges and goals for the 2020s

The increase in data intensity and the opportunities it creates require better strategic planning, cross-sectoral dialogue and overall management. At the same time, the role of data service providers at the core of research and data-based business is increasing. Research infrastructures often have decentralised systems of data production and utilisation, which poses particular challenges for openness and privacy protection and for ensuring the availability and storage of data. There is therefore a need to consider the types of entities in which research infrastructures and the management of data generated by them will be managed and developed in the future.

Scientific and technological advancements are enabling the construction and use of completely new kinds of research infrastructures. The prioritisation of research infrastructures must take into account not only the opportunities created by new strategic initiatives but also the extensive utilisation of investments in existing research infrastructures. It must also be ensured that

research organisations' own research infrastructures are up-to-date and meet the needs of research, education, businesses and other actors.

The ability to seize new opportunities and provide advance support for the activities of existing research infrastructures requires prioritisation and long-term financing. In addition to research organisations, research infrastructures are funded in particular by research funders, ministries and the EU. In this system of multiple funders, the challenge is how to secure a sufficiently strong, long-term basis for the development and provision of high-quality research infrastructure services over several government terms.

Based on the information submitted in 2018 to the mid-term review of the national infrastructure roadmap, the total funding required for the construction and upgrading of roadmap research infrastructures for 2018–2022 would amount to EUR 600 million. This estimate does not include new initiatives to be funded alongside roadmap research infrastructures or

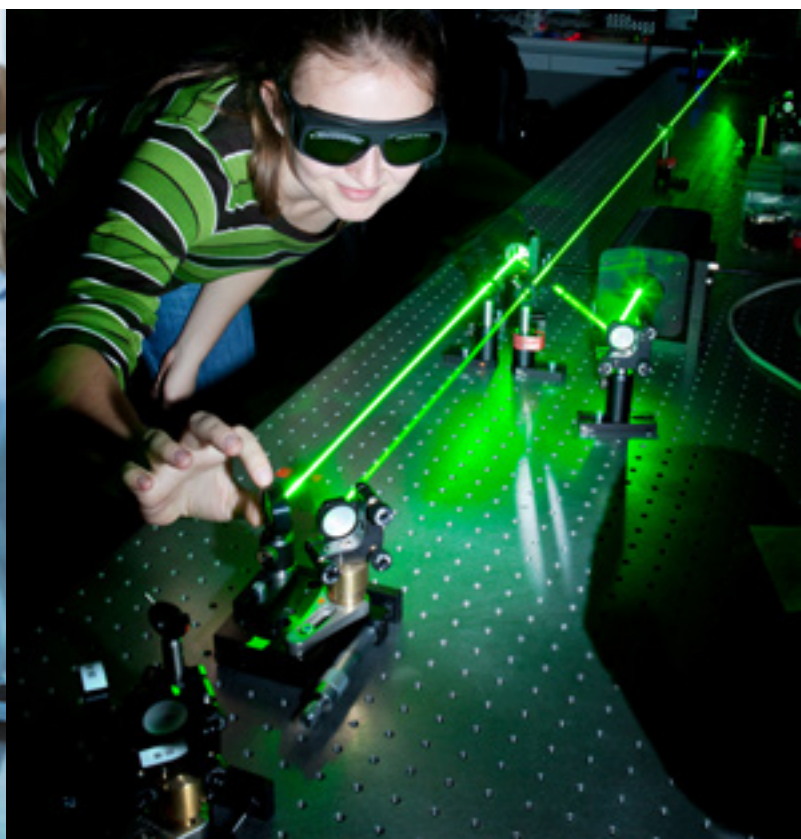


“ It must also be ensured that research organisations’ own research infrastructures are up-to-date and meet the needs of research, education, businesses and other actors.

international research infrastructures to which Finland acceded before 2014 and whose membership fees are financed annually by the Academy of Finland and Business Finland with EUR 40 million. Finland also provides significant support to the construction of high-performance computing in Europe.

The Finnish Research Infrastructure Committee supports the construction and upgrading of research infrastructures annually with EUR 18.5 million. Between 2013 and 2017, together with other funders, this has made it possible to provide EUR 500 million in funding for the construction and upgrading of national and international research infrastructures. The Committee does not finance the maintenance or use of these research infrastructures.

There are also an estimated [300 other significant, often local, research infrastructures in Finland](#). These research infrastructures play an important role for the research organisations hosting them as research environments that also provide a platform for, for example, teaching, development and innovation cooperation with different actors. They also form a platform for creating new national and international research infrastructure services. Their funding therefore plays a key role in the overall development of research infrastructure activities.



Objectives for strategic development areas

Responsibility and sustainable development

Responsibility

High-quality research infrastructure services shall be constructed and developed responsibly so that the scientific and higher education community and other actors in society have access to high-quality and state-of-the-art research infrastructure services to support research, education and innovation.

Research infrastructure actors shall commit themselves to following the guidelines of good scientific practice and the principles of good governance and comply with them throughout the life cycle of the research infrastructure.

Sustainable development

Research infrastructures shall develop their services taking into account the UN's Sustainable Development Goals (SDGs) and monitor their implementation.

As part of the activities of the scientific community, research infrastructures shall produce monitoring methods and solutions that promote the SDGs.

Long-term perspective and dynamism

Long-term perspective

Research infrastructure actors shall have access to up-to-date information on the role and importance of research infrastructures in national and international research and innovation environments, on local research infrastructures and on the overall funding of research infrastructures and its long-term development and development needs.

The Finnish Research Infrastructure Committee shall update the roadmap as part of the implementation of the strategy, base its funding decisions on international peer review and promote ways of adapting Finland's research infrastructure policy to international developments.

Dynamism

The work of research infrastructure actors shall be supported by jointly developed models and incentives for long-term, but at the same time dynamic technological and financial solutions, expansion of funding bases and other new opportunities, considering financial perspectives spanning several government terms.

The review processes of research infrastructures shall be up-to-date and the principles of continuing and joining international memberships shall be specified nationally.

Ownership and know-how

Ownership

The ownership of each research infrastructure shall be clear, and the owners shall know the characteristics of good ownership as well as the rights, obligations and roles of the owner and implement them in their own activities.

Know-how

The key competence needs required for the construction, upgrading and maintenance of research infrastructure services have been defined at national level.

A national recommendation on the conditions for effective research infrastructure personnel and management has been published.

The owners of research infrastructures shall create the conditions for good research infrastructure management and human resources policy.

Digital platforms and data

The necessary changes brought about by the growth in digitalisation and data intensity, such as the development of new technologies, remote access and different service models, as well as factors that increase their costs, have been identified.

In order to promote digital collaboration between research infrastructures, steering mechanisms have been developed in national and international cooperation to streamline the processes for data management and the collection, processing and utilisation of relevant data.

Research infrastructures promote open access to and wide use of data in accordance with ethical and other good practices in cooperation with research organisations and stakeholders.

Organisations across several administrative branches have intensified their dialogue with a view to expanding the knowledge base and promoting the wider utilisation of data.

Research infrastructure services delivered through national cooperation are developing and competitive in a changing and international environment.

Open access and collaboration

Open access

Open access and open access policies increase the usability and impact of research infrastructures.

Research infrastructures shall make their usage policies easily accessible and provide customer-friendly services for all those interested in their services.

The Finnish Research Infrastructure Committee collects information on and disseminates examples of good practices to increase the transparency of research infrastructures.

Collaboration

The Finnish Research Infrastructure Committee monitors and develops national and international infrastructure activities in close cooperation with research organisations, ministries, the scientific and higher education community and the public and private sectors.

Good practices and policies have been gathered through national cooperation for use by research infrastructures and actors in the public and private sectors interested in using them.

Those interested in developing international research infrastructure activities have access to a shared knowledge base for the establishment, operation and development of international cooperation.

Wide and versatile impact

Working closely with the scientific and higher education community and the public and private sectors, national and international collaborative projects have developed models to promote wide and diverse utilisation of research infrastructures.

A systematic monitoring and evaluation system has been established for the models and practices that promote impact.



ACADEMY OF FINLAND

Hakaniemenranta 6 • P.O. Box 131, FI-00531 Helsinki, Finland

Tel +358 (0) 295 33 5000 • firstname.lastname@aka.fi

aka.fi | tietysti.fi | etsixpertti.fi | [f](#) [t](#) [in](#) [y](#)

ISBN 978-951-715-911-1 • Press: PunaMusta Oy, 2020