

# Handling research infrastructures within Research.fi

This paper presents the ongoing work on renewing the research infrastructures as part of the national CRIS in Finland the Research.fi. This includes exploring the preliminary work on the renewal process where the landscape of Finnish HEIs and research organizations was analyzed regarding data collection and handling infrastructure related information within organizations. Also included is a look on the current work regarding the data model update – i.e. a look on what kind of entities research infrastructures are and how they should be handled in a national CRIS system.

## Background

Research infrastructures are nationally essential research tools, facilities, materials and services that enable research and development at different stages of innovation, support organized research, researcher training and education, and develop research and innovation capacities. A research infrastructure can be a large national or international entity managed by several organizations working together. It can also be managed by a single university and operated by an internal team. It may, for example, have services for businesses connected to it, while also maintaining free-of-charge operations for academia.

In Finland the evaluations of Finland's research infrastructures underscore the need for a more comprehensive national overview, in alignment with EU strategies for research and innovation. These efforts aim to ensure that Finland's infrastructure roadmap not only identifies critical national infrastructures but also promotes transparency, resource sharing, and collaboration in a way that mirrors the EU's focus on avoiding duplication and increasing efficiency. Business cooperation, particularly between public and private sectors, is a major area of focus, as Finland seeks to integrate infrastructures to benefit both sectors. However, challenges remain, such as ensuring easy access and identification of these infrastructures, which are vital for fostering broader collaboration and efficient use of resources.

The 2030 vision for research infrastructures in Finland emphasizes their role in driving innovation and enhancing research and development (RDI) activities, in alignment with EU objectives to create a more competitive, knowledge-driven economy. Finland's infrastructures are seen as key to fostering collaboration between actors in the RDI system and ensuring that high-quality, cutting-edge research continues to thrive. By bolstering the accessibility of infrastructures, Finland aims to support both national and European efforts to increase the overall impact of RDI activities, pushing for a more research-intensive business structure while contributing to the broader EU goal of fostering innovation across member states.

## Research.fi and renewing research infrastructures within

In Research.fi – the Finnish national CRIS system – the data model and processes for handling research infrastructures is currently being developed to better highlight the infrastructures as a web of interlinking dependencies and various organizations who maintain them.

During the design phase, it was found that data on research infrastructures are maintained in different ways and not all research organizations have direct access to data from their systems on research infrastructures. Only a handful of HEIs within Finland have extensive and/or automated processes for handling infrastructure related information, while most rely on manual handling of such information.

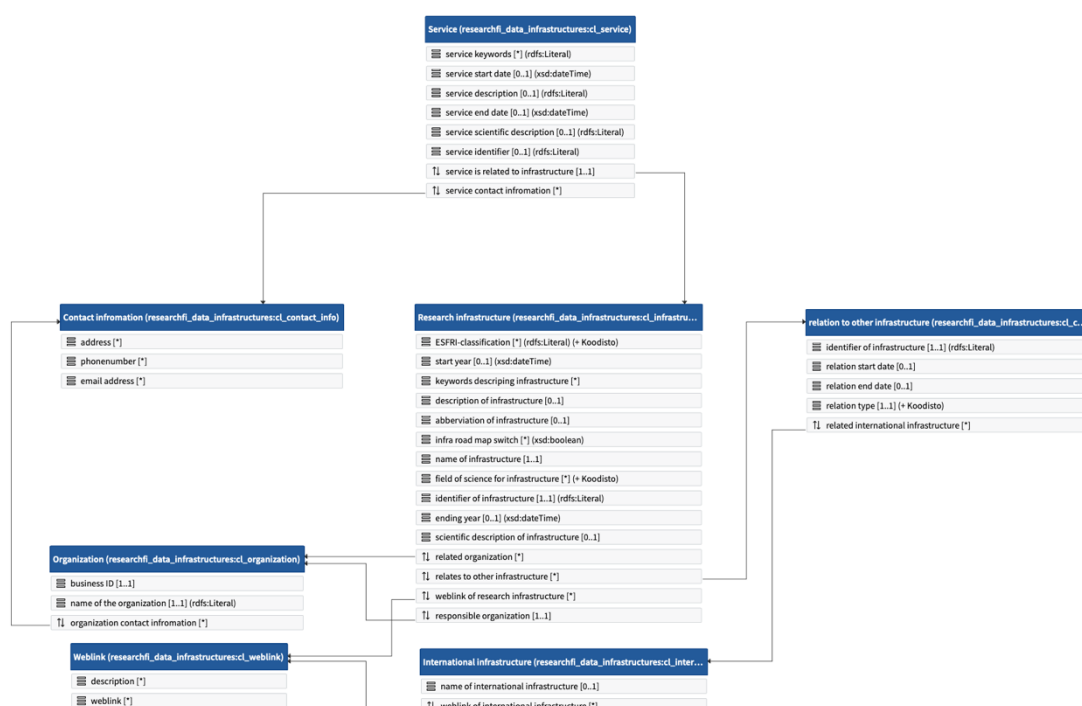


Figure 1: Preliminary data exchange model for research infrastructures in Research.fi<sup>1</sup>

The data model has been designed in collaboration with the Research Infrastructure Group of the Finn-ARMA network. The aim is to enable the provision of research infrastructure data from a wide range of sources, considering the networked nature of research infrastructures.

Related to the use cases of infrastructure, we have identified the following three main use cases to follow when developing infrastructures within Research.fi:

A: Enhance RDI activities by promoting cooperation between research actors and businesses, boosting innovation, and making research infrastructures more discoverable and usable. Consistent and comparable information on infrastructure

<sup>1</sup> [https://iri.suomi.fi/model/researchfi\\_data\\_infrastructures/](https://iri.suomi.fi/model/researchfi_data_infrastructures/)

services, published through various channels like tiedejatutkimus.fi, is essential for visibility and supporting both paid services and innovation.

B: Landscape of research infrastructures in Finland provides a comprehensive overview of key resources, helping funders, researchers, and operators access and utilize information effectively. It aligns with the needs outlined in various national efforts, requiring consistent data across networked infrastructures managed by multiple organizations to maintain accuracy and transparency.

C: Evaluating the impact of research infrastructures involves tracking the outputs they produce, such as publications and research data. This process supports the consistent development of national policies and enables monitoring of infrastructures openness over time.

The infrastructures have been part of Research.fi for some years already, but they currently show rather static information that organisations only seldom update via manual processes. The basis of data is from Research Council of Finland's so called FIRI-infrastructures, but it has been expanded since. Currently some 200 infrastructure records are present in Research.fi with strong bias to organisations which have been active in bringing updates to their records.

## Conclusion

On such basis we will demonstrate in the euroCRIS SMM 2024 the ongoing progress of implementing research infrastructures into a national CRIS. This includes:

- 1) a short landscape study conducted for Research.fi on infrastructures within Finland, i.e. how HEIs and research organizations currently handle infrastructure related information in CRIS systems and similar.
- 2) a look at the current data model discussed between various stakeholders which has abilities to catch the networked nature of such research infrastructures, where multiple organizations are responsible for different parts of infrastructures.
- 3) a glimpse into some of the preliminary plans on the technical solutions in Research.fi for both importing research infrastructure related information and sharing it via Research.fi portal and its API layer.