# Managing and Reusing Research Infrastructure Metadata

Research Service Days 2025

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# On agenda

- Briefly on what research infrastructures and services are – from research information management point of view

- Small survey for you all

- Research.fi and vision/use cases for infrastructure information

- Table discussion on the topic

# What are research infrastructures?

centralised, decentralised or virtual environments that provide equipment, facilities, networks, programs, databases, research data, and services, or combinations thereof, enabling research to be conducted. They also support teaching, researcher training and develop research and innovation capacity.

tarkoittaa keskitetysti, hajautetusti tai virtuaalisesti tai näiden yhdistelminä saatavilla olevia välineitä, laitteistoja, tietoverkkoja, ohjelmistoja, tietokantoja, aineistojaja palveluita, jotka mahdollistavat tutkimuksen toteuttamisen ja teknologian kehittämisen. Ne tukevat myös opetusta tai tutkijan koulutusta sekä ovat osa tutkimus- ja innovaatiokapasiteettia.

**Research management vocabulary:**
*https://iri.suomi.fi/terminology/tuha/concept-158*
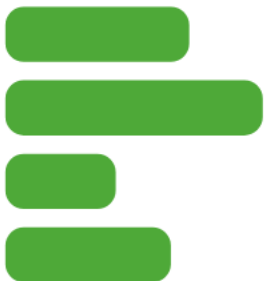
# Few partial examples

**Natural Resources Institute Finland (Luke)**

Research infrastructures for agriculture (*at least 5 RI's*)

-> Jokioinen livestock research infrastructure (*has 3 nested* **infrastructures**)

-> Research barn (*offers several* **research infrastructure service**s)

-> Multifunctional research facility for livestock (offers *several* **research infrastructure services**)

-> *i.e. Animal welfare services*

-> Biogas plant and new energy solutions (offers *several* **research infrastructure services**)
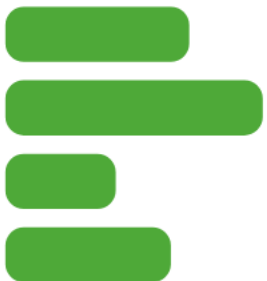
# Few partial examples

**Technobotnia**

- Research infrastructure governed by 3 organizations in Vaasa (Univ. Vaasa, Vamk, Novia)

- Within the umbrella each offers several **infrastructures** (=laboratories)

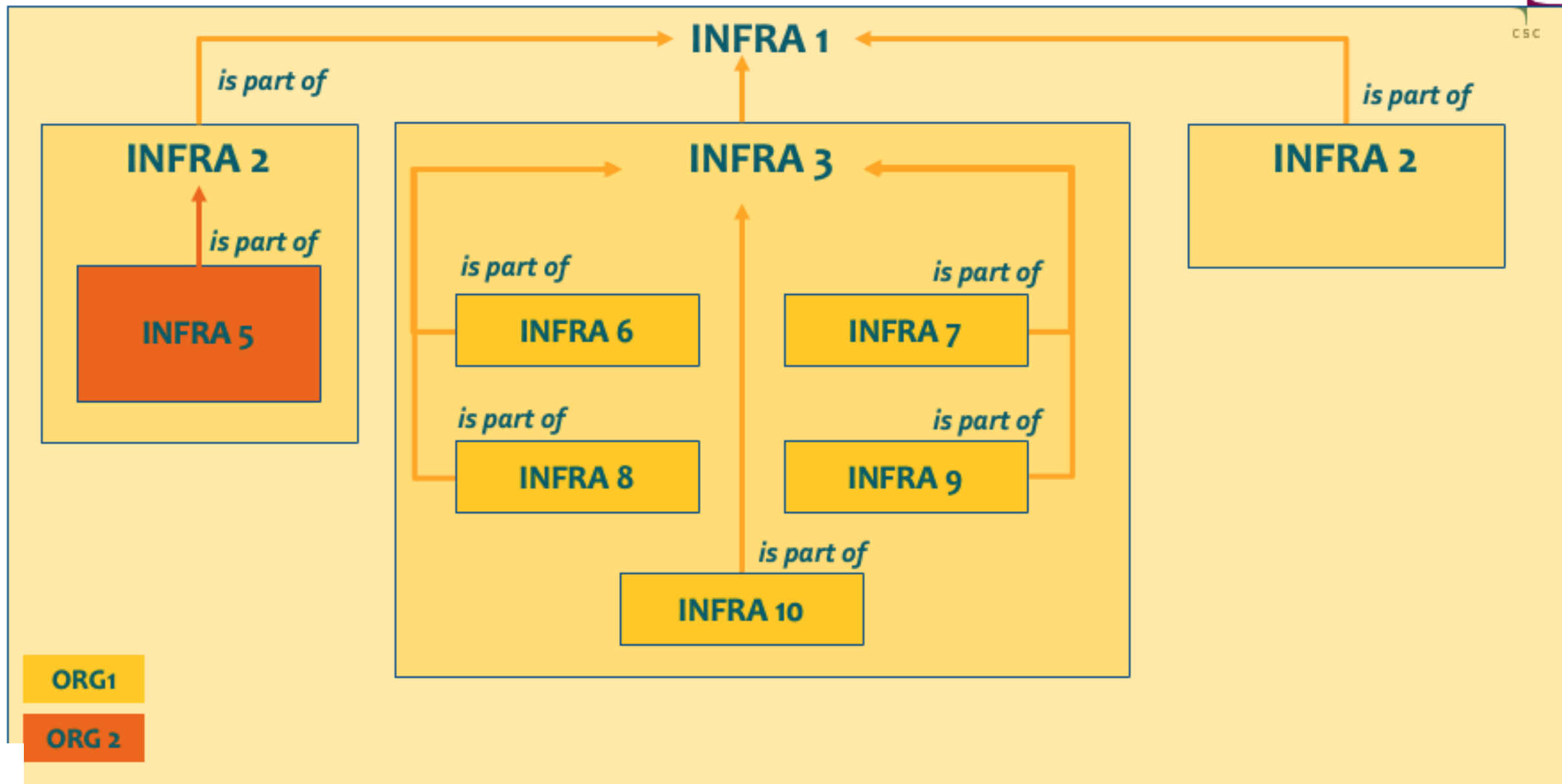- RI's offer **research infrastructure services**

    Technobotnia (RI)

    -> Energy technology and space data laboratories (*several independent RI's by different organisations*)

    -> Energy Technology laboratory (VAMK)

    -> Space Data laboratory (Univ. Vaasa)
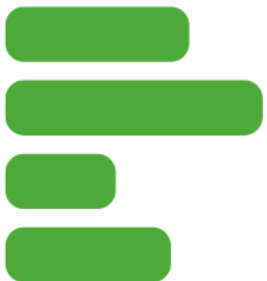
# Research infrastructures create networks

# What are research infrastructure services

- The *research infrastructure service* enables access to the research infrastructure as defined by its responsible party
  - The responsible organisation defines who (=enables access) and how to utilize the research infrastructure. For example, an organization can provide a research infrastructure service for business collaboration.
  - See the research management vocabulary: https://iri.suomi.fi/terminology/tuha/collection-4
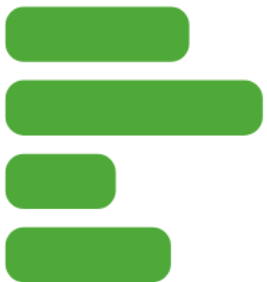
# Examples of research infrastructure services

- University of Jyväskylä Accelerator laboratory
  - Research infrastructure (facility) which includes several RI's (nested, depends of course about definition) (**RI**)
  - Offers radiation safety expert services for private sector and other actors (**service**)

- Tampere University of Applied Sciences Textile laboratory
  - A research infrastructure (lab) with equipment. (**RI**)
  - Offers testing services (fabrics, yarns and fibers and finished products) for private sector and other actors. (**service**)
    - Service has description, access, price, contact,...

# How you manage infrastructure information?

- Survey open for the rest of the presentation
- Answers in English, Finnish or Swedish



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# Research infrastructures in Finnish landscape

- How much resources are used for infrastructures?
    - Research Council of Finland estimate that some 10% is funded via FIRI (TIK 2023). 100Me is sought and approx 30Me is granted
- Research infrastructure roadmap assessments (2018, 2023)
    - Development of impact monitoring, overall picture should be clarified, avoid parallel infrastructures, infrastructures are increasingly connected to each other.
    - TIK wants to develop policies on strategic level, but cannot be done without information
    - The need for business cooperation is identified, but currently lacking due to first obstacle being finding the infrastructures
    - Vision for 2030 – impact, collaboration, new innovations + infrastructure assessment

# Research infrastructure information

- Public information is scarce and internally organisations handle information in various systems (CRISs, resource/infrastructure management, websites).
- Vision is to:
  - Have common format for infrastructure information, that is both sufficient and relevant for most use cases
  - Have a public and shared view of the infrastructure landscape
  - Make infrastructure information reusable for wide set of services and tools, both organizational and public

# What is Research.fi / Tiedejatutkimus.fi?

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- Research.fi collects and disseminates information on research conducted in Finland
  - All information is harvested from external sources – no manual input
  - Supports the highly decentralized landscape of systems (e.g. local CRIS systems, funders)
  - Provides information in common format via API layer
- Research.fi is owned by the Ministry of Education and Culture and developed + maintained by CSC

# Research infrastructures in Research.fi

- Data model for RI's and RI-services is ready
  - Defined with the RI-experts from universities, universities of applied sciences, research institutes and funders (Finn-ARMA working group for RI's).
  - Started at the end of last decade, revised lately.
  - Goals: descriptive, easy to keep up-to-date, fulfills use cases, addresses the networked structure of RI's (self-organising).
  - Persistent identifiers (PID) for each **RI** and each **service**!

- Current development
  - Enable data collection, transfer (API's) => i.e. building the sturdy basis.

# Use cases for research infrastructure data

- Enhancing RDI activities and supporting cooperation
  - business cooperation, discoverability of infrastructures
  - Accelerating innovation & supporting service activities
- An overview of Finnish research infrastructures
  - Uniform information for use by research actors and stakeholders
- Evaluation of the effectiveness of research infrastructures
  - common research infrastructure policy
  - importance of infrastructures

# Research infrastructures and RDI

- Research infrastructures are one cornerstone of impactful RDI.
  - Not just spin-off companies. RI's can support the whole innovation ecosystem.
- Currently their findability is poor (in general) and access can be difficult.
- Shared RI (and service) information builds the base on which local solutions for various use cases can be built.
  - Service findability, local private sector etc.
  - Fog is lifted off the national Research infrastructure landscape
- PID's enable connecting the output (research data, pub's) to RI's.
  - Easier to trace their impact.
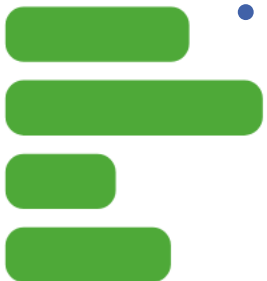
# Research infrastructure information available for reuse in Research.fi during 2025

| RESEARCH ORGANISATION | DATA TRANSFER | Research.fi | API | |
|---|---|---|---|---|

JUSTUS

CRIS / Other systems → Direct transfer file

Combining the information

Service catalogues

Other services and systems

Research actors websites

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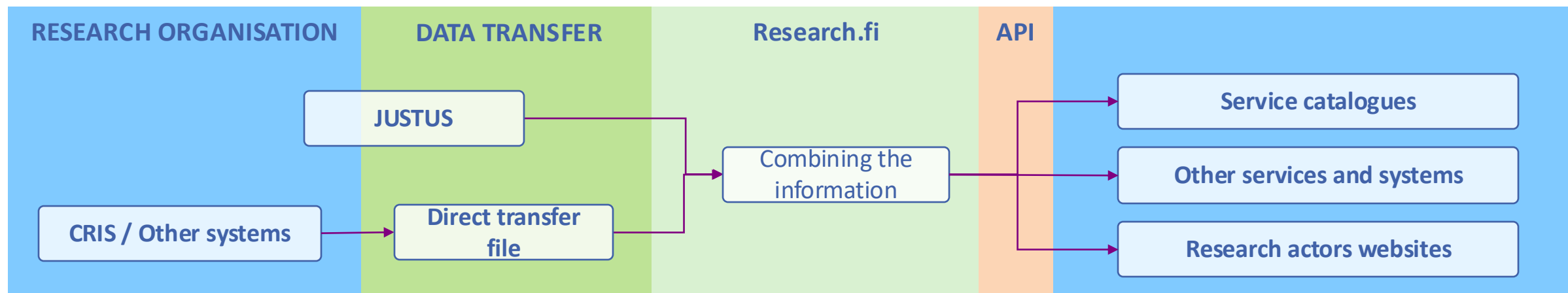
Identifies and describes research infrastructures in relation to a common data model.

Designs the process of data collection.

Utilizes common infrastructure data internally from Research.fi API.

**JUSTUS-service**
*2025 –* New service for managing of infrastructure data within the organization and data transfer to Research.fi.

**Direct transfer files**
Organization creates a transfer file from its own systems according to the instructions.

*ready* - a common updated data model for research infrastructure data

*ready* – direct data transfer format

*2025* – API for reusing the data

*2025* – Reading in tranfer files

*2025* – updating existing data in Research.fi to new data model

*2026* – renewing Research.fi infrastructure view within portal

# Discussion