

FDM@HAW.rlp

Base4NFDI: Framework and Services

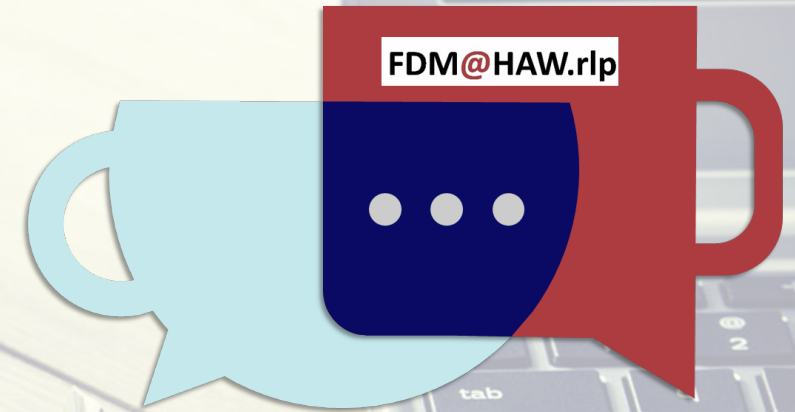
09.04.2025

Speaker:

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Host:

Thomas Schimmer, Project Manager/Coord., FDM@HAW.rlp, Mainz UAS



COFFEE LECTURE

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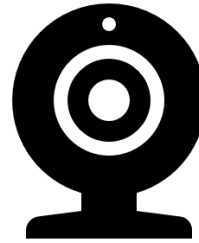


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Nettiquette



Mikro
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Kamera an ;-)



Fragen in den Chat

The Base4NFDI framework and its basic service projects

Najla Rettberg
April 9, 2025 |



Questions? Send an email to:

base4nfdi-office@lists.nfdi.de

Check our website:

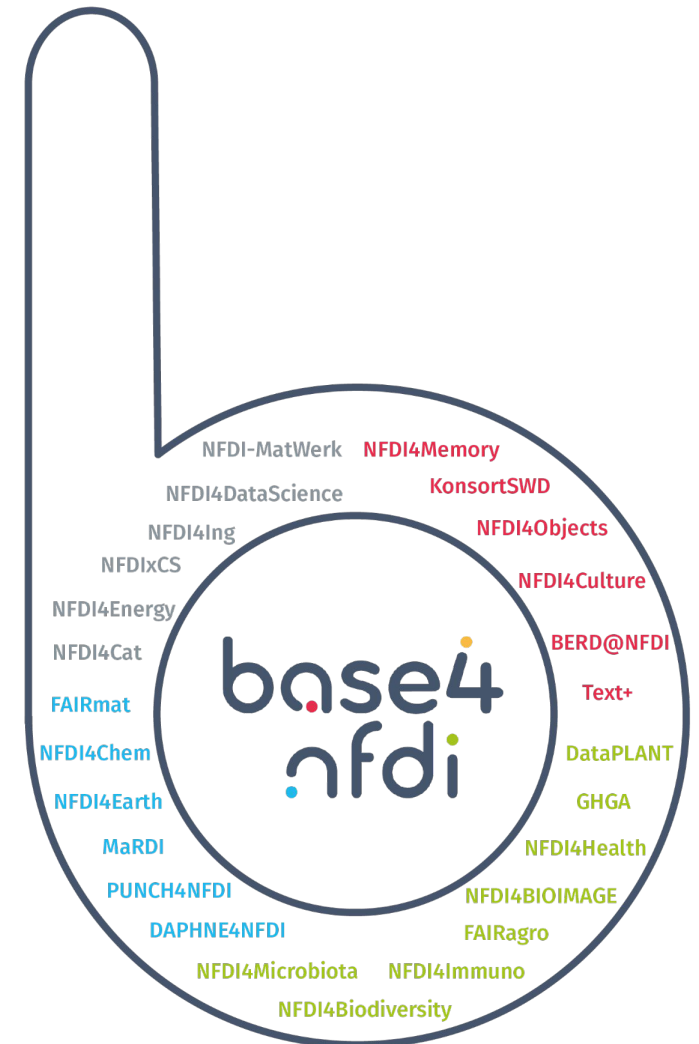
www.base4nfdi.de

NFDI: 26 Disciplinary Consortia



Base4NFDI: Definition and Goals

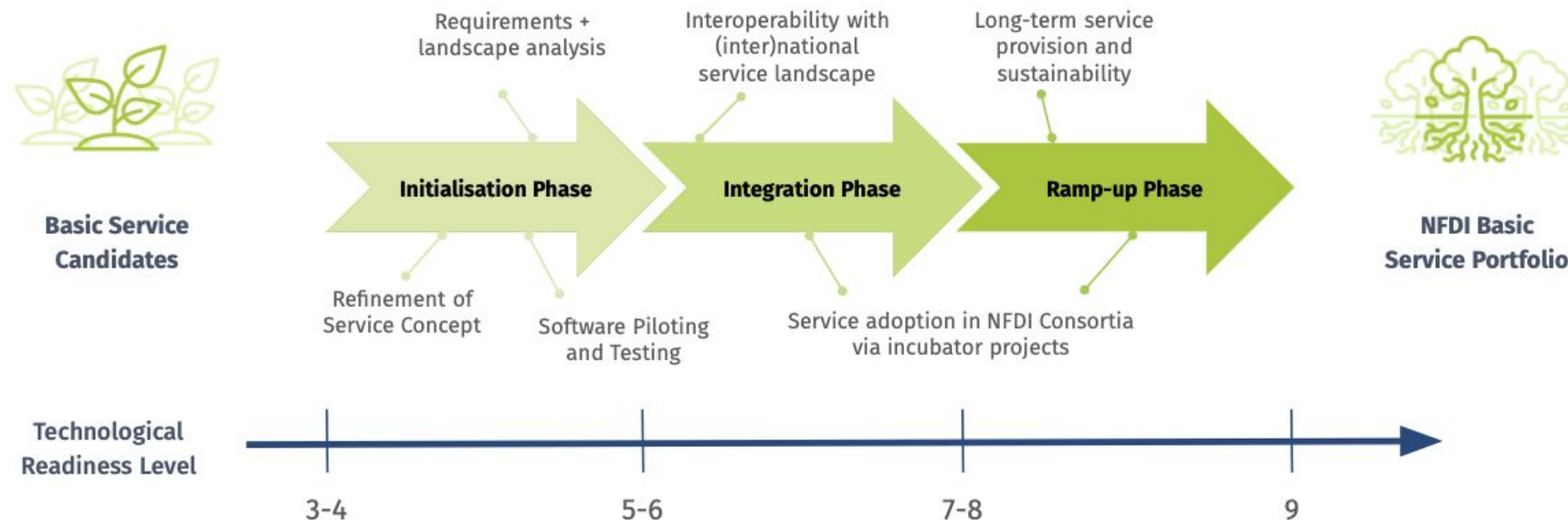
- Base4NFDI is the joint initiative of **all 26 NFDI** consortia.
- Our goal is to establish reliable **basic services** for **FAIR** research data management.
- Basic services will be...
 - **easily usable** for as many consortia as possible,
 - **interoperable** with international standards and services (e.g. EOSC) and
 - utilising **synergies** between **existing solutions**.



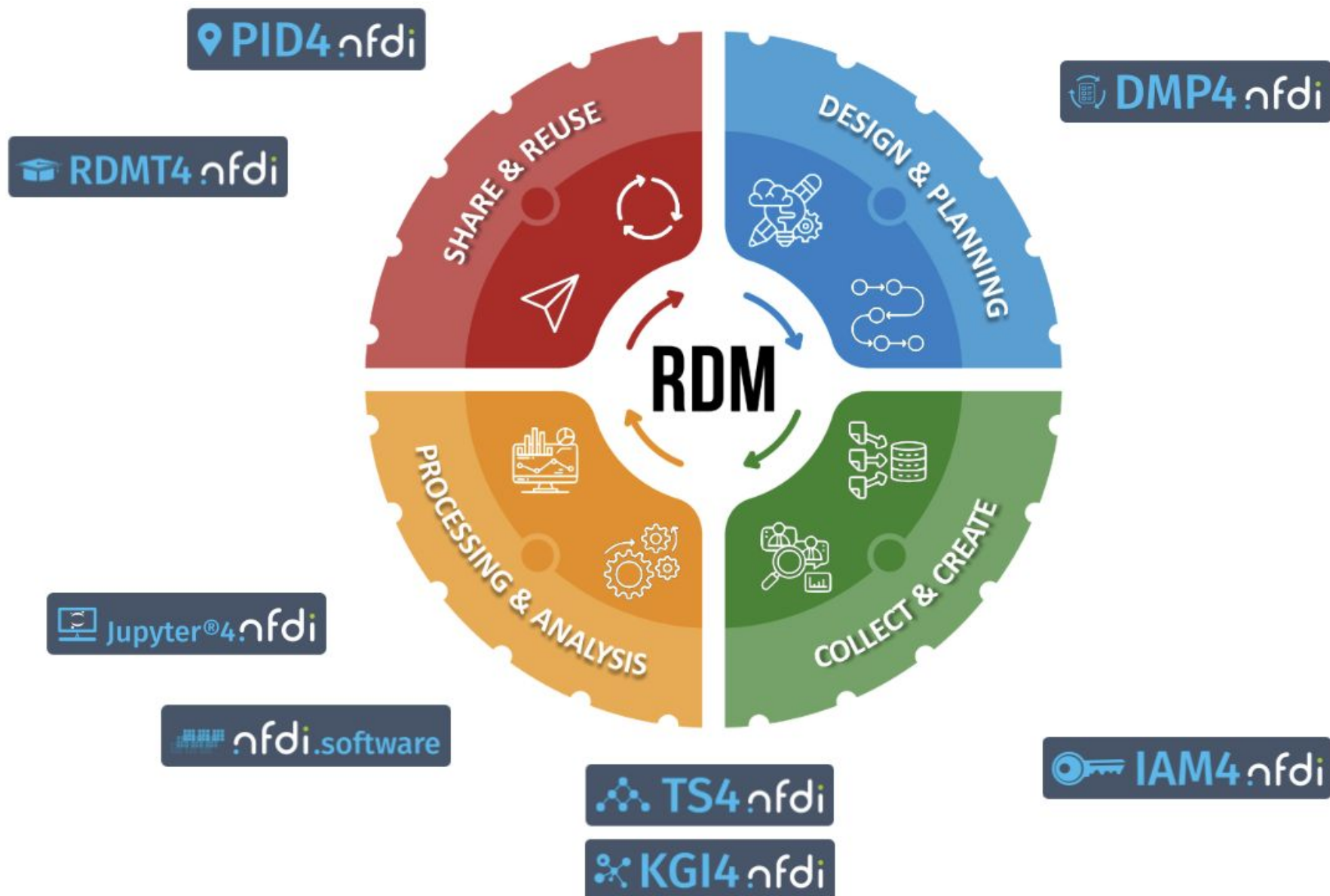
What Base4NFDI offers

Base4NFDI provides the **framework** for the **development of basic services** by...

- defining **potential** basic services
- **transparent allocation** of flexible **funding**
- stepwise **service development** (initialisation, integrating and ramping-up)



We have 8 Services underway



IAM4NFDI - Goals and Benefits



Integration

IAM4nfdi

Identity and Access Management
for the German National Research
Data Infrastructure



base4nfdi.de/projects/iam4nfdi.html

iam.services.base4nfdi.de




aai-kernteam@lists.kit.edu

Why?

- provide state-of-the-art Identity and Access Management (IAM) to access controlled resources in the NFDI. It is the **A** in FAIR RDM.

What is in it for you?

- Users & service providers do not need to bother with managing accounts.
- Users can access services & data via their home organization. 
- Scalable and efficient governance in user management with VOs (virtual organisations)
- NFDI consortia can join via compact solutions called **Community AAls** (didmos, AcademicID, Helmholtz AAI, RegApp)
- Interoperability to EOSC-AAI

**IAM4NFDI quickly
explained**



**Base4NFDI
Roadshow 2024**



Persona Impressions



I am a **Postdoc and service administrator**. My goal is to provide researchers with a secure and user-friendly service. I need to ensure that only the right people get access while keeping the login process simple. With IAM4NFDI, I rely on trustworthy user information and seamless authentication tools to strike the perfect balance between security and ease of use."

I work at a **Service Desk** and help researchers and guest users access our services smoothly, but troubleshooting authentication issues can be a nightmare. Error messages are often unclear, and AAI is complex, making it hard to pinpoint the source of a problem. I need nfdi.software to provide clear responsibilities for support escalation, fast response times, and informative error messages—so I can assist users quickly and efficiently.



PID4NFDI - Goals and Benefits

Integration

PID4nfdi

Persistent Identifier Services
for the German National Research
Data Infrastructure



base4nfdi.de/projects/pid4nfdi.html

pid.services.base4nfdi.de



pid4nfdi@lists.nfdi.de

Why?

- Harmonize the PID service landscape within NFDI at all levels (technical, organisational, methodological, and in communication)
- PIDs are persistent, globally unique identifiers to link, cite, refer to research resources in connection metadata

What is in it for you?

- PID4NFDI **is not another PID provider** for generating PIDs, but it integrates existing PID infrastructures.
- PID providers are already in the project (GWGD, DataCite)
- Users can access a central place to find transparent information on existing PIDs incl. decision guides, howtos, solutions

Base4NFDI
Roadshow Dec 2024



Vision: PID Coordination Hub

Governance

- Decision matrix for PID (provider) selection
- NFDI-wide PID policy
- Compliance testing with PID policies (EOSC)

Metadata & Interoperability

- Support for metadata quality assessment
- Guidelines for metadata harmonization
- Data Type Registry / PID Metaresolver

→ Create foundation for NFDI PID Graph

Support & Information

- Linking existing PID resources
- Display best practices
- Helpdesk / Training

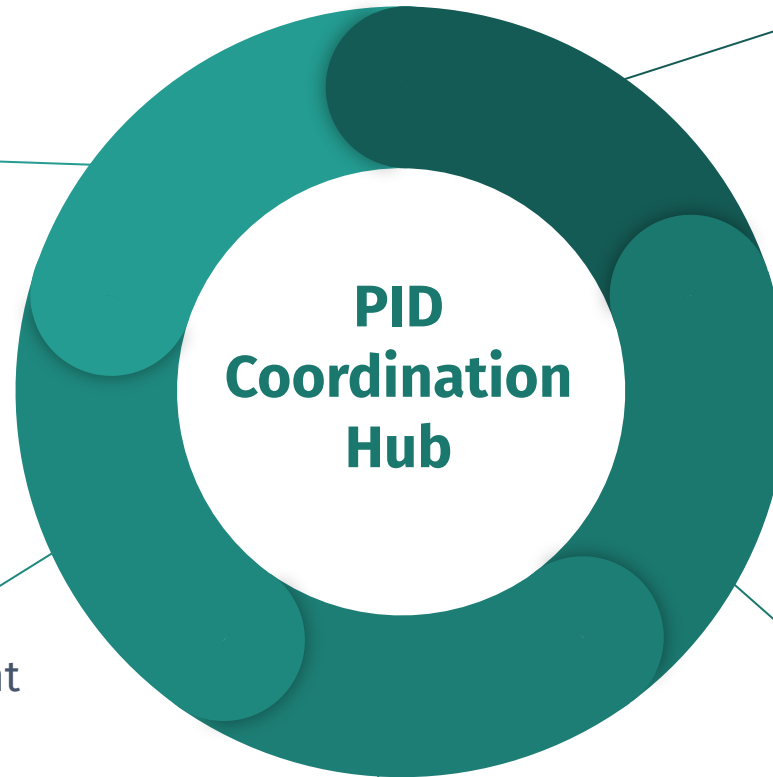
Use cases

- Instruments
- Physical Objects
- High-granular/ warm data
- Projects & grants (explorative)

Focus Groups
(ELN / DMP)

Target group-specific community engagement:

- Repository managers
- Researchers
- Organizations
- Decision makers



Persona Impressions



I am a **social scientist**. In my everyday work, PIDs are useful to cite and credit other researchers' work. I also use PIDs to have a stable reference to my own person, publications and data.

In the future, I would love to use PIDs to cite data on a more granular level, e.g. single variables of large quantitative studies - so it's unambiguous what I mean for every reader of my paper.

I am a **repository manager**. The information on the PID Coordination Hub are very helpful for me to gain basic knowledge on current PID solutions, cost models and metadata requirements. I also found training material to educate my co-workers.

The PID provider selection guide helped me to choose the most suitable PID for our use case.

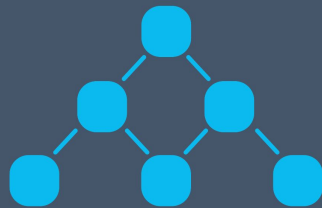


TS4NFDI - Goals and Benefits

Integration

TS4nfdi

Terminology Services
for the German National Research
Data Infrastructure



base4nfdi.de/projects/ts4nfdi.html

ts.services.base4nfdi.de



ts4nfdi@lists.nfdi.de

Why?

- Help researchers use and share consistent terminology (standardized vocabulary) across different fields
- Provide tools to organize, connect, and align terminology, ensuring that data is interpreted the same way by everyone
- build a central platform with services for searching, mapping, and integrating terminology

What is in it for you?

- This Terminology Service Suite consists of JavaScript based widgets that can be integrated into each web based application.
- Users can integrate **terminology service** features (annotation tools, ELNs, search engines, data repositories) via widgets to any web application.

Base4NFDI
Roadshow Dec 2024



Persona Impressions



I am a **Research Software Engineer**. Building research tools is a challenge when datasets use different terminologies, and I have to manually map terms across multiple sources. With TS4NFDI's single-point-of-access API and easy-to-integrate widgets, I can seamlessly integrate standardized vocabularies into my web applications, making my tools more efficient and ensuring smooth data interoperability."

I am a **Biomedical Researcher**. Annotating my research data is frustrating when every source uses different terms, and I'm never sure which one is correct. TS4NFDI helps by providing clear, standardized terminology recommendations, so I can keep my annotations accurate and consistent without wasting time searching for the right terms.



Jupyter4NFDI - Goals and Benefits



base4nfdi.de/projects/jupyter4nfdi

<https://nfdi-jupyter.de/>



jupyter4nfdi@lists.nfdi.de

Why?

- Jupyter Notebooks are a core tool for data science in terms of coding, visualization, reproducibility
- Multi-user JupyterHubs are very widely distributed in the NFDI landscape, with different setups and access mgmt

What is in it for you?

- Establishing a central NFDI JupyterHub for all NFDI users allowing multi-user access to JupyterLabs on various resource types as cloud environments, HPC systems
- Should fit to 90% of all typical use cases
- Provide a foundational set of resources by connecting existing external sites to the central instance

**Base4NFDI
Roadshow Dec 2024**



The Concept of Jupyter4NFDI

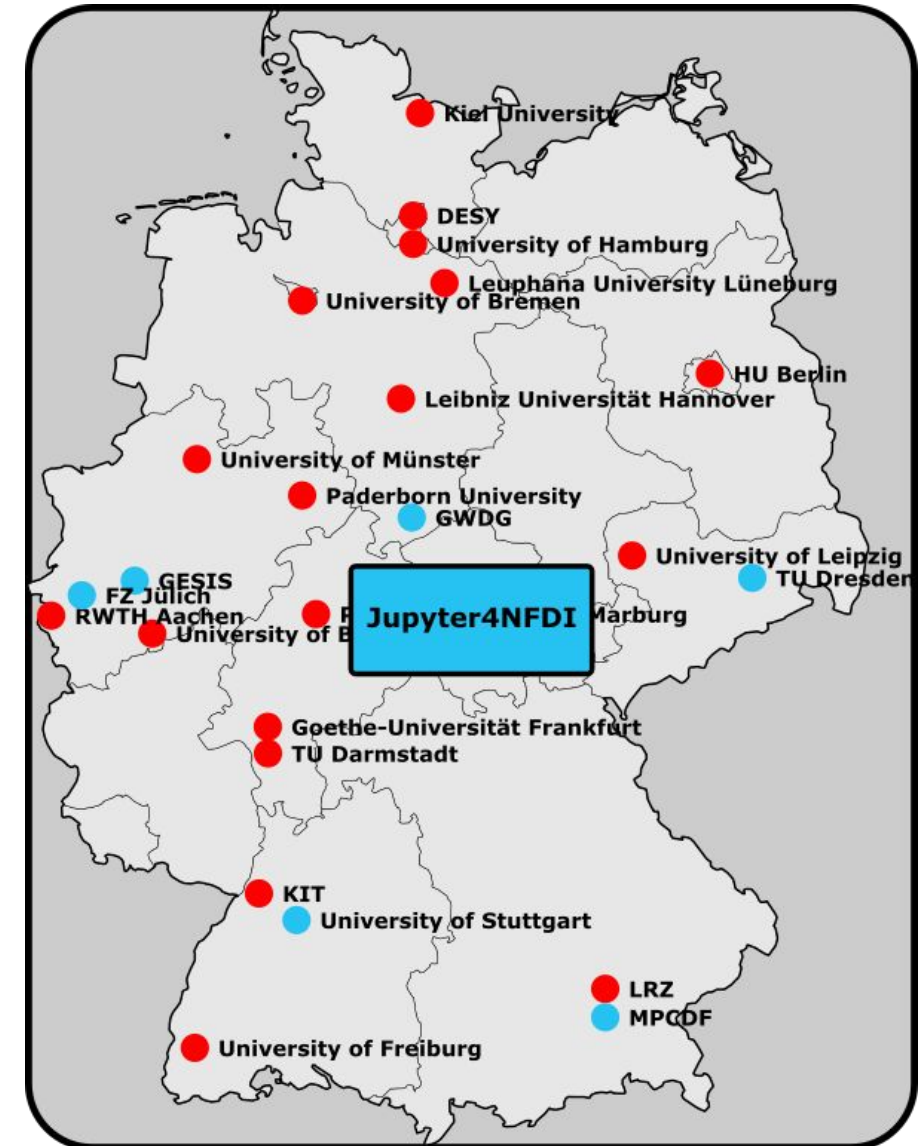
Dozens of JupyterHubs in Germany

Challenges

- Out of 24, 20 are not accessible to external users
- Which JupyterHubs are available to me?
- What are the differences?

Proposed solution

- Centralized “default” JupyterHub
- Combining resources of providers
- Not a replacement, but **complementary service** to enhance access and usability for all users
- <https://hub.nfdi-jupyter.de>



Persona Impressions



As a **digital humanities researcher**, I analyze large text corpora and historical datasets using statistical methods. I need a reliable and accessible computing environment, but dedicated IT resources are often limited in my field. Jupyter4NFDI makes my work easier with its simple access, high uptime, and the ability to share and import materials effortlessly. Plus, it supports a wide range of computational needs, allowing me to run complex analyses efficiently.

As an **IT manager** at a research institute, I want to provide both our researchers and external collaborators easy access to our computing resources without the burden of managing separate setups for each. Jupyter4NFDI allows us to share our resources through the central Jupyter hub, reducing overhead.



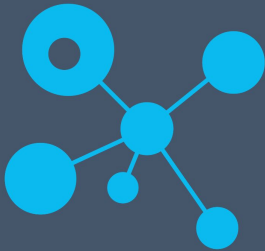
KGI4NFDI

Goals and Benefits

Initialisation

KGI4nfdi

Knowledge Graph Infrastructure
for the German National Research
Data Infrastructure



base4nfdi.de/projects/kgi4nfdi



kgi4nfdi@lists.nfdi.de

Why?

- important technology supporting interoperability and enabling data exchange
- KG is a graph-structured knowledge base containing a terminology and interrelated data entities
- usage in many consortia

What is in it for you?

- help consortia, institutions and researchers to adopt, create and link KGs
- central service Hub/registry to search and query platform
- (inter)national KG interoperability

Base4NFDI
Roadshow Dec 2024



Persona Use Case

I am a Junior **Research Software Engineer**. At my Leibniz Institute, I work with researchers from different disciplines who need better ways to structure and connect their data. I'm developing a new workflow to help them integrate complex datasets, and a knowledge graph could be the perfect solution. But choosing the right KG technology is overwhelming without a clear comparison of tools. A knowledge base that explains the strengths and weaknesses of different options and provides solid documentation.



DMP4NFDI - Goals and Benefits

Initialisation

DMP4nfdi

Data Management Plans
for the German National Research
Data Infrastructure



base4nfdi.de/projects/dmp4nfdi

dmp.services.base4nfdi.de



dmp4nfdi@lists.nfdi.de

Why?

DMPs are essential to prepare and maintain proper RDM/FAIRness and should precede and accompany every research project

What is in it for you?

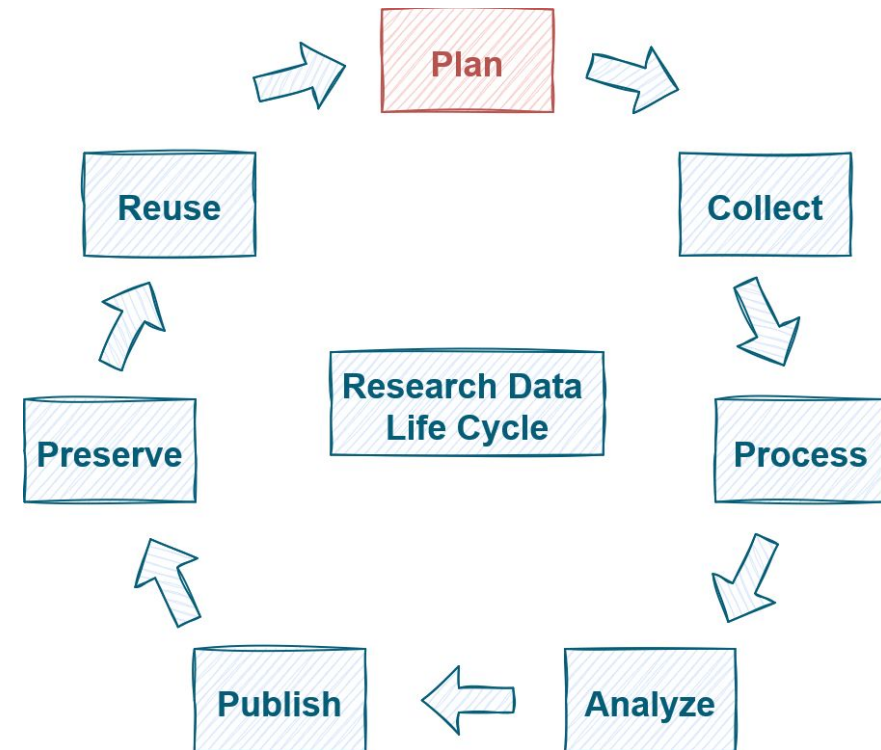
- centrally hosted, open source tool (RDMO) for DMPs + SMPs with customisable client for each consortium
- coordination and support of template creation and their standardisation
- guidance, training and support for DMP-responsible staff in consortia

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What is a Data Management Plan?

- A **Data Management Plan** (DMP)...
 - describes the data that researchers intend to collect or generate during the research process
 - explains how this data will be managed at different stages of the research project
- A DMP is a **living document**
 - created before the project
 - updated to reflect changes/adjustments as the research project progresses (e.g. revision of data sharing plans)
 - tailored to the specific needs of the community (not universally standardised)
- DMPs support researchers in producing **FAIR data**.
- DMP-Tool: Research Data Manager Organiser (RDMO)



Persona Impressions



As a **post-doc researcher** planning my next project, I need a data management plan (DMP) tailored to my discipline. Funding organizations require it, and I want a template that fits my needs. I'd appreciate having a contact point for questions and support in completing the form, especially with AI-assisted guidance. At the end of the process, I want a DMP that not only meets funder requirements but also helps me manage my research data effectively.

As a **Data Steward**, I need a solution to provide custom data management plan templates for our researchers. Our institution lacks the resources to host our own DMP tool, and PDFs are inefficient. DMP4NFDI offers the support and expertise to customize templates, ensuring they meet our needs while promoting interoperability with other institutions and consortia.



nfdi.software - Goals and Benefits

Initialisation

nfdi.software

A research software marketplace
for the German National Research
Data Infrastructure



 base4nfdi.de/projects/nfdi-software

 nfdi-software@lists.nfdi.de

Why?

- Research software is distributed everywhere in the community, finding it is hard

What is in it for you?

- nfdi.software will serve as a **single entry point** in Germany that brings together information about research software from the different scientific communities
- easier to find, understand, evaluate and reuse software for specific research questions and for one's own research



Persona Impressions



I am an **Environmental Scientist** and I need reliable and well-documented software to analyze climate data. With nfdi.software, I can find tools that other researchers use, share my own scripts, and ensure my work remains reproducible!



I am a **Research Software Engineer** and I develop data analysis tools for social scientists. nfdi.software helps me discover reusable components, follow best practices, and collaborate with other RSEs to create sustainable research software.

RDMT4NFDI - Goals and Benefits

Goals and Benefits

Initialisation

RDMT4nfdi

Research Data Management Training
for the German National Research
Data Infrastructure



base4nfdi.de/projects/rdmtraining4nfdi



rdmtraining4nfdi@lists.nfdi.de



Why?

- Lack of open tailored training materials among different disciplines which all have their own unique requirements and subject cultures

What is in it for you?

- Modular collection of foundational RDM training materials (Train the Trainer) for consortia staff (data stewards, trainers)
- Adaptable, documented, proven training formats and methods
- Exploration of (NFDI) certification to establish quality standards and document the skills acquired by participants



Persona Impressions



I am a **Data Steward**, and I just started working in the consortium NFDI4Cakes. I am supposed to train my researchers in FAIR RDM. I tried finding resources online but got overwhelmed since there are so many materials out there and I don't know which material is reliable and of high quality.

I am a **trainer for RDM** and I want to teach my researchers as good as possible in conducting FAIR RDM. Often, I don't find the time during my busy days to educate myself further on this topic. It would be great to have an intensive training format like a summer school to learn all the essentials in a short period of time.



Section Liaison Officers & Service Stewards

New roles to support basic service development

Section Liaison Officers

- directly **support the work of the Sections** in matters related to preparing basic services development strategies, decisions and monitoring



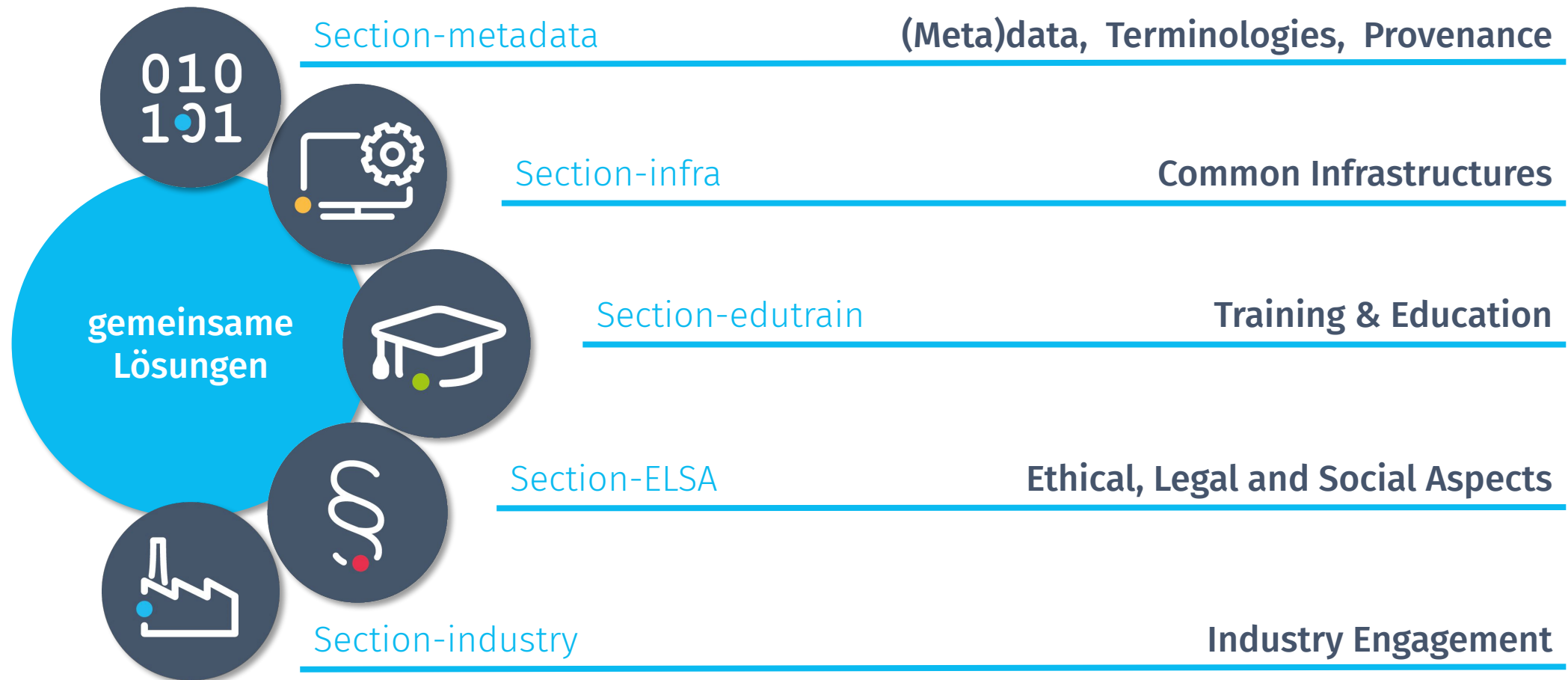
Service Stewards

- **support the service development** process through all phases
- ensure a smooth interplay and **exchange of information** between all process stakeholders



4. Kooperation statt Konkurrenz

Fünf Sektionen arbeiten an Querschnittsthemen



Mitglied werden

Eine kostenlose Mitgliedschaft im Verein Nationale Forschungsdateninfrastruktur (NFDI) e.V. bietet für Ihre Organisation zahlreiche Vorteile:

- Beteiligen Sie sich an der aktiven Gestaltung der strategischen Entwicklung der Nationalen Forschungsdateninfrastruktur durch Mitwirkung im NFDI-Verein.
- Leisten Sie Ihren Beitrag zur Etablierung eines übergreifenden Forschungsdatenmanagements in Deutschland und tragen Sie zur Steigerung der Effizienz des Wissenschaftssystems bei.
- Gestalten Sie gemeinsame Querschnittsthemen in den [NFDI-Sektionen](#)
- Nehmen Sie an Sitzungen der Mitgliederversammlung des NFDI-Vereins mit Stimmrecht teil.
- Sprechen Sie bei relevanten Dialogen zu politischen Entscheidungen auf nationaler und internationaler Ebene mit.
- Werden Sie Teil eines großen Netzwerkes und profitieren Sie von Synergieeffekten.

How to contribute, keep aware ?

The Base4NFDI services will go beyond NFDI

- *They are not exclusively for NFDI*
- *The consortia will shape them*
- *...but anyone can join NFDI...and help shape them*
- *...The services still need to be finalised*



Service Stewards

base4nfdi-servicestewards@lists.nfdi.de

www.base4nfdi.de