

# NFDI Sections Roadshow

## Welcome!

## NFDI Sections Roadshow



**4 Feb 2026**



**3-5 p.m., Online**



**Meet the NFDI sections.  
Many disciplines -  
one goal!**



- What are important cross-cutting topics for a construction of research data infrastructure?
- What challenges do these cross-cutting topics face when setting up a national research data infrastructure?
- On what solutions are the sections working in order to address these challenges?



nfdi



RDM data future

LTA

ELSA

- Search & harvest
- Training formats & Certificate course
- Common Infrastructure



# Cross-cutting topics

International Engagement

Training & Education

Industry Engagement

Common Infrastructures

(Meta)data, Terminologies,  
Provenance

Ethical, Legal and Social Aspects



Let's make data treasures  
a common good.



For a FAIR data future.



Let's make data treasures  
a common good.



For a FAIR data future.

## Need for

- high quality data
- easily accessible
- reusable for researchers

## to create new insights

- for research
- for society
- for industry



nfdi

FAIR data  
future









## Common Infrastructures

Aiming to identify, design and build **jointly usable infrastructure components** and their interoperability.



## (Meta)data, Terminologies, Provenance

Supporting processes of the NFDI consortia in the development of **shared (meta)data standards** as a basis for a FAIR data future.



Dedicated to legal, ethical and social questions and sharing existing knowledge **to realise common solutions, guidelines and statements.**

**Ethical, Legal and Social Aspects**

**Collaborating** and exchanging  
**data, methods and solutions**  
with industry partners on a  
FAIR basis.

### Industry Engagement



## Training & Education

**Merging data literacy and FAIR concepts** to all stakeholders while **cooperating** with universities and FDM initiatives.





## International Engagement

Ensuring that **national** and **international** data can be **(re)used** by researcher.







Search & harvest

Training formats &  
Certificate course

Common Infrastructure

TER

KG

RSE

RS-M

# Welcome to our NFDI Universe!

**Your Mail-Address**

**Password**

# Common Infrastructures

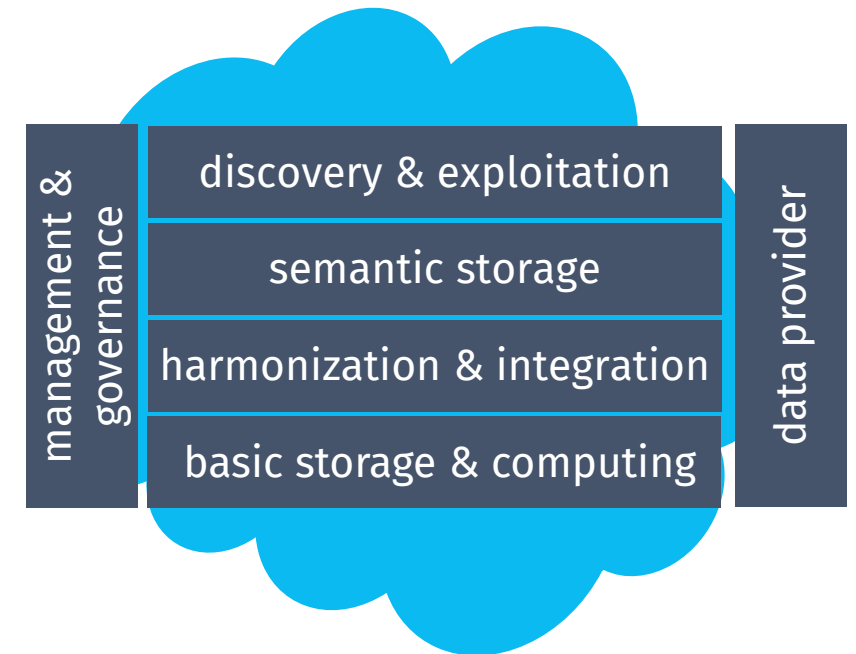
presented by Sonja Schimmler & Marius Politze



Common  
Infrastructures

## Goals

- Coordinate **federated infrastructures** and **software development** across NFDI consortia.
- Align **architectural concepts** of NFDI consortia.
- Establish a **Research Data Commons (RDC)**.
- Build **sustainable technology partnerships** and engage with **external initiatives**.
- Support NFDI as a **national EOSC node**.



*What is our goal?*

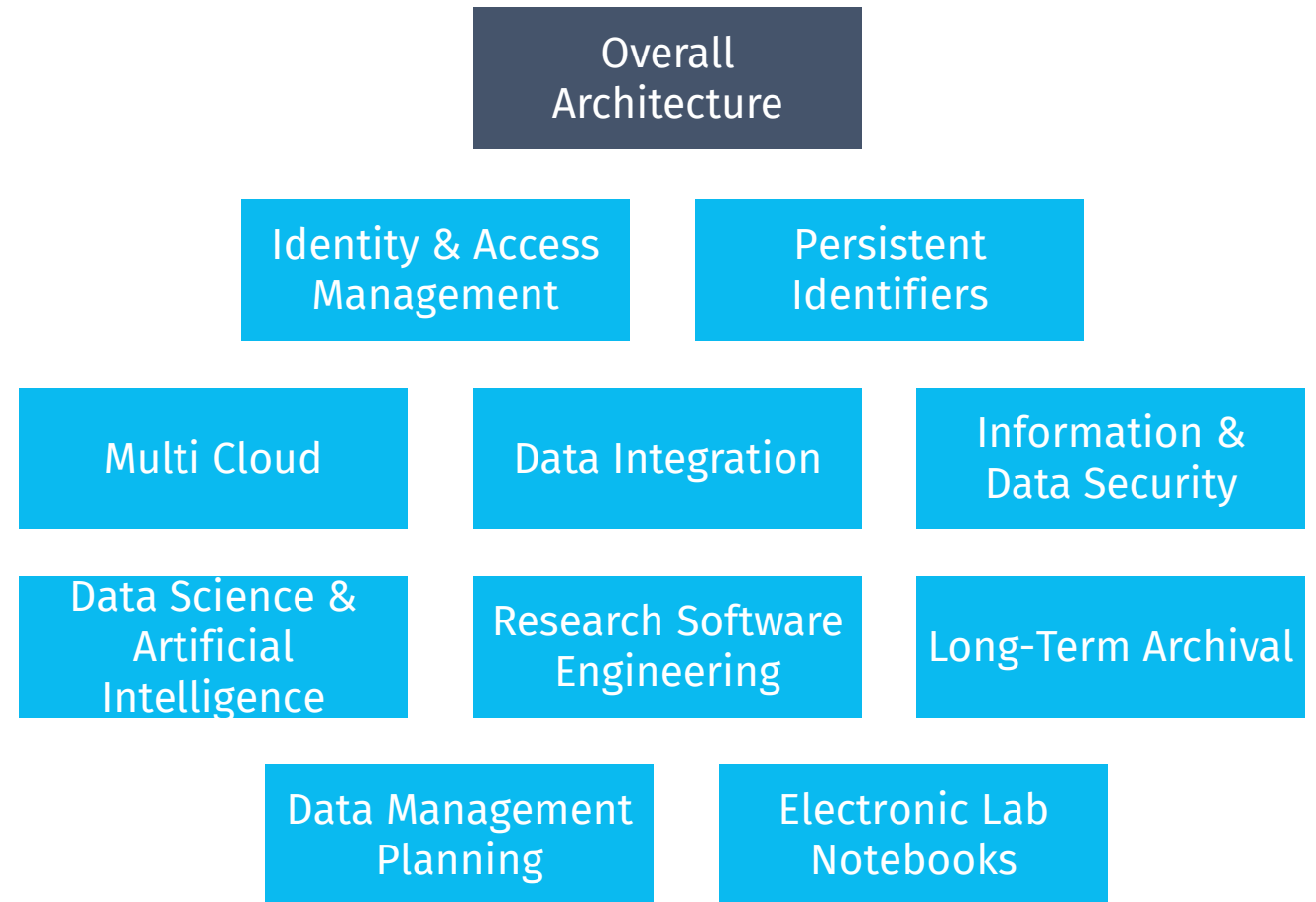
*“Support identify, design and build federated infrastructures and software components.”*



# Common Infrastructures



- Different components are needed for a common infrastructure
- The **WG Overall Architecture** coordinates and aligns the work of the other working groups.



# Common Infrastructures



## Common Infrastructures

The section is responsible for six core basic services:

**IAM4.nfdi**

Identity and Access Management  
for the German National Research  
Data Infrastructure



**PID4.nfdi**

Persistent Identifier Services  
for the German National Research  
Data Infrastructure



**DMP4.nfdi**

Data Management Plans  
for the German National Research  
Data Infrastructure



**Jupyter®4.nfdi**

A central JupyterHub  
for the German National Research  
Data Infrastructure



**nfdi.software**

A research software marketplace  
for the German National Research  
Data Infrastructure



**Accounting4.nfdi**

Accounting  
for the German National Research  
Data Infrastructure



# Overall Architecture



Common  
Infrastructures

*What is our goal?*

*“Help shape our overall picture.”*

Consolidation into  
“oneNFDI”

Requirements from  
structural evaluation (GWK)

Alignment with NFDI storage  
provider

Positioning of NFDI as EOSC  
German National Node

External Input

Where is the common  
ground for an overall  
architecture?

What gaps need to be  
filled?

What governance  
models are best suited?

WG Overall Architecture

What are the key requirements from  
the domains’ perspectives?

What gaps can be spotted in  
the different domains?

What is in scope of an overall NFDI  
architecture and what isn’t?

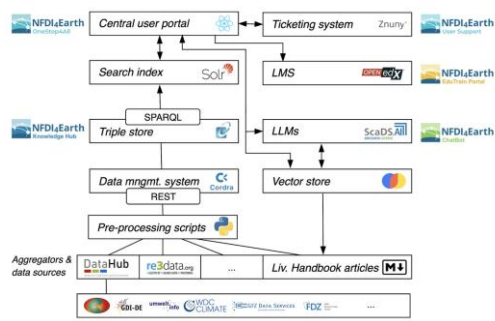
How do consortia contribute  
to the overall NFDI  
infrastructure?

NFDI-internal Input

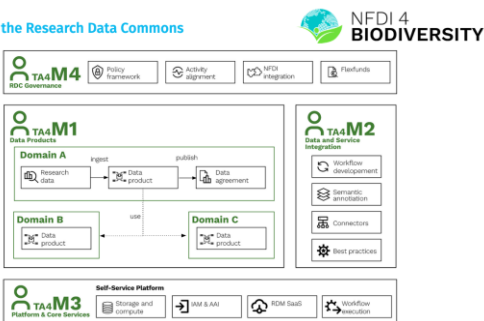
# Overall Architecture



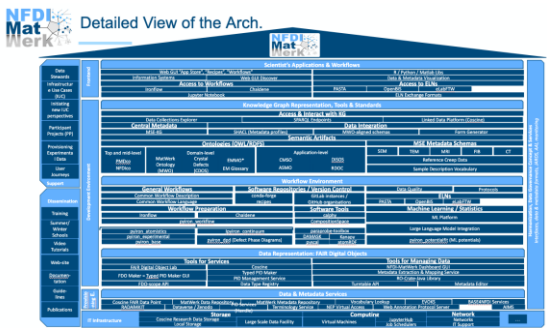
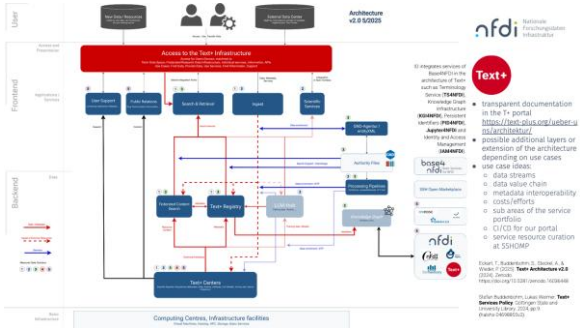
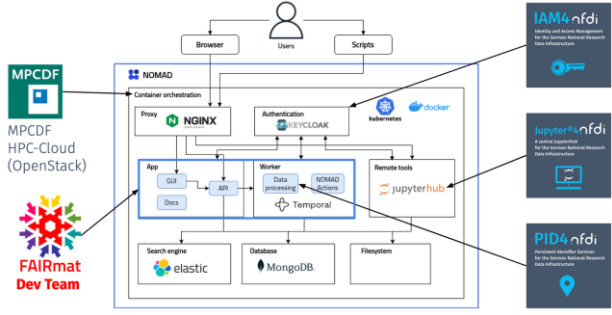
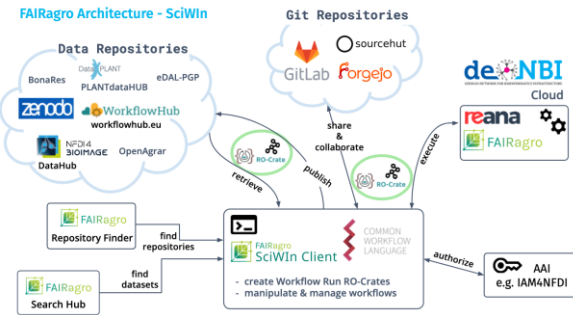
## Collection of Approaches from NFDI Consortia



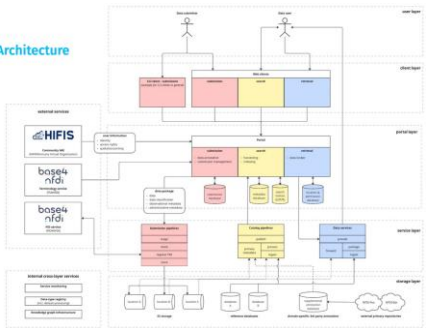
Evolution of the Research Data Commons



FAIRrago Architecture - SciWin



NFDI4Immuno Data Architecture



N4BI Architecture



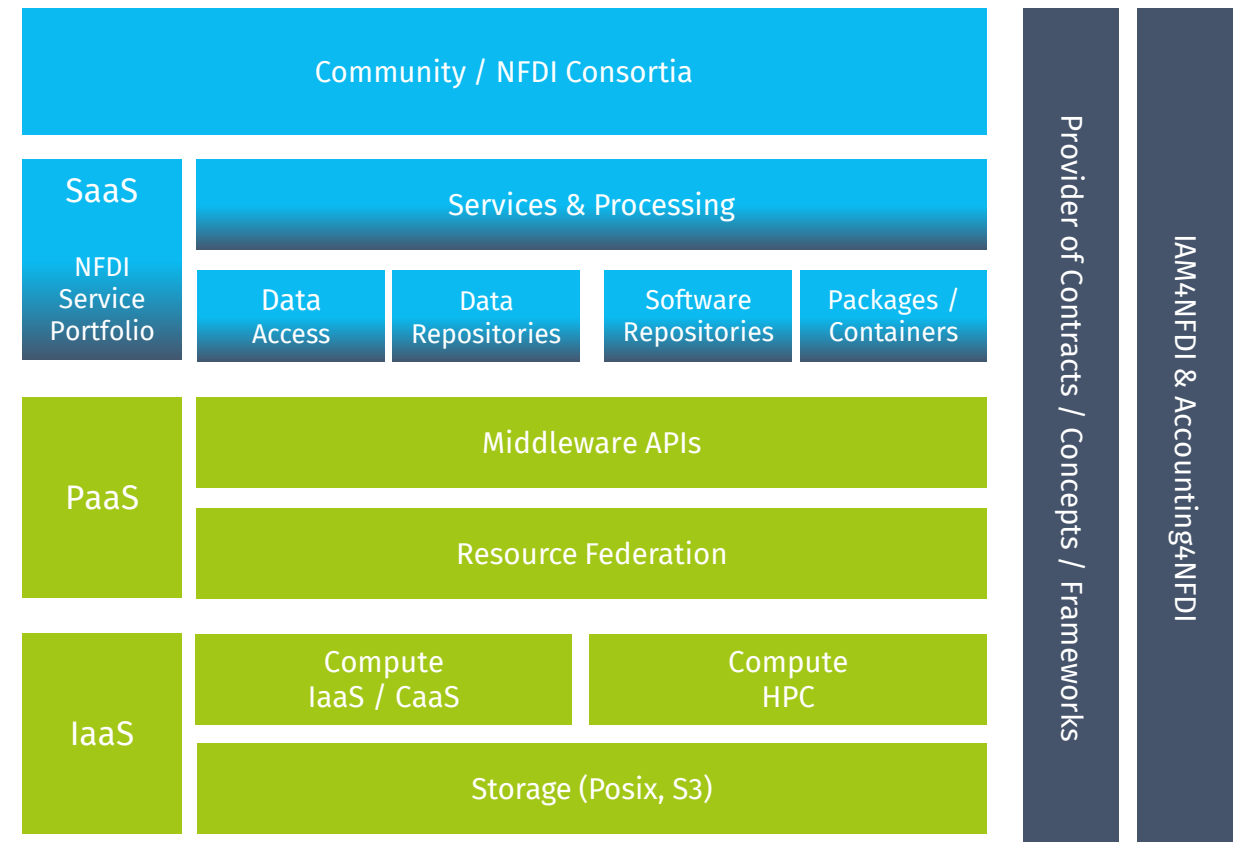
# Overall Architecture



Common  
Infrastructures

## Identification of Common Building Blocks

- Consensus-driven participatory process
  - Common building blocks
  - Shared and distributed responsibilities
- Identification of critical services
- Recommendation for technical interoperability
  - Alignment with cloud service model
  - Alignment with EOSC





# Multi Cloud

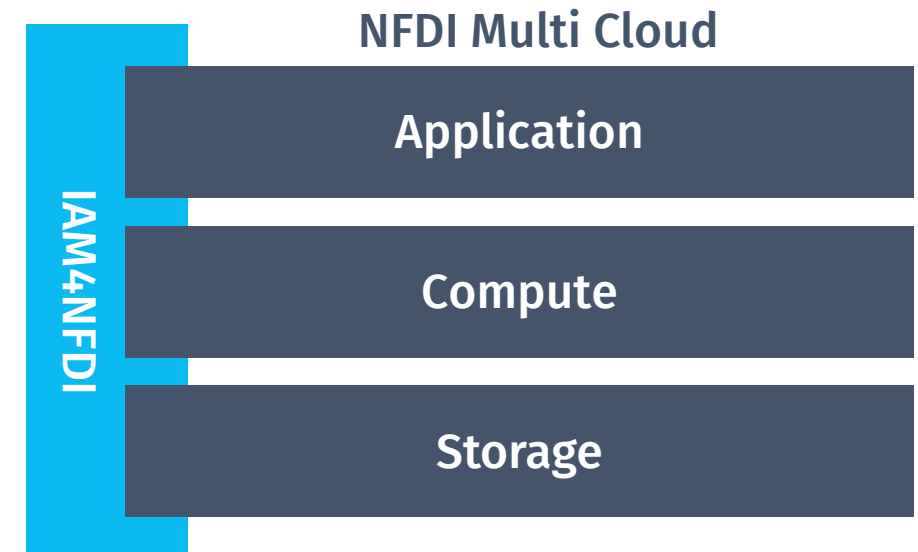


Common  
Infrastructures

*What is our goal?*

*“Lay the foundation for our  
overall picture.”*

- A decentralized yet federated **cloud computing platform**
  - to either operate own systems (cloud of clouds)
  - or use a shared cloud system.
- A federated **Multi Cloud architecture** that
  - provides unified access to compute and data storage resources
  - and allows seamless integration of services and data.

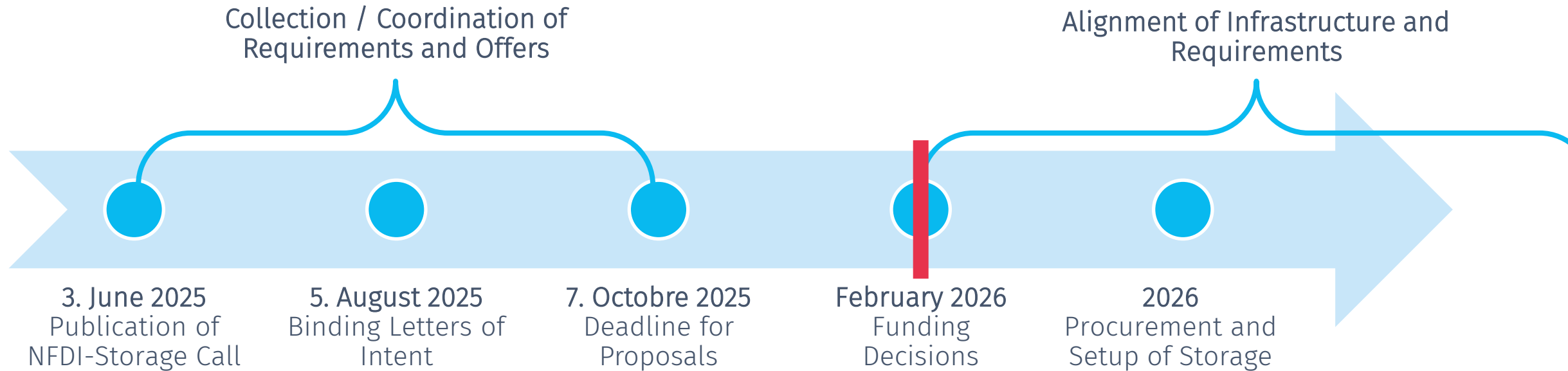


# Putting the Architecture into Practice



Common  
Infrastructures

## NFDI-Storage - Timeline



# Putting the Architecture into Practice

## Gathering (Storage) Requirements from the Consortia

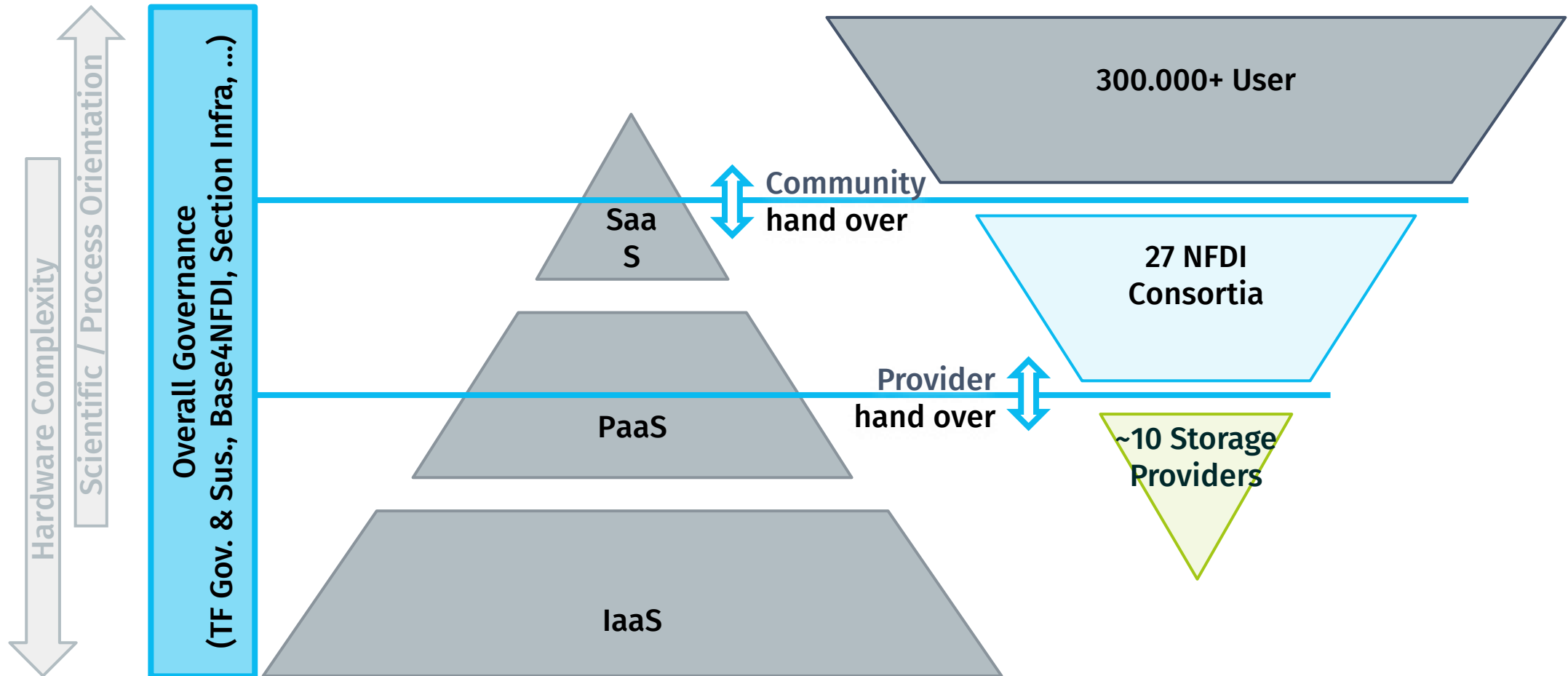
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Storage-Provider (33)			Required [TB]	Covered [%]	MISSING	bwData4NFDI (KIT)	bwData4NFDI (U FR)	DataStorage.nrw	de.NBI Bielefeld	de.NBI Gießen	Deutsches Archäolog	DKFZ	DSMZ Braunschweig	FSU Jena	GWG	LB Bonn	
2	NFDI-Consortium (27)			storage required by the consortium in 5-years	demanded that can be covered if proposals are successful	Consortium is still looking for providers to match demands	MIT + U HD	U FR + U YD	DMTH + LMU + U DE + U PB									
3	BERD@NFDI		6,13	0,00%														
4	DAPHNE4NFDI		41.203,00	88,73%		30.260,00		0,13								800,00		
5	DataPLANT		4.700,00	191,49%			8.000,00											
6	FAIRRagro		138,00	0,00%														
7	FAIRmat		1.505,20	0,00%														
8	GHGA		122.880,00	100,00%				20.480,00	20.480,00									
9	KonsortSWD		1.304,75	131,39%		800,00	14,25											
10	MaRDI		13.000,00	100,00%														
11	NFDI4Biodiversity		35.412,00	54,49%				0,00										
12	NFDI4BIOIMAGE		24.632,00	86,50%			4.766,00	9.030,00	7.511,00		3.500,00						2.000,00	0,00
13	NFDI4Cat		2.456,50	100,00%			1.456,50							1.000,00				
14	NFDI4Chem		2.026,20	100,00%			1.446,00		30,20									
15	NFDI4Culture		8.061,00	102,75%			214,00		4.010,00				0,00					
16	NFDI4DataScience		4.000,00	100,00%							20.480,00						20.480,00	20.480,00
17	NFDI4Earth		15.000,00	105,33%			5.000,00											
18	NFDI4Energy		100,00	100,00%														
19	NFDI4Health		5.436,00	133,24%			1.400,00		26,00					1.000,00				
20	NFDI4Immuno		3.250,00	100,00%						10.000,00		0,00			675,00	115,00		
21	NFDI4ING		56.540,00	55,18%			10.200,00		13.000,00									
22	NFDI4Memory		849,00	0,00%														
23	NFDI4Microbiota		23.687,00	93,06%				0,00	61,00								318,00	
24	NFDI4Objects		1.207,00	74,32%										1.905,00				
25	NFDI-MatWerk		22.180,00	74,89%			7.700,00		6.410,00									
26	NFDIxCs		7.000,00	99,86%		990,00			2.500,00		5.000,00						2.000,00	
27	PUNCH4NFDI		72.591,88	80,59%		100,00	7.000,75		4.000,00								5.000,00	800,00
28	Text+		6.650,00	94,14%				160,00										
29	Base4NFDI																	
30	Sum	26/27	475.815,66	86,44%		1.890,00	64.457,50	42.670,00	58.028,33									
31	Coverage	96%				0,40%	13,55%	8,97%	12,20%								8.000,00	
32	# Consortia					3	10	7	11									
33																		

# Putting the Architecture into Practice

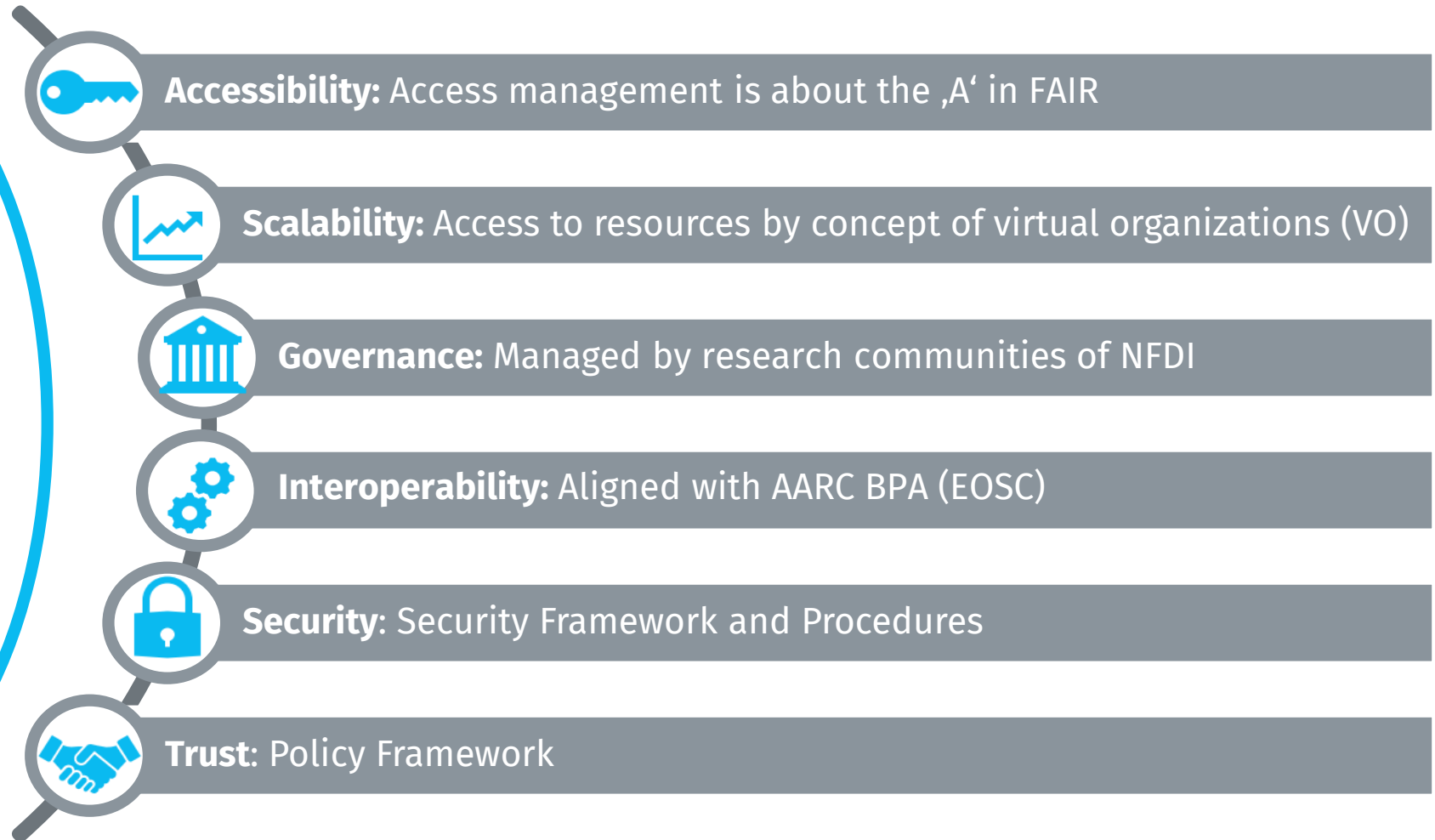


Common  
Infrastructures

“Hand over” Model for the NFDI Storage

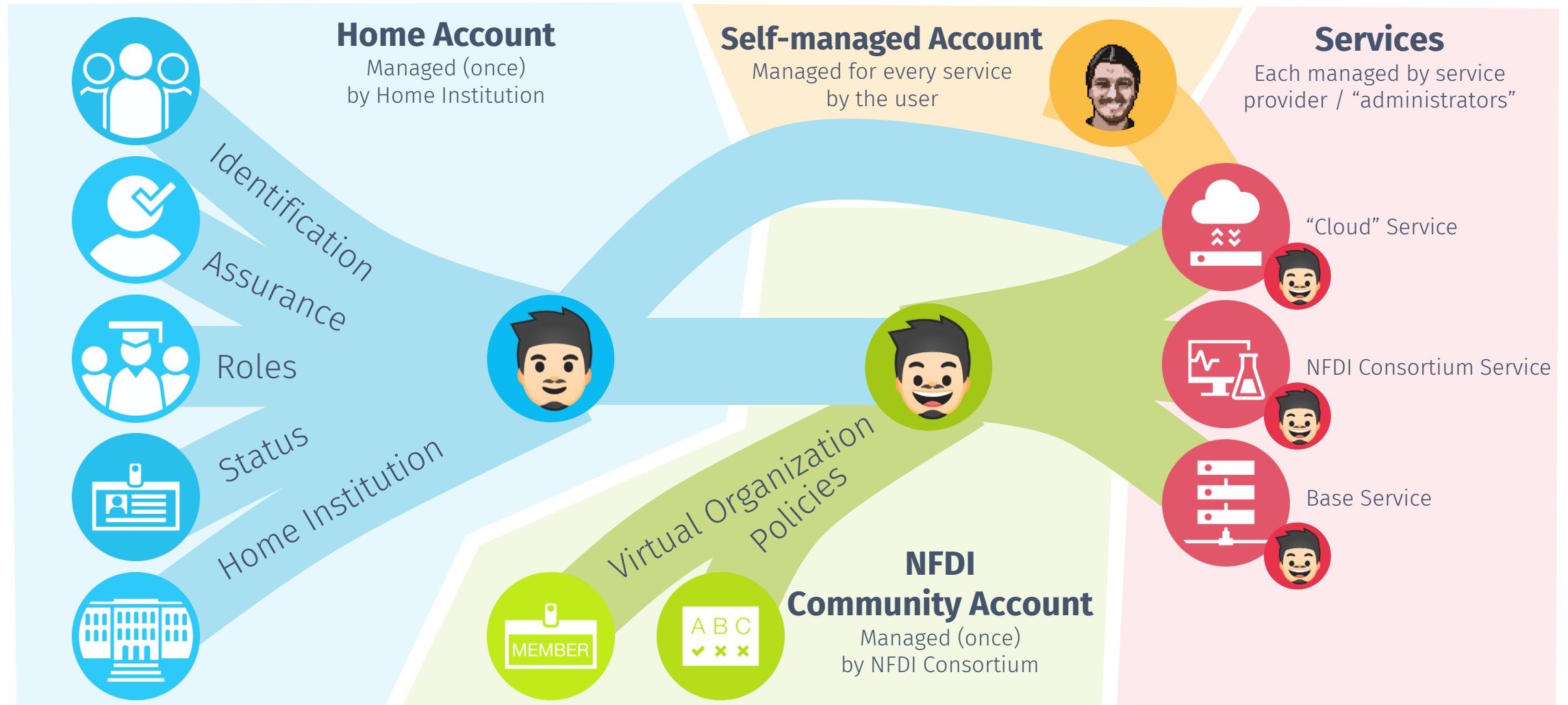


Built on **open standards** and existing, well-proven solutions like the **Guidelines of the AARC community**



# Identity & Access Management

010  
101 Common  
Infrastructures

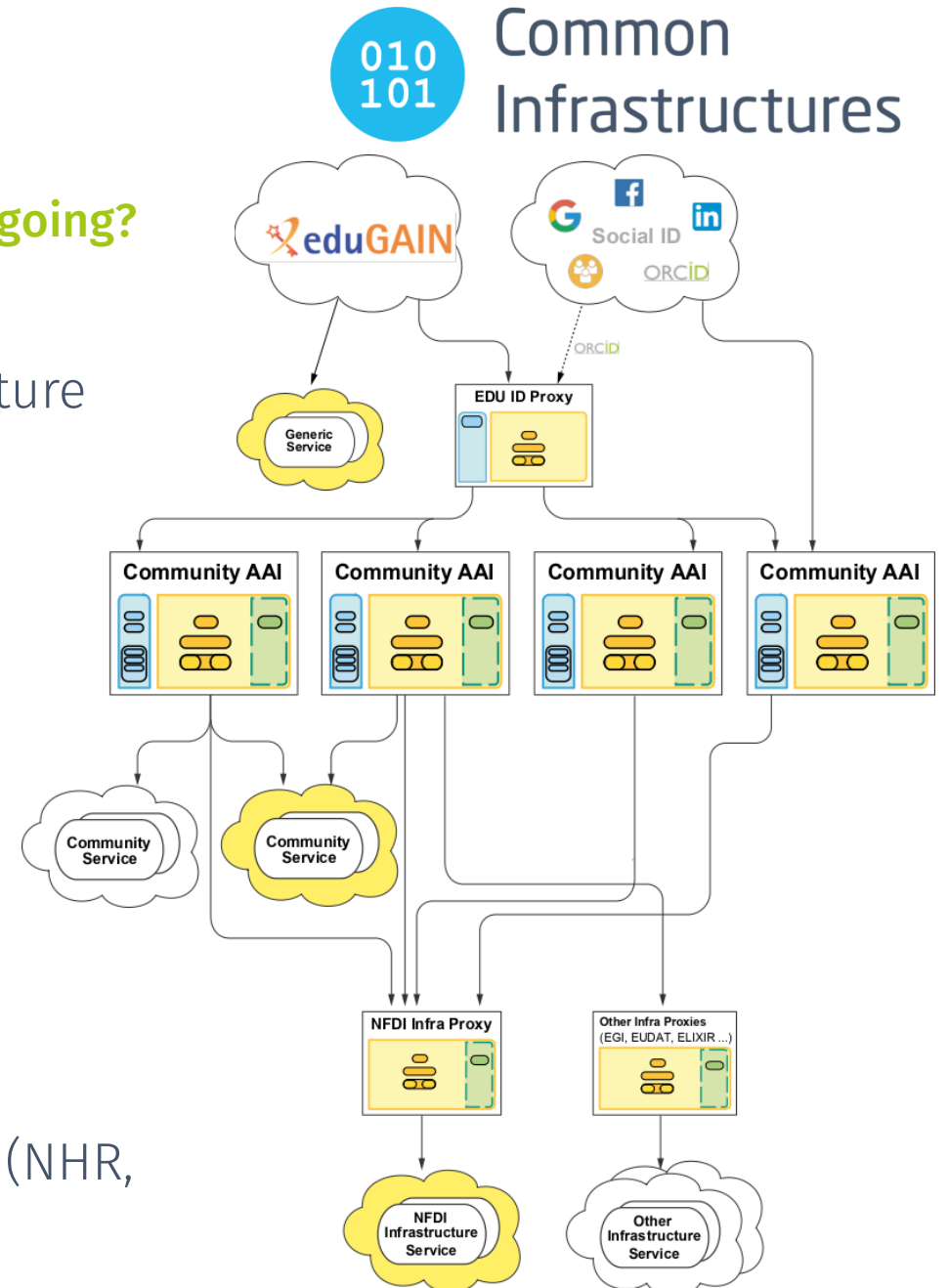


# Identity & Access Management

Where are we now, and where are we going?

## NFDI-AAI

- Architecture based on the AARC Blueprint Architecture
- 4 NFDI Community AAI
  - AcademicID
  - didmos
  - RegApp
  - Unity
- Identities: eduGAIN and national R&E Federations
- NFDI Infra Proxy
- Interoperability: with EOSC AAI and Infrastructures (NHR, EGI, LifeScienceAAI)



# Identity & Access Management

## Current IAM integration status in NFDI

**Covering 22/26 NFDI consortia** (~84 %)

(currently fifth round of incubators)

Different requirement profiles

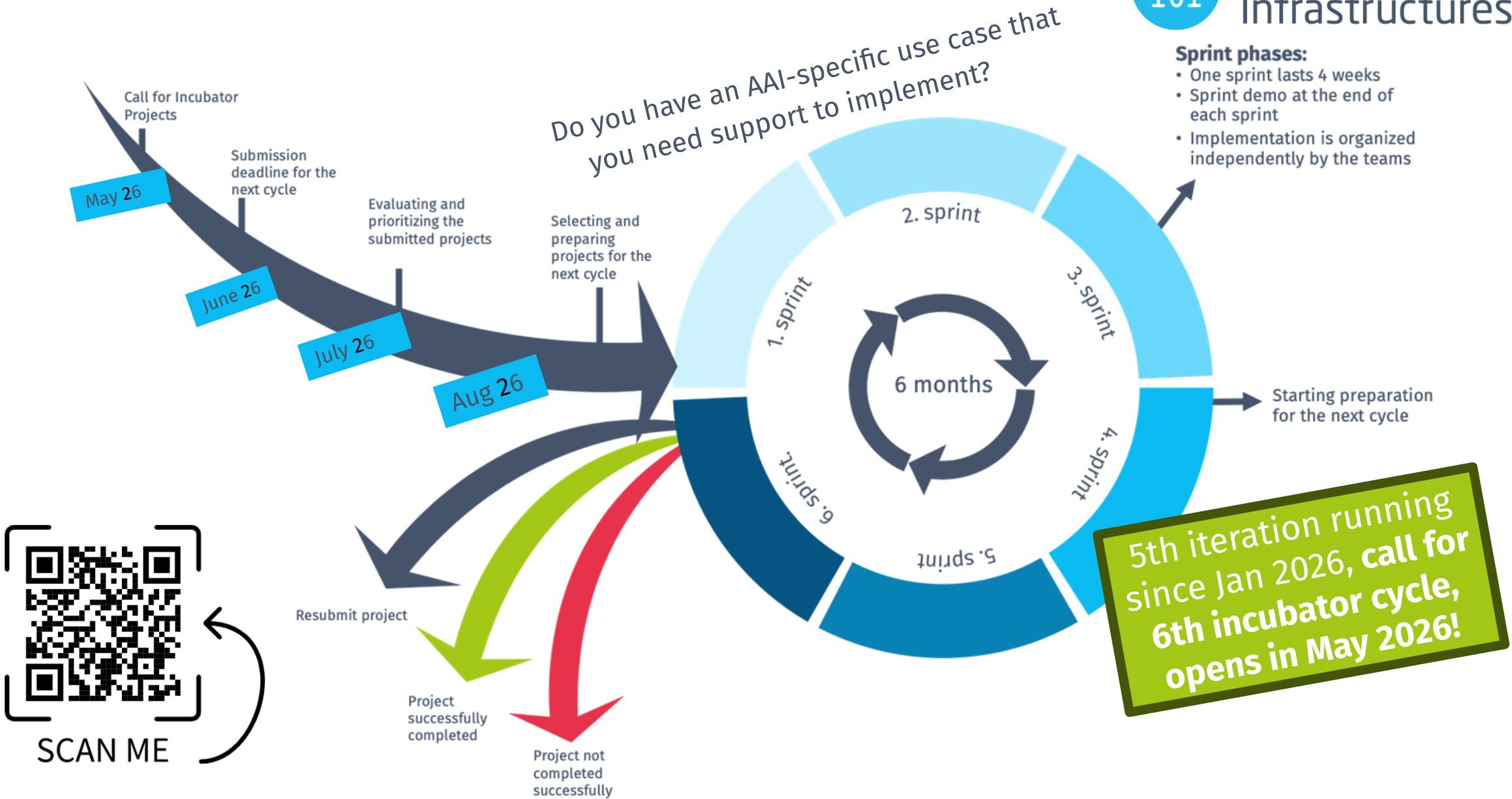
- consulting and standard onboarding
- development of new features
- discussion of policies

Consortium	Academic ID	didmos	RegApp	unity	other	InfraProxy	Incubator
BERD@NFDI						x	x
DAPHNE4NFDI				x			
DataPLANT					x		x
FAIRagro					x		x
FAIRmat				x			x
GHGA					x		
KonsortSWD	x						x
MaRDI		x					x
NFDI4Biodiversity	x					x	x
NFDI4BIOIMAGE							
NFDI4Cat			x				x
NFDI4Chem			x			x	x
NFDI4Culture		x					x
NFDI4DataScience			x				x
NFDI4Earth	x						x
NFDI4Energy			x				x
NFDI4Health							x
NFDI4Immuno				x			
NFDI4ING			x				x
NFDI4Memory							
NFDI4Microbiota					x	x	x
NFDI4Objects		x					x
NFDI-MatWerk			x				
NFDIxCS	x						x
PUNCH4NFDI				x			
Text+	x						x
Base4NFDI						x	x
NFDI Directorate				x			x



# Identity & Access Management

010  
101 Common Infrastructures



Good afternoon  
Heidi!



**Your Profile**

**Your Training &  
Certifications**

**Your Projects**

Good afternoon  
Heidi!



Your Profile

Your Training &  
Certifications

Your Projects

# Training formats and certification

presented by Birte Lindstädt & Mareike Wohltmann  
(on behalf of the working group)



Training &  
Education

**Good afternoon  
Heidi!**



Your Profile

**Your Training &  
Certifications**

Your RDM-Projects

## Our Vision

**“Researchers learn research data management (RDM) during their education and apply it in their research.”**

They are supported by experts for RDM - data stewards working in NFDI consortia or other RDM supporting initiatives.



## Aims of the working group



- Train the data stewards as trainers for researchers on RDM.
- Find the best training format to do this.
- Develop a credential framework for certifying training to ensure quality.
- Develop quality indicators as base to the credential framework for training material and didactics.

# Training formats and certification



## What we have done so far



- Gaining an overview of training activities and formats from NFDI consortia and other RDM initiatives,

- Collect the characteristics of training material and develop a criteria catalogue as a quality standard,



- Test different training formats for data stewards and evaluate them,

- Analysed certification possibilities.  
Result: micro-credentials.

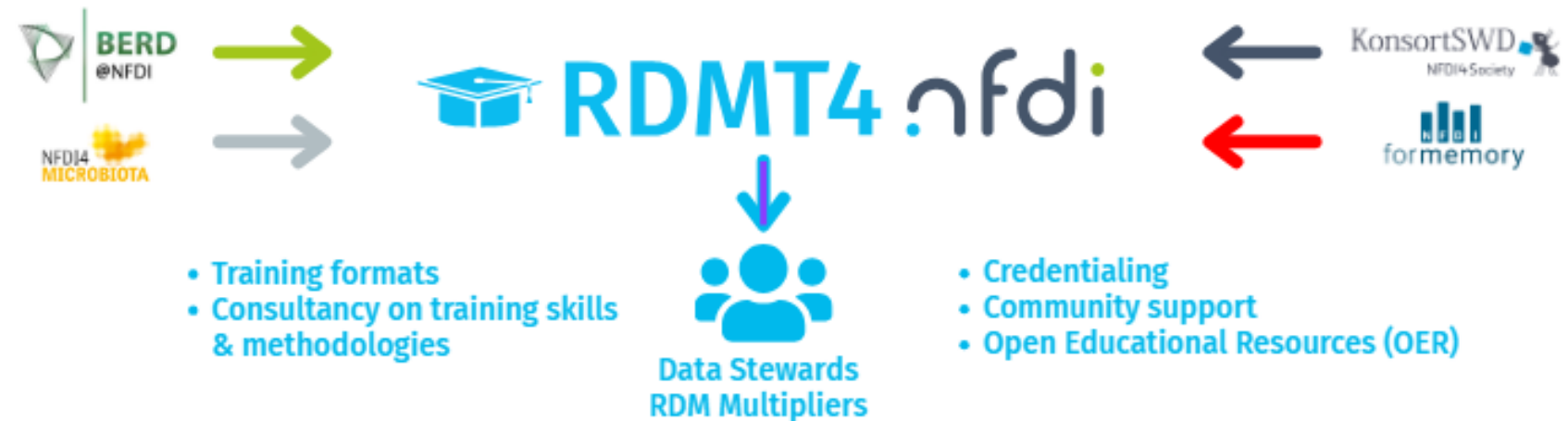


# Training formats and certification



## What we have done so far

All this we achieved by building up the  
DFG funded BASE4NFDI service **RDMTraining 4NFDI**



## What we plan to do

- Establish data steward training.
- Train the researchers in basic RDM to relieve the NFDI consortia.
- Piloting training with micro-credentials and establish a credential process within NFDI and beyond.





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Your Profile

Your Training &  
Certifications

Your Projects

Research Data

Searching

Storing

Analysing

Sharing



# Search and Harvest

presented by Heinrich Widman (on behalf of the working group)



(Meta)data,  
Terminologies, Provenance




**Metadata harvesting enables aggregators to make research output discoverable and supports FAIR**

# Search and Harvest

presented by Heinrich Widman (on behalf of the working group)



(Meta)data,  
Terminologies, Provenance

 **Metadata harvesting enables aggregators to make research output discoverable and supports FAIR**



**F**indable

indexed in discovery portals



**A**ccessible

identifiers + resolvable links



**I**nteroperable

cross-domain catalogues



**R**eusable

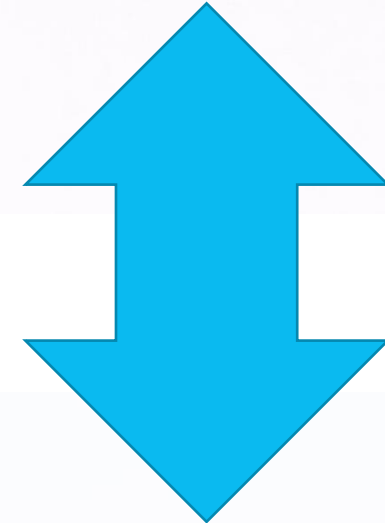
provenance & context information

# Search and Harvest

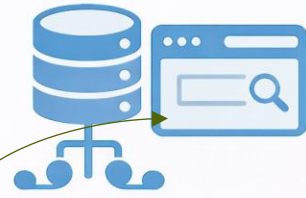
## Our motivation and mission

WG Search & Harvest intends to improve the harvesting and discovery process across NFDI

- Develop recommendations & best practices
- Support data providers in setting up harvest interfaces
- Enable NFDI-wide discoverability in exchange with discovery services
- Bridge user needs ↔ technical solutions
- Map NFDI data sources and their needs
- Learn from domain-specific approaches across consortia



# An ideal world



## Discovery Services

- Indexers
- Search Portals



(Meta)data,  
Terminologies, Provenance



My complex cross-domain search request ...

MD Harvester

... results in finding interesting data needed for my study ☺

MD Provider

Metadata

MD Provider

Metadata

MD Provider

Metadata

MD Provider

Metadata

My research results is made visible and discoverable for re-use by others ... ☺

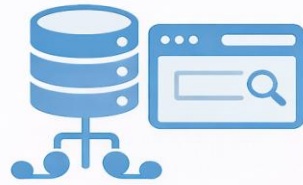


## Data Providers

- Repositories
- Archives



# But reality ...



## Discovery Services

- Indexers
- Search Portals



(Meta)data,  
Terminologies, Provenance

MD Harvester



Localizing and  
harvesting data  
sources not  
possible ☹

My search is returning  
pretty poor results ☹



No glue how to set up  
MD provider service

My OAI-PMH endpoint  
not found by MD  
aggregators

Data siloed



## Data Providers

- Repositories
- Archives

No or only  
poor  
Metadata

Metadata

MD Provider

Metadata

Only Domain  
scope

Metadata



# Our approach

The diagram illustrates the re3data.org approach, centered around the **re3data.org** Registry of Research Data Repositories. It shows the flow of data and metadata between various components:

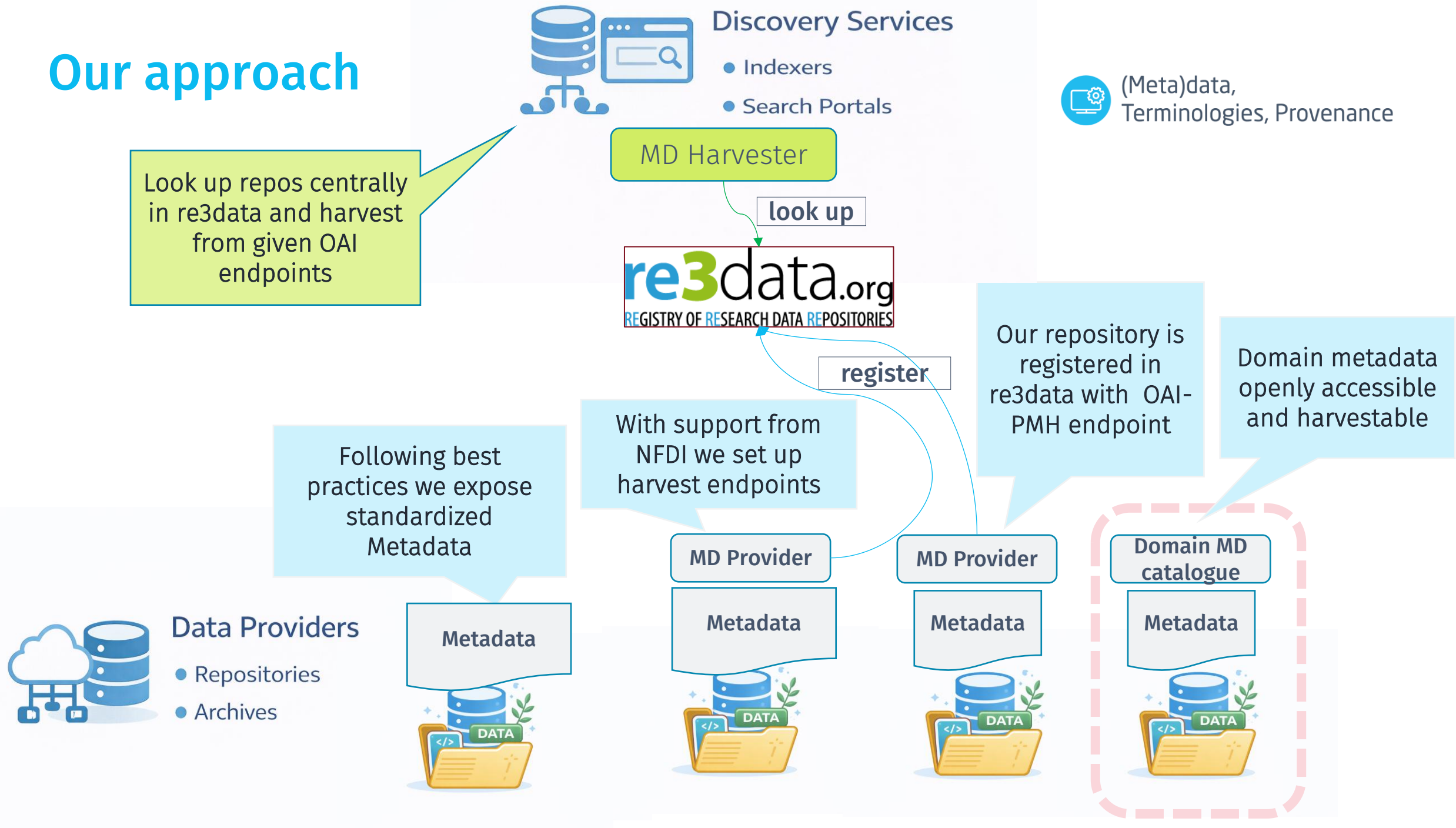
- Discovery Services** (Indexers, Search Portals) interact with the **MD Harvester**.
- The **MD Harvester** performs a **look up** in the **re3data.org** registry.
- Data Providers** (Repositories, Archives) provide **Metadata** to **MD Providers**.
- MD Providers** register their metadata in the **re3data.org** registry.
- The **re3data.org** registry is supported by **NFDI** and provides **harvest endpoints**.
- The **re3data.org** registry is registered in the **OAI-PMH endpoint**.
- The **re3data.org** registry is a **Domain MD catalogue**.
- The **re3data.org** registry is **Domain metadata** openly accessible and harvestable.

Key components and their roles:

- Discovery Services**: Indexers, Search Portals.
- MD Harvester**: Harvests metadata from the registry.
- re3data.org**: Registry of Research Data Repositories.
- Data Providers**: Repositories, Archives.
- MD Provider**: Provides metadata to the registry.
- Metadata**: Data provided by providers and harvested by the harvester.
- Domain MD catalogue**: A collection of domain-specific metadata.
- Domain metadata**: Openly accessible and harvestable.

Additional information:

- Look up repos centrally in re3data and harvest from given OAI endpoints.
- Following best practices we expose standardized Metadata.
- With support from NFDI we set up harvest endpoints.
- Our repository is registered in re3data with OAI-PMH endpoint.
- Domain metadata openly accessible and harvestable.





# Work-in-progress, next steps, networking ...



(Meta)data,  
Terminologies, Provenance

## Recommendation for data sources (ongoing)

### Guidance on

- setting up harvest interfaces (e.g. OAI-PMH)
- exposing standardized metadata
- registering repository and endpoints in re3data

### Next steps

- Elaborate and finalize the recommendations
- Present and discuss at next NFDI MD workshop

### Feedback and cooperation

- Invite NFDI consortia representatives and experts for feedback
- Connection to other Working Groups

#### (Meta)data, Terminologies, Provenance

- Ontology Mapping and Harmonization
- Terminology Services
- Knowledge Graph WG

#### Training & Education

- Guide and Tutorial „How to set up harvest/provider service“ (planned)

#### Common Infrastructures

- Data Integration

#### Other

- Open Research Knowledge Graph
- Open Science Graphs for FAIR Data IG (RDA)





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Your Profile

Your Training &  
Certifications

Your Projects

Mole



# Terminology Services

presented by Roman Baum (on behalf of the working group)



(Meta)data,  
Terminologies, Provenance

## Terminologies - Why are they important?



(Meta)data,  
Terminologies, Provenance

# Terminologies - Why are they important?



(Meta)data,  
Terminologies, Provenance



(Meta)data,  
Terminologies, Provenance



**Venus**



(Meta)data,  
Terminologies, Provenance





(Meta)data,  
Terminologies, Provenance



**Venus**





(Meta)data,  
Terminologies, Provenance



**Morning  
Star**



(Meta)data,  
Terminologies, Provenance



**Evening Star**



**Morning  
Star**

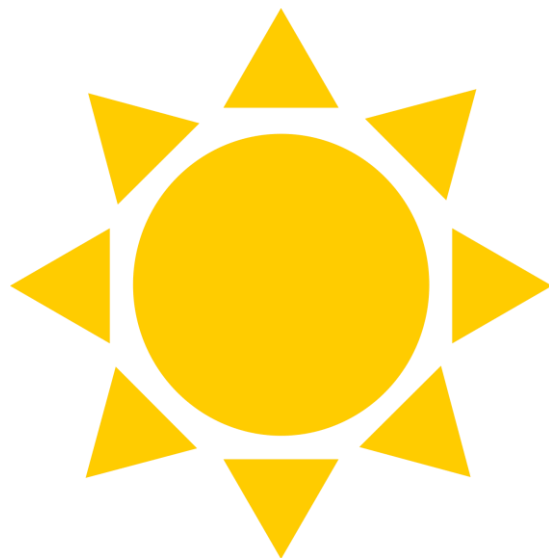


**Evening Star**



**Morning  
Star**

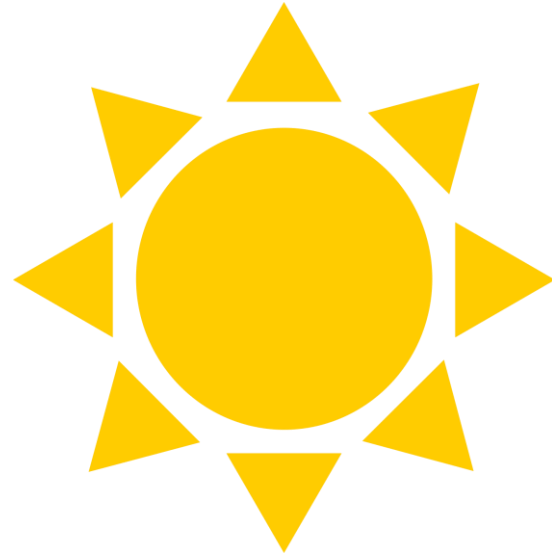




**sun**



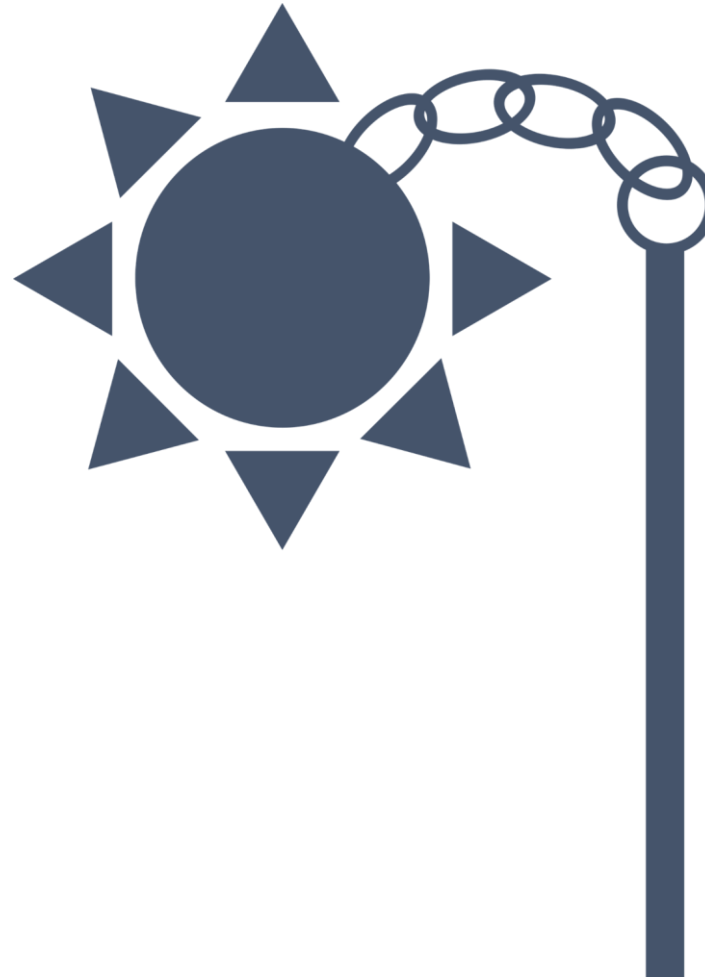
(Meta)data,  
Terminologies, Provenance



**Sonne**

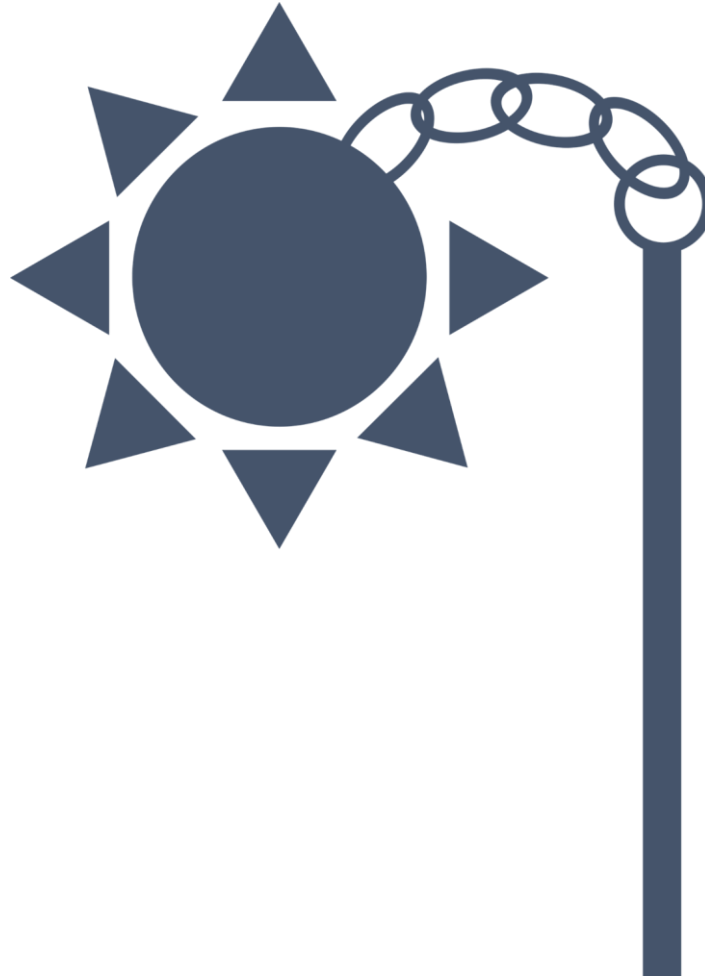


(Meta)data,  
Terminologies, Provenance

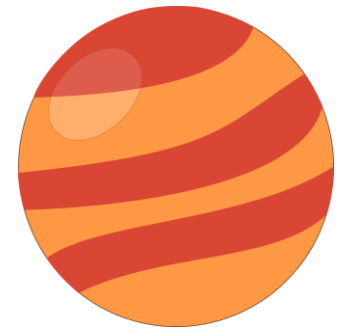


**Morning Star**

## Morning Stars



(Meta)data,  
Terminologies, Provenance





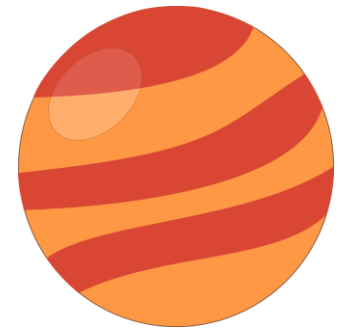
(Meta)data,  
Terminologies, Provenance

### **Perspective**

same objects/items could have different labels

different objects/items could have the same label

**Morning Stars**







(Meta)data,  
Terminologies, Provenance

### Perspective

same objects/items could have different labels

different objects/items could have the same label



Solution

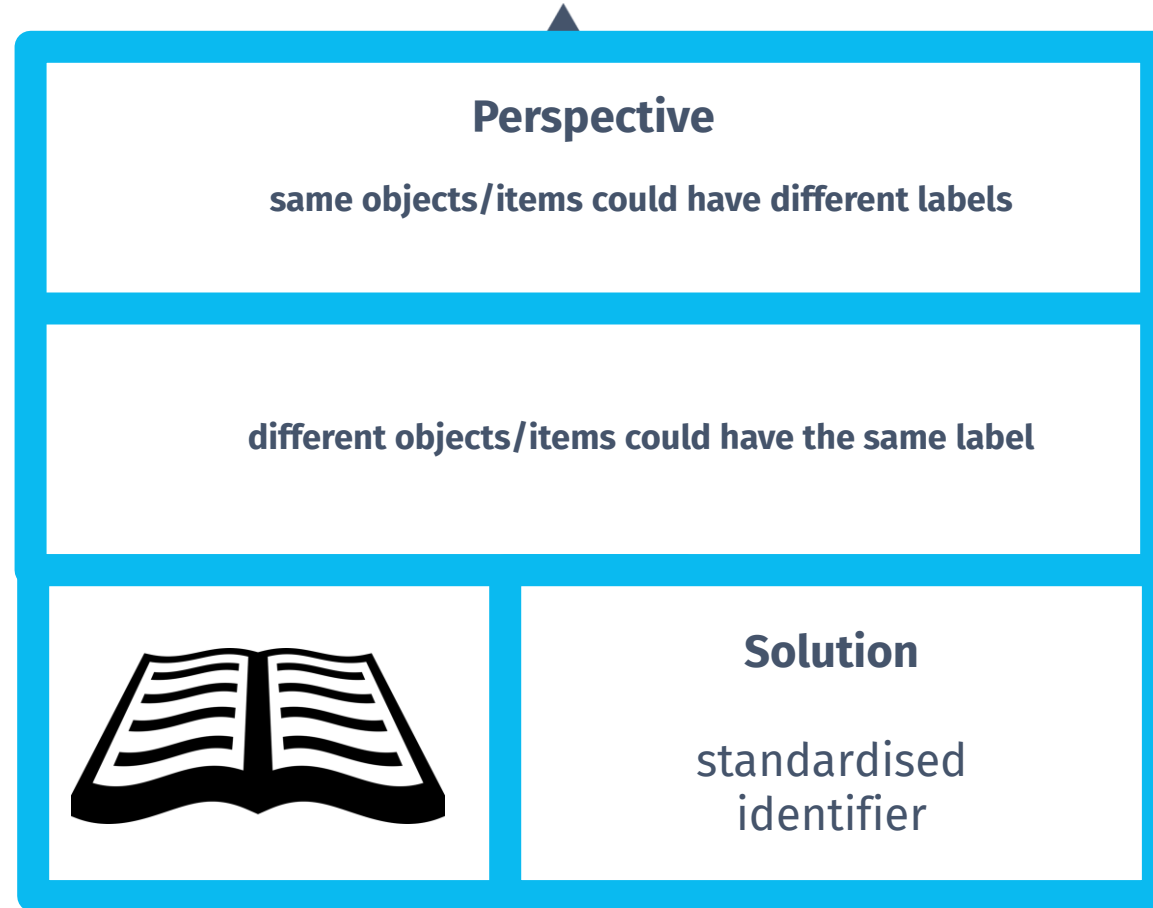


Morning Stars



(Meta)data,  
Terminologies, Provenance

**Morning Stars**





## **Terminologies - Why are they important?**

- provide standardised identifier



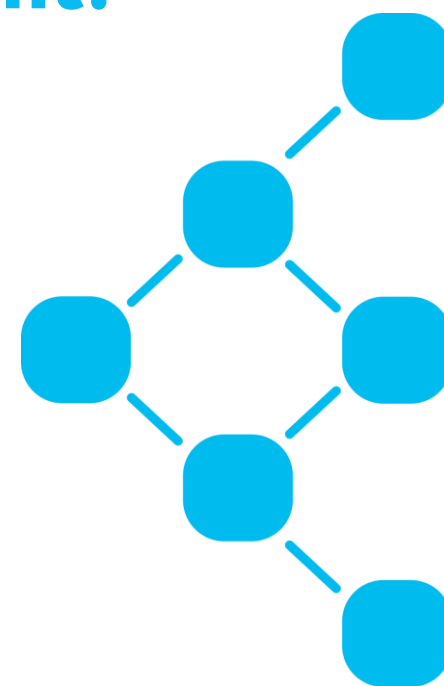
## Terminologies - Why are they important?

- provide standardised identifier
- provide (multilingual)  
human readable terms



## Terminologies - Why are they important?

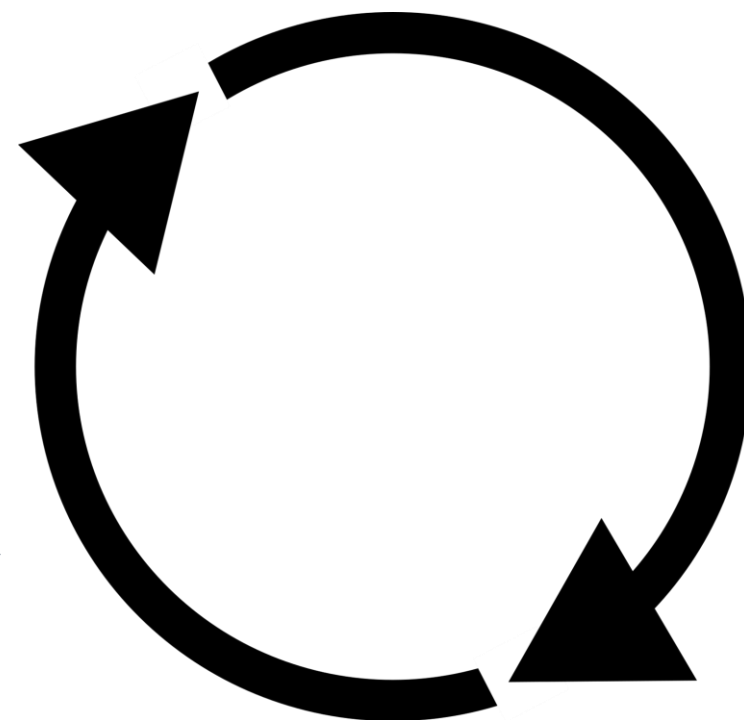
- provide standardised identifier
- provide (multilingual)  
human readable terms
- provides structured data





## Terminologies - Why are they important?

- provide standardised identifier
- provide (multilingual)  
human readable terms
- provides structured data
- could support the whole research data  
life cycle





## Terminologies - Why are they important?

- provide standardised identifier
- provide (multilingual)  
human readable terms
- provides structured data
- could support the whole research data  
life cycle
- heart of FAIR metadata



# What is the service?



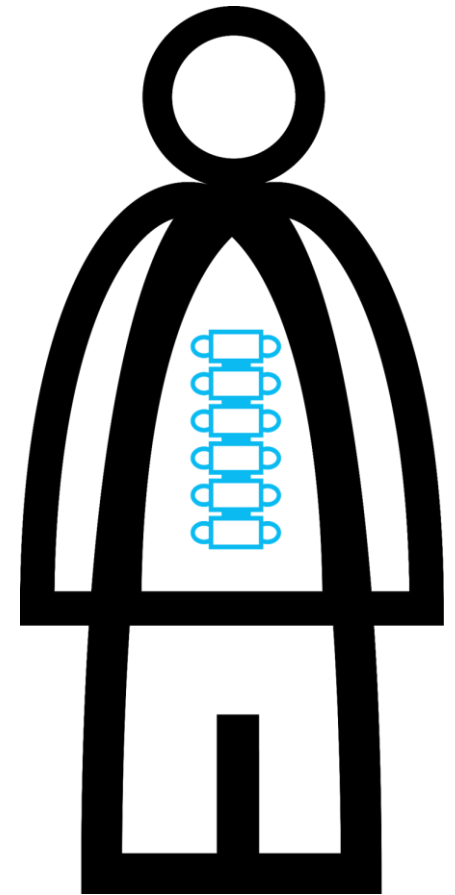




(Meta)data,  
Terminologies, Provenance

## What is the service?

- the backbone to access terminologies

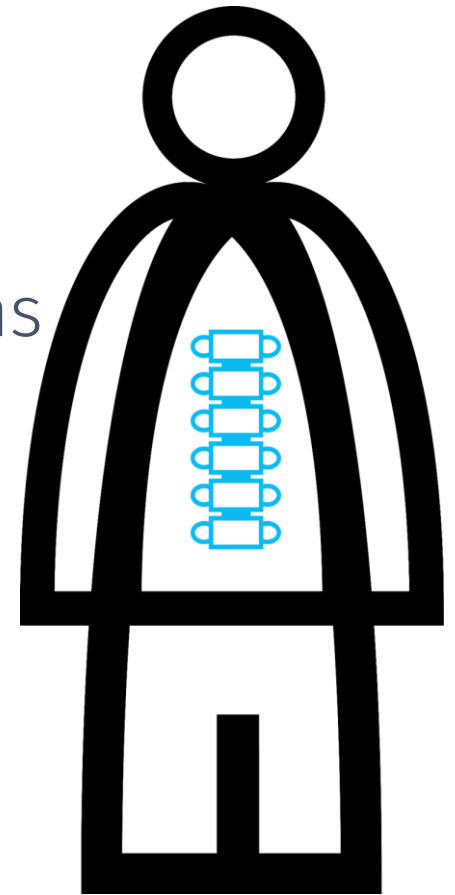




(Meta)data,  
Terminologies, Provenance

## What is the service?

- the backbone to access terminologies
- provides terminologies for knowledge domains

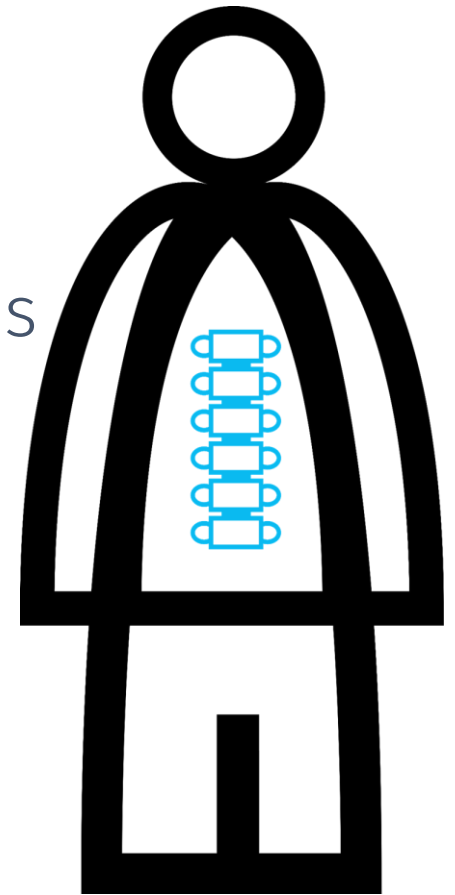




(Meta)data,  
Terminologies, Provenance

## What is the service?

- the backbone to access terminologies
- provides terminologies for knowledge domains
- provides a graphical overview for humans

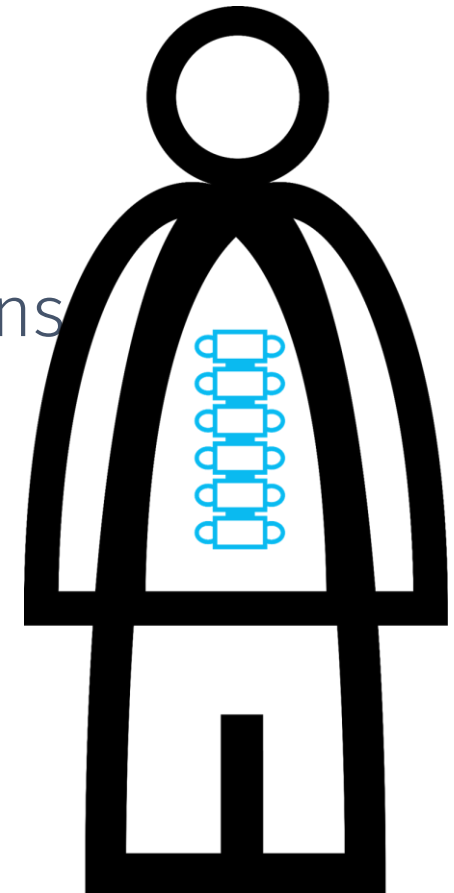




(Meta)data,  
Terminologies, Provenance

## What is the service?

- the backbone to access terminologies
- provides terminologies for knowledge domains
- provides a graphical overview for humans
- provides access for machines via APIs

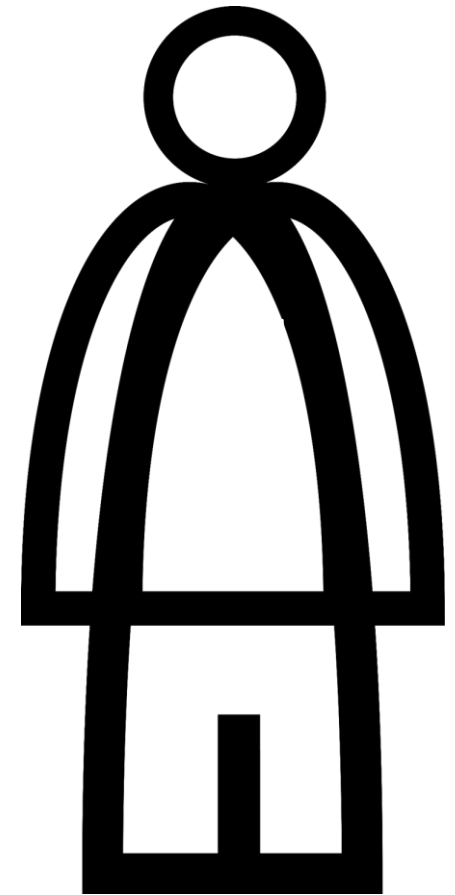




(Meta)data,  
Terminologies, Provenance

## Vision

- share knowledge

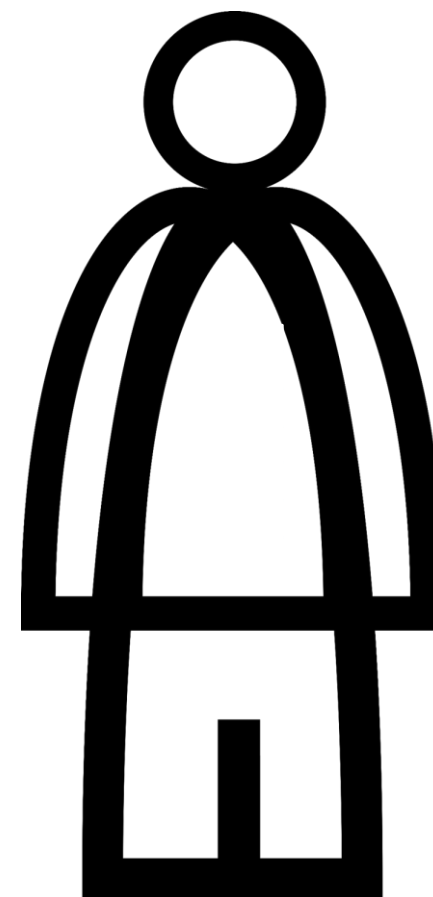




(Meta)data,  
Terminologies, Provenance

## Vision

- share knowledge
- discuss technologies

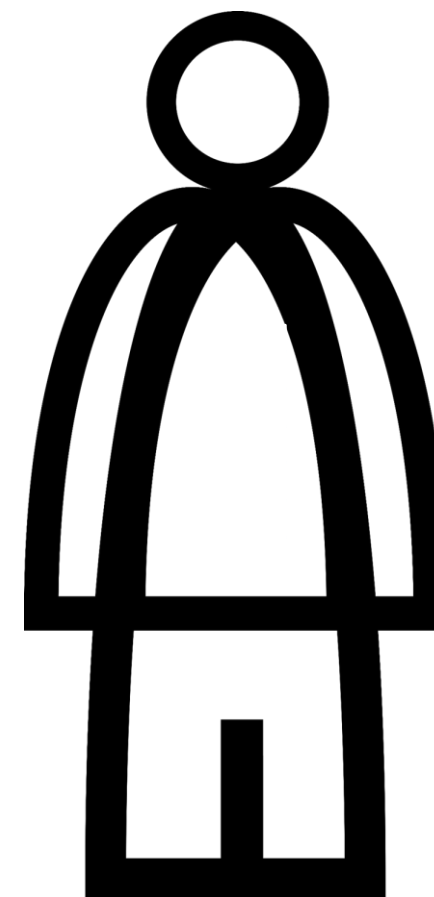




(Meta)data,  
Terminologies, Provenance

## Vision

- share knowledge
- discuss technologies
- provide help to users which want to interact with terminologies

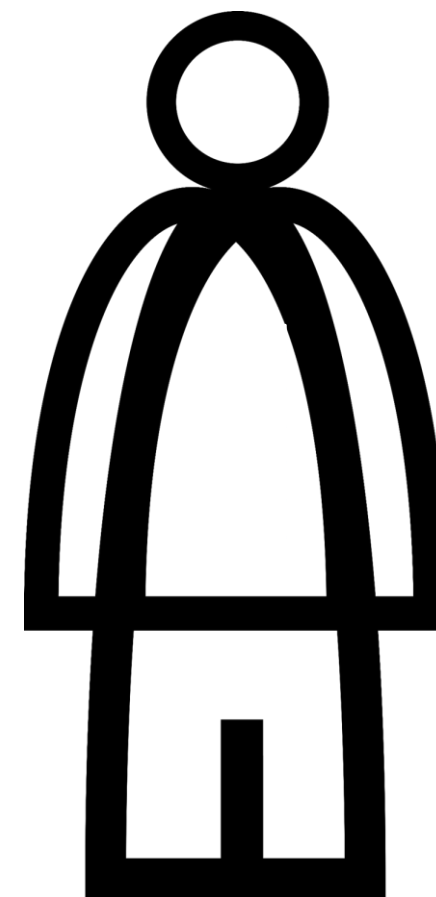




(Meta)data,  
Terminologies, Provenance

## Vision

- share knowledge
- discuss technologies
- provide help to users which want to interact with terminologies
- present solutions







(Meta)data,  
Terminologies, Provenance

# Terminologies - Why are they important?





(Meta)data,  
Terminologies, Provenance

## Terminologies - Why are they important?



**bowling ball**

Good afternoon  
Heidi!

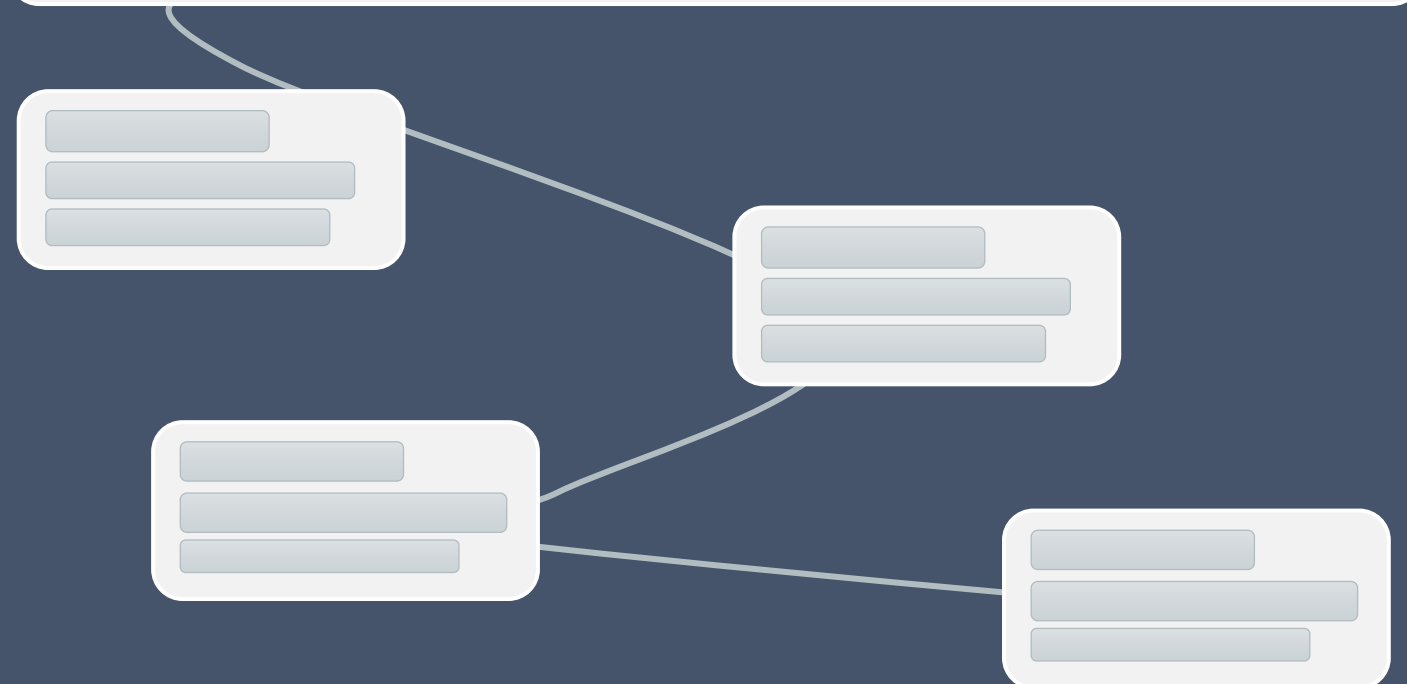


Your Profile

Your Training &  
Certifications

Your Projects

Knowledge Graphs



# Knowledge Graphs

 (Meta)data,  
Terminologies, Provenance



## Motivation

- Rich, varied, and connected artifacts
- The research context can grow
- Relationships are 1<sup>st</sup> class citizens

## Knowledge Graphs

- Nodes, relations, and attributes
- A **semantic layer** to **typify** them
- + Terminologies

## Benefits

- Represent research efforts in full & FAIR
- Support enrichment and linking
- Support existing and new use cases

# Knowledge Graphs



(Meta)data,  
Terminologies, Provenance



## Why Knowledge Graphs?

- Support RDM
- Support the FAIR Principles
- For humans and machines
- Adopted across NFDI consortia

## Why “KG WG”?

- Different practices: Domains, Research data, Use cases, Services, Technologies
- Need to promote and support KG adoption



# Knowledge Graphs



(Meta)data,  
Terminologies, Provenance

## What “KG WG”?

- Catalogue & exchange KG adoption practices
- Disseminate & Consult
- Develop relevant services in (inter)national contexts
  - (Linkup &) Federation
  - Interoperability
  - KGI4NFDI Base service



## In the context of the NFDI

- FAIR data practices
- Data access and exchange
- Provision of tools and services



# Knowledge Graphs



(Meta)data,  
Terminologies, Provenance

Establish an effective communication within the NFDI on the topic



Aligning **practices across different dimensions: Standards, Technology, etc.**



Aligning practices with relevant infrastructure initiatives (EU, etc.)

Networking across NFDI Sections



Exchanging with and Disseminating to many consortia, WGs, communities, etc., at the NFDI level.

Example: **The KGI4NFDI**, incl. the KG Registry

Gathering practices (via surveys, case studies, interviews, etc.)



**Surveyed KG adoption practices in NFDI (Ongoing)** [[KGsInNFDI](#)]



## Current Activity:

### KG Adoption Practices in NFDI

Top-to-bottom	Bottom-up
Data integration	Data analysis
FAIRification	Data interoperability
Metadata cataloging	Metadata search
Machine actionability / AI-readiness	Federation
Data verification	Metadata management
Data enrichment	



# Knowledge Graphs

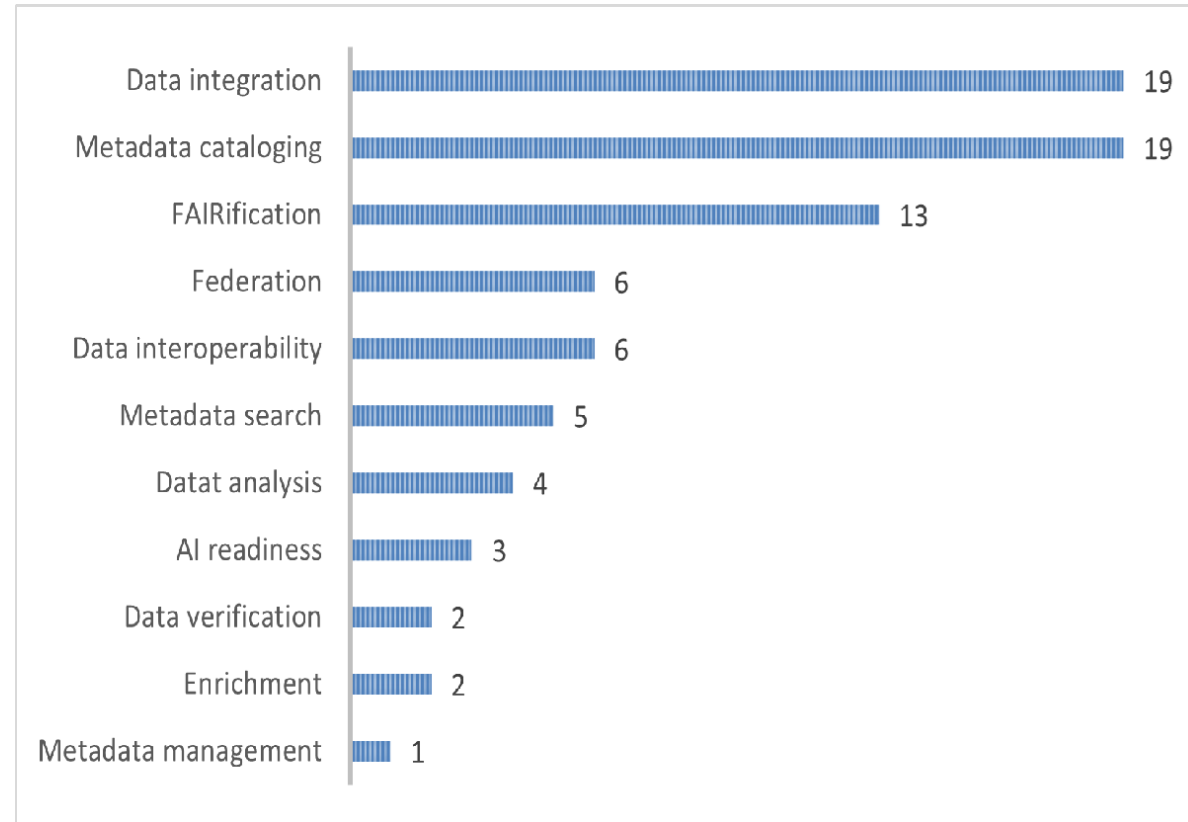


(Meta)data,  
Terminologies, Provenance

## Current Activity: KG Adoption Practices in NFDI

### RDM Functions

- 25 participants, 27 KGs, 11 NFDI consortia
- All proposed functions are present
- A diverse range of domains
- **AI readiness** reported
- Info. about tools and workflows IDed



### Also

- The complete dataset is published @  
<https://doi.org/10.5281/ZENODO.16651341>

# Knowledge Graphs



(Meta)data,  
Terminologies, Provenance

- Deepen the survey of KG practices
  - There are so much more that NFDI members are asking for



- Introducing a new type of talks in the WG
  - Inviting NFDI members and those outside of it that work with KGs
  - Get in touch to book a presentation slot if interested

- Research networking & contributions
  - Venues to publish and exchange on the topic



# Knowledge Graphs



(Meta)data,  
Terminologies, Provenance

(Meta)data, Terminologies,  
Provenance

- Ontology Mapping and Harmonization
- Terminology Services
- Search and Harvesting
- Cookbooks, Guidance, Best Practices
- Research Software Metadata

Training & Education

- Training Infrastructure

Common Infrastructures

- Data Integration

Other

- NFDI@Wikidata
- Open Research Knowledge Graph
- Wikimedia Germany (Wikidata)
- Wikibase Stakeholders Group
- Open Science Graphs for FAIR Data IG (RDA)

Good afternoon  
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Your Profile

Your Training &  
Certifications

Your Projects

Research Data

Searching

Storing

Analysing

Sharing

Research  
Software

# Research Software Engineering

presented by Bernd Flemisch (on behalf of the working group)



Common  
Infrastructures

## Three Focal Areas

Infra-  
structure

# Research Software Engineering



Common  
Infrastructures

## Three Focal Areas

Infra-  
structure

Research  
Software

# Research Software Engineering



Common  
Infrastructures

## Three Focal Areas

Infra-  
structure

Research  
Software

Software  
Engineers

# Research Software Engineering



Common  
Infrastructures

## Goal of the Working Group

Bring together the NFDI consortia in all software-related aspects.

**Infra-  
structure**

**Research  
Software**

**Software  
Engineers**



# Research Software Engineering



Common  
Infrastructures

Challenges and solutions for

F

A

I

R

research software

Infra-  
structure

Research  
Software

Software  
Engineers

# Research Software Engineering



Common  
Infrastructures

Challenges and solutions for

**Findable**

**Accessible**

**I**

**R**

research software

Infra-  
structure

Research  
Software

Software  
Engineers

Software Marketplace

# Research Software Engineering



Common  
Infrastructures

nfdi.software

Search or jump to... Ctrl K

Software Projects Organisations Communities

A research software marketplace  
for the German National Research  
Data Infrastructure

Feedback IAM4NFDI sig

All software

1 Filter Clear

Order by Mentions

Keywords 19

Program languages 23

Licenses 3

RSD Host 2

porous media

1-5 of 5

DuMux<sup>x</sup>

@research-software-directory.org

DuMux

DuMux - DUNE for Multi-{Phase, Component, Scale, Physics, ...} flow and transport in porous media and more. The swiss army knife of...

Earth And Environmental Sciences Engineering

Finite Volume Method +9

C++ CMake Python +2 21 450

GOLEM

@helmholtz.software

GOLEM

GOLEM is a modelling platform for thermal-hydraulic-mechanical and non-reactive chemical processes in fractured and faulted...

Earth & Environment

Multiphysics Of Porous Fractured Rocks

C++ SWIG Assembly +5 3 160

openpnm

@research-software-directory.org

OpenPNM

OpenPNM is an open source project aiming to provide porous media researchers with a ready-made framework for performing a wid...

Pore Network Modeling

C++ MAXScript Cython +15 5 1

# Research Software Engineering



Common  
Infrastructures

Challenges and solutions for

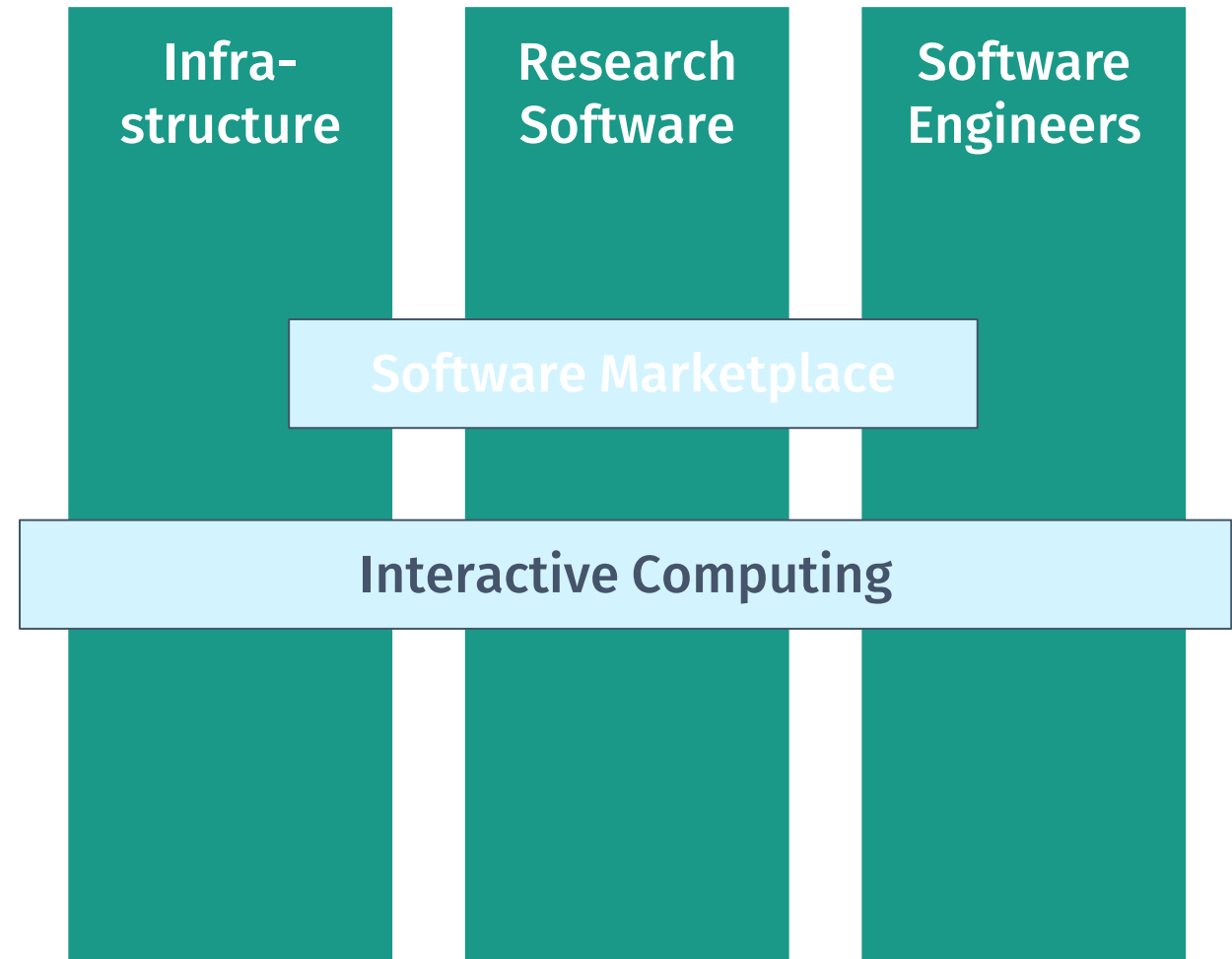
F

Accessible

I

Reusable

research software



	Name	Configuration
+	New JupyterLab	

### Action

30

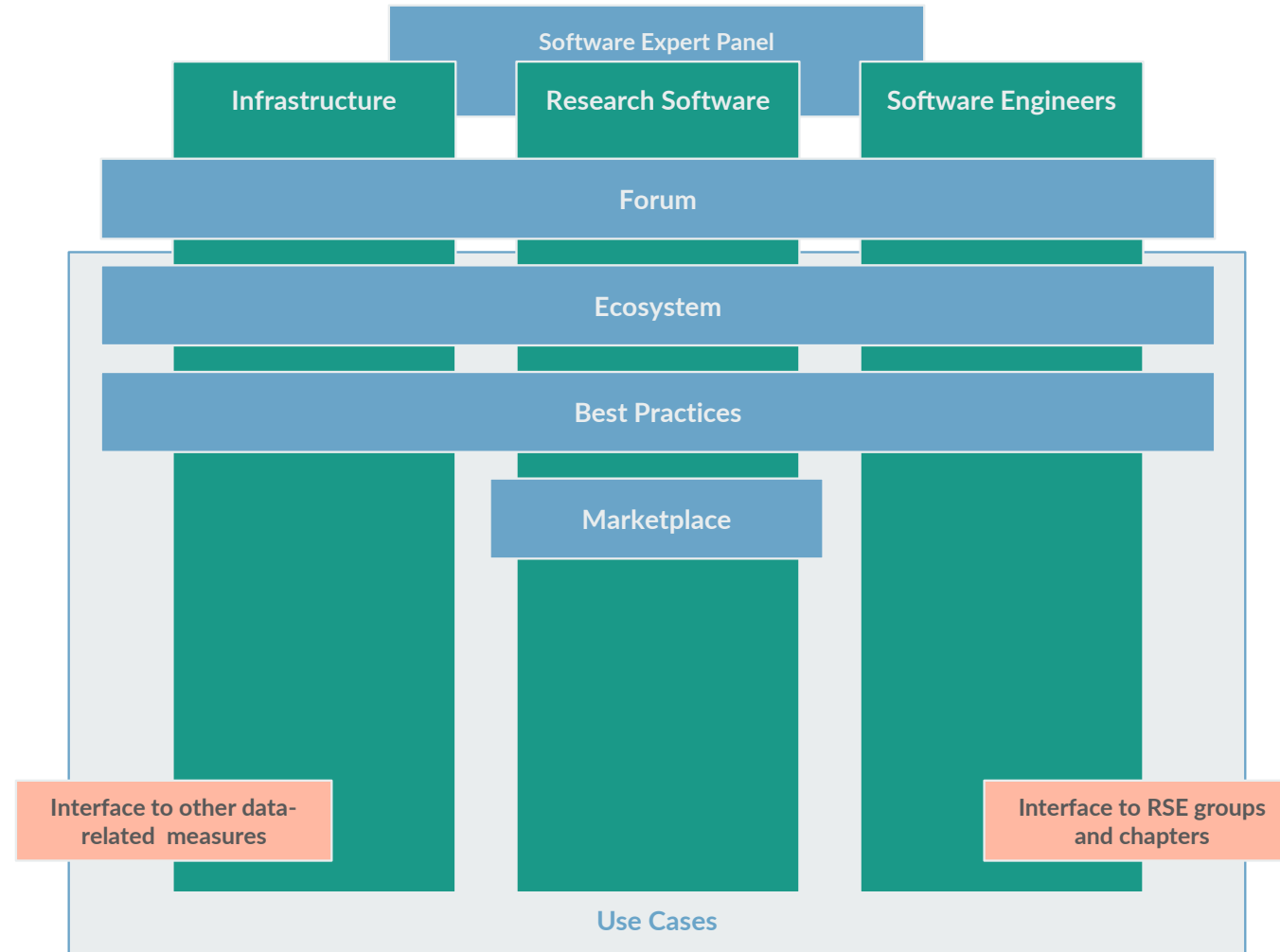
# Research Software Engineering



## Common Infrastructures

### The Future

- Several more tasks have been identified in 2022.
- Started to work on some of them.
- Currently reflected in refactoring the WG's concept.



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Heidi!

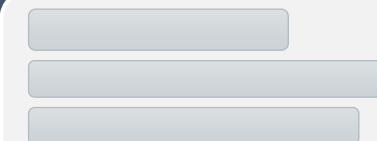
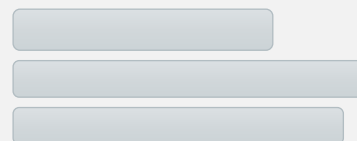
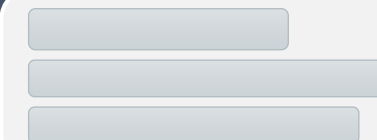
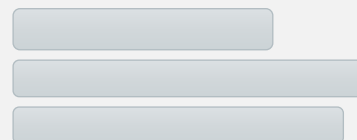
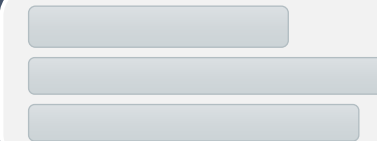
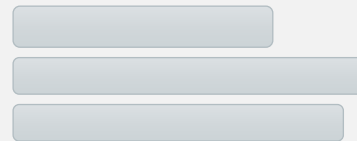


Your Profile

Your Training &  
Certifications

Your Projects

Finding the right Research Software



# Research Software Metadata

presented by Stephan Ferenz (on behalf of the working group)



(Meta)data,  
Terminologies, Provenance

- Research software is a common research artifact (a specific type of data) - extremely important for reproducible science!
- A harmonized description of research software with metadata enables:
  - better findability through providing relevant information on the software
  - better understandability through links to related material (e.g., documentation, examples, publications)
  - better reusability (e.g., through clear license metadata)



**a common metadata schema for research software is needed in the NFDI**



# Example for Research Software Metadata



(Meta)data,  
Terminologies, Provenance



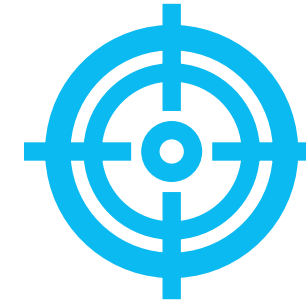
Name	mosaik
Description	A flexible Smart Grid co-simulation framework.
License	LGPL-2.1
Code repository	<a href="https://github.com/OFFIS-mosaik/mosaik">https://github.com/OFFIS-mosaik/mosaik</a>
Programming language	Python
Operating system	Windows, Mac, Linux
Reference publication	<a href="https://doi.org/10.3390/app9050923">https://doi.org/10.3390/app9050923</a>
Release date	2026-01-26
Contributors	Eike Schulte, Malte Stormberg, Tobias Grimm, Jan Sören Schwarz, ...
Development Status	active

Metadata Schema

# Research Software Metadata

 (Meta)data,  
Terminologies, Provenance

- We analyzed the use of metadata schemas for research software in the NFDI:
  - Non domain-specific metadata schemas like CodeMeta, CFF, Bioschemas are used in different consortia
  - Research software is covered very differently in the various consortia



- We also analyzed different existing approaches and mapped them to CodeMeta as a common standard

# Research Software Metadata



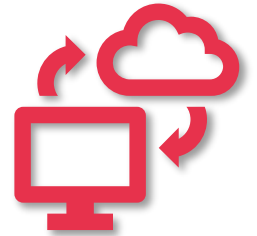
(Meta)data,  
Terminologies, Provenance

## Future Goals

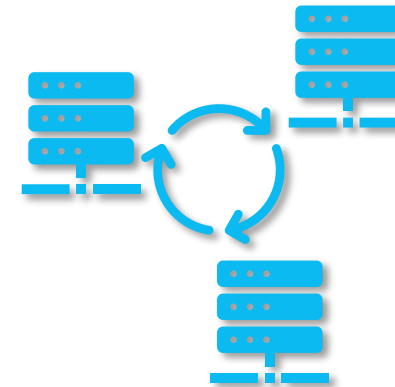
- Provide an extension to CodeMeta to cover all non-domain specific aspects relevant to the NFDI
- Provide recommendations for an interoperable approach to research software metadata across all NFDI consortia



**Findable**



**Accessible**



**Interoperable**



**Reusable**



Good afternoon  
Heidi!



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DMP

ELSA

# Data Management Planning

presented by Jürgen Windeck (on behalf of the working group)

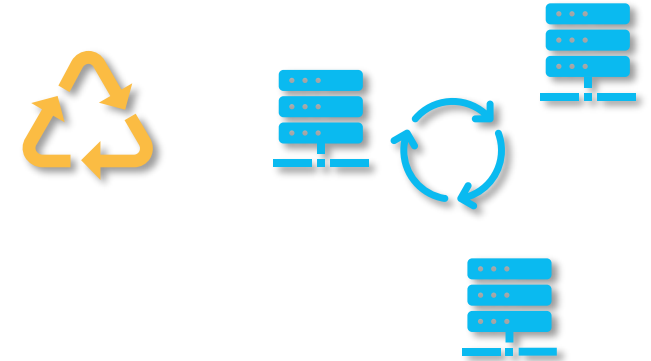


Common  
Infrastructures



## Vision

Every research project has a data strategy  
for how to achieve FAIR research data



## Data Management Plan

- A tool to support the development of such data strategies
- Supports planning: guidance, examples, and good practices
- Community-specific: standards, terminology, and established workflows

## Infra-dmp Working Group

- Coordinates all DMP related activities across NFDI
- Enables regular exchange between consortia
- Drives cooperation on templates, tools, and trainings

## Goals

- Make DMPs a practical support tool for researchers across NFDI
- Develop domain-specific and modular templates
- From plan to practice: link DMP Tools to data management services

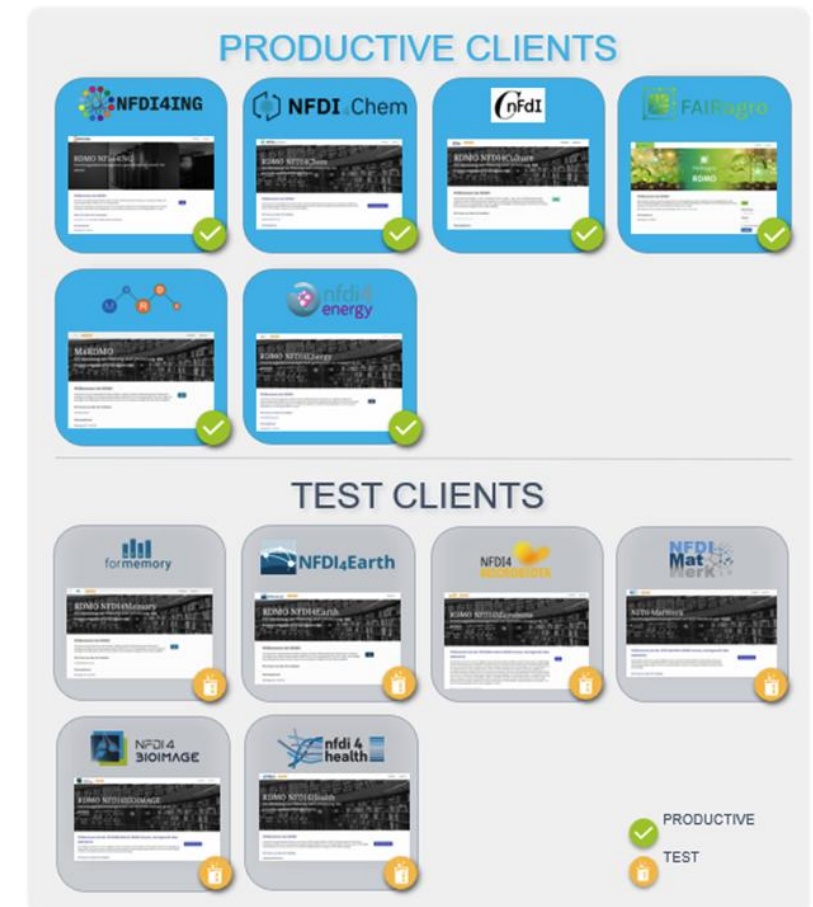
# Data Management Planning



## Results

- Discipline-specific templates: several consortia have published templates or are currently developing them to support their research community
- **NFDI Service: DMP4NFDI**
  - Provides/hosts the DMP Tool RDMO
  - Already available for 6 consortia (*more are joining*)
  - Supports Consortia with: template development, training, and outreach
  - Connects RDMO to other services

Try it out: <https://dmp.services.base4nfdi.de/>





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Your Profile

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DMP

ELSA

# Data Protection

presented by Oliver Watteler (on behalf on the working group)



Ethical, Legal  
and Social Aspects

## Aims

### Working Group Data Protection

- Supporting researchers by exchanging perspectives and knowledge
- Addressing topics directly relevant to the work within NFDI
- Enabling researchers to learn and benefit from easy-to-use privacy guidelines

## Focus

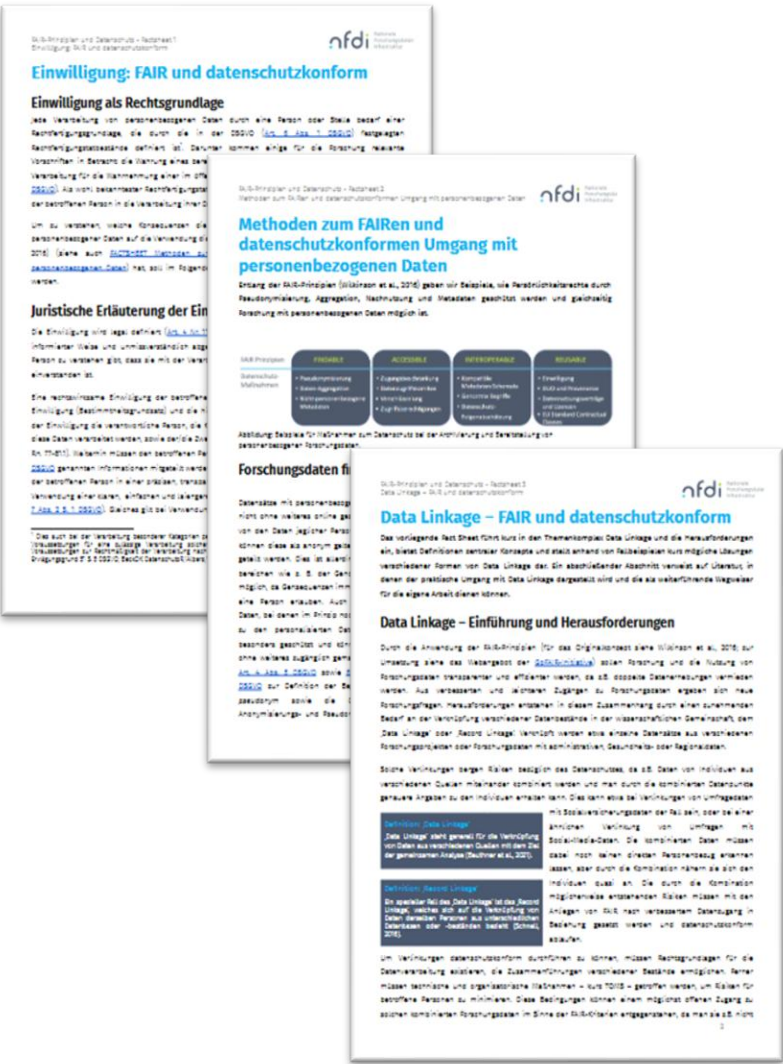
- Experts meet researchers
- Short, open and moderated discussions on emerging issues + pre-selected presentation on a specific topic

## Main Topics

- AI law
- Assessment of anonymity
- Training needs on data protection
- ...and more

## Factsheet Series on the FAIR principles and GDPR

- Consent: FAIR and GDPR-compliant
- Methods for FAIR and GDPR-compliant handling of personal data
- Data Linkage: FAIR and GDPR-compliant



# Ethics

Presented by Thomas Richter (on behalf on the working group)



Ethical, Legal  
and Social Aspects

## Challenges

- Intertwined with but distinct from or complementary to legal requirements
- Affecting many scientific fields (particularly but not only those working with [sensitive] personal research data)





### Challenges

- Intertwined with but distinct from or complementary to legal requirements
- Affecting many scientific fields (particularly but not only those working with [sensitive] personal research data)



### Work-in-progress

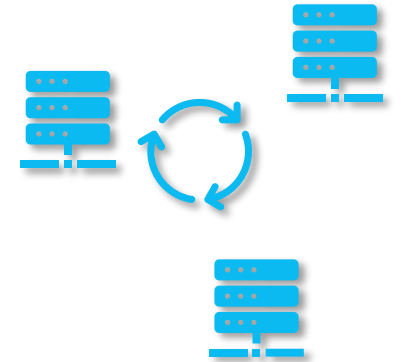
- Discuss ethical issues relating to the various challenges posed by research data and adapt possible solutions
- Currently focus topics are:
  - Ethical challenges in regard to Artificial Intelligence
  - Dark data → which means data that is invisible, unknown, unstructured, etc.
  - CARE principles → **C**ollective Benefit, **A**uthority to **C**ontrol, **R**esponsibility, **E**thics





## Aim

Making data FAIR (e.g. „Be FAIR and CARE“)



To discuss the different challenges and show existing solutions which can be relevant for several more scientific fields...

# Ethics



Ethical, Legal  
and Social Aspects

## Our first Talks focus on:

- Introduction to **Research Ethics**
- Ethical aspects of **human-participant** research data collection: The open-source “Ethiktool” software
- **Ethics and data reuse** – How researchers are considering data sharing in their research ethics proposals
- **Social risk assessment** for secondary use of sensitive data
- **CARE** principles
- **Dark Data** – when your data is lost and you don’t even know

## NEW SERIES



Section Ethical, Legal  
and Social Aspects

# ELSA Webinar Series Research Ethics

Start: 5 February 2026



Learn more about  
research ethics!





Good afternoon  
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Your Profile

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Certifications

Your RDM-Projects

Research Data

Searching

Storing

Analysing

Sharing



LTA

# Long-Term Access and Preservation (LTA)

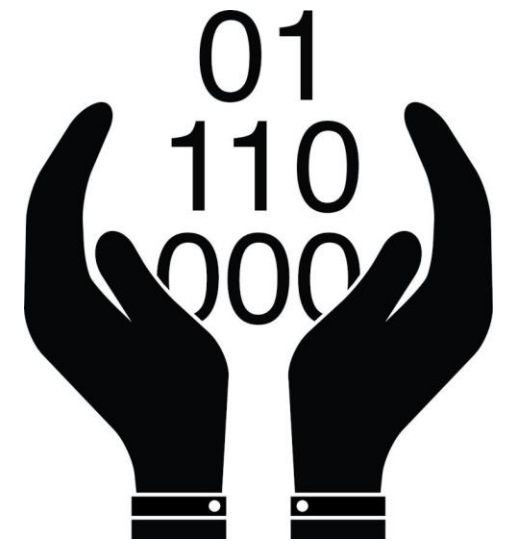
presented by Katharina Markus (on behalf of the working group)



Common  
Infrastructures



Source: Katharina Markus



Sierman CC-BY-NC-ND

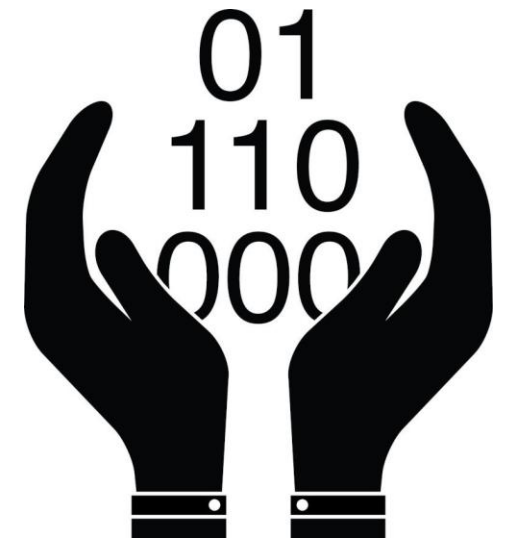
# Long-Term Access and Preservation (LTA)



Common  
Infrastructures

## Aim

- Long-Term availability, reusability, reproducibility of valuable research data, beyond changes in e. g. technology, standards, ...
- Solutions for active digital preservation of research data, as needed



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# Long-Term Access and Preservation (LTA)



Common  
Infrastructures

**Work-in-progress:** Clarify digital preservation services/solutions in NFDI

- Helps with: fulfilling e. g. research **funder requirements** (“long-term preservation and curation” European Research Council)
- Solution: Digital preservation and archiving **consultation service** (FAIR4ever, funded by DFG)
  - Clarify preservation needs in NFDI further
  - Consult NFDI consortia
  - Build a knowledge base



# Long-Term Access and Preservation (LTA)



Common  
Infrastructures

**Work-in-progress:** Clarify digital preservation services/solutions in NFDI

Solution: **Terminology and standards**

- What is digital preservation?
- What is a trustworthy digital preservation service/institution?
- When are data preserved, when are they not?





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Your Profile

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Certifications

Your RDM-Projects

Support

Help

Materials

Communication

# RDM Helpdesk Network

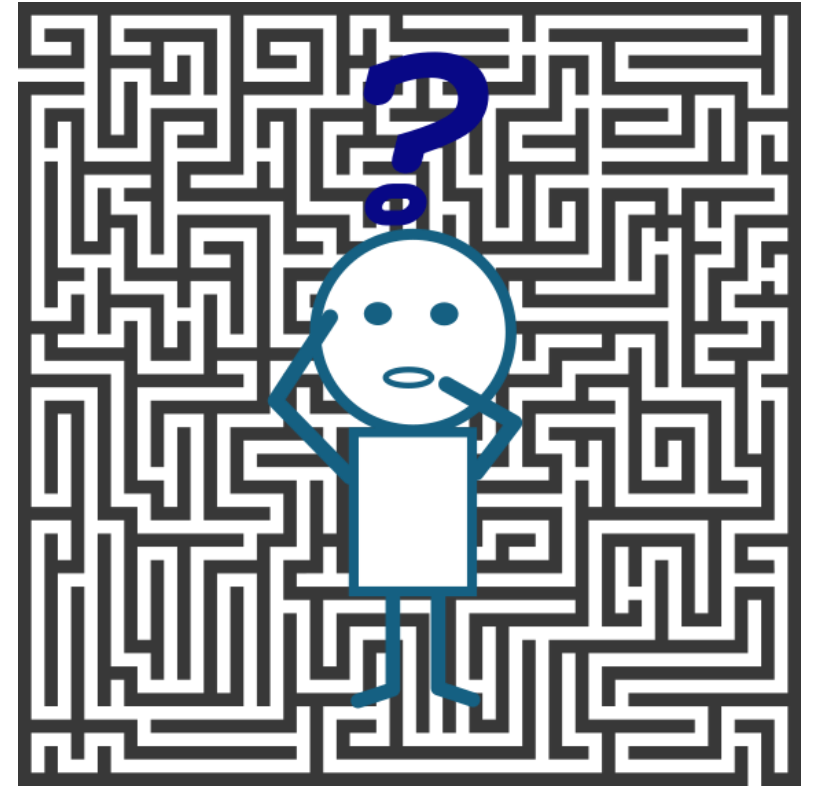
presented by Marina Lemaire & Martha Stellmacher  
(on behalf of the working group)



Training &  
Education

## The Problem in Everyday Research

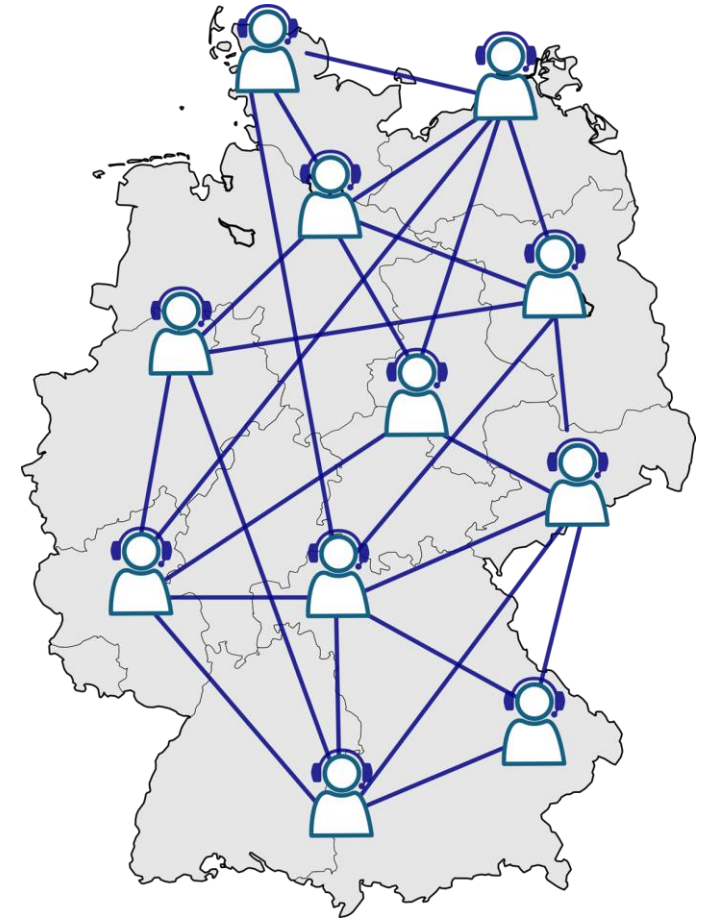
- Specialized RDM questions—where to find answers?
- Expertise scattered across institutions
- Unique research requires tailored advice
- Result: Searching, uncertainty, wasted time
- Frustration for researchers and advisors





## Our Solution: The RDM Helpdesk Network

- A nationwide network of RDM support teams.
- Universities, research centers, regional RDM initiatives, NFDI consortia helpdesks – we cover Germany!
- Moving from informal help to structured support.
- Support4RDM: Building a reliable expert network.





### How it Works

Question

Search

Success

Result

Researcher asks a tricky RDM question at their institution.



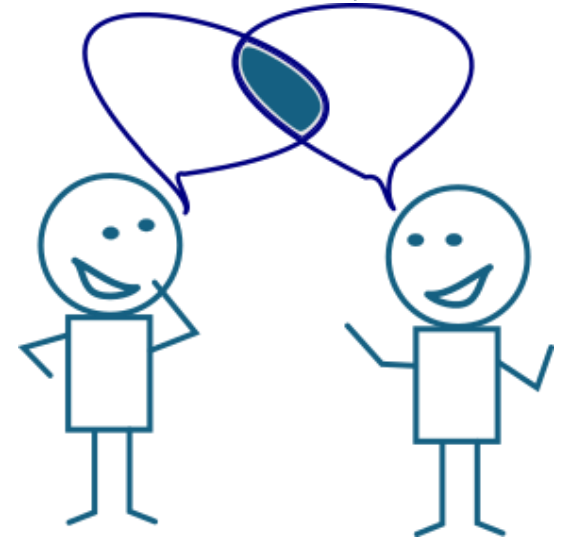
Local helpdesk uses Support4RDM tools (catalog, chatbot, ticketing system).



The right expert is found – quickly and reliably.



Everyone benefits from shared knowledge and the best RDM practices.





### NFDI and the Benefits for Research

- **Equal access:** Expert advice for all, regardless of location or institutional size
- **More time for research:** Less time spent searching for help
- **Higher data quality:** Better research data through expert support
- **Win-win:** Researchers get rapid, competent answers; helpdesk staff benefit from knowledge sharing
- **Promoting FAIR data:** The network fosters transparent, reusable research data



## NFDI and the Benefits for Research

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- **Promoting FAIR data:** The network fosters transparent, reusable research data

**With or without NFDI basic service status, our network continues to set standards for research data management support nationwide.**

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Your Profile

Your Training &  
Certifications

Your RDM-Projects

Support

Help

Materials

Communication

# Inventory of Materials

presented by Andrea Polywka & Jonathan D. Geiger  
(on behalf of the working group)



Training &  
Education

## What is this working group about?

(1) exchange of ideas, problems and solutions regarding open educational resources (OER) collection for data literacy and RDM training



(2) networking between actors of OER collection curators (NFDI consortia, county initiatives, data competence centers ...)



(3) presentations of collections and platforms which host training materials and OERs and discussions on the topic

## Vision in regard of the NFDI goal



- variety of presentations, highlights and insights
- we offer a networking opportunity as well as a platform to get to know discipline-specific examples of different collection methods concerning training materials
- importance of the application of FAIR principles



# Inventory of Materials

Example of a collection of OER and training material, the Educational Resource Finder (NFDI4Culture): <https://nfdi4culture.de/id/E4696>

## Educational Resource Finder

Der Educational Resource Finder der Cultural Research Data Academy (CRDA) präsentiert Aus- und Weiterbildungsangebote zu Forschungsdatenmanagement (FDM), Code und Data Literacy. Der Fokus liegt auf fach- oder medienspezifischen, sowie generischen Angeboten, die sich an die jeweiligen Fachcommunities innerhalb von NFDI4Culture richten.

Suchbegriffe eingeben...



Suchen

Filter by Akademische Disziplin ▾ Einstiegslevel ▾ Sprache ▾ Forschungsaktivität ▾ Schlagwort ▾

21 Treffer



**CRDA-OER: Basiskurs „Forschungsdatenmanagement für Geistes- und Kulturwissenschaften“**

Details



**DATA AFFAIRS – Datenmanagement für ethnografische Forschung**

Details



# Inventory of Materials



## Work-in-progress and next steps

- continuation of regular online meetings (networking, presentations, discussions)
- identification of recurring themes, questions and issues
- planned publication in 2026



If you are interested, you are very much welcome! Please send an e-mail to Jonathan and/or Andrea.



Good afternoon  
Heidi!



Your Profile

Your Training &  
Certifications

Your RDM-Projects

Research Data

Searching

Storing

Analysing

Sharing

Support

Help

Materials

Communication

# Industry Engagement

presented by Regina Jutz (on behalf of the section)



Industry  
Engagement



- Foster a continuous, open, and trust-based **dialogue between the NFDI and industry** to align scientific excellence with real-world needs.
- **Jointly identify and prioritize** challenges to foster collaboration between the NFDI and industry.

# Industry Engagement



Industry  
Engagement

## **(1) Collaboration Models**

Between Industry and Academia

Link: <https://zenodo.org/records/10473579>

## **Jointly Defined Priority Topics:**





### **(1) Collaboration Models**

Between Industry and Academia

Link: <https://zenodo.org/records/10473579>

### **(2) A Conceptualization of Research Data** in the Context of Industry-Academia Collaborations

Link: <https://zenodo.org/records/16753522>

## **Jointly Defined Priority Topics:**





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Between Industry and Academia

Link: <https://zenodo.org/records/10473579>

### (2) A Conceptualization of Research Data in the Context of Industry-Academia Collaborations

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### Jointly Defined Priority Topics:



### (3) Measuring the **Value** of **(Research) Data**

Link: <https://zenodo.org/records/16573901>

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## Jointly Defined Priority Topics:



## (3) Measuring the **Value** of (Research) Data

Link: <https://zenodo.org/records/16573901>

## (4) Data Spaces and **Interoperability** for Collaborative Research



# Industry Engagement



Industry  
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Between Industry and Academia

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## (2) A Conceptualization of Research Data in the Context of Industry-Academia Collaborations

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## Jointly Defined Priority Topics:



## (3) Measuring the **Value** of (Research) Data

Link: <https://zenodo.org/records/16573901>

## (4) Data Spaces and **Interoperability** for Collaborative Research

## (5) **Knowledge Transfer** and **Impact**: co-develop and implement research-based solutions with in day-to-day industrial operations



### Our Contribution to the NFDI

1.

**Establish legal, technical, and organizational frameworks** that enable responsible, interoperable, and FAIR data exchange between academia and industry.



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**Drive standardization and interoperability across sectors** by developing shared models, piloting real-world use cases, and providing practical guidance for implementation.



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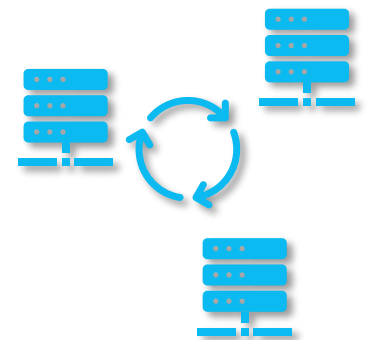
3.

**Connect the NFDI to national and European data ecosystems** — aligning with Base4NFDI and EOSC, linking to trusted data spaces such as Gaia-X and Catena-X, and improving access for small and medium-sized enterprises.



### Relevance for researchers

- **Enables more interoperable, reusable, and high-quality research data** through shared standards, training opportunities, and comprehensive documentation.
- **Fosters international collaboration** by connecting researchers, infrastructures, and data initiatives across borders.
- **Lowers legal and organizational barriers** with ready-to-use templates for privacy, intellectual property, and licensing, supported by transparent governance models.
- **Promotes cross-sector data use and innovation** through pilot projects, white papers, and best-practice examples that translate research into real-world impact.





## Industry Advisory Board



**Martina Fiddrich**

Cornelsen Verlag GmbH



**Dr. Michael Dose**

Bundesverband der dt.  
Industrie (BDI) e.V.



**Dr. Katrin Frieze**

BASF SE



**Dr. Julia Göhringer**

Allianz SE



**Saskia Kress**

Interactive Media Foundation  
GmbH



**Dr. Corinna Hehlmann**

Freudenberg SE (z.Zt. Elternzeit)



**Dr. Thomas Koenen**

Bundesverband der dt. Industrie  
(BDI) e.V.



**Dr. Sicco  
Lehmann-Brauns**

Siemens AG



**Christine Regitz**

SAP SE



**Dr. Stefan Schmid**

Robert Bosch Corporate  
Research



**Dr. Ina Sebastian**

Infineon Technologies AG



**Thomas Dauser**

SWR

## Collection of lighthouse collaborations of NFDI and industry

 Nationale Forschungsdaten Infrastruktur

Unsere erfolgreichen **Kollaborationen** zwischen **Industrie** und **Wissenschaft**

[www.nfdi.de/section-industry-engagement/](http://www.nfdi.de/section-industry-engagement/)

DiStEL – MaterialDigital Projekt (BMFTR gefördert)



**FRAGESTELLUNG**

Wie kann **digitale Materialbetrachtung** entlang der **Wertschöpfungskette** Effizienz steigern, Lebensdauer prognostizieren und den CO<sub>2</sub>-Fußabdruck ermitteln?



**GEMEINSAMES VORGEHEN**

- Durchführung von **User- und Daten-Journeys** entlang der Wertschöpfungskette
- Erarbeitung **gemeinsamer semantischer Strukturen** für barrierefreien Informationsaustausch
- Einzelinterviews in rechtlich geschütztem Rahmen.
- Kontinuierliche Diskussion und Offenlegung der **Mehrwerte aller Partner**



**ERZIELTE ERGEBNISSE**

- **Firmenübergreifender Use-Case** für eine **Material Informations-Infrastruktur** für eine Kreislaufwirtschaft

**AN DER KOLLABORATION BETEILIGTE INSTITUTIONEN:**



- Robert Bosch GmbH (Konsortialführung)
- Schaeffler Technologies AG & Co. KG
- BMW AG
- LRP-Autorecycling Leipzig GmbH
- DECOIT GmbH & Co. KG
- smoods GmbH

**NUTZEN FÜR UNTERNEHMEN:**

- **Beschleunigung** von Entwicklungsprozessen in den Firmen & entlang der Wertschöpfungskette
- **ReUse** von **Materialinformationen** und -daten
- Risikominimierung
- Ressourceneffizienz

**WISSENSCHAFTLICHER NUTZEN:**

- Identifikation **lebensdauerrelevanter Prozessparameter** entlang der Wertschöpfungskette
- Bestimmung **physikalischer Mechanismen in Materialien**
- Verständnis von **Schädigungsprozessen**

Mohanty JP, Thomas A, Pollock TM, Durmaz AR. Mining Multimodal Fatigue Data Using Reasoning Foundation Models and Formalized Domain Knowledge. ChemRxiv. 2025; doi:10.26434/chemrxiv-2025-xwd6c. This content is a preprint and has not been peer-reviewed.

BESUCHEN SIE UNS AUF  
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Demonstrator: Reuse Quality-assured Data for Batteries (**RuQaD Batteries**)




### ZIELSETZUNG

**Brückenbildung** zw. Forschungsdateninfrastruktur POLIS und einem industriellen Datenraum (BatCat) und **Reusability** von qualitätsgeprüften Forschungsdaten



### GEMEINSAMES VORGEHEN

- Anbindung an die **Kadi4Mat Software**
- Integration von **Qualitätschecks** aus dem FAIR Data Spaces Projekt
- Anbindung an die im **BatCAT Datenraum** verwendete Software LinkAhead
- Erstellung **automatisierter Metadaten-Checks**
- Zusammenbau zu einer automatisierten **Monitorkomponente**



### ERZIELTE ERGEBNISSE


- automatisierte Verknüpfung** der beteiligten Systeme ist möglich
- „keep the human in the loop“** – manuelle Freigabe erforderlich

**NUTZEN FÜR UNTERNEHMEN:**

- veröffentlichte POLIS Forschungsdaten stehen im BatCAT Datenraum **Industriekleuten** zur Verfügung
- erhöhte Sichtbarkeit -> **Wahrscheinlichkeit** der Wiederverwendung der Daten steigt

**WISSENSCHAFTLICHER NUTZEN:**

- Potenziell **Feedback und Rückfragen** zu den Forschungsdaten



AN DER KOLLABORATION  
BETEILIGTE INSTITUTIONEN:

- NFDI4ING
- FAIR Data Spaces
- IndiScale Data Services
- BatCAT Battery Cell Assembly Twin
- POLIS Post Lithium Storage Cluster of Excellence

<https://www.indiscale.com/projects/fair-data-space-demonstrator/>

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Selbstselektion in Online-Produktbewertungen



**FRAGESTELLUNG**

Inwiefern sind **Produktbewertungen** durch **Selbstselektion** verzerrt? Wie kann diese **Selbstselektion** behoben werden?



**GEMEINSAMES VORGEHEN**

- Wissenschaftliche **Analyse** von **bestehenden Online-Bewertungsdaten**
- Gemeinsam durchgeführte **Experimente** auf der Plattform und **Auswertung**



**ERZIELTE ERGEBNISSE**

- Online-Produktbewertungen sind in mehreren Hinsichten **verzerrt**.
- Gemeinsam mit dem Unternehmen werden **Strategien ausgearbeitet**, wie groß diese Verzerrung jeweils ist und wie ggf. die Verzerrung bereinigt werden kann.

AN DER KOLLABORATION BETEILIGTE INSTITUTIONEN:



**NUTZEN FÜR UNTERNEHMEN:**

- Komplexe Analysen** und Experimente durch **wissenschaftliche Experten durchgeführt**
- Implikationen** für das eigene **Geschäftsmodell** ableitbar

**WISSENSCHAFTLICHER NUTZEN:**

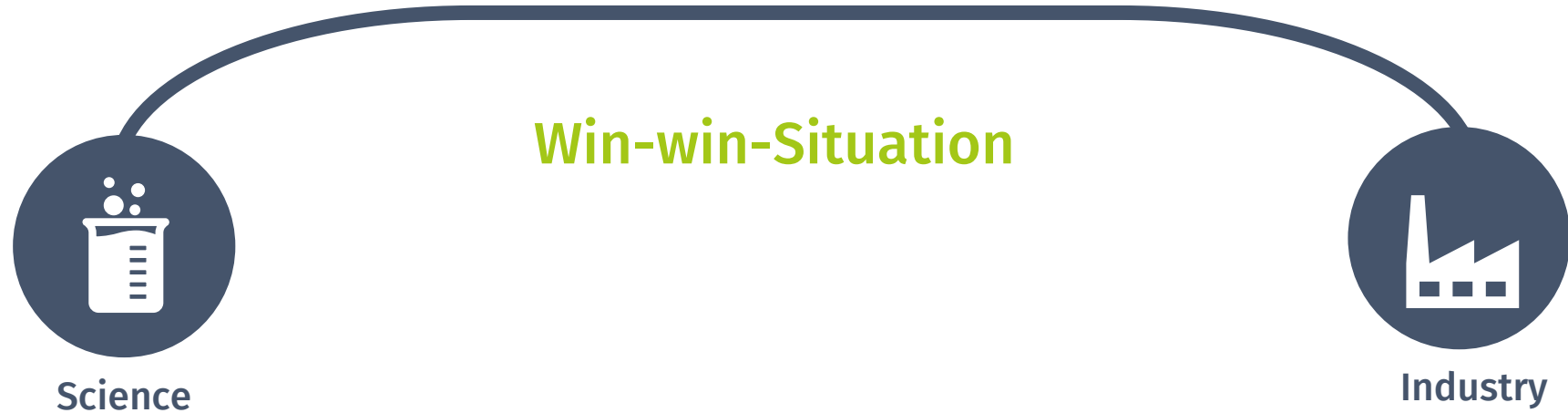
- Beitrag zur Forschung** im Bereich Online-Produktbewertungen
- Impuls für weitere Forschungsarbeiten** & Projekte
- Hohe praktische Relevanz** & Anwendbarkeit der Ergebnisse

BESUCHEN SIE UNS AUF  
[www.nfdi.de/section-industry-engagement/](http://www.nfdi.de/section-industry-engagement/)

# Industry Engagement



Industry  
Engagement



Advancing the research field, increase the **real-world relevance of their findings**, and provide a push for further research.

Industry benefits by **trusted methods, access to academic expertise**, and faster innovation.



Good afternoon  
Heidi!



Your Profile

Your Training &  
Certifications

Your RDM-Projects

Research Data

Searching

Storing

Analysing

Sharing

Support

Help

Materials

Communication

# International Engagement

presented by Rebecca Kröhler (on behalf of the section)



1.

Research data, tools,  
and expertise work  
across borders

## Why

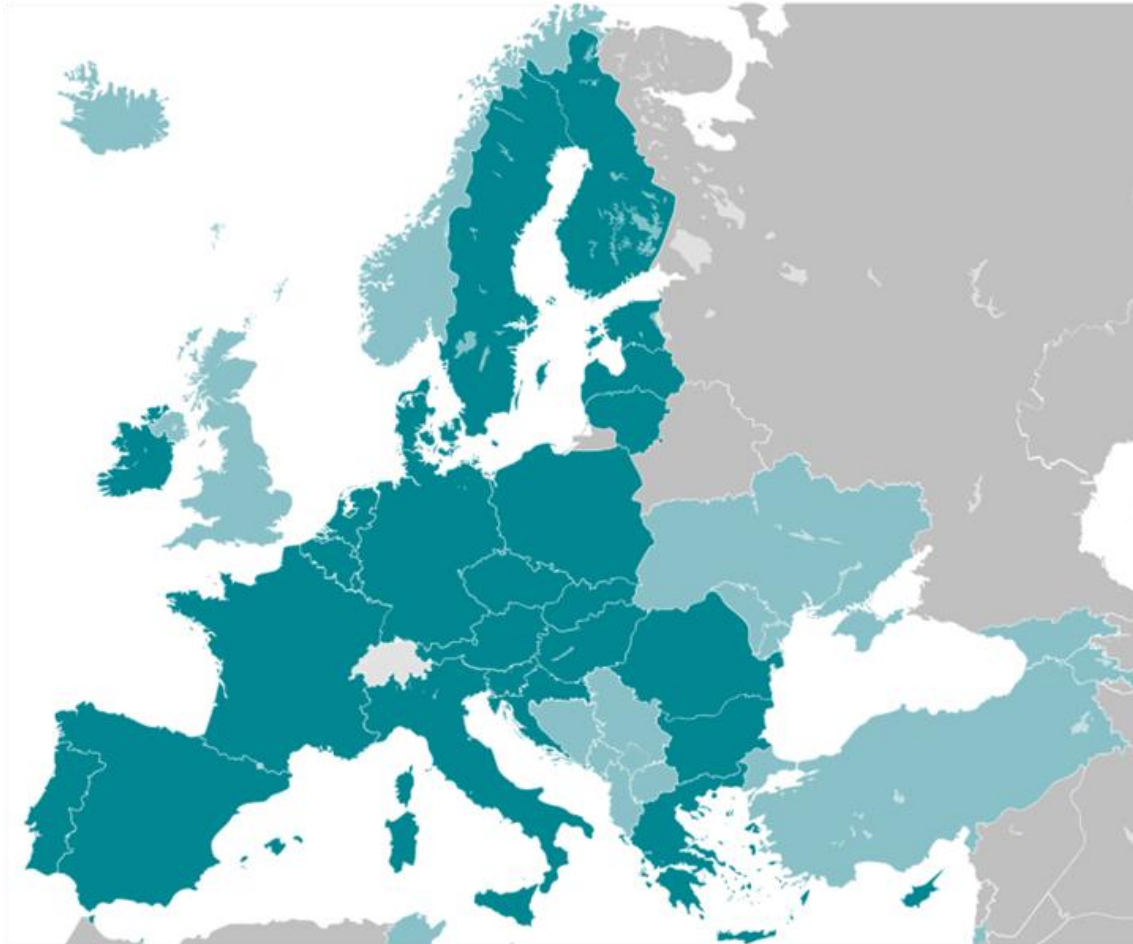
2.

NFDI connects national  
infrastructures to  
international ecosystems

## The goal:

tangible benefits for researchers in  
their daily work

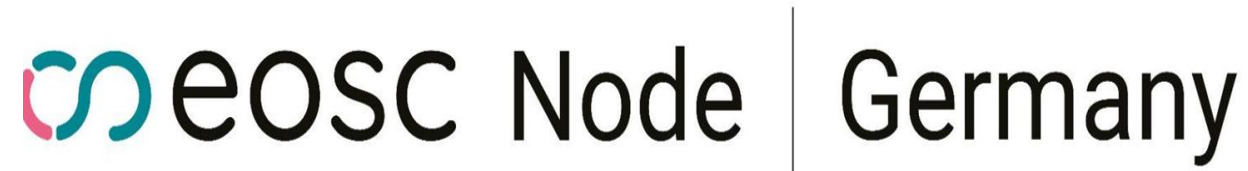
# International Engagement



## Our aim:

Establishing NFDI as active, visible, and well-connected partner in the European and international research data ecosystem

## Connecting NFDI and EOSC



- NFDI services from consortia and Base4NFDI are connected to the European **EOSC federation**
- Researchers in Germany gain easier access to European data and digital services
- NFDI actively contributes to shaping EOSC according to community needs

## EOSC Node | Germany

### Long-term vision

A more seamless research experience: data and services that are easier to find, easier to combine, and easier to reuse across borders



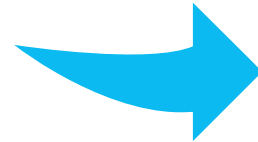
## From coordination to sustainable international engagement

- Coordinating technical, organizational, and legal efforts around **EOSC Node** Germany
- Bringing together NFDI **consortia, infrastructure providers, and international partners**
- Serving as a central point of contact and enabling the NFDI community to actively connect internationally
- Turning **EOSC experience into reusable guidance for future European** and global collaborations

## What we will do



Ensuring that **data**  
created in Germany can  
be used internationally



... and **international data** can be  
used effectively by researchers in  
Germany.

# See you soon in the NFDI Universe!

Your Mail-Address

Password

# Cross-cutting topics

Industry Engagement (Regina Jutz)

Training formats and certification  
(Birte Lindstädt & Mareike  
Wohltmann)

RDM Helpdesk Network (Marina Lemaire & Martha Stellmacher)

Research Software Metadata  
(Stephan Ferenz)

Search and Harvest (Heinrich Widman)

Ethics (Thomas Richter)

Research Software Engineering  
(Bernd Flemisch )

Data Management Planning  
(Jürgen Windeck)

Long-Term Access and Preservation  
(Katharina Markus)

Multi Cloud (Sonja Schimmler)

Knowledge Graphs (Fidan Limani )

Terminology Services  
(Roman Braun)

Inventory of Materials  
(Andrea Polywka & Jonathan D. Geiger)

Data Protection (Oliver Wattler)

Overall Architecture (Marius Politze)

International Engagement (Rebecca Kröhler)



# Thanks for your input!

Industry Engagement (Regina Jutz)

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# The people behind the work of the sections!



Kick Off of WG RDM-Helpdesk  
20.-21.11.2023



Workshop of WG Overall  
Architecture, 26.-27.11.2025



Kick-Off Section Industry  
Engagement, 12.05.2023



Workshop of the Advisory Board  
of Section Industry Engagement, 19.01.2024



2nd TF Metadaten  
Workshop, 06/2025



ELSA Workshop  
12.-13.10. 2022



Workshop of Section-  
Spokespersons, 11.-12.06.2025



Community Event „Lernzielmatrix  
im FDM“, 31.01.-01.02.2024



# Demo Session: DMP4NFDI

**FEBRUARY 10, 2026**  
**1:30-2:30 PM**

For everyone  
involved with  
DMP / SMP  
Services

**GUIDE TO BUILD A DMP / SMP SERVICE IN YOUR CONSORTIUM:**  
DEVELOPMENT STEPS, RDMO & FRAMEWORK IN ACTION,  
WITH INTERACTIVE Q&A SESSION

# Cross-cutting topics

## **(Meta)data, Terminologies, Provenance**

Dr. Oliver Koepler &  
Dr. Leyla Jael Castro

## **Common Infrastructures**

Prof. Dr. Sonja Schimmler &  
Dr. Michael Diepenbroek

## **Training & Education**

Prof. Dr. Sonja Herres-Pawlis &  
Prof. Dr. Peter Pelz

## **Industry Engagement**

Prof. Dr. Florian Stahl &  
Dr. Andreas Förster

## **International Engagement**

Newly founded sections:  
Therefore elections in spring

## **Ethical, Legal and Social Aspects**

Vasilka Paunova &  
Prof. Dr. Ulrich Sax

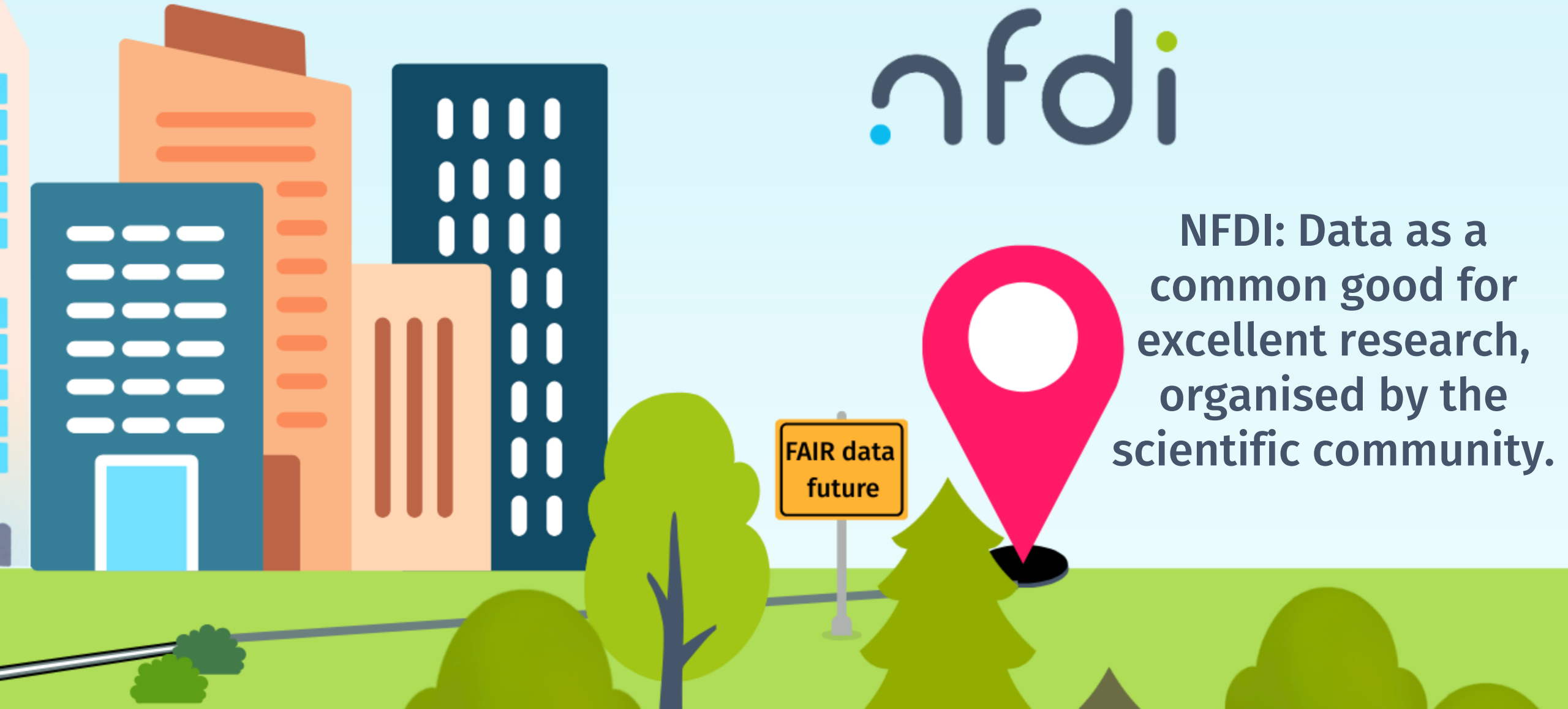




# For a FAIR data future.



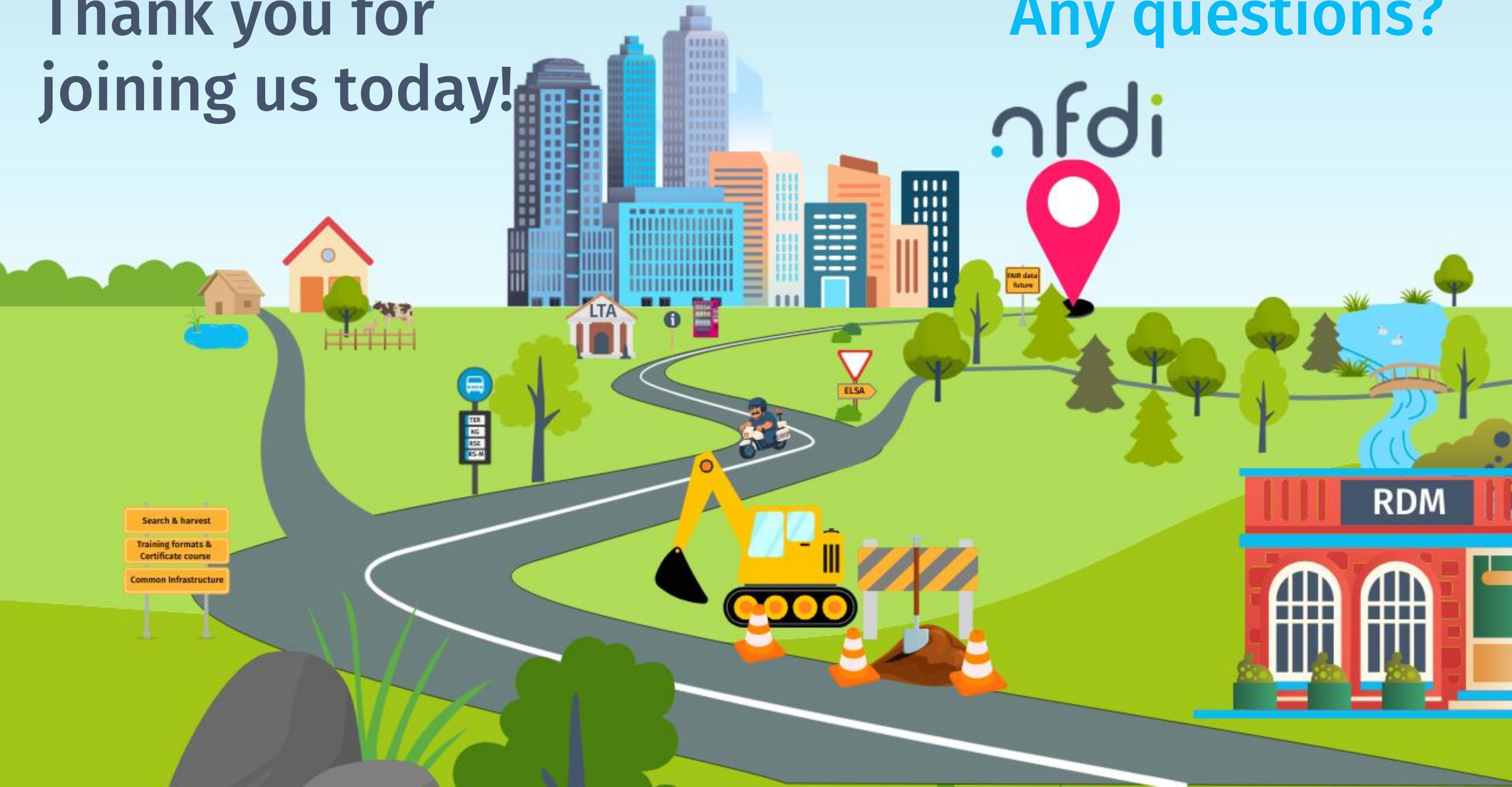
NFDI: Data as a  
common good for  
excellent research,  
organised by the  
scientific community.



# Thank you for joining us today!

## Any questions?

nfdi



More information regarding the sections on the following slides.

If you would like to work in the sections – join them here: <https://www.nfdi.de/registration-for-participation-in-the-sections/?lang=en>

# NFDI Sections Roadshow

## Section Industry Engagement

- **Website:** <https://www.nfdi.de/section-industry/>
- **Mailing list** (general updates and invitations):
  - <https://lists.nfdi.de/postorius/lists/section-industry.lists.nfdi.de/>
- **Rocket Chat:** [section-industry-engagement](#) (NFDI only)
- See **our aims** for the next two years in our **new Section Concept**:
  - <https://zenodo.org/records/17588697>
- **Whitepapers** published:
  - Collaboration Models Between Industry and Academia: [zenodo.org/records/10473579](https://zenodo.org/records/10473579)
  - A Conceptualization of Research Data in the Context of Industry-Academia Collaborations: [zenodo.org/records/14938080](https://zenodo.org/records/14938080)
  - Measuring the Value of (Research) Data: [zenodo.org/records/16573901](https://zenodo.org/records/16573901)
- **Spokespersons:** Florian Stahl (BERD@NFDI) and Andreas Förster (NFDI4Cat)
- Do not hesitate to **contact** me with any questions: [regina.jutz@uni-mannheim.de](mailto:regina.jutz@uni-mannheim.de) (coordination)

# NFDI Sections Roadshow

## Section Metadata, Terminologies, Provenance

- Website:
  - <https://www.nfdi.de/section-metadata/>
- Section Concept:
  - <https://zenodo.org/records/5619089>
- Spokespersons: Dr. Oliver Koepler, Stellvertreterin: Dr. Leyla Jael Castro

# NFDI Sections Roadshow

## Section Common Infrastructure

### Website:

- <https://www.nfdi.de/section-infra/>

### Spokespersons:

- Prof. Dr. Sonja Schimmler, Stellvertreter: Dr. Michael Diepenbroek

### Concept of the section (03/2025):

- <https://doi.org/10.5281/zenodo.15000220>

### Concept of the WG Overall Architecture (04/2025):

- <https://doi.org/10.5281/zenodo.15210893>
- Coordinators WG OA: Marius Politze and Philipp Wieder

# NFDI Sections Roadshow

## Section Education & Training

- Website:
  - <https://www.nfdi.de/section-edutrain/>
- Mailing list:
  - <https://lists.nfdi.de/postorius/lists/section-edutrain.lists.nfdi.de/>
- Section Concept:
  - <https://zenodo.org/records/5599770>
- Spokespersons: Sprecherin: Prof. Dr. Sonja Herres-Pawlis, Stellvertreter: Prof. Dr. Peter Pelz

# NFDI Sections Roadshow

## Section ELSA

- Website:
  - <https://www.nfdi.de/section-elsa/?lang=en>
- **Speakers:** Vasilka Paunova (BERD@NFDI), Ulrich Sax (NFDI4Health)
- **Coordinator:** Patrick Brunner (NFDIxCS)
- **Mailing List:**
  - <https://lists.nfdi.de/postorius/lists/section-elsa.lists.nfdi.de/>



# NFDI Sections Roadshow

## Section International Engagement

- Mailing List: [section-int@lists.nfdi.de](mailto:section-int@lists.nfdi.de)
- Section Concept: <https://zenodo.org/records/18459748>
- Feel free to join our new section by registering to it:
  - <https://www.nfdi.de/registration-for-participation-in-the-sections/?lang=en>

More information regarding the presented working groups of the sections.

# NFDI Sections Roadshow – Section EduTrain

## WG Training formats and certification



- Sections Webiste: <https://www.nfdi.de/section-edutrain/?lang=en>
- Website RDM4Training: <https://base4nfdi.de/projects/rdmtraining4nfdi>
- Mailing list general updates and invitations:
  - <https://lists.nfdi.de/postorius/lists/section-infra-wg-dmp.lists.nfdi.de/>

Join us!

- every 2nd Thursday every month, 13-14 pm
- contact: [lindstaedt@zbmed.de](mailto:lindstaedt@zbmed.de)

# NFDI Sections Roadshow – Section EduTrain

## WG Training formats and certification



- See our **RDMTraining4NFDI** published:
  - Bock, S., ZB MED - Information Centre for Life Sciences. (2025). Combining community concepts for reusable RDM training materials (Version 2a) DOI: <https://doi.org/10.5281/zenodo.17581243>
  - Sanchez Barrioluengo, M., Microcredentials in higher education, Biagi, F. and Di Pietro, G. (editors), Publications Office of the European Union, Luxembourg, 2025, DOI: <https://data.europa.eu/doi/10.2760/0157920>, JRC142086
  - Wohltmann, M., Bock, S., Vandendorpe, J., Uebachs, M., Müller, R., Lindstaedt, B., Blümm, M., & Förstner, K. U. (2025b). RDMTraining4NFDI Proposal Integration Phase: Research Data Management Training for the German National Research Data Infrastructure. DOI: <https://doi.org/10.5281/zenodo.16927331>

# NFDI Sections Roadshow – Section Metadata

## WG Search & Harvest



Join us!



[section-metadata-wg-search@lists.nfdi.de](mailto:section-metadata-wg-search@lists.nfdi.de)

### Participants

- Consortia and NFDI members from all disciplines
- Please join, anybody is welcome !
- Monthly meetings online on every last Tuesday of the month
- Next meeting on Tuesday, 24<sup>th</sup> February 2026

WG Charta: <https://doi.org/10.5281/zenodo.6770762>

### Publications:

- Poster@CORDI26 : Mathiak, B., Widmann, H., Heyer, G., Henzen, C., & Czerniak, A. (2023). Search and Harvesting across NFDI Consortia - Gaps and Challenges. Zenodo. <https://doi.org/10.1007/s13222-024-00480-7>
- Paper : Mathiak, B., Heyer, G., Widmann, H. et al. Search and Harvesting across NFDI Consortia – Gaps and Challenges. Datenbank Spektrum 24, 77–84 (2024). <https://doi.org/10.1007/s13222-024-00480-7>

Spokespersons: Brigitte Matthiak (KonsortSWD) and Heinrich Widmann (NFDI4Earth)

# NFDI Sections Roadshow – Section Metadata

## WG Terminology Services

- **Related Section:** (Meta)data, Terminologies, Provenance
- **Website:** <https://www.nfdi.de/section-metadata/>
- **Mailing list** for general updates and invitations for wg meetings:
  - <https://lists.nfdi.de/postorius/lists/section-metadata-wg-ts.lists.nfdi.de/>
- See **our aims** for the next two years in our **WG Charter**:
  - <https://doi.org/10.5281/zenodo.6759325>
- **Papers** published:
  - Terminology Services in the DACH Region Landscape – What Are the Essential Requirements?  
<https://doi.org/10.11588/heibooks.1652.c23929>
- **Spokespersons:** Roman Baum (NFDI4Health) and Naouel Karam (NFDI4Biodiversity)
- Do not hesitate to **contact** me with any questions: [baum@zbmed.de](mailto:baum@zbmed.de)

# NFDI Sections Roadshow – Section Metadata

## WG Knowledge Graphs

Join us!

### Participants

- Consortia and NFDI members from all disciplines
- Please join, anybody is welcome!



**section-metadata-wg-  
kg@lists.nfdi.de**



**<https://lists.nfdi.de/postorius/lists/section-metadata-wg-kg.lists.nfdi.de>**

### Results

- Link to our ongoing Survey of KG adoption practices in:  
<https://zenodo.org/records/8124286>
- Paper: <https://pub.zbw.eu/dspace/bitstream/11108/675/1/2025-Limani-Knowledge-Graphs-Preprint.pdf>
- Dataset: <https://zenodo.org/records/16759011>



# NFDI Sections Roadshow – Section Infra

## WG Research Software Engineering

- **Related Section:** Common Infrastructures
- **Website:** <https://www.nfdi.de/section-infra/>
- **Mailing list** for general updates and invitations for WG meetings:
  - <https://lists.nfdi.de/postorius/lists/section-infra-wg-rse.lists.nfdi.de/>
- See **our aims** formulated in 2022 in our **WG Charter**:
  - <https://zenodo.org/records/6483449>
- **Coordinators:** Bernd Flemisch (NFDI4ING) and Florian Thiery (NFDI4Objects)
- Basic service **nfdi.software**: <https://nfdi.software/>
- Basic service **Jupyter4NFDI**: <https://nfdi-jupyter.de/>
- Associated **JupyterHub**: <https://hub.nfdi-jupyter.de/>
- Do not hesitate to **contact** me with any questions: [bernd.flemisch@iws.uni-stuttgart.de](mailto:bernd.flemisch@iws.uni-stuttgart.de)



# NFDI Sections Roadshow – Section Metadata

## WG Research Software Metadata

- **Related Section:** (Meta)data, Terminologies, Provenance
- **Website:** <https://www.nfdi.de/section-metadata/>
- **Mailing list** for general updates and invitations for wg meetings:
  - <https://lists.nfdi.de/postorius/lists/section-metadata-wg-rsmeta.lists.nfdi.de/>
- See **our aims** for the next two years in our **WG Charter**:
  - <https://zenodo.org/records/10808325>
- **Whitepapers** published:
  - Results on a Survey on Research Software Metadata in the NFDI Consortia:  
<https://zenodo.org/records/15674520>
- **Spokespersons:** Stephan Ferenz (NFDI4Energy) and Jael Leyla Castro (NFDI4DS)
- Do not hesitate to **contact** me with any questions: [stephan.ferenz@uol.de](mailto:stephan.ferenz@uol.de)

# NFDI Sections Roadshow – Section Infra

## WG Data Management Planning

- **Related Section:** Common Infrastructures
- **Website:** <https://www.nfdi.de/section-infra/>
- **Mailing list** for general updates and invitations for wg meetings:
  - <https://lists.nfdi.de/postorius/lists/section-infra-wg-dmp.lists.nfdi.de/>
- See **our WG charta** and **papers** published:
  - <https://zenodo.org/communities/infra-dmp>
- More on the NFDI Basic Service **DMP4NFDI**
  - <https://dmp.services.base4nfdi.de/>
- **Spokespersons:** Jürgen Windeck ([Juergen.Windeck@tu-darmstadt.de](mailto:Juergen.Windeck@tu-darmstadt.de)) and Daniela Hausen ([daniela.hausen@ulb.hhu.de](mailto:daniela.hausen@ulb.hhu.de))

# NFDI Sections Roadshow – Section ELSA

## WG Data Protection

### WG Data Protection

- Coordinators: Oliver Watteler (KonsortSWD), Timo Reichelt (KonsortSWD)
- Mailing List:
  - <https://lists.nfdi.de/postorius/lists/section-elsa-wg-data-protection.lists.nfdi.de/>
- **Factsheet Series** on “FAIR principles and data protection. How can FAIR data management be compatible with General Data Protection Regulation (GDPR)?”:
  - <https://www.nfdi.de/elsa-factsheets/?lang=en>

# NFDI Sections Roadshow – Section ELSA

## WG Ethics

- **WG Ethics**
- Coordinator: Thomas Richter (NFDI4Ing)
- Mailing List:
  - <https://lists.nfdi.de/postorius/lists/section-elsa-wg-ethics.lists.nfdi.de/>
- Webinar Series on “Research Ethics”:
  - <https://www.nfdi.de/section-elsa/webinar-series-research-ethics/>

# NFDI Sections Roadshow – Section Infra

## WG Long-Term Access and Preservation (LTA)

- Website: <https://www.nfdi.de/section-infra/>
- Mailing list: <https://lists.nfdi.de/postorius/lists/section-infra-wg-lta.lists.nfdi.de/>
- WG Charter: <https://doi.org/10.5281/zenodo.14939132>
- Current projects, visual overview: <https://zenodo.org/records/17054247>
- Survey results (eng): <https://doi.org/10.5281/zenodo.11109480>
- WG organizers: Svenia Pohlkamp, Tobias Steinke, Katharina Markus, Angela Hammer
- Do not hesitate to **contact** me with questions: [markus@zbmed.de](mailto:markus@zbmed.de)

# NFDI Sections Roadshow – Section Infra

## WG Long-Term Access and Preservation (LTA)

- References:
  - European Research Council (ERC) Data Management Plan:  
<https://web.archive.org/web/20251011034347/https://erc.europa.eu/sites/default/files/document/file/ERC-DataManagement-Plan.docx>
  - Sierman Icon Digital Preservation, Creative Commons CC-BY-NC-ND:  
<https://digitalpreservation.nl/seeds/icon-digital-preservation/>
  - Core Trust Seal Certifications: <https://www.coretrustseal.org/>
  - nestor Seal for Trustworthy Digital Archives:  
[https://www.langzeitarchivierung.de/Webs/nestor/EN/Zertifizierung/nestor\\_Siegel/siegel.html](https://www.langzeitarchivierung.de/Webs/nestor/EN/Zertifizierung/nestor_Siegel/siegel.html)

# NFDI Sections Roadshow – Section EduTrain

## Working Group RDM Helpdesk Network




- Website: <https://www.nfdi.de/section-edutrain/working-group-rdm-helpdesk-network>
- Working Group Charter: RDM Helpdesk Network: <https://doi.org/10.5281/zenodo.14035822>
- RocketChat-Channel: <https://all-chat.nfdi.de/channel/wg-helpdesk>
- Mailinglist: [fdm-helpdesks@listserv.dfn.de](mailto:fdm-helpdesks@listserv.dfn.de)
  - <https://www.listserv.dfn.de/sympa/info/fdm-helpdesks>
- Bibliography: [https://www.zotero.org/groups/5639114/rdm\\_helpdesk\\_network/](https://www.zotero.org/groups/5639114/rdm_helpdesk_network/)

# NFDI Sections Roadshow – Section EduTrain

## WG Inventory of Materials

### Contact:

- **WG leads:** Jonathan D. Geiger and Andrea Polywka
- **Monthly meetings (every third Monday):** Short presentations of educational or training material are held at meetings that are aimed at serving as a platform for exchange and discussion.
- **Next meeting** on *Monday, February 16th, 11.30–12.30 o'clock*  
 <https://adwmainz.zoom.us/j/92476322440>
- **Rocket.Chat (NFDI All-Chat):** <https://all-chat.nfdi.de/channel/edutrain-AP2>





**For a FAIR data future.**

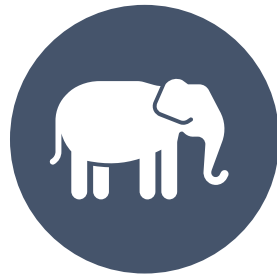
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