Funded by
DFG Deutsche Forschungsgemeinschaft
German Research Foundation

NFDI4Earth

Pitching Products and Services of the First Funding Phase

nfdi4earth.de

NFDI4Earth Academy: Bridging Earth System and Data Science

NFDI4Earth 2021-26

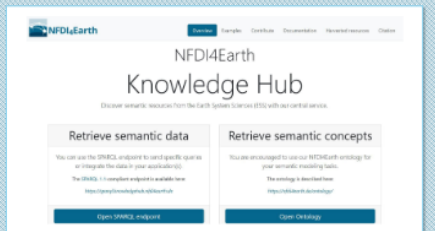
Serving our Community - Our Products and Activities

NFDI4Earth OneStop4All

Exploring RDM resources

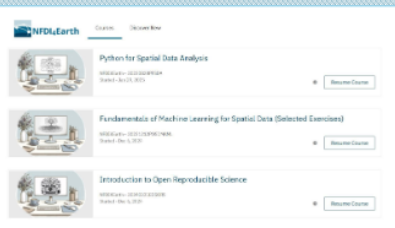
NFDI4Earth User Support Network

RDM support from ESS experts



NFDI4Earth Knowledge Hub

Semantic data discovery via API

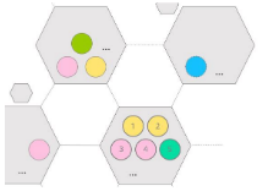


NFDI4Earth EduTrain Portal

Open Educational Resources

NFDI4Earth Commitment

Advance FAIRness & Openness in ESS



NFDI4Earth Architecture

Integrate open community services

NFDI4Earth Label

FAIRness and interop-erability of services

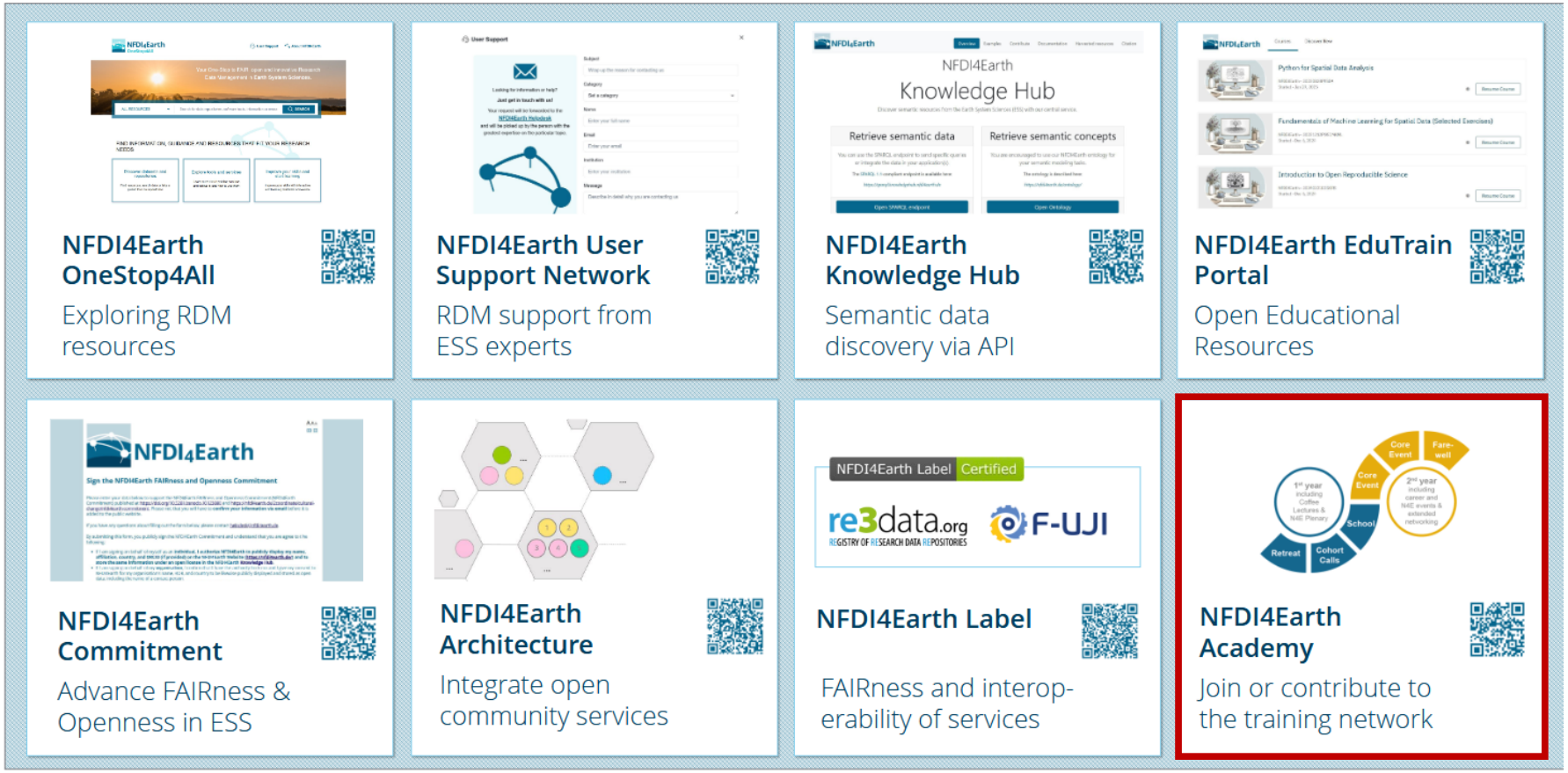
NFDI4Earth Academy

Join or contribute to the training network

NFDI4Earth Academy: Bridging Earth System and Data Science

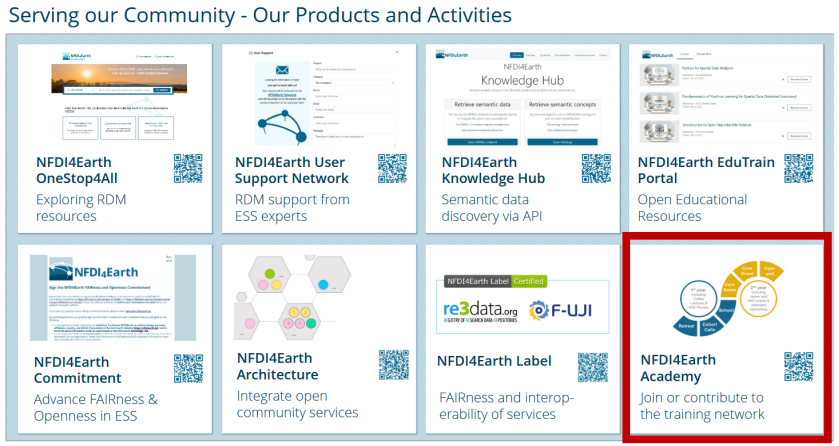
NFDI4Earth 2021-26

Serving our Community - Our Products and Activities



NFDI4Earth Academy: Bridging Earth System and Data Science

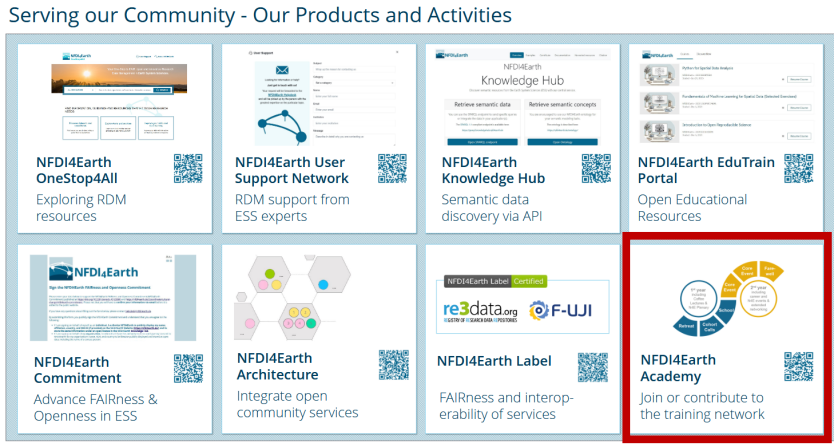
NFDI4Earth 2021-26



- **Systematic involvement** of Early Career Scientists in NFDI4Earth
- Support integrating **data-driven methodology**
- Fostering **open research culture**

NFDI4Earth Academy: Bridging Earth System and Data Science

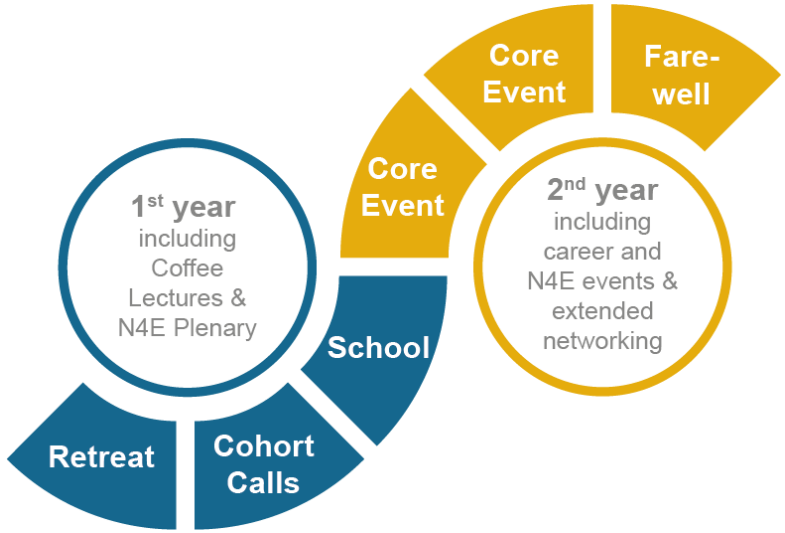
NFDI4Earth 2021-26



- **Involvement** of Early Career Scientists in NFDI4Earth
- Support integrating **data-driven methodology**
- Fostering **open research culture**

Two-year Academy program

- Hands-on events (in-person and online)
- Peer-mentoring environment
- Bottom-up approach for needs-oriented training offers



Empowering Early Career Scientists Through Engagement

NFDI4Earth

45 needs-oriented Academy events

- Networking and Training events on Open and Data Science
- Regular coffee lectures (Ø 50 participants)

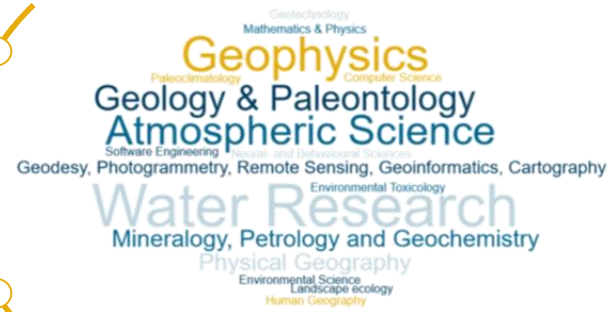
Cohort 1
2022 - 2024

14 Nationalities

23 Doctoral & **16** postdoctoral researchers

24 Universities & Research Institutes

51 % female & **49 %** male



NFDI4Earth community collaborations

- Pilot & Incubator projects of Academy Fellows
- NFDI4Earth Educational Portal
- Specific sessions for Early Career Scientists at NFDI4Earth Plenary

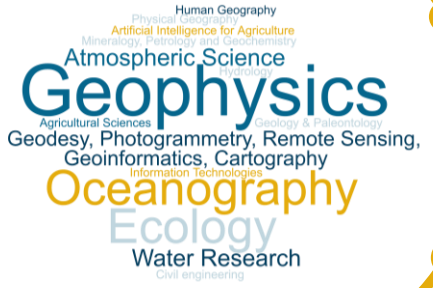
Cohort 2
2024 -2026

14 Nationalities

19 Doctoral & **15** postdoctoral researchers

23 Universities & Research Institutes

56 % female & **44 %** male



Engaging beyond the NFDI4Earth

Cross-consortia events & initatives such as

- **Cross-consortia hackathon** (with NFDI4Microbiota & NFDI4Biodiversity)
- School on **FAIR research data management** (with NFDI4Microbiota)
- Workshop series on **Introduction to Machine Learning**
- Workshop on **Knowledge Graphs for Scholarly data** (with NFDI4DataScience)
- Workshop series "**Legal aspects of research data management**" (with FAIRagro & NFDI4Biodiversity)

Involved consortia:

NFDI4 MICROBIOTA

NFDI 4 BIODIVERSITY

FAIRagro

Engaging beyond the NFDI4Earth

Cross-consortia events & initatives such as

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- Workshop series "**Legal aspects of research data management**" (with FAIRagro & NFDI4Biodiversity)

Involved consortia:

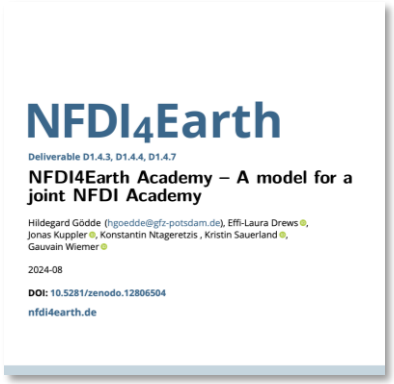
NFDI4 MICROBIOTA

NFDI 4 BIODIVERSITY

FAIRagro

White paper "NFDI Academy"

- Strategic development of cross-consortia Academy
- Initial planning with NFDI4Biodiversity


NFDI4Earth

Deliverable D1.4.3, D1.4.4, D1.4.7

NFDI4Earth Academy – A model for a joint NFDI Academy

Hildegard Gödde (hgoedde@gfz-potsdam.de), Effi-Laura Drews, Jonas Kuppler, Konstantin Ntageretzis , Kristin Sauerland, Gauvain Wiemer

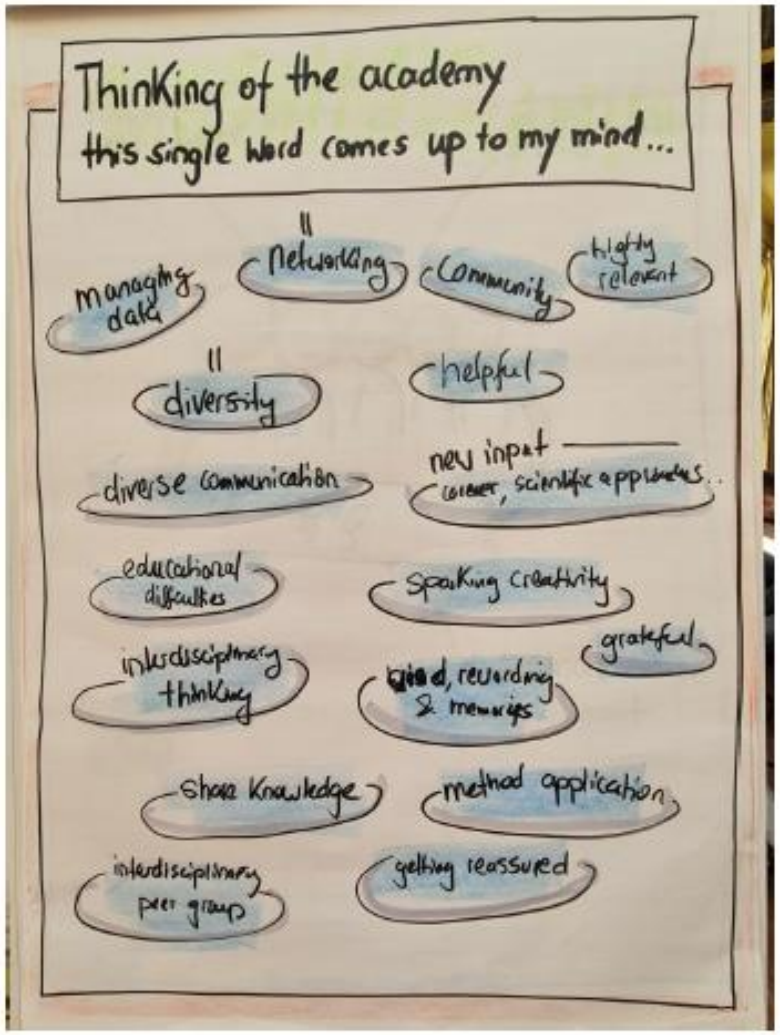
2024-08

DOI: 10.5281/zenodo.12806504

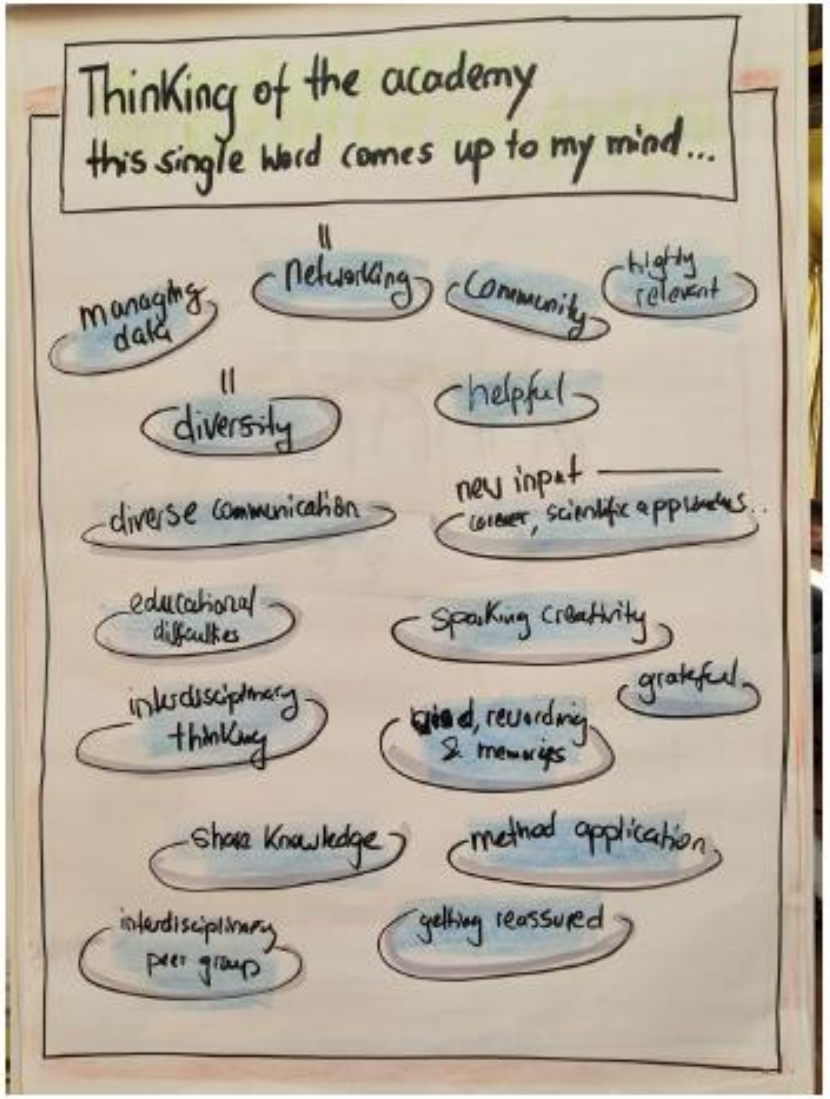
nfdi4earth.de

Link to white paper: https://zenodo.org/records/13684199

Feedback / Evaluation results



Feedback / Evaluation results



Successfully wrapping up Phase 1

NFDI4Earth

Thank you!

Thank you!

EduTrain: An Overview

N4E Learning Objective Matrix

- Enabling Micro-Learning and Modularity
- Designing Courses Systematically
- Structuring Progression

N4E Inventory of OER

- Collection of Quality-Assured OER in ESS
- Educational Material as FAIR Digital Objects
- Identifying the Gaps in Existing OER

N4E Educational Pilots

- Filling Knowledge Gaps in Existing OER
- Developing Material on Emerging Topics
- Community Involvement and Support

N4E Educational Portal

- Learner-centered UX
- Interactive Modules and Notebooks
- Zero Setup Required

EduTrain: Learning Objective Matrix

Open Reproducible Spatio-Temporal Data Analysis

NFDI4Earth

200
Learning Objectives

88
Progression Relationships

50
Courses Defined

42
OER Mapped

20
Learning Units Developed

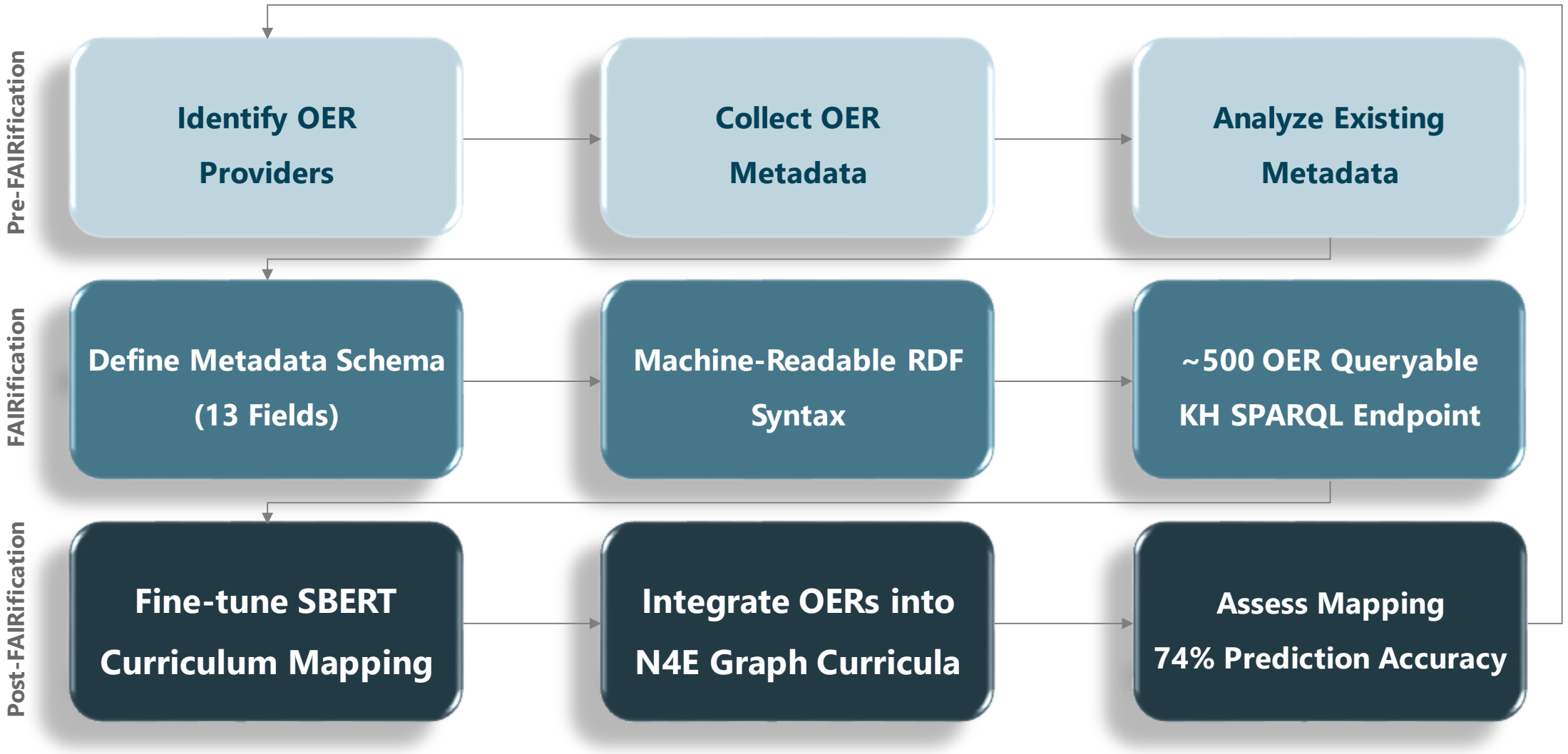
Core Framework

Modular Design

Open Reproducible Methods

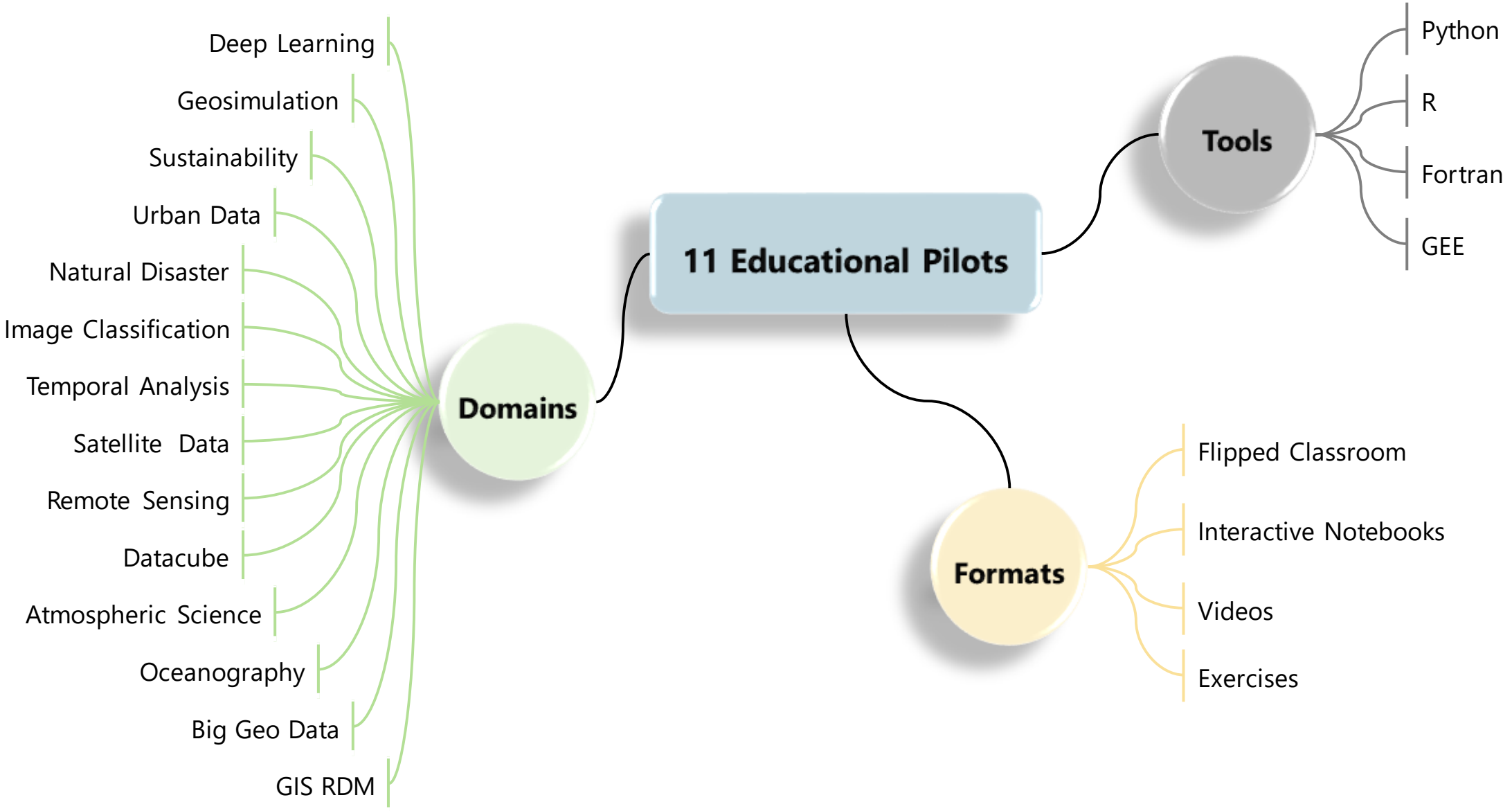
Flexible & Adoptable

EduTrain: Inventory of FAIR OER



⚠ More in the Workshop on AI Use in NFDI4Earth

EduTrain: Educational Pilots



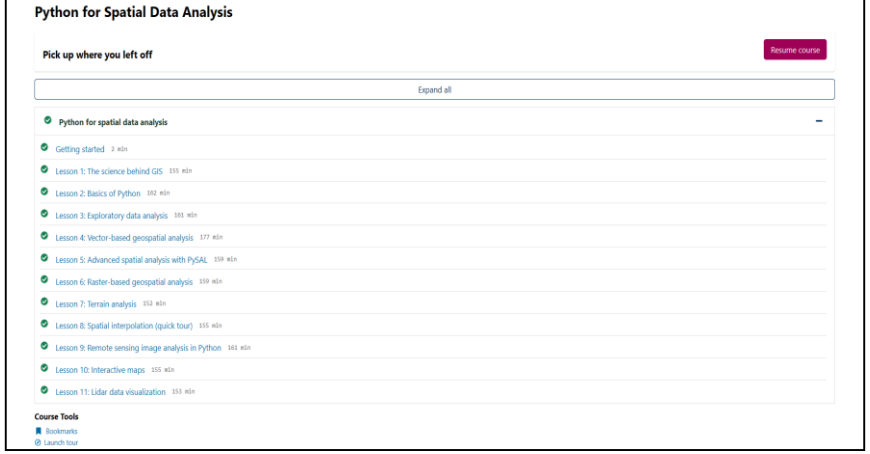
EduTrain: Educational Portal

30
ESS
Courses

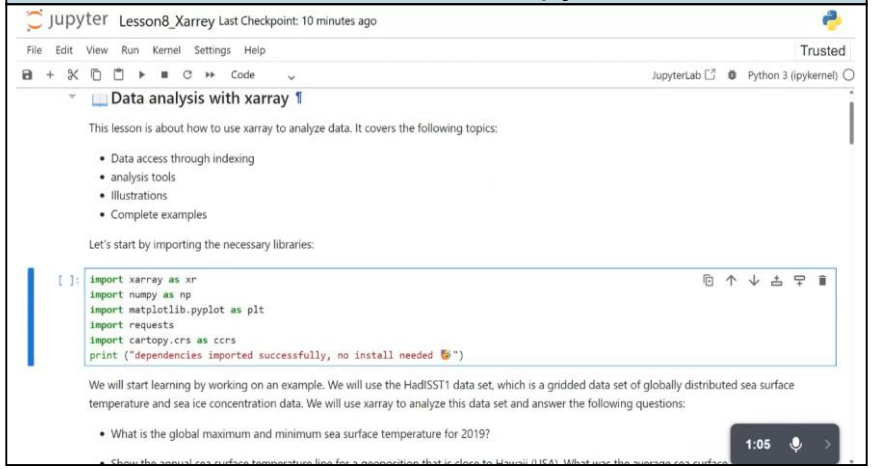
292
Learning
Units

677
Learner
Enrollments

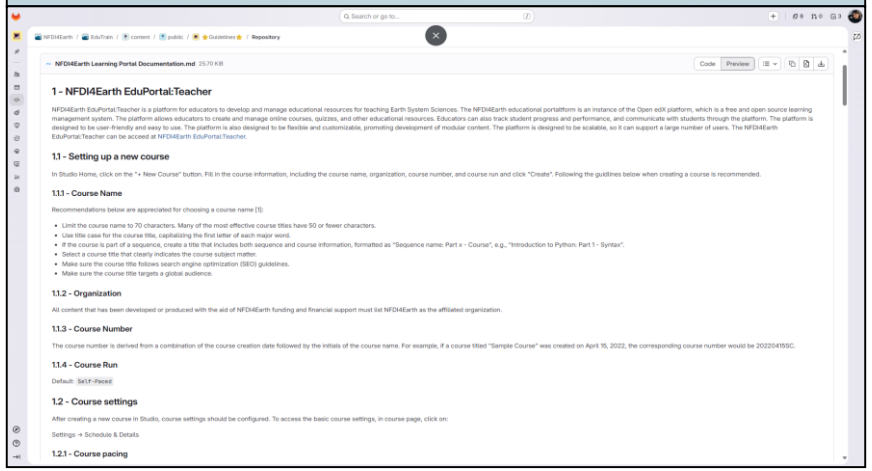
Modular Courses



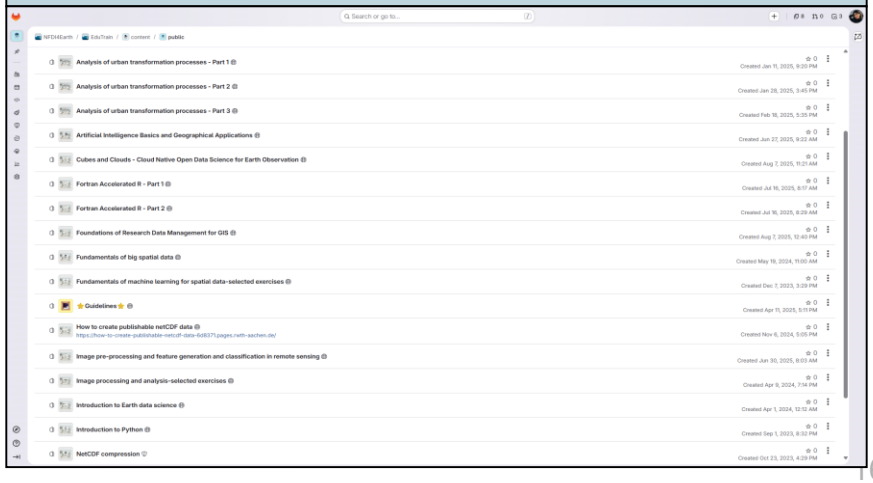
Live Jupyter Notebooks



N4E Guidelines for Course Creators

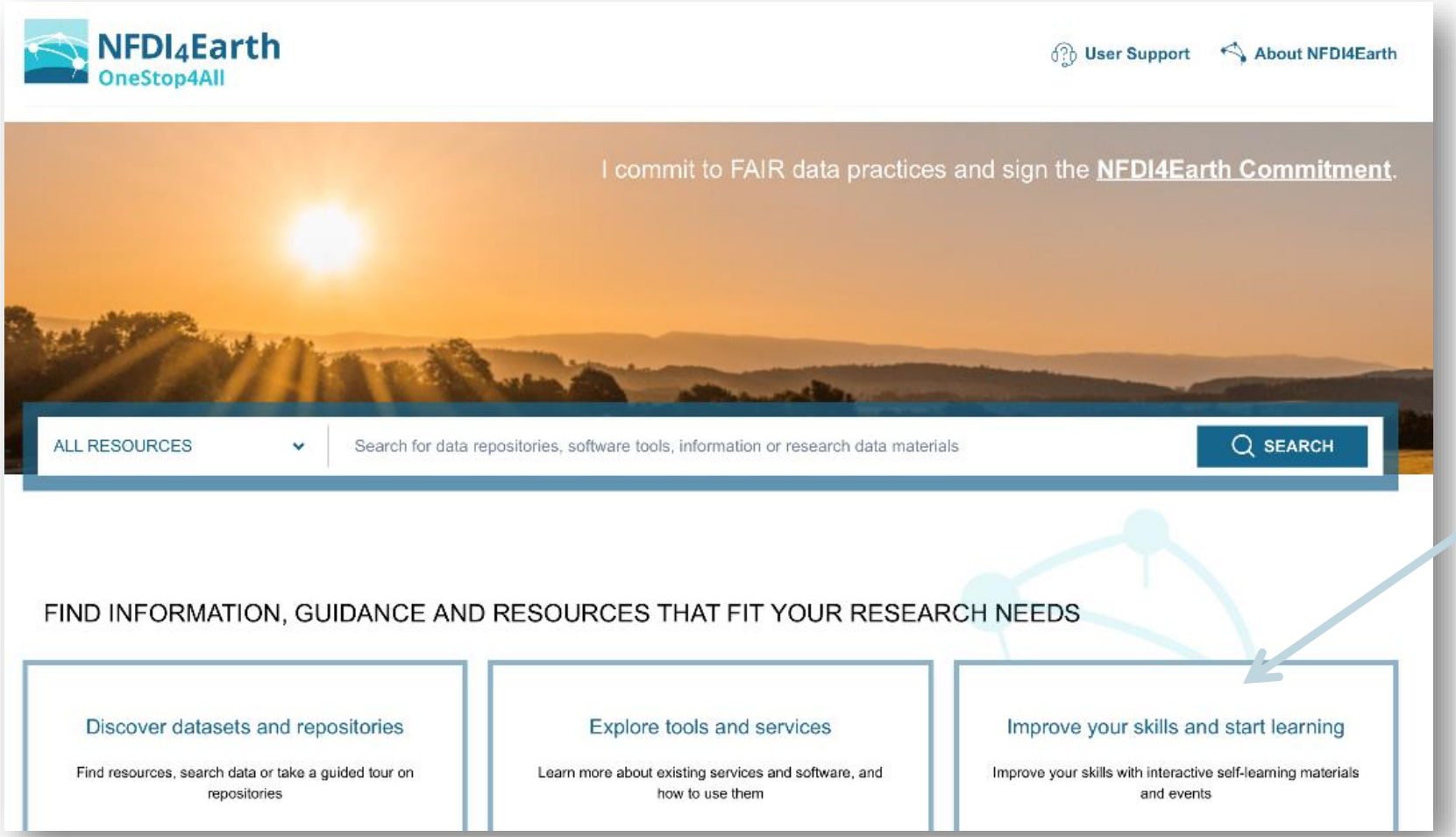


Raw Material Available for Reuse



OneStop4All – Our Community Portal

- Central service to support researchers in realizing FAIR research data management
- Single entry point to diverse community resources



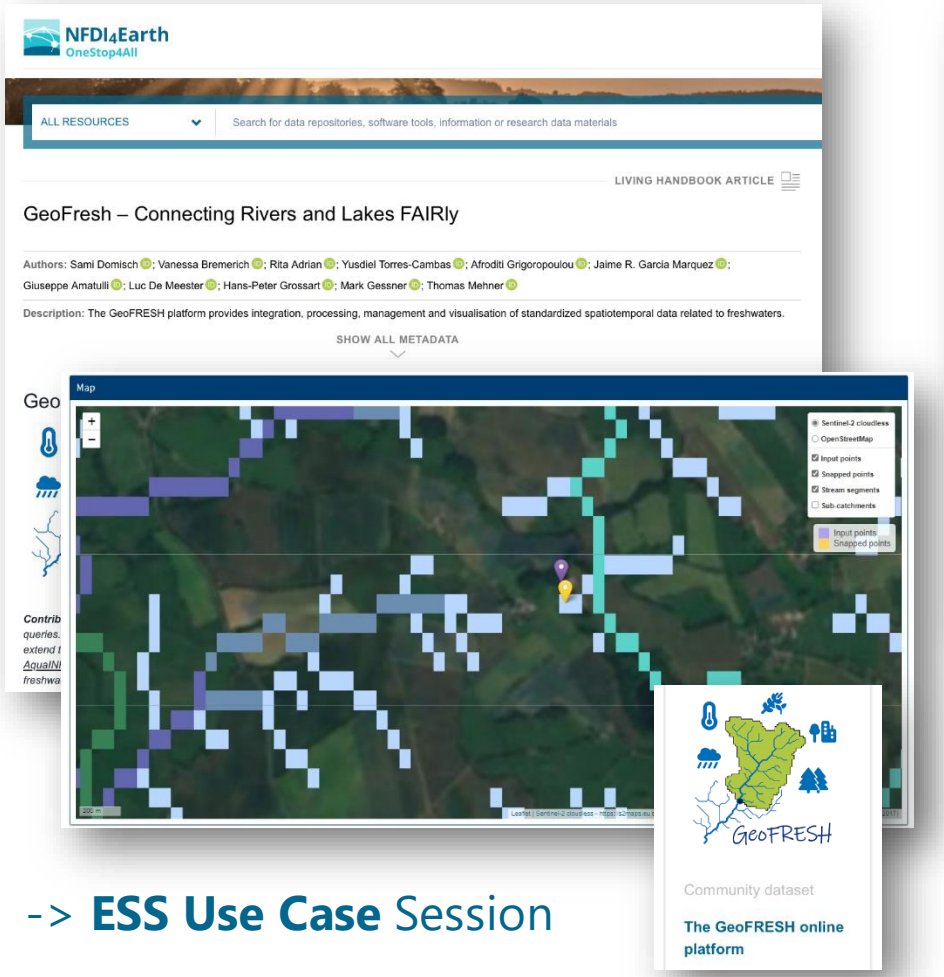
- Datasets
- Repositories * GUIDED *
- Software & Services
- Learning Resources

...

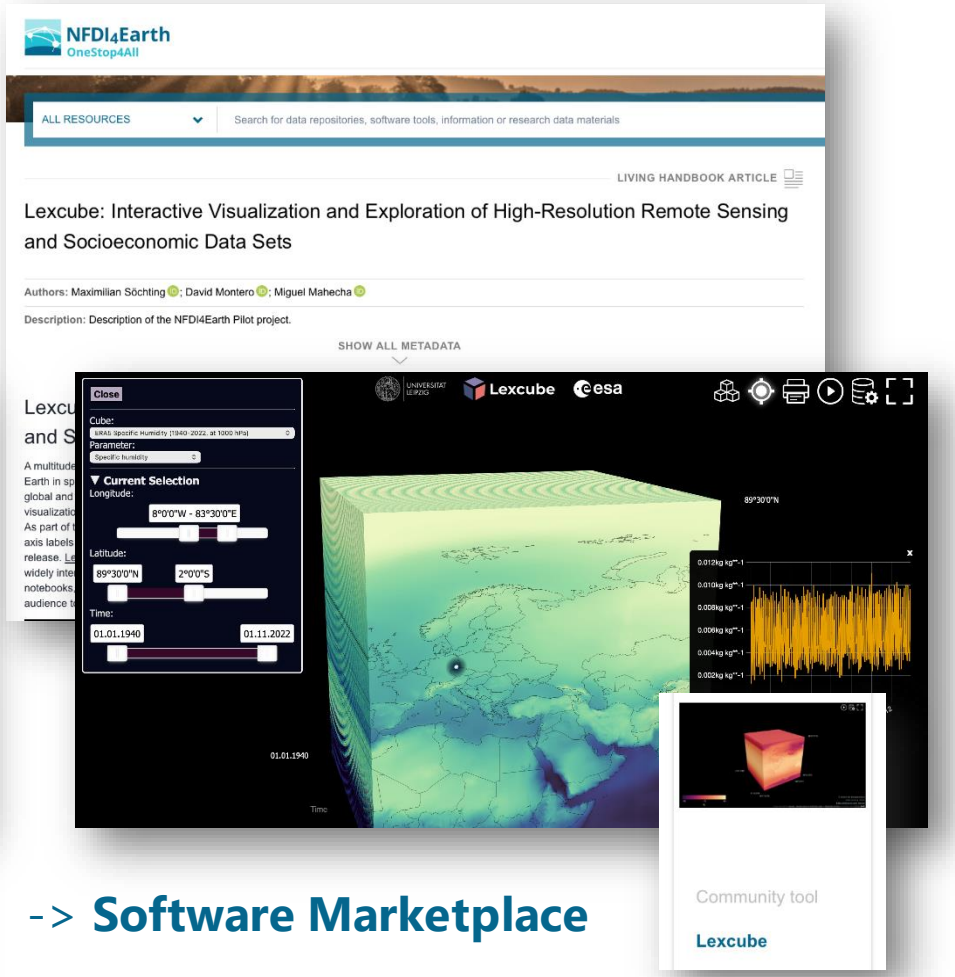
LIVE DEMO @ Software Marketplace today

OneStop4All – Our Community Portal

- To share community data and software showcases
- And participate in NFDI4Earth



-> **ESS Use Case** Session

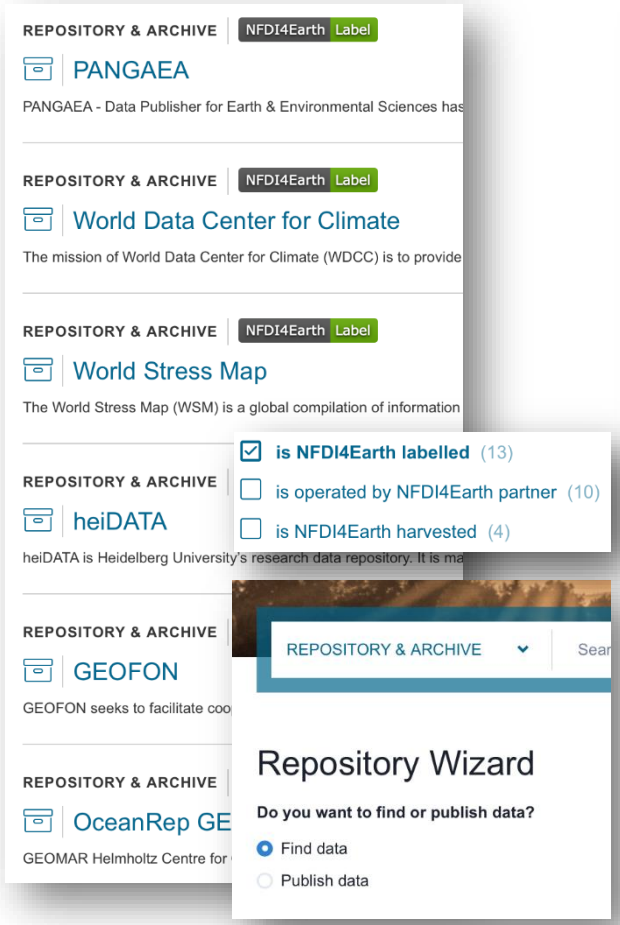


-> **Software Marketplace**

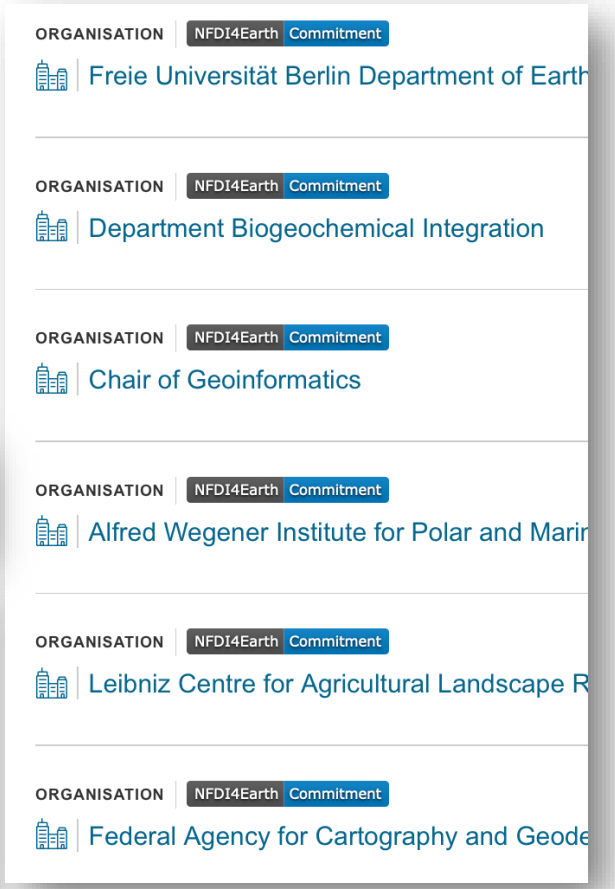
OneStop4All – Our Community Portal

- Makes NFDI4Earth products and services visible, e.g.:

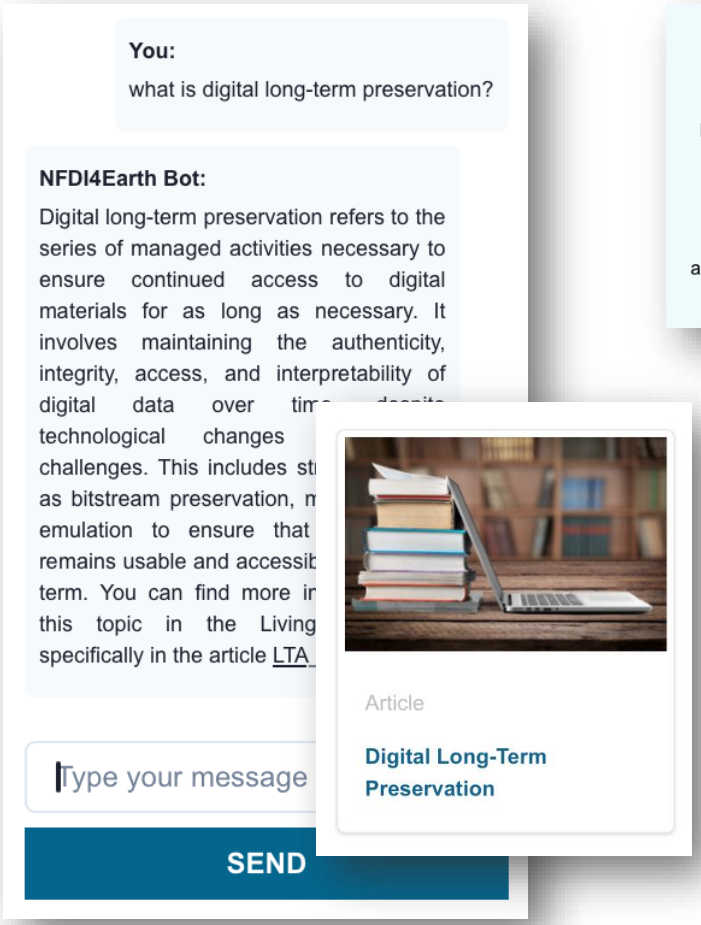
Interoperability **Label** for repositories



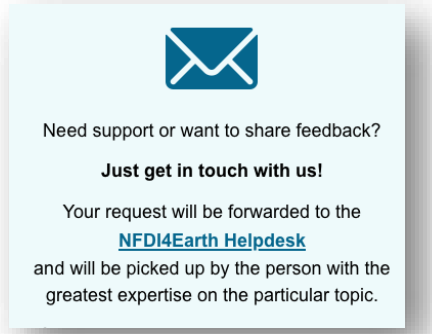
FAIRness & openness **Commitment**



RDM articles from the **Living Handbook**



User Support Network

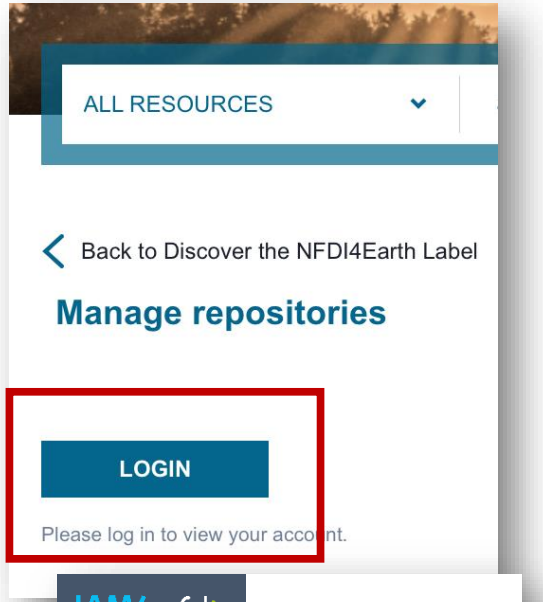


-> **next pitches**

OneStop4All – Our Community Portal

- Embedded in a strong ecosystem, e.g.:

Identity & access management



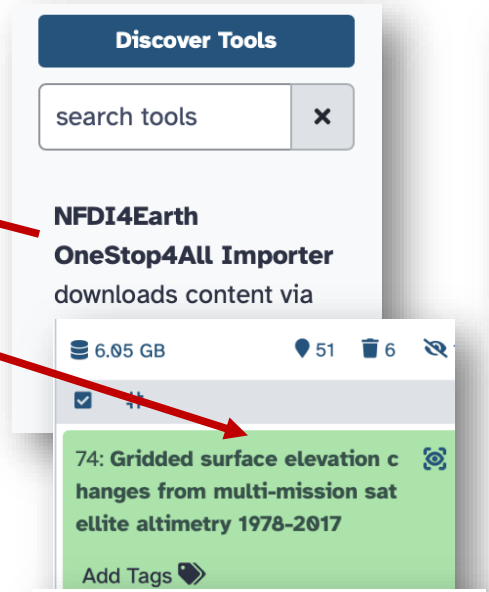
IAM4nfdi
Identity and Access Management for the German National Research Data Infrastructure

base4nfdi

Curation & software developments

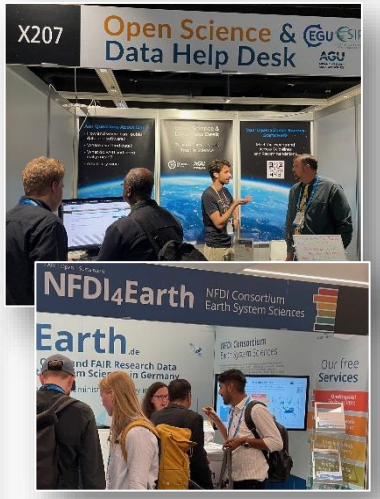
DataHub
Research Field Earth and Environment

Processing & analysis



DATA TERRA
Galaxy EUROPE
eosc

Feedback & support

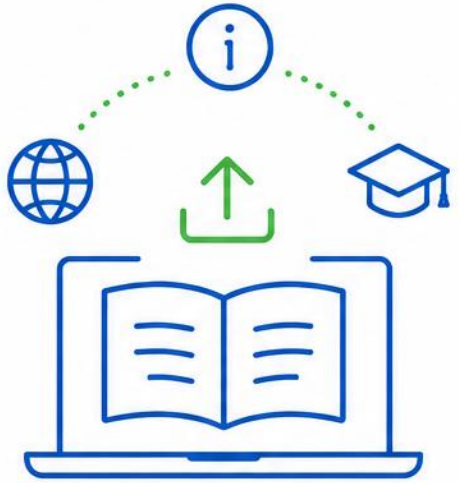


NFDI4Earth User Support

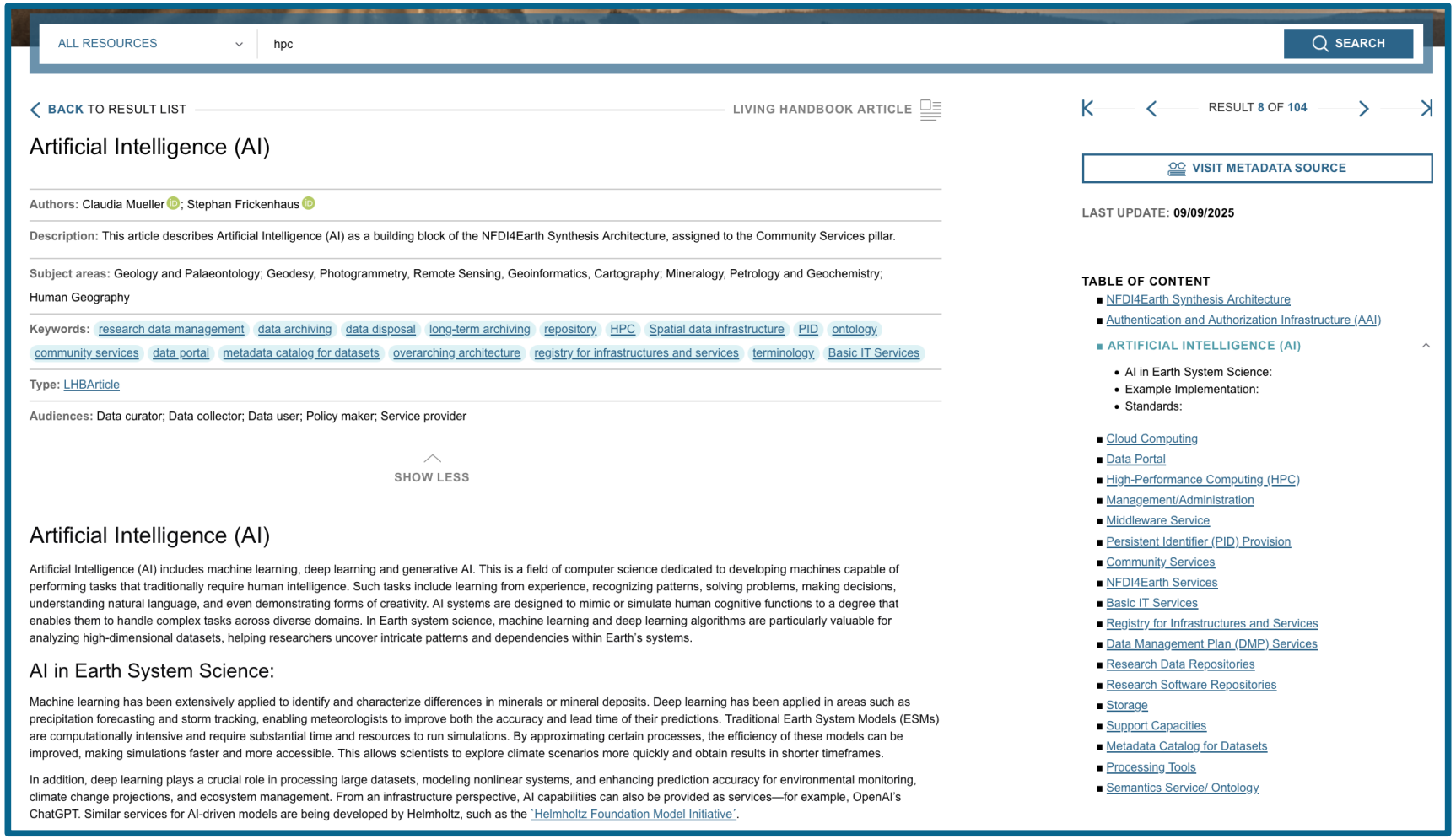
Idea of the Living Handbook

Dominik Hezel & Jie Xu

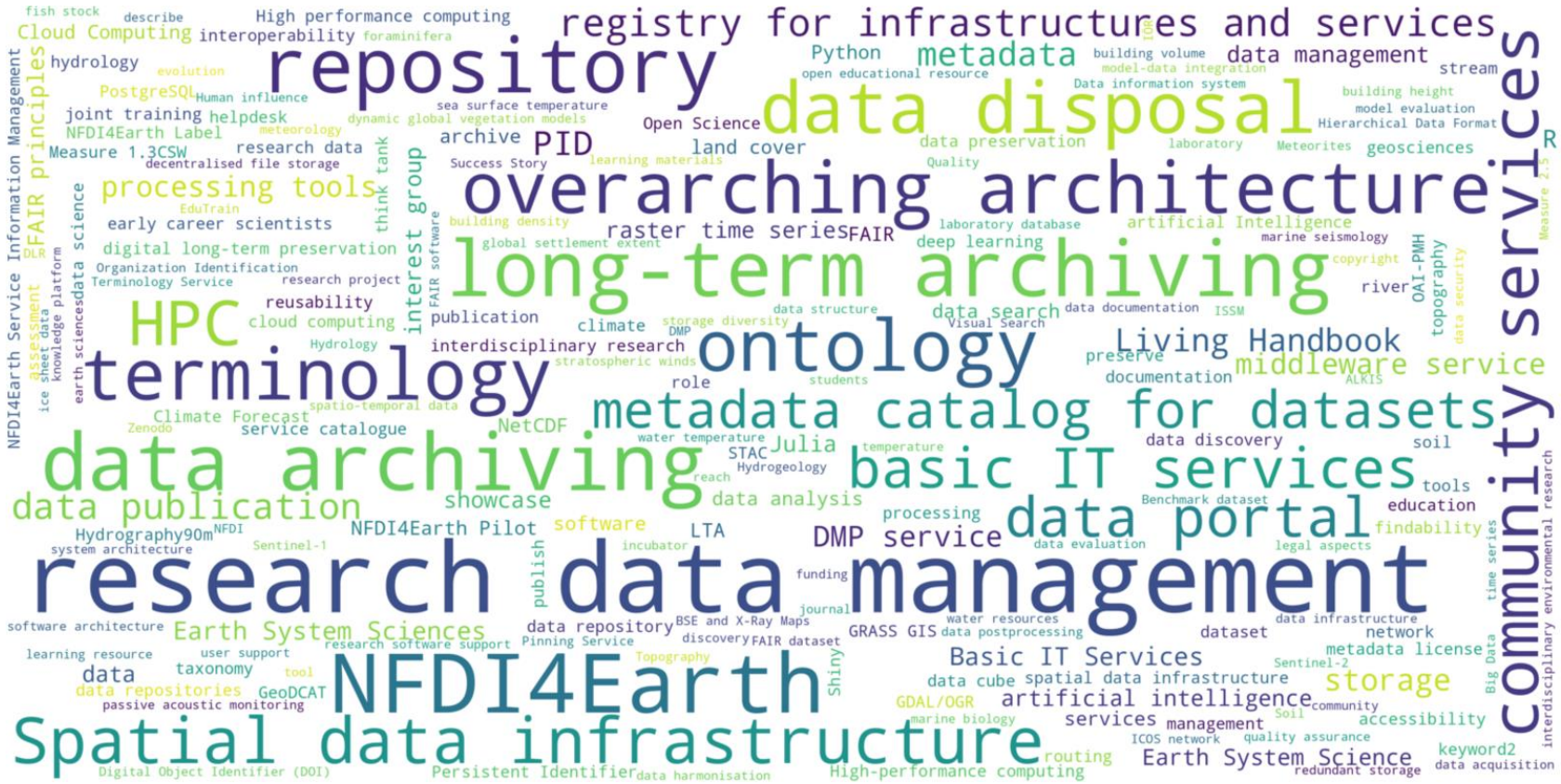
- NFDI4Earth owned, text-based repository
- Integrated in the OneStop4All → no need to leave the NFDI4Earth webpage
- Home for NFDI4Earth related information
- Home for RDM in the ESS related information
- Wiki-inspired updates



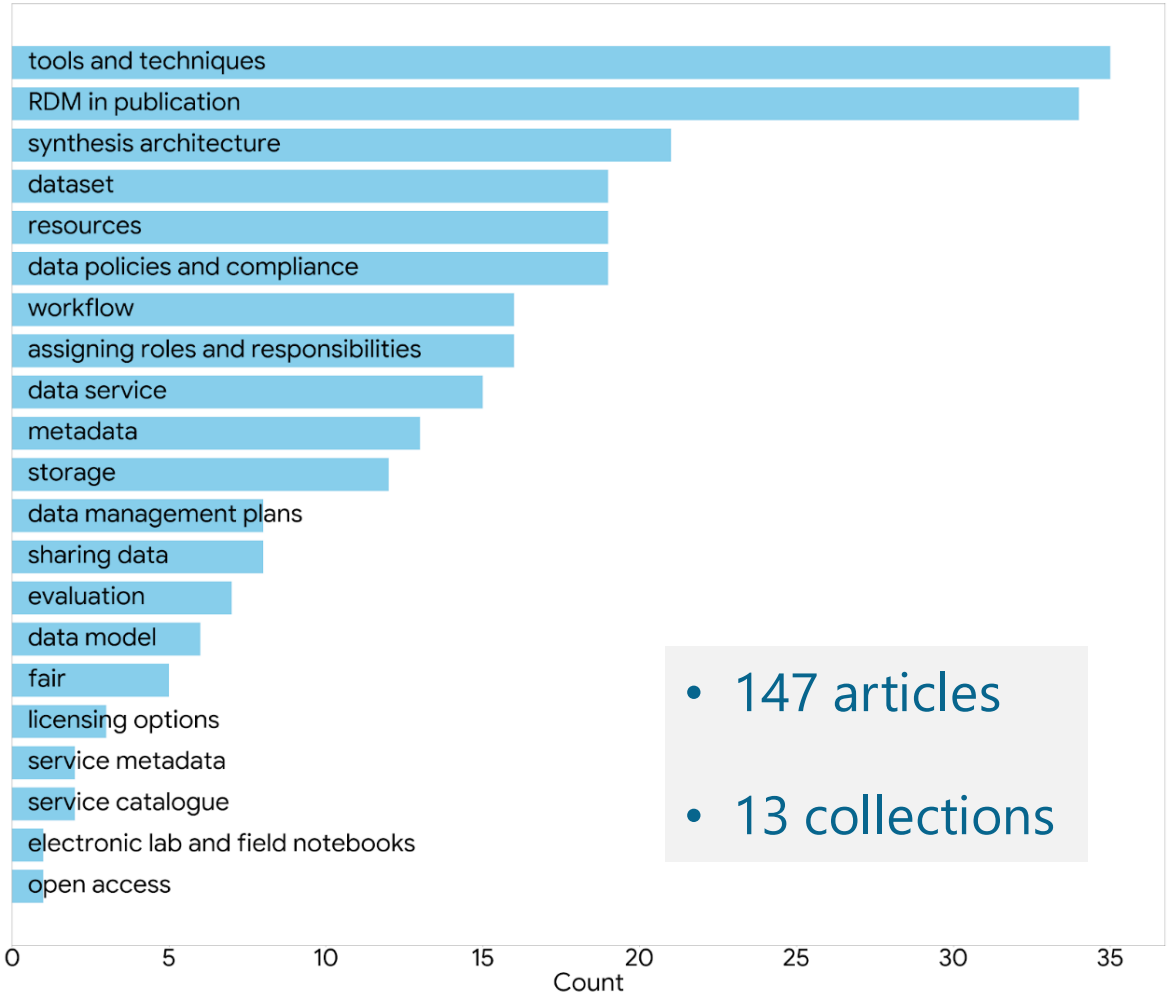
Living Handbook



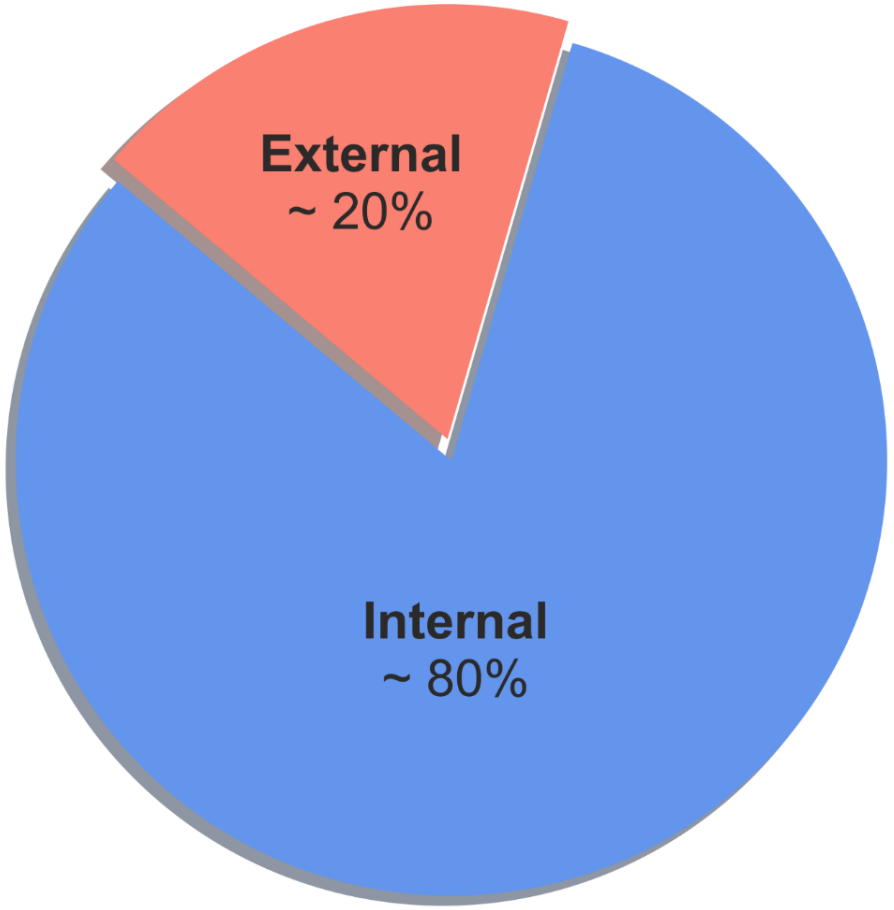
Living Handbook - Content



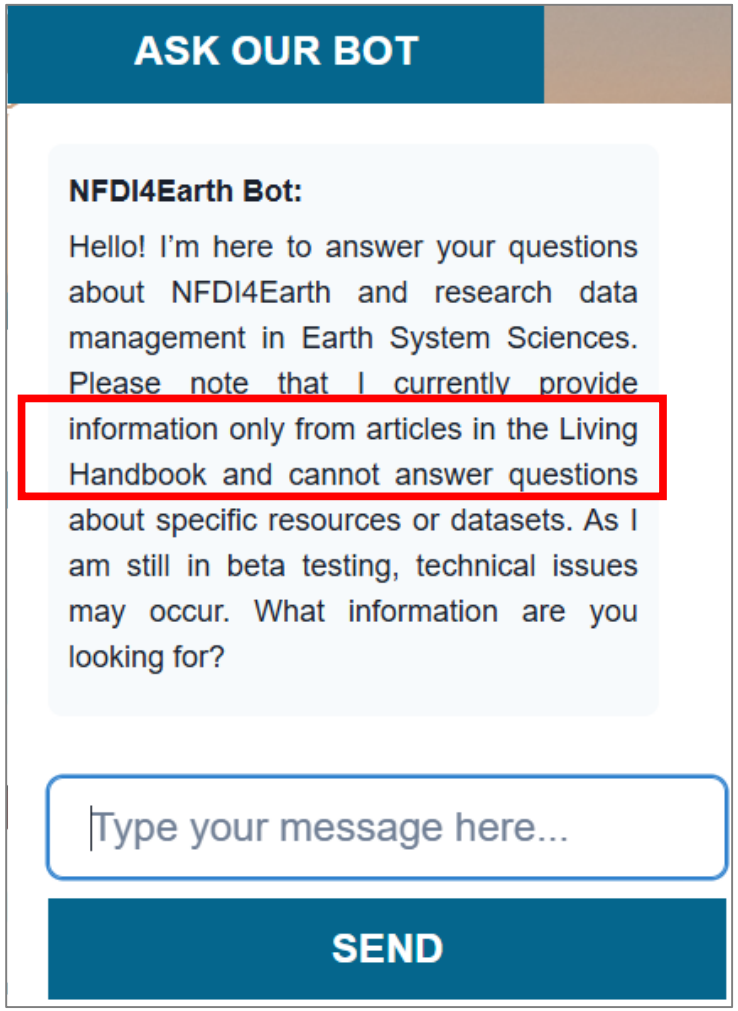
Living Handbook - Article Statistics



- 147 articles
- 13 collections



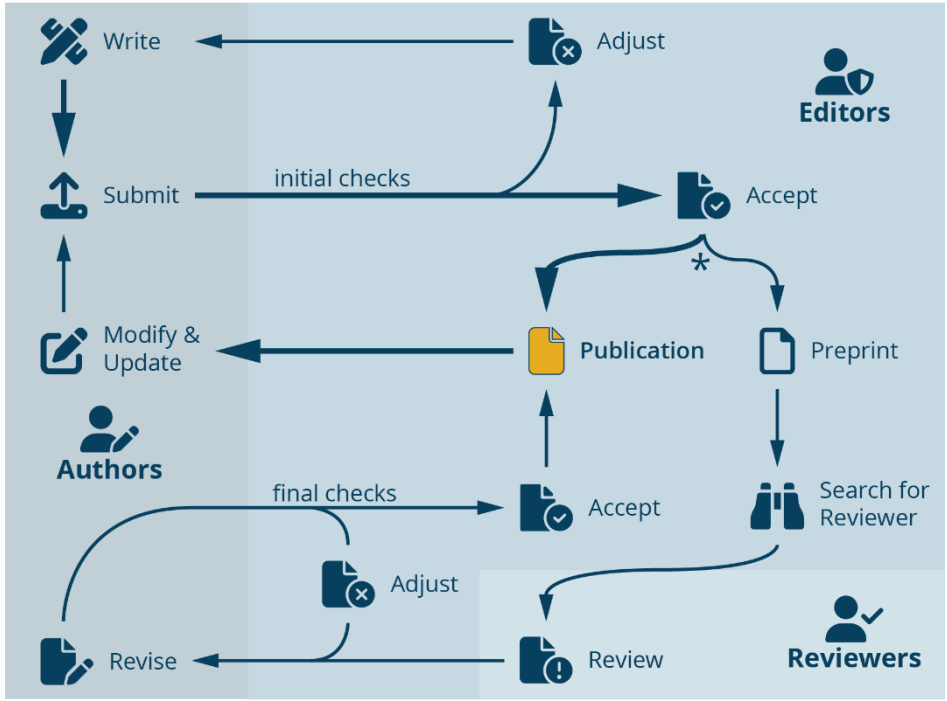
Living Handbook - The basis for our Bot



Achievments & Relevance vs. Issues

- Almost 150 articles
- High quality articles
- Basis for chatbot

yes!



- Complex review process
- Hard to receive more articles
- Hard to track all urls

Living Handbook– Editorial board & technical support

Executive Editor

Jie Xu
Institut für Geowissenschaften, Goethe Universität Frankfurt

Ines Langer
Freie Universität Berlin

Claudia Müller
Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung

Valentina Protopopova-Kakar
GFZ Helmholtz Centre for Geosciences

Dominik C. Hezel
Institut für Geowissenschaften, Goethe Universität Frankfurt

Jonas Grieb
nckenberg Gesellschaft Naturforschung

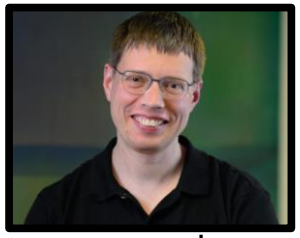
Christin Henzen
Technische Universität Dresden

Kemeng Liu
Center for Earth System Research and Sustainability (CEN)

Ivonne Anders
Deutsches Klimarechenzentrum

Michael Finkel
Zentrum für angewandte Geowissenschaften, Universität Tübingen

Ira Gerloff
Leibniz-Institut für Angewandte Geophysik



ex-member
Thomas Rose

Auriol Degbelo

Ralf Klammer
Technische Universität

The Living Handbook is moving to a new measure!

Andrea Lammert,
DKRZ

Ivonne Anders,
DKRZ

Measure 3.2: User Support Network

Integration and Support of the 4Earth Community

… and we switch to TA2 for phase 2

NFDI4Earth
Training Schools

Measure 2.4

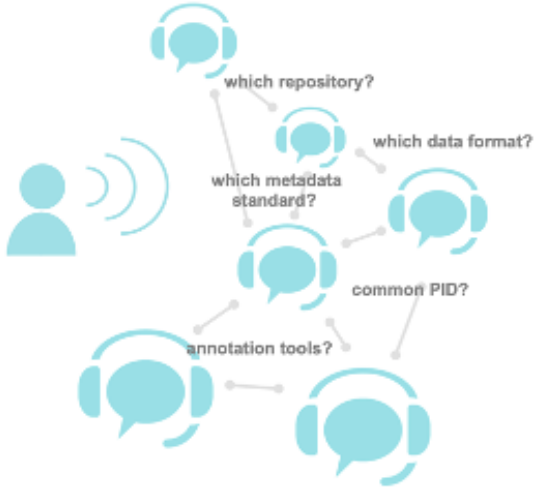
User Support Network

NFDI4Earth

Community support

Living Handbook

Pilot collaboration



Internal structure

NFDI4Earth Label

... Feedback, Label and ServicePortfolio

User Support Network

NFDI4Earth

Community involvement

Newsletter: Question of the Quarter

Question of the Quarter
NFDI4Earth
??User Support!!

NFDI4Earth / USN visibility

EGU General Assembly 2025

FDM.SH

CoRDI, Data Science Symposium, RDA-DE, ...

Projects

CDRterra

CDRmare

DataHub
Research Field Earth and Environment

DAM DEUTSCHE ALLIANZ MEERESFORSCHUNG

User Support Network

NFDI4Earth

Highlights

- Ticket System operational in 2022

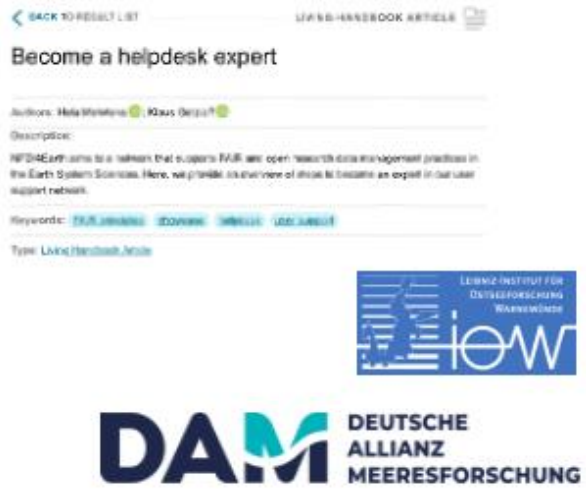
10+ Agents

10+ FAQs

1+ Ticket System

200+ Tickets

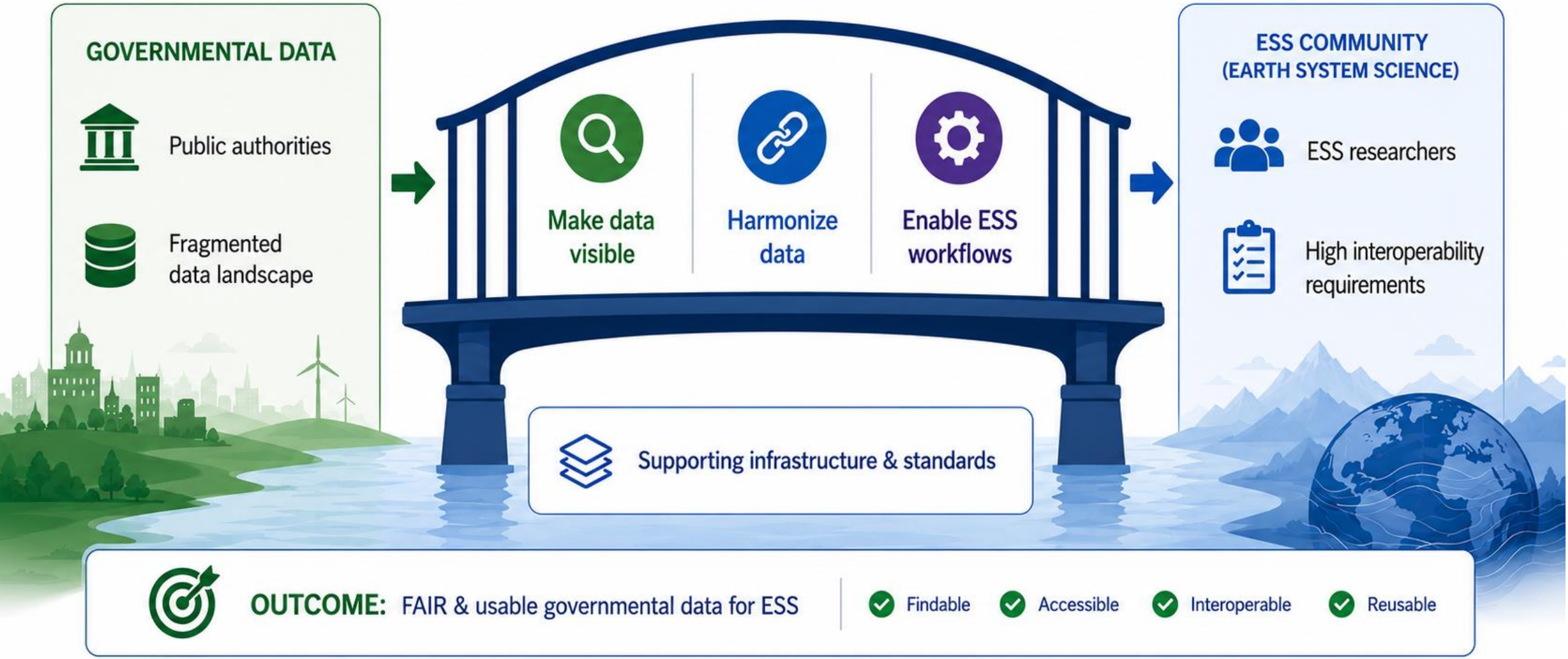
- extended network external and internal



Geo-Chem-Life Science Helpdesk-Network

Governmental Data and Advancing Tools

NFDI4Earth



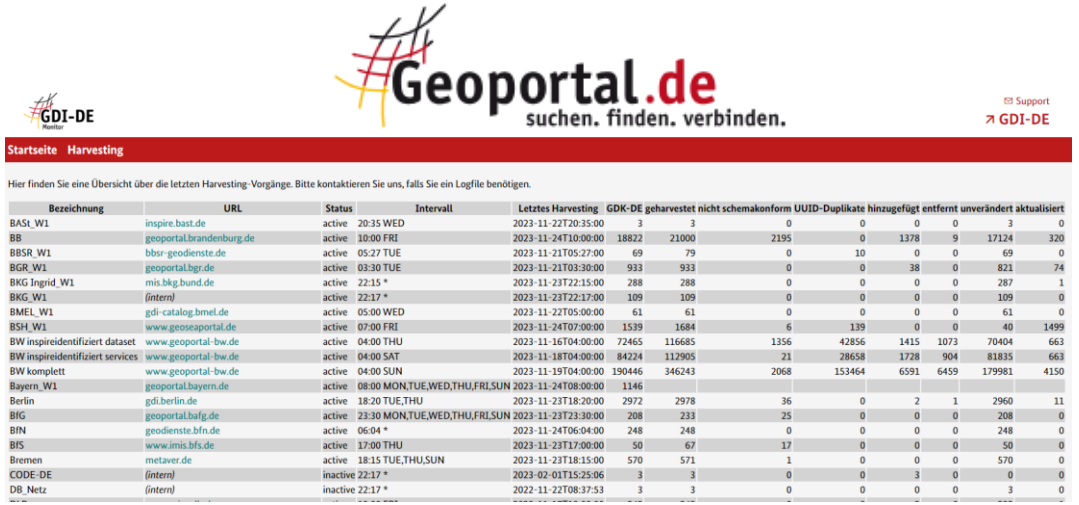
Governmental Data and Advancing Tools: Key Results

NFDI4Earth

Structural Impact:
- Mapping of governmental data landscape
- Use case-based data requirements

Scientific Usability:
- COSMO-REA6 data cube development
- High-Value Data integration tests

Strategic Collaboration:
- Cooperation with authorities
- Exchange with GDI-DE & umwelt.info

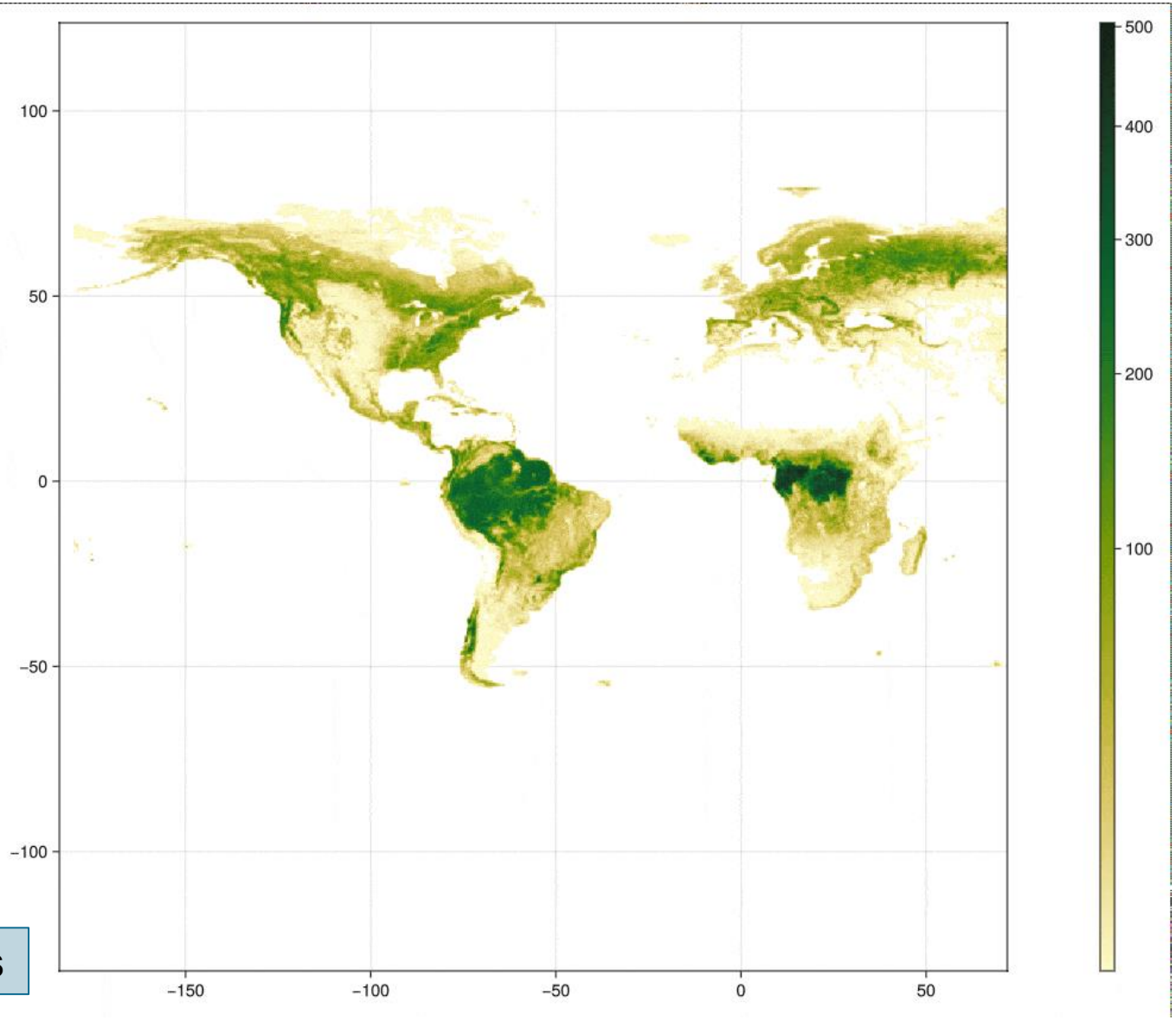


Bezeichnung	URL	Status	Intervall	Letztes Harvesting	GDK-DE	geharvestet	nicht schemakonform	UUID-Duplikate	hinzugefügt	entfernt	unverändert	aktualisiert
BASt_W1	inspire.bast.de	active	20:35 WED	2023-11-22T20:35:00	3	3	0	0	0	0	3	0
BB	geoportal.brandenburg.de	active	10:00 FRI	2023-11-24T10:00:00	18822	21000	2195	0	1378	9	17124	320
BBSR_W1	bbsr-geodienste.de	active	05:27 TUE	2023-11-21T05:27:00	69	79	0	10	0	0	69	0
BGR_W1	geoportal.bgr.de	active	03:30 TUE	2023-11-21T03:30:00	933	933	0	0	38	0	821	74
BKG Ingrid_W1	mis.bkg.bund.de	active	22:15 *	2023-11-23T22:15:00	288	288	0	0	0	0	287	1
BKG_W1	(intern)	active	22:17 *	2023-11-23T22:17:00	109	109	0	0	0	0	109	0
BMEL_W1	gdi-catalog.bmel.de	active	05:00 WED	2023-11-22T05:00:00	61	61	0	0	0	0	61	0
BSH_W1	www.geoseaportal.de	active	07:00 FRI	2023-11-24T07:00:00	1539	1684	6	139	0	0	40	1499
BW inspireidentifiziert dataset	www.geoportal-bw.de	active	04:00 THU	2023-11-16T04:00:00	72465	116685	1356	42856	1415	1073	70404	663
BW inspireidentifiziert services	www.geoportal-bw.de	active	04:00 SAT	2023-11-18T04:00:00	84224	112905	21	28658	1728	904	81835	663
BW komplett	www.geoportal-bw.de	active	04:00 SUN	2023-11-19T04:00:00	190446	346243	2068	153464	6591	6459	179981	4150
Bayern_W1	geoportal.bayern.de	active	08:00 MON,TUE,WED,THU,FRI,SUN	2023-11-24T08:00:00	1146							
Berlin	gdi.berlin.de	active	18:20 TUE,THU	2023-11-23T18:20:00	2972	2978	36	0	2	1	2960	11
BfG	geoportal.bafg.de	active	23:30 MON,TUE,WED,THU,FRI,SUN	2023-11-23T23:30:00	208	233	25	0	0	0	208	0
BfN	geodienste.bfn.de	active	06:04 *	2023-11-24T06:04:00	248	248	0	0	0	0	248	0
BfS	www.imis.bfs.de	active	17:00 THU	2023-11-23T17:00:00	50	67	17	0	0	0	50	0
Bremen	metaver.de	active	18:15 TUE,THU,SUN	2023-11-23T18:15:00	570	571	1	0	0	0	570	0
CODE-DE	(intern)	inactive	22:17 *	2023-02-01T15:25:06	3	3	0	0	3	0	0	0
DB_Netz	(intern)	inactive	22:17 *	2022-11-22T08:37:53	3	3	0	0	0	0	3	0

Governmental Data and Advancing Tools: Technological Key Outputs

- FAIR Publishing of a large dataset
- Benchmarks on data formats
- Open Source contributions:

  PyramidScheme.jl

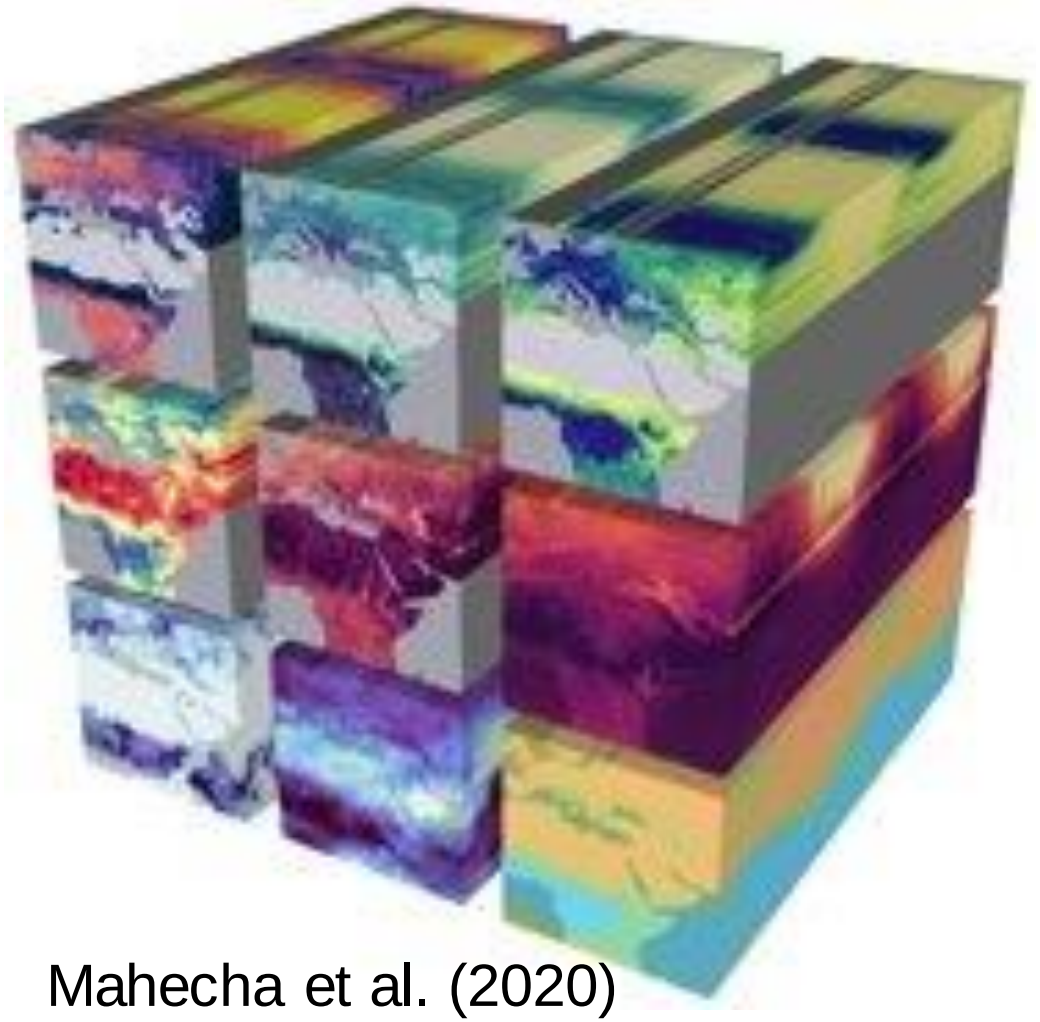


Global 100 m biomass example generated via PyramidScheme.jl

Seamless zoom across spatial scales

Governmental Data and Advancing Tools: Methodological Key Outputs

- **Use case-driven OneStop4All data search** workflows
- **Cross-language** workflows
- Harmonised raster & vector **data cubes**
- Scalable & reusable **analysis workflows**



Mahecha et al. (2020)
https://doi.org/10.5194/esd-11-201-2020

Governmental Data and Advancing Tools: Community Outputs & Dissemination

- **Workshops & Hackathons:**

  High-Value Data & NFDI4Earth Academy events

- **Community & institutional collaboration:**

  Pangeo & cross-NFDI gov data cooperation

- **Training & knowledge transfer:**

  Tutorials in R, Python and Julia + guidance reports

Report on data made available for research by governmental authorities

Availability of Government Data for Research Purposes

Astrid Ziemann (astrid.ziemann@tu-dresden.de), Alois Georg Wieshuber, Tim Schürmann, Stefan Krämer , Maximilian Berthold, Frank Kratzenstein

Overview of data cube technologies and review of other emerging technologies

Felix Cremer (fcremer@bgc-jena.mpg.de), Hannes Dröse, Yomna Eid, Fabian Gans, Sibylle Hassler, Arne Osterthun, Edzer Pebesma

Service Management and Architecture

- Repositories and Data Portals – cooperation with re3data
- RDM Services – Metadata and collection of services
- NFDI4Earth Synthesis Architecture and the NFDI Overall Architecture

Service Management and Architecture

Repositories and Data Portals – cooperation with re3data

- re3data uses a standardised set of metadata
- re3data assigns DOIs (Digital Object Identifiers) to repositories

➢ NFDI4Earth uses re3data as main source for repository metadata

re3data.org

Registry of Research Data Repositories

The NFDI4Earth part

- Supported in keeping repository metadata up to date
- Reported outdated and not existing repositories (to be marked accor
- Suggested ESS relevant repositories for registration with re3data
- Supported repository providers in the registration process

Frickenhaus, F.; Grieb, J.; Henzen, C.; Müller, C.; Protopopova-Kakar, V. Weiland, C. (2025) NFDI4Earth Cooperation - re3data (NFDI4Earth White Paper) NFDI4Earth Community on Zenodo. https://zenodo.org/doi/10.5281/zenodo.15095431

Service Management and Architecture

Repositories and Data Portals – Updated repository entries since 2024

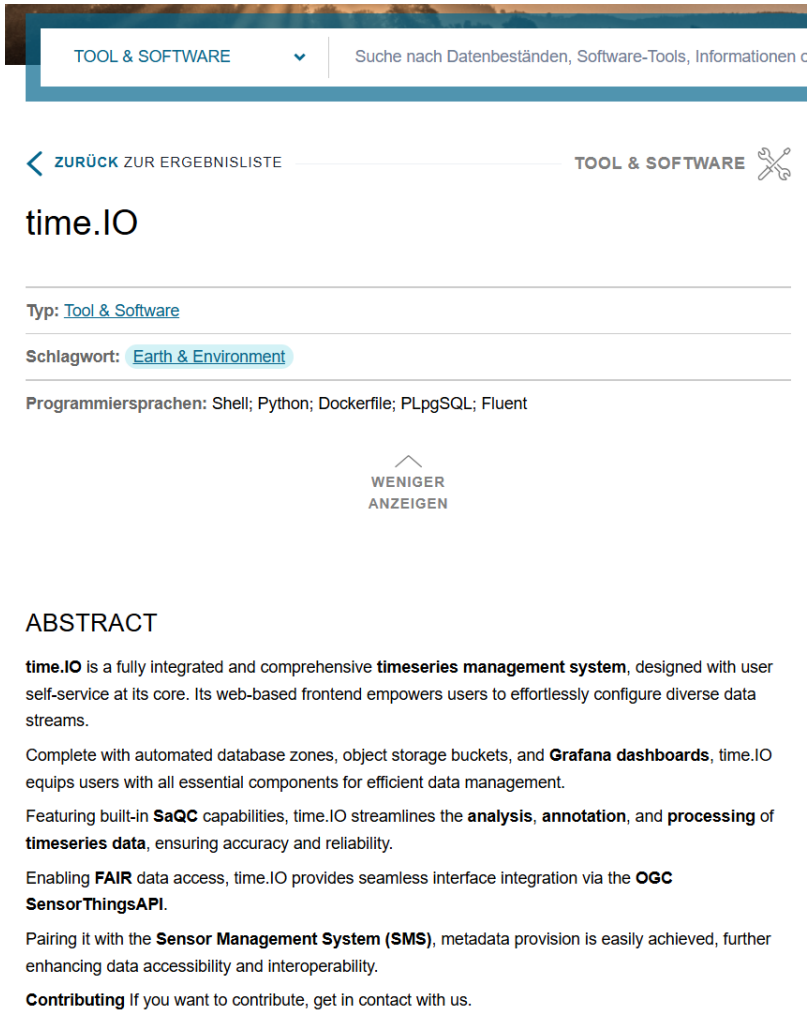
Updates	Number of repositories
ROR (persistent identifiers for research organisation)	16
General updates (URL, Keywords, API info etc.)	26
Metadata field ‘enhanced publication’ lacked clear explanation – better explanation added	All

Service Management and Architecture

RDM Services – Metadata and collection of services

- Developed and refined a RDM service schema with 34 attributes of which 5 are mandatory
- Conducted a metadata collection of services via a survey
  - ➢ 75 questions send out, yielding 29 valid responses
- Mapped most entries successfully to the service schema
- Integrated the information into the Knowledge Hub and OneStop4All
- New services can be suggested via the **NFDI4Earth Helpdesk***

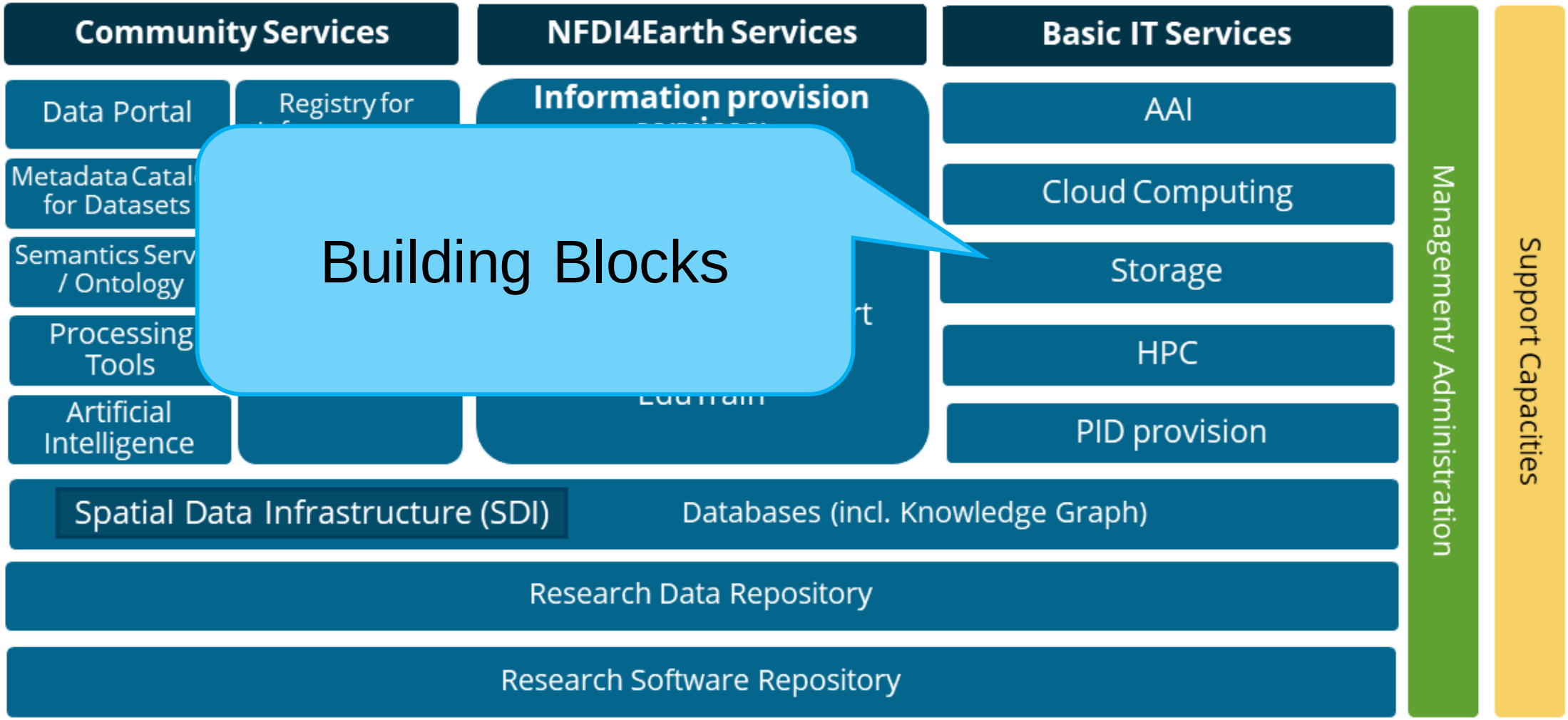
(*https://onestop4all.nfdi4earth.de/result/lhb-docs-N4E_Suggest_A_Service.md)



Liu, K., Henzen, C., Frickenhaus, S., & Müller, C. (2025). Extended Service Catalogue (NFDI4Earth Milestone MS3.1.2) (1.0). NFDI4Earth Community on Zenodo. https://doi.org/10.5281/zenodo.17584787

Service Management and Architecture

NFDI4Earth Synthesis Architecture and the Overall Architecture (NFDI OA)



Service Management and Architecture

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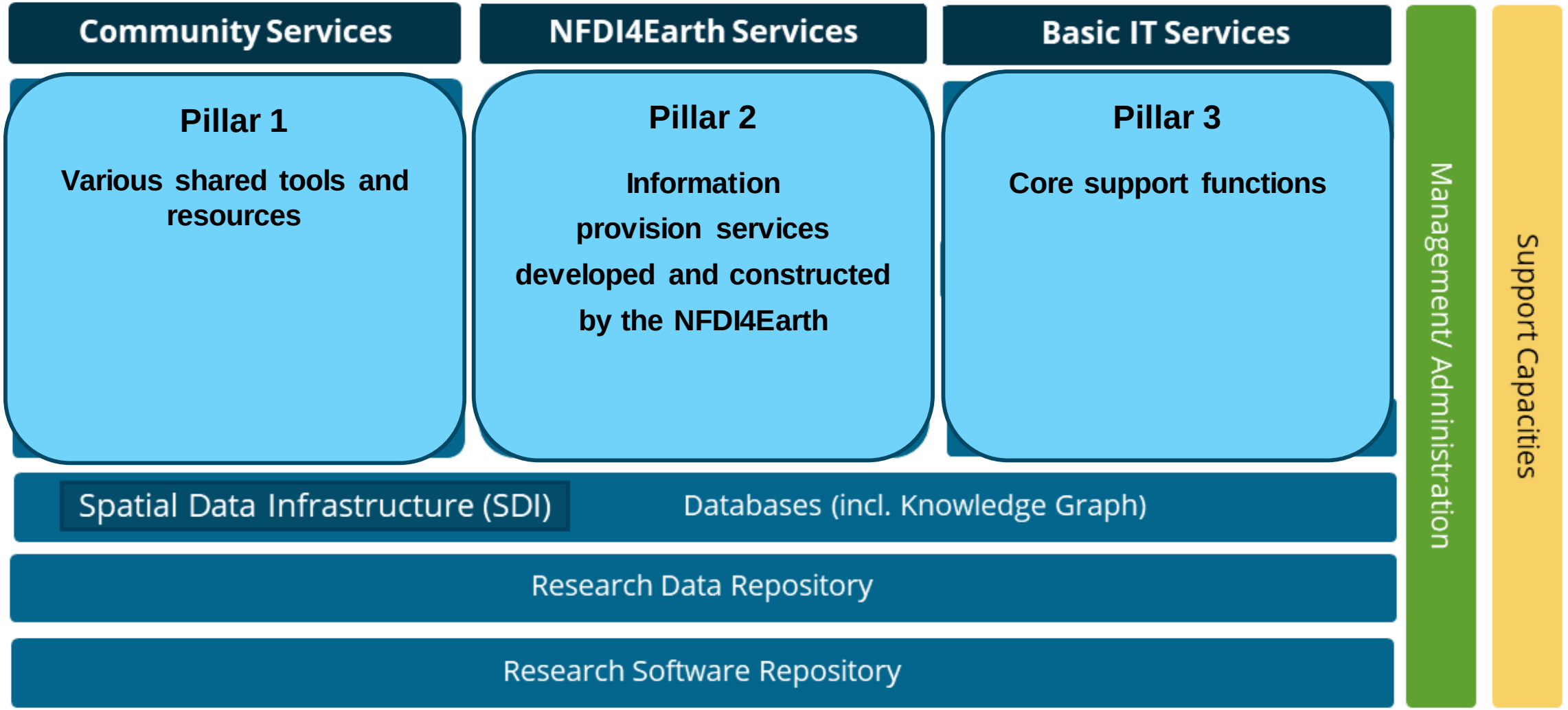
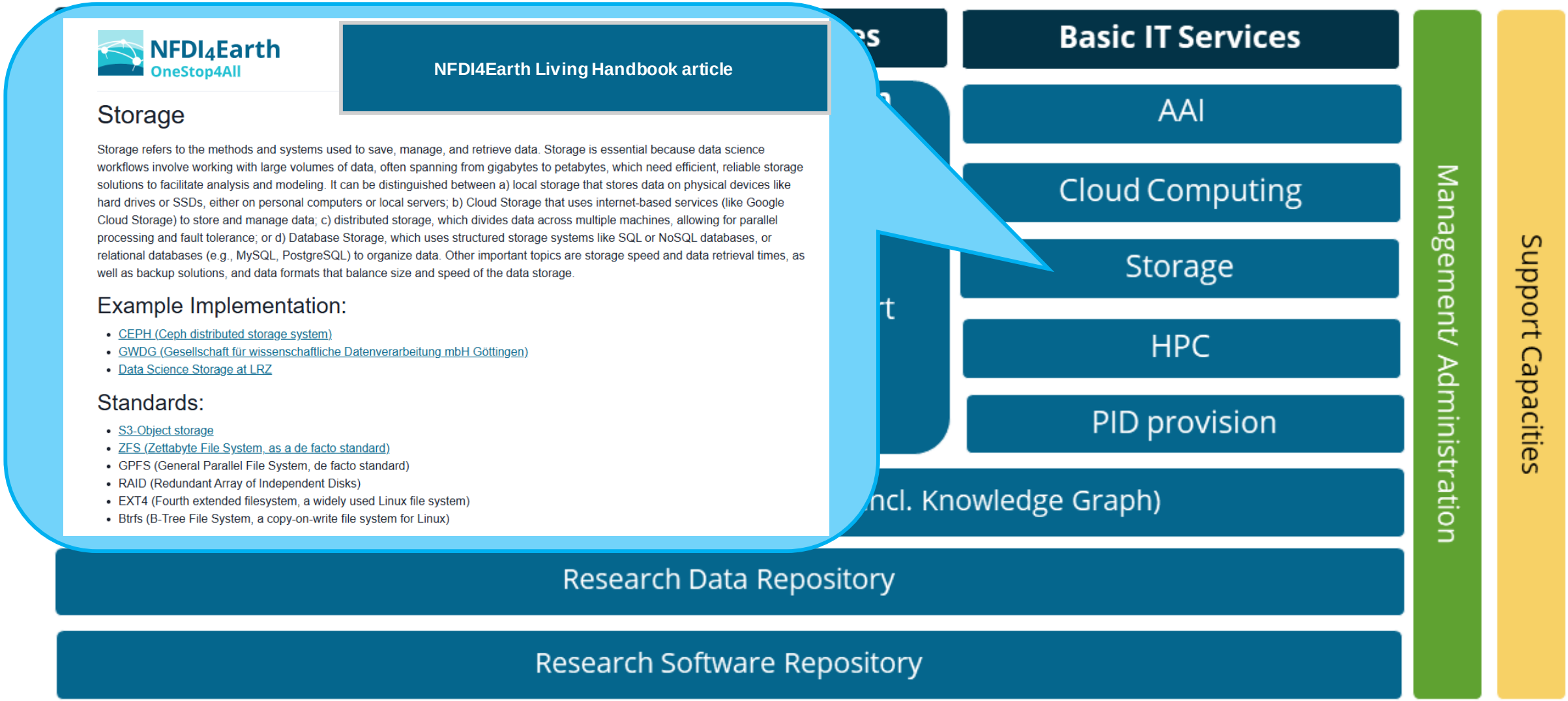


Frickenhaus, F.; Gerloff, I.; Hanisch, M.; Hezel, D.; Koppe, R.; Liu, K.; Müller, M.; Schmidt, C.; Söding, E.; Alexander Wellmann, A.; Wolodkin, A.; Xu, J.D. (2025) Workshop Report: NFDI4Earth Synthesis Architecture NFDI4Earth Community on Zenodo. https://zenodo.org/doi/10.5281/zenodo.15853504

Service Management and Architecture

NFDI4Earth Synthesis Architecture and the Overall Architecture (NFDI OA)



Service Management and Architecture

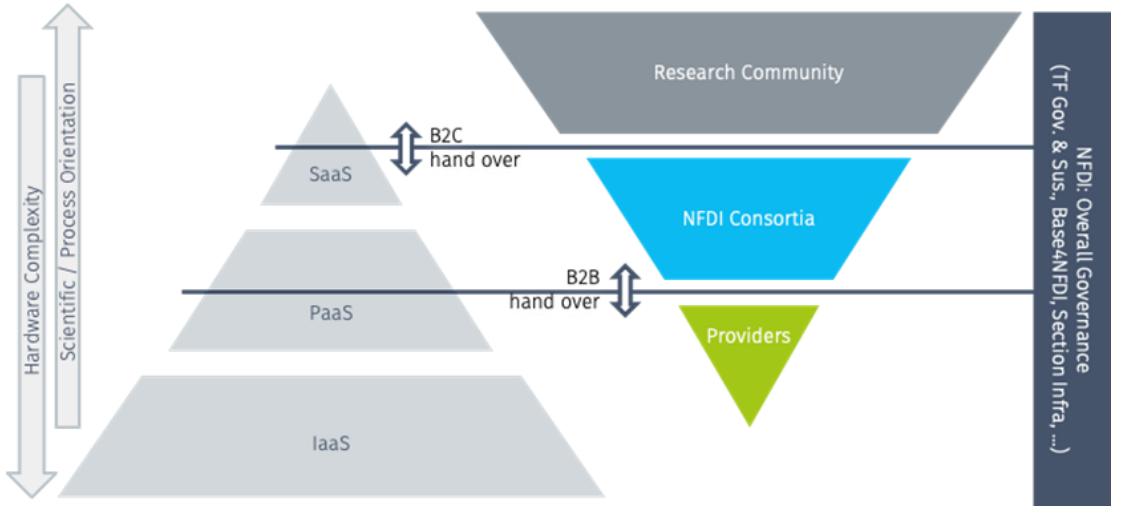
NFDI4Earth Synthesis Architecture and the Overall Architecture (NFDI OA)

NFDI OA concept

SaaS - Software as a Service

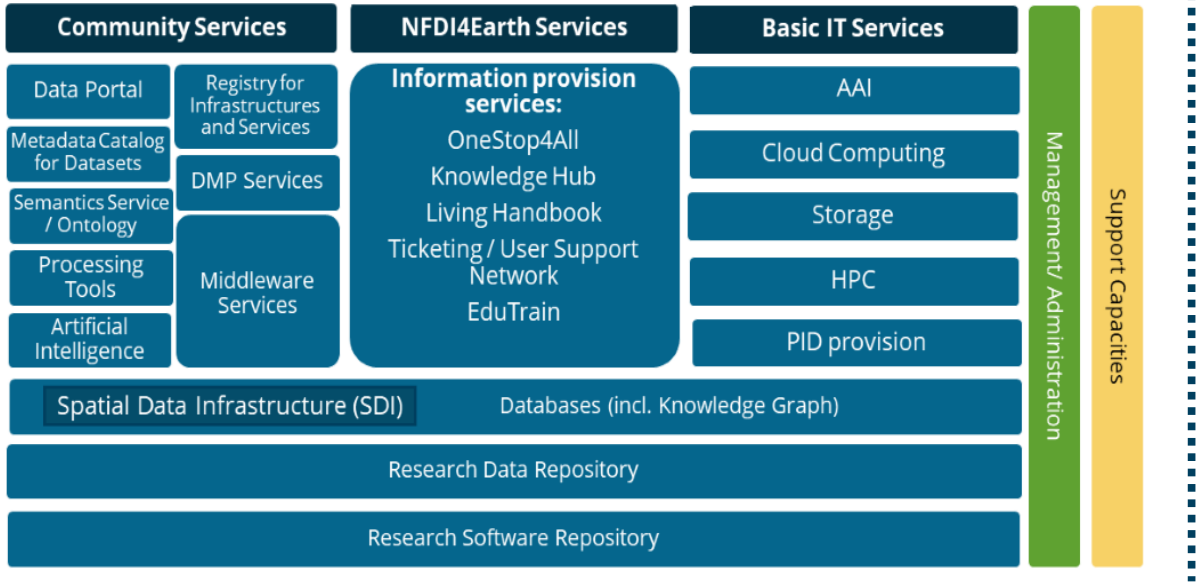
PaaS - Platform as a Service

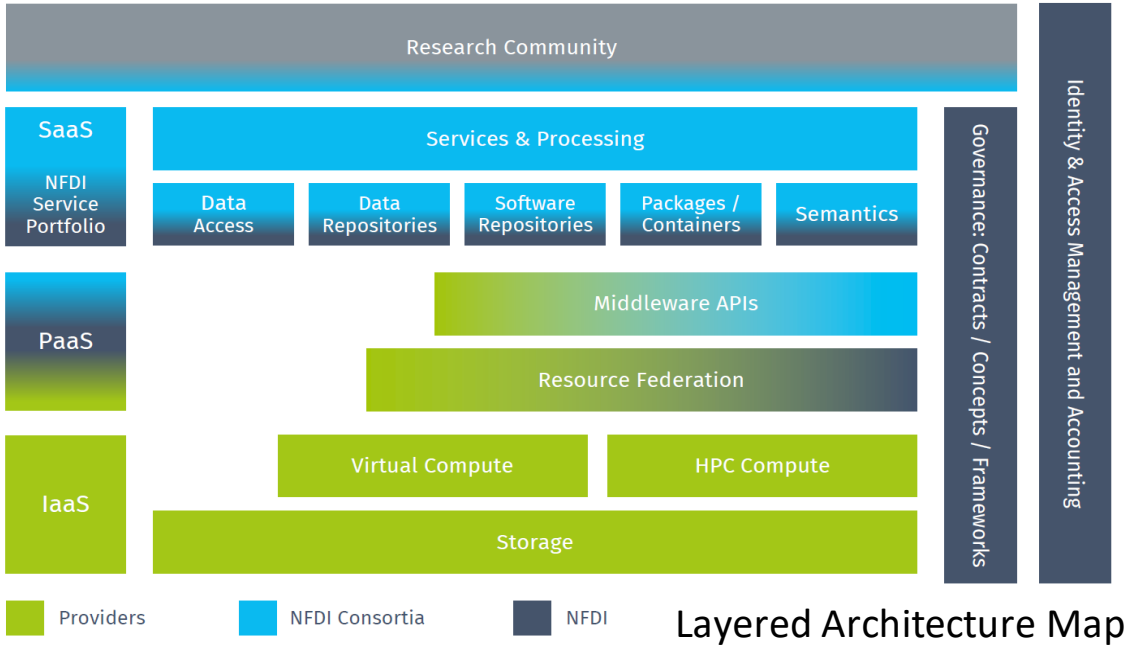
IaaS - Infrastructure as a Service



NFDI4Earth concept

with more services, in particular semantic/thematic ones





Layered Architecture Map

Beckstette, M. et. al. (2026). Outcomes of the First Overall Architecture Workshop. Zenodo. https://doi.org/10.5281/zenodo.18755450

Knowledge Hub

A linked data service for ESS resources

- 900k+ **Datasets**
- 400k+ **Data services**
- 500+ **Learning resources**
- 200+ **Software**

180+ **Data repositories**

170+ **Publications**

90+ **Metadata standards**

70+ **RDM services**

RDF Quad Store

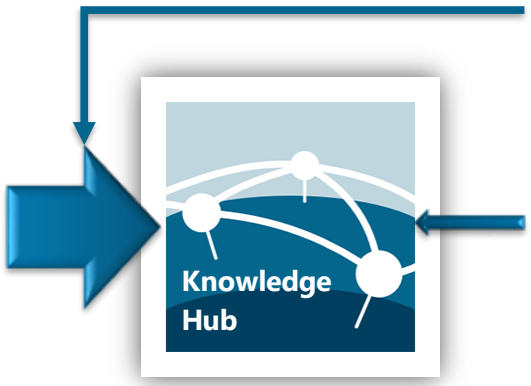
+ Digital Object storage

Data providers

Knowledge Hub

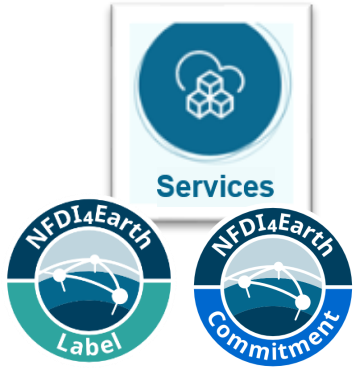
Data ingestion

Harvesting
Aggregators and resource providers



Curation within NFDI4Earth project
e.g., RDM service provider survey

EduTrain
Living Handbook
Pilots & Incubators



Integration in the NFDI4Earth community

- Building on existing **services** of **NFDI4Earth partners**

- **Collaboration** through **joint** development, metadata curation, publications

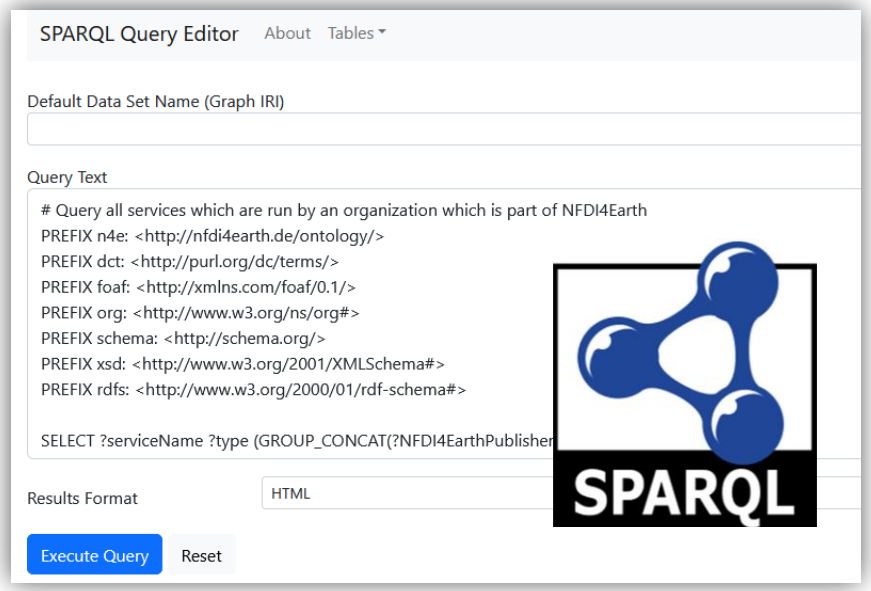
Example I: Joint development and metadata curation
Integration of resources offered by umwelt.info via DataHub

Example II: Joint publication
Recommendation paper for metadata provision in ESS

Knowledge Hub

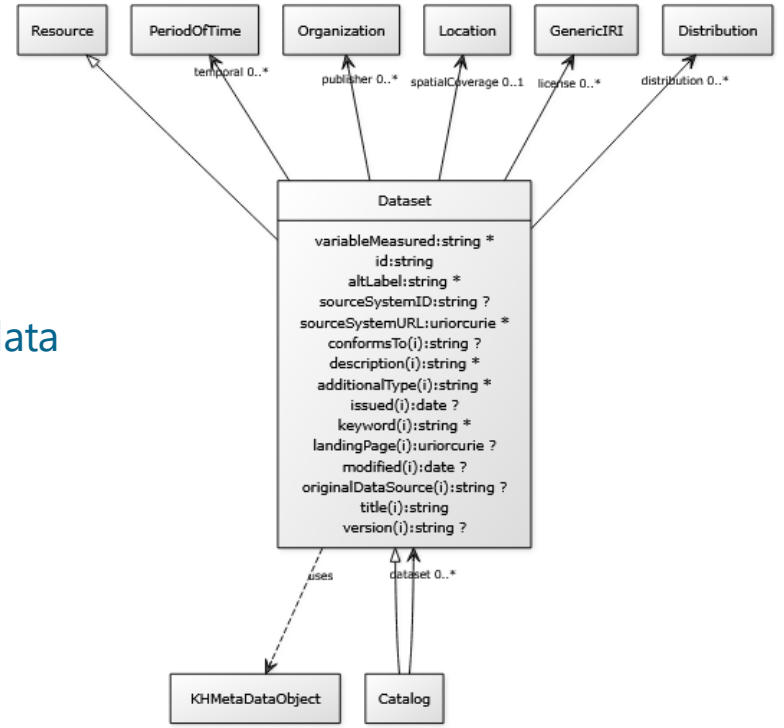
SPARQL API

Query endpoint for data exploration and retrieval of interconneced metadata



NFDI4Earth Ontology

Describes entities of research data infrastructures



Builds on widely adopted community standards, e.g.,

nfdicore Ontology

Open Geospatial Consortium

DCAT-AP.de

Schema.org

Findable via

TERMINOLOGY SERVICE BY TIB

EarthPortal

Bioregistry

Engagement in NFDI working groups, e.g.,

Taskforce Metadata
Search and Harvesting
Knowledge Graphs

Knowledge Hub

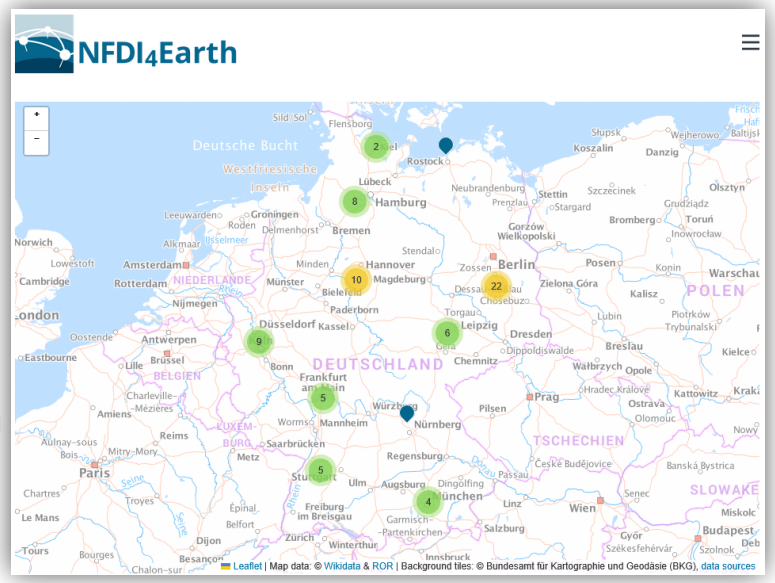
Focus 2025/26: Streamlining and consolidation

Harvest & query performance
Efficiency of data population and retrieval operations

Metadata curation
E.g., duplicate detection

Schema enrichment
Extension of existing classes

Metadata provider access
Enabling providers to insert and maintain metadata within the system



Consortium map, powered by data from the Knowledge Hub

Further efforts and work in progress

Metadata inference
Automated completion of missing or incomplete metadata fields

Schema expansion
E.g., integration of workflows

Service resilience
Automatic monitoring of processing pipelines

Apache Airflow

Natural language querying
Enabling metadata search and exploration using natural language

Discovery of related resources
Enabling exploration of semantic and structural connections between resources

See you at the Software Marketplace!

NFDI4Earth Label

- **Goal**: assess and improve the level of **interoperability** and **trustworthiness** of **research data repositories** in the **ESS**
- **Process:**
  - (M) **Automated assessment** based on **re3data** repository information
  - (M) **Manual self assessment**, information on the repository not available via re3data
  - (O) **Automated FAIR assessment** of a random sample of repository datasets using **F-UJI**
- 13 repositories awarded

NFDI4Earth

Get your label now!

DEIMS-SDR	2025-08-22	NFDI4Earth Label
Biodiversity Exploratories Information System	2025-09-01	NFDI4Earth Label
PANGAEA	2025-09-18	NFDI4Earth Label
World Data Center for Climate	2025-09-05	NFDI4Earth Label
Edmond	2025-11-07	NFDI4Earth Label
World Stress Map	2025-11-20	NFDI4Earth Label
heiDATA	2025-12-18	NFDI4Earth Label
GEOFON	2026-01-12	NFDI4Earth Label
OceanRep GEOMAR Repository	2025-08-22	NFDI4Earth Label
Edaphobase	2026-02-06	NFDI4Earth Label
GFZ Data Services	2026-02-19	NFDI4Earth Label
ioerDATA	2026-03-16	NFDI4Earth Label
UFZ Spatial Data Catalog	2026-05-20	NFDI4Earth Label

NFDI4Earth Label

FAIRness & Openness Commitment

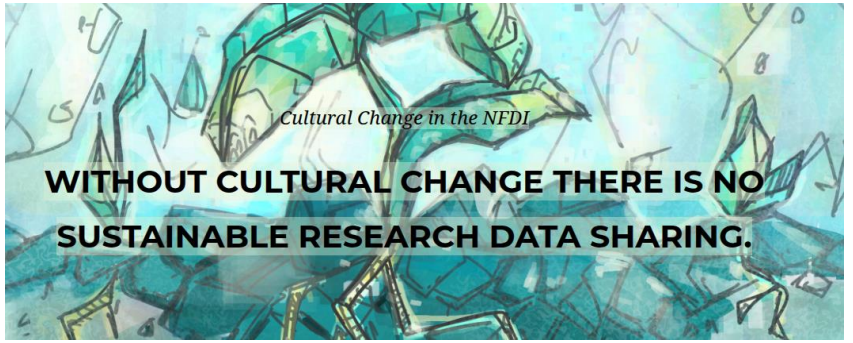
We commit to advance FAIRness and Openness in Earth System Sciences.

We value data infrastructures and data experts.

8 institutions | **5** organisations/groups | **70+** individuals

Sign the commitment now: **nfdi4earth.de/commit**

Add the **badge** to your website: **nfdi4earth.de/member-area/materials**



Collaborations
FAIRagro & NFDI4Energy

FAIRness & Openness Commitments Workshop

Joint workshop with FAIRagro & EGU presentation

"FAIRness and Openness Commitments as a catalyst for cultural change in research organisations"

Together:

13 institutions
8 groups

Nüst, D., Sennhenn, A., Seegert, J., Hübner, A., Vahabi, K., Hachinger, S., Möller, M., Hoffmann, C., Bernard, L., Anderson, J. M., Fischer, S., Reichstein, M., Weynants, M., Keßler, C., Koch, K., Wenz, K.-P., van Dam, N., and Regierer, B.: FAIRness and Openness Commitments as a catalyst for cultural change in research organisations, EGU General Assembly 2026, Vienna, Austria, 3–8 May 2026, EGU26-6870, https://doi.org/10.5194/egusphere-egu26-6870, 2026.

Chair of Geoinformatics, TUD Dresden University of Technology

Department of Earth Sciences, Freie Universität Berlin

Department Biogeochemical Integration at the Max Planck Institute for Biogeochemistry

Faculty of Geosciences, University of Münster

University of Kassel Faculty of Organic Agricultural Sciences

FAIRness & Openness Commitments Workshop

Institutional and group signatories of different **types**: unis, research orgs, associations, departments, federal research institutes, Helmholtz/Leibniz/MP

Heterogenous maturity **levels** re. policies, resources, stage of cultural change

Agenda: Introduction, 3 discussion blocks, shared minutes

Outcomes: **activities and challenges** in advancing RDM in line with the commitments:

Shared activities | Special activities | Primary challenges | **Proposed activities:**

- Develop and maintain an **annotated, researcher-facing version of the Commitments**
- Curate and **share** implementation plans across signatories
- Build the **evidence base for incentives** — and approach external stakeholders
- **Differentiate guidance** on the Commitments by organisation type but keep document stable
- Anticipate and shape the **role of AI**/LLMs
- Provide repetitive, structural **communication** support > long-term perspective!
- Solve the **orientation** problem in the tool ecosystem > team effort!

FAIRness & Openness Commitment

Continue the discourse with us!

- Annotated version & exchange between **institutions**
- Academic rewarding systems > **poster**

You can take action to recognise FAIR and Open research data practices

… as member of an institution or academic society

… as editor and reviewer

Hübner, A., & Nüst, D. (2026). Integrating FAIR and open research data management practices in academic rewarding systems (NFDI4Earth Deliverable D4.2.5) (1.0). NFDI4Earth Community on Zenodo. https://doi.org/10.5281/zenodo.20158665

Thank You !

https://www.nfdi4earth.de/

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