

# Introduction to Research Data Management

Ronny Gey (RDM)

2025-04-29









- Events page: <https://events.hifis.net/event/2218>
- Protocol: <https://notes.desy.de/0yRA6icZR-OKmprLMrbqqg>
- No Device needed
- Anyone not a data representative?

# Data Representative?

# Data Representatives

<https://www.intranet.ufz.de/index.php?en=50387>

|  |  |
|--|--|
|  <p><b>BIOP</b> → Sajani Joshi<br/> <b>BOOEK</b> → Marie-Lara Bouffaud<br/> <b>BOSYS</b> → Ralf Gründling<br/> <b>BZF</b> → Alexander Harpke and → Marc Frenzel<br/> <b>CLE</b> → Andreas Böhme<br/> <b>NSF</b> → Hans Kasperidus<br/> <b>PHYDIV</b> → Thomas Hornick<br/> <b>SIE</b> → Tiffany Knight</p> |  <p><b>AME</b> → Ulisses Nunes da Rocha<br/> <b>MEB</b> → Uwe Kappelmeyer<br/> <b>MIBITECH</b> → Marcell Nikolausz<br/> <b>SOMA</b> → Stephan Klähn<br/> <b>SUBT</b> → Daneish Despot<br/> <b>TECH</b> → Matthias Schmidt, → Anett Georgi</p> |
|  <p><b>ASAM</b> → Olaf Büttner<br/> <b>CATHYD</b> → Christian Siebert<br/> <b>FLOEK</b> → Mario Brauns<br/> <b>HDG</b> → Andreas Musolff<br/> <b>SEEFO</b> → Kurt Frieze</p>   |  <p><b>CER</b> → Emanuele Bevacqua<br/> <b>CHS</b> → Stephan Thober<br/> <b>ENVINF</b> → Thomas Fischer<br/> <b>MET</b> → Marco Pohle<br/> <b>OESA</b> → Martin Lange<br/> <b>RS</b> → Maximilian Lange</p>                                   |
|  <p><b>COMPBC</b> → Matthias Bernt<br/> <b>EAC</b> → Oliver Lechtenfeld<br/> <b>ETOX</b> → Nils Klüver and → Elena Katharina Nicolay<br/> <b>EXPO</b> → Ralf-Uwe Ebert<br/> <b>IMMU</b> → Stefan Röder<br/> <b>MOLTOX</b> → Sven Haange<br/> <b>ZELLTOX</b> → Georg Braun</p>                              |  <p><b>OEKON</b> → Heinrich Zozmann<br/> <b>UPR</b> → Till Markus<br/> <b>SUSOZ</b> → Mariana Madruga de Brito<br/> <b>UPOL</b> → Anran Luo<br/> <b>BEN</b> → David Manske</p>  |

**Liaison person  
between  
department and  
RDM team**

## 1. 10:00 Presentations

Intro | Time Series Management | Spatial Data Infrastructure |  
WOMBAT/Storage | HIFIS | Misc

## 2. 10:45 Your Role as *Data Representative*

## 3. 11:30 *Lunch Break*

## 4. 12:30 Networking

HIFIS | Times Series Management | Spatial Data Infrastructure | WOMBAT  
and Deployment of Web Apps | HPC | Storage Systems at UFZ and beyond |  
Publication of Data and Software

# RDM Team at UFZ

3 main strands:

- **development** and maintenance of data infrastructures, services and tools
- scientific **data processing/** data pipelines
- **consulting**, training and networking



The RDM Team @ UFZ 08/2023

## Development *Software that we develop*

DMP | DRP | SaQC | SMS | spatial.IO | time.IO

## Service *Software that we offer as a service*

BioME | DMP | DRP | eLabFTW | Grafana | INTOB-DB | OMERO | SMS |  
spatial.IO | time.IO ...



# Research Data Management

## -Practice at UFZ-

### RDM Team

*The experts at UFZ*

[Intranet](#)

[Internet](#)

[Services](#)

[Consulting](#)



### RDM Policy

*The rules at UFZ*

[EN](#) / [DE](#)



### RDM Guidelines

*Your bible*

[Internet](#)

[Repository](#)



### RDM Workshops

*Enhance your skills*

[events.HIFIS](#)



### HIFIS

*Helmholtz expertise*

[Services](#)

[ConsultingWorkshops \(HIDA\)](#)

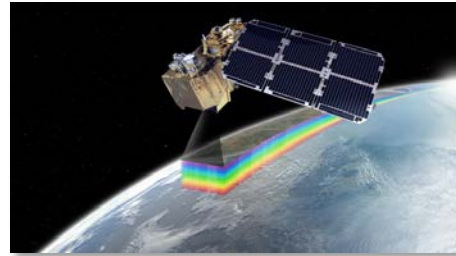


# Data Representatives Meeting 2025

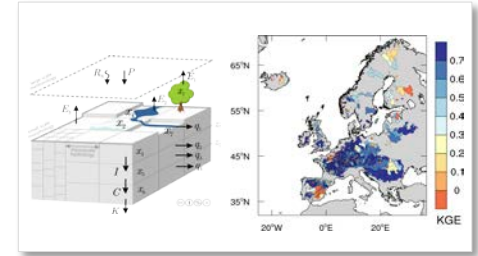
## A short survey through our data cosmos for FAIR Time Series Data Management

# Environmental System Sciences needs FAIR Data

- Availability of high-quality data
- Assessment of environmental conditions and changes
- Building and validating models
- Data science and AI methods
- Stakeholder interaction



Remote sensing data



Modelling data



Sensor data



Metadata

# Core data infrastructure at UFZ

**Data Management Portal** **Data Investigation Portal (DRP)**

UFZ Web Applications DE | EN

all data projects ▼

Home Sample data Logger data Field management data Archive data Master data

## Welcome to the Data Management Portal (DMP)

With this application you are able to **manage** scientific data from different areas:

- ✓ **Archive data** - File based archiving
- ✓ **Sample data** - Sampling and analysis data workflow
- ✓ **Logger data** - Automated transmission of measured values from sensors in the field
- ✓ **Field management data** - Planning and history of agement on experimental fields

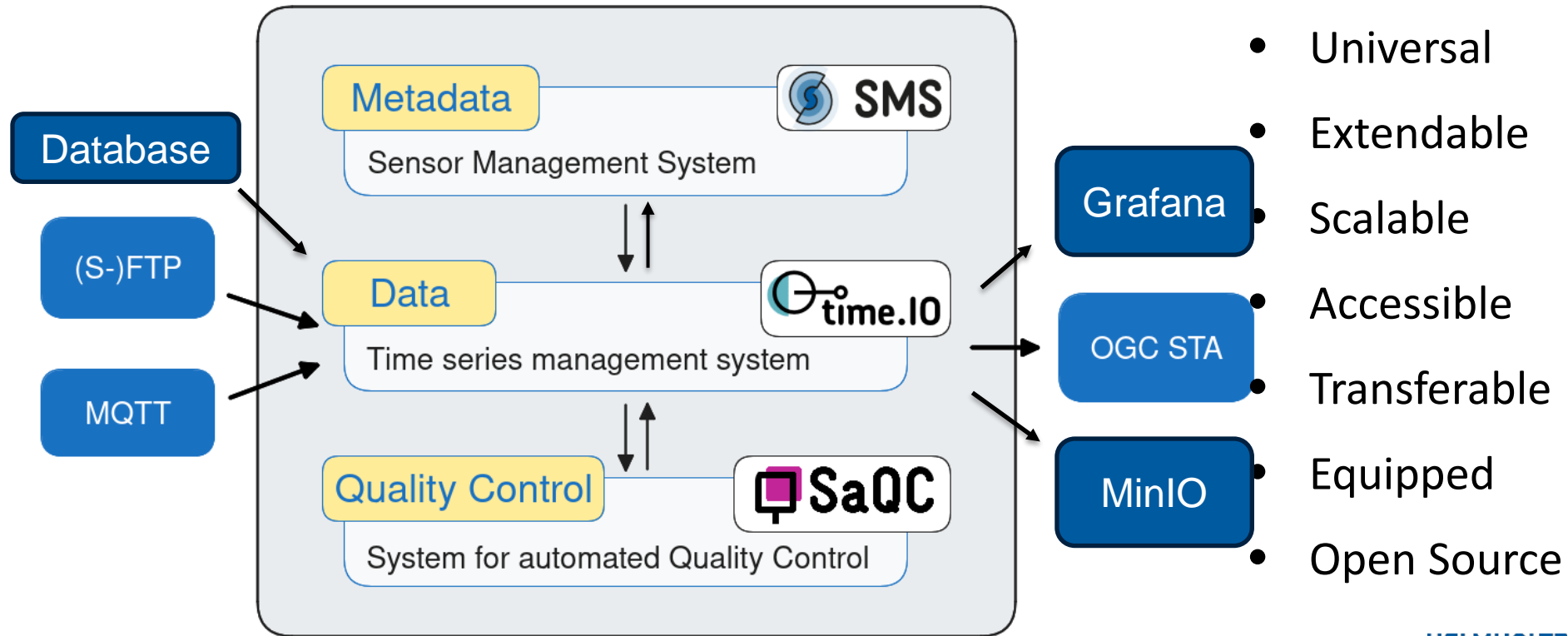
In case of any question please contact [wkdv-datamanagement@ufz.de](mailto:wkdv-datamanagement@ufz.de).

<https://www.intranet.ufz.de/dmp>

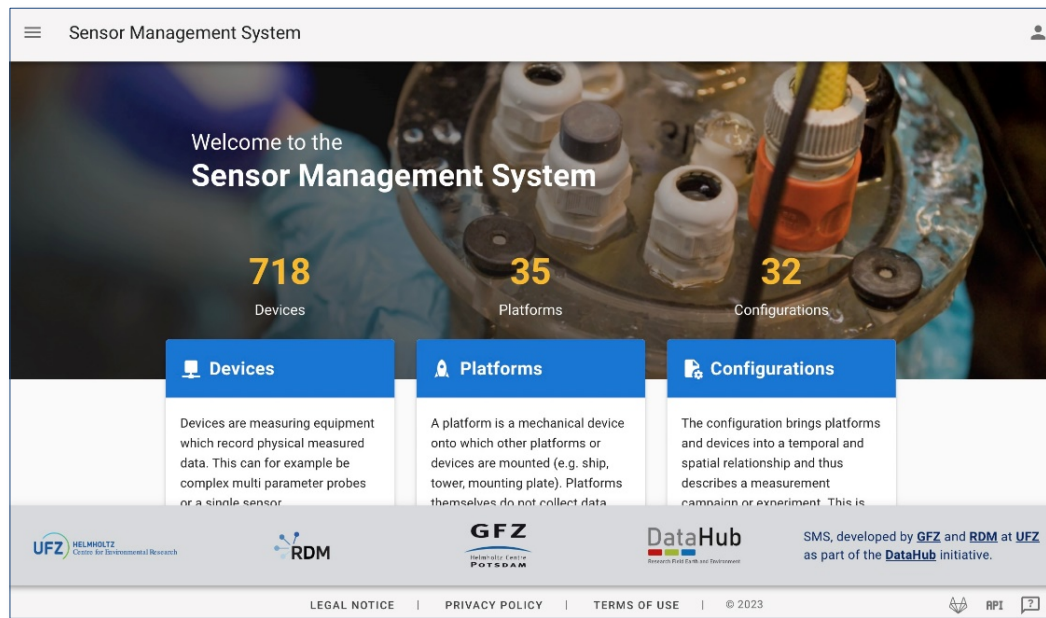
Archive data doi Metadata Upload and Access HELMHOLTZ

# Digital Ecosystem for FAIR Time Series Data Management

## System overview



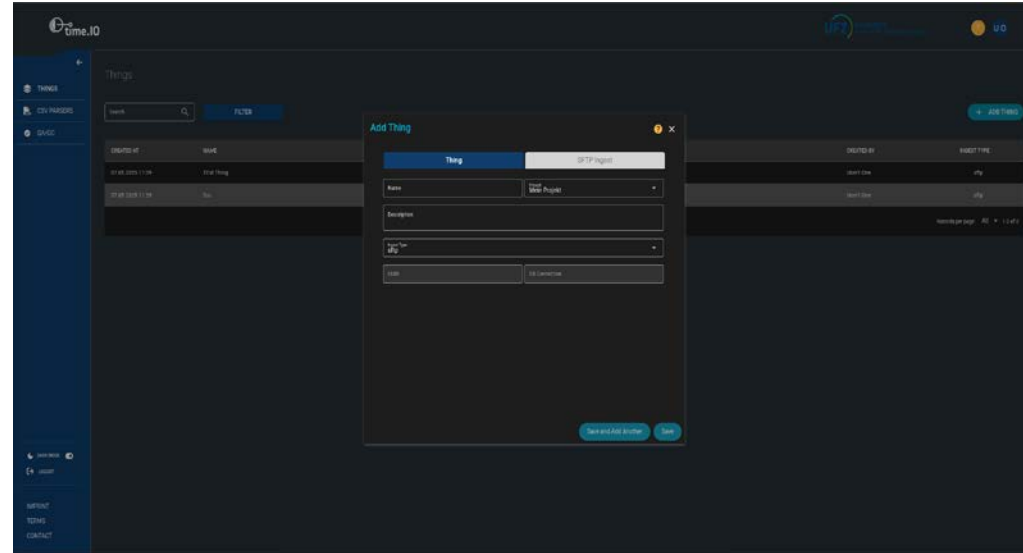
# Sensor Management System (SMS) Metadata Management



<https://web.app.ufz.de/sms/>

- Register and manage sensors and measuring parameters
- Use a community driven controlled vocabulary (CV)
- Plan and manage complex measuring setups and changes over time
- OGC SensorML interface
- Open Source license available <https://zenodo.org/records/13329926>

- Distribute/Link data to other components
- Transfer and store timeseries data
- Visualize data streams with **Grafana**
- Provision data and metadata using OGC SensorThingsAPI
- Integrate seamlessly into existing infrastructures



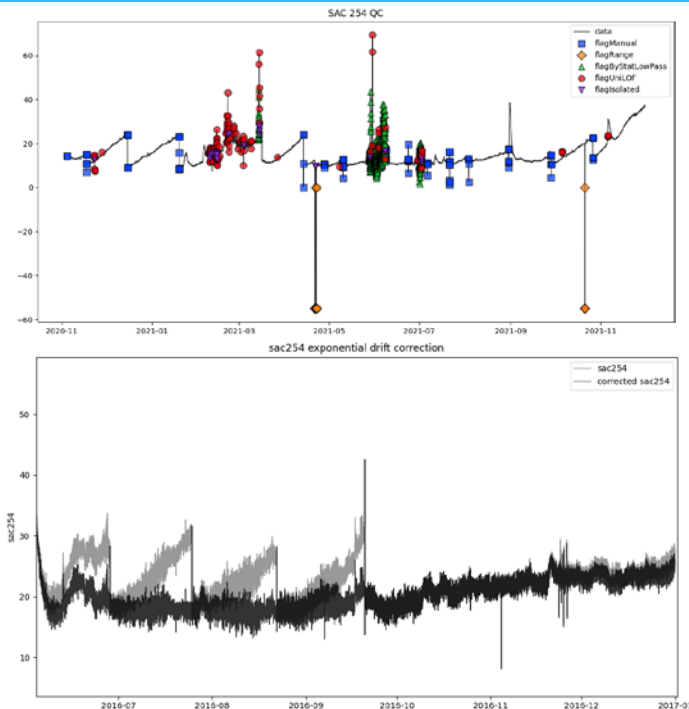
<https://tsm.ufz.de>

# System for automated Quality Control

## Quality control of timeseries data



- Full automation of data analysis, annotation and processing
- Enrich metadata from end to end
- Use predefined or custom annotation schemes
- Interact with one of several user interfaces, a Python API, text based configuration or a web application
- Get from [PyPI](https://pypi.org/project/saqc/), [conda-forge](https://anaconda.org/conda-forge/saqc) and <https://git.ufz.de/rdm-software/saqc>



Schmidt, L., Schäfer, D., Geller, J., Lünenschloss, P., Palm, B., Rinke, K., Rebmann, C., Rode, M., and Bumberger, J.,  
System for automated Quality Control (SaQC) to enable traceable and reproducible data streams in environmental science,  
Environmental Modelling & Software, 2023, 105809, <https://doi.org/10.1016/j.envsoft.2023.105809>



# Conclusion and Outlook

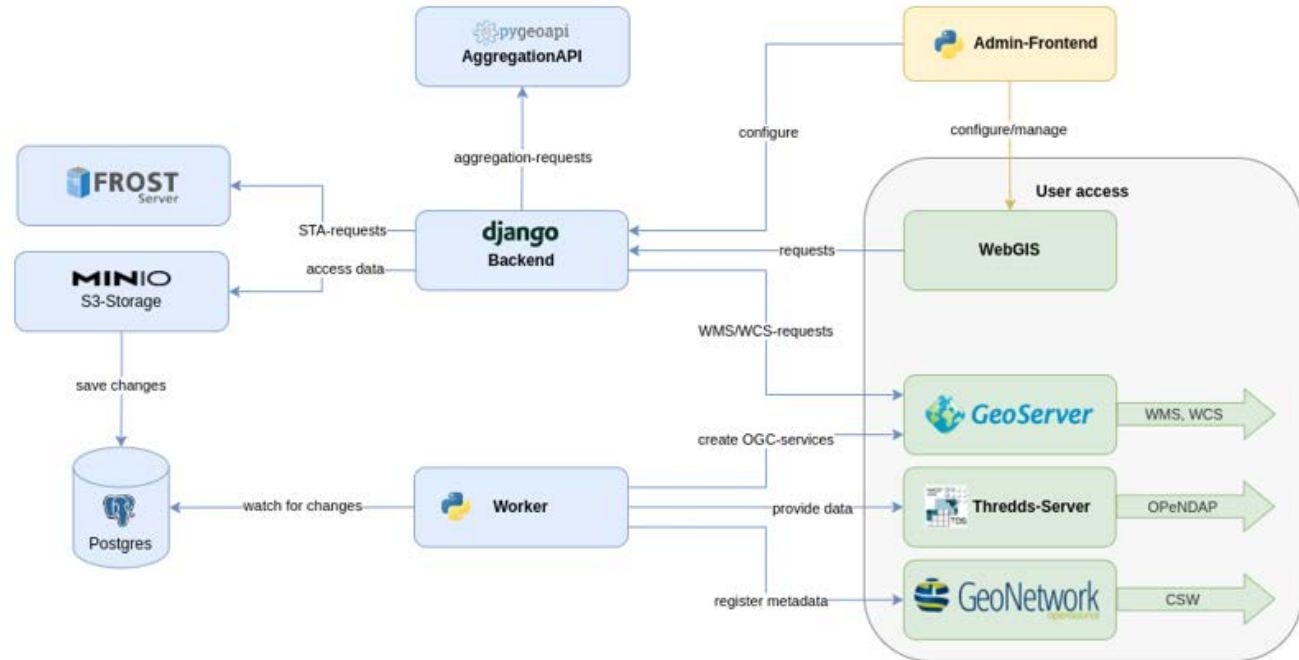
- All tools presented are under open source licenses and are directly available for use in the communities
- We provide an integration of SMS, time.IO and SaQC into a timeseries ecosystem in combination with spatial.IO
- Standardized APIs allow for easy data integration into third party applications (portals, etc.)



**Sensor  
Management  
System**

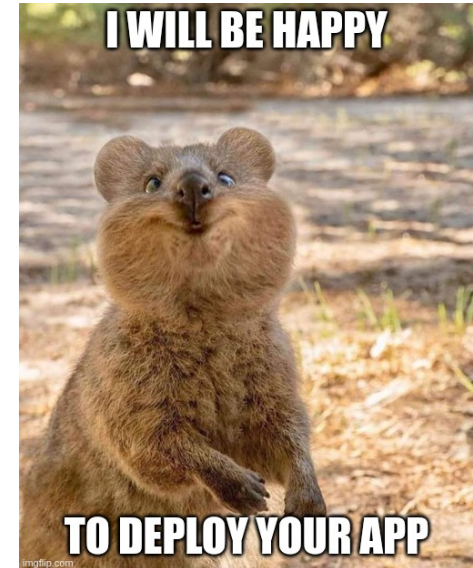


# Rebekka



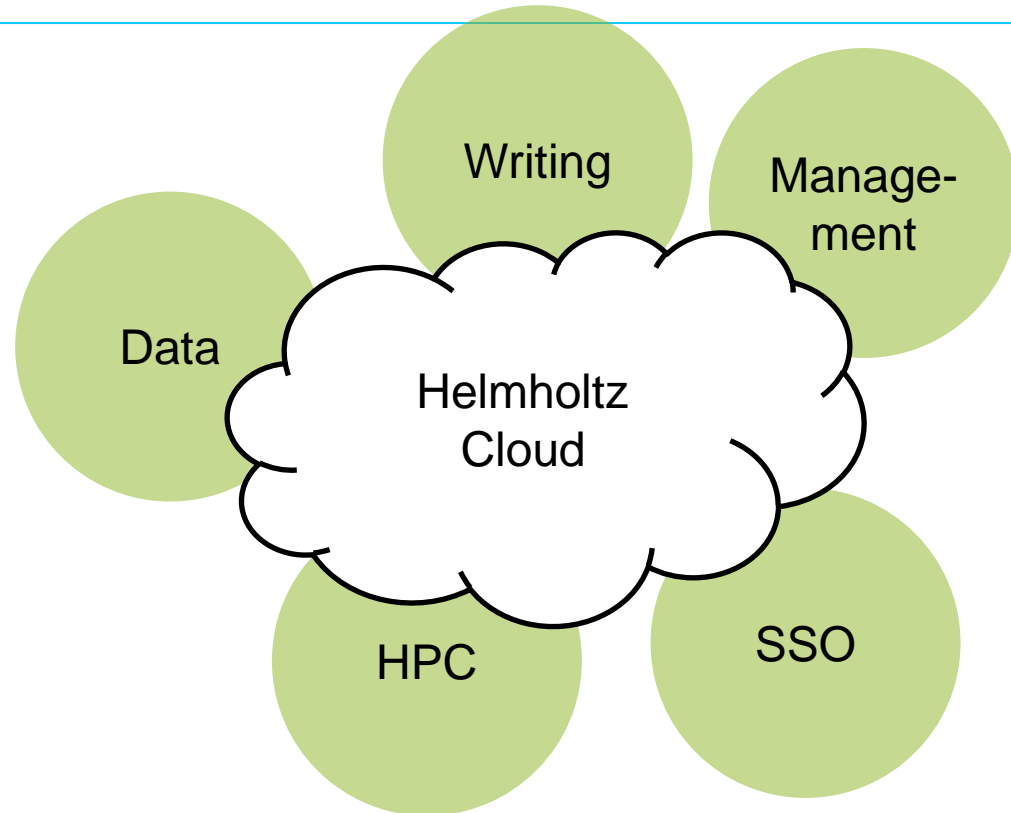
# Hannes, our wombat trainer

[https://notes.desy.de/p/n\\_yFnDbGv#/](https://notes.desy.de/p/n_yFnDbGv#/)



# Helmholtz Federated IT Services (HIFIS)

- **Bring IT teams together across centers**
- **Identify solutions for all centers**
- **Host and evolve a modern portfolio of software infrastructure services**
- **Teach and involve scientists**



# What does HIFIS do for you?



- General platform support
- Consulting on RSE
- RSE community building
- Federated IT means diversity of contact partners

Sort by Popularity ▼

Q Text

Search services...

Category

Cloud Infrastructure

Communication

Data Analysis

Data Management

Developer Tools

Productivity Publish

Science Survey

Provider

AWI DESY DKFZ

FZJ GFZ HZB HZDR

KIT UFZ

**GitLab**

Helmholtz Codebase

A web-based DevOps lifecycle tool that provides a Git-repository manager.

**Indico**

HIFIS Events

An Events Management service for everyone within Helmholtz and their partners, based on Indico.

**Mattermost**

A hosted chat service for everyone within Helmholtz based on Mattermost.

**Overleaf**

Collabtex

Collaborative document writing with LaTeX

**Nextcloud**

Sync &amp; Share

File Sync and Share, Collaborative Editing using Collabora.

**LimeSurvey CE**

LimeSurvey

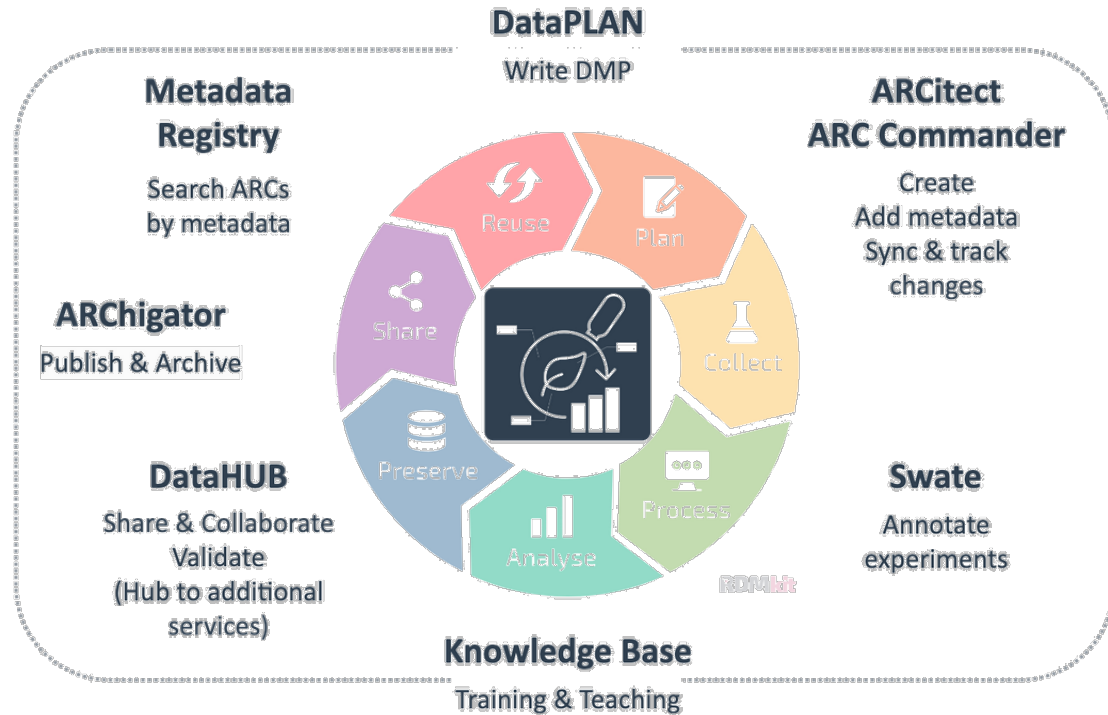
An online survey tool offered by DKFZ to everyone within Helmholtz Association.

# HIFIS:



# Another view on data: NFDI

- National Research Data Infrastructure
- Establishment and support of RDM-related processes in scientific domains
- Spotlight: DataPLANT





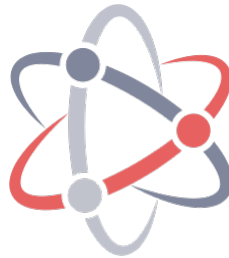
# Another view on data: NFDI

- National Research Data Infrastructure
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- Spotlight: NFDI4ING



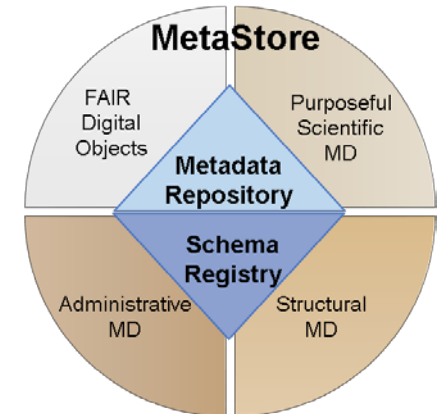
**Kadi**<sup>4</sup>Mat

Online Research Platform with RDM,  
Data Standardization, and Storage



**ORKG**

Open  
Knowledge  
Graph for  
engineering  
contributions



# Data Representatives

## RDM Policy (3.3)







*Each department in the UFZ appoints a data representative, who **receives ongoing training** through suitable RDM courses. This person **supports** the respective **department** with respect to data management matters, serves as a **contact person** for the RDM board representatives of the respective research unit, and records and **communicates** needs related to data management to the RDM unit.*

- 1 per department
- Receives ongoing RDM training
- Supports own dept in RDM matters
- Contact for the RDM board representative
- Communicates from/to RDM team

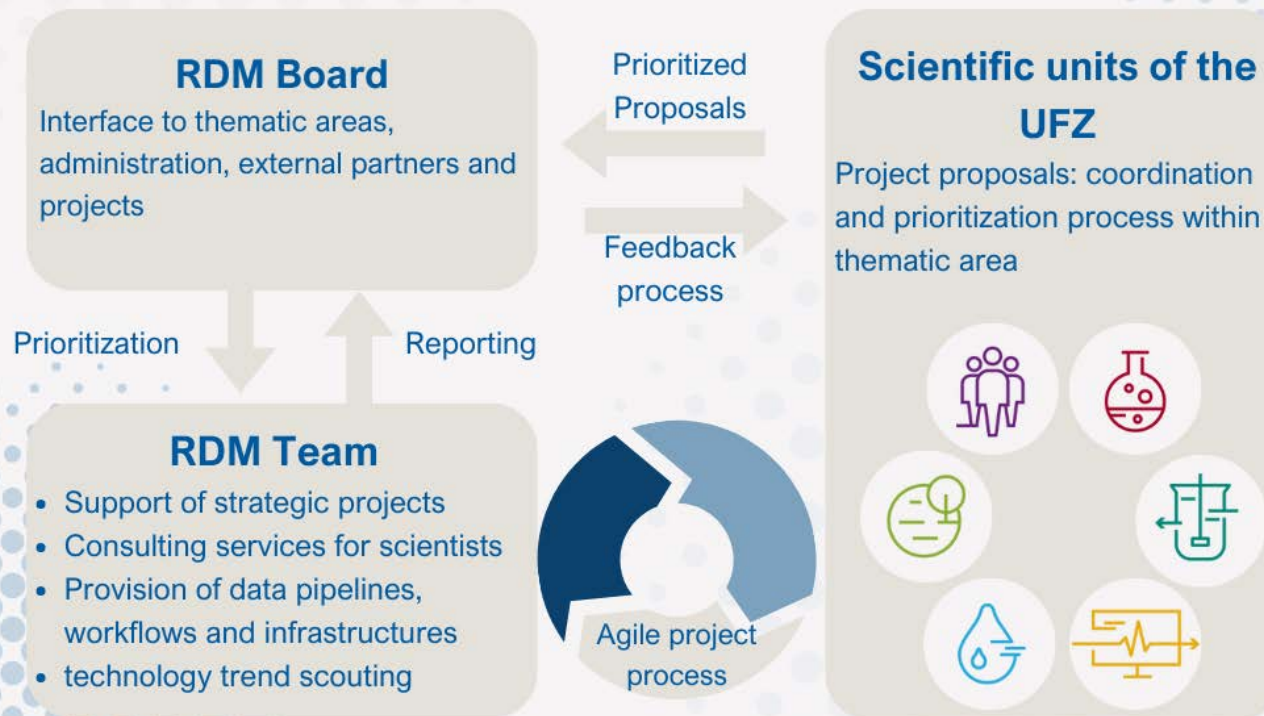
# RDM Board?

<https://www.intranet.ufz.de/index.php?en=50392>

- RDM steering board
- Interface to the research units, the administration, external partners and projects
- Prioritizes the research data management applications of the research groups at the UFZ and thus makes important strategic decisions

|  |  |   |
|--|--|---|
| Responsibilities   | <p><b>Dr.-Ing. Jan Bumberger</b><br/>Mail: <a href="mailto:jan.bumberger@ufz.de">jan.bumberger@ufz.de</a><br/>Tel.: +49 341 6025 1802</p> <p><b>Thomas Schnicke</b><br/>Mail: <a href="mailto:thomas.schnicke@ufz.de">thomas.schnicke@ufz.de</a><br/>Tel.: +49 341 6025 1958</p>   |  <p><b>Dr. Ulisses Nunes da Rocha</b><br/>Mail: <a href="mailto:ulisses.rocha@ufz.de">ulisses.rocha@ufz.de</a><br/>Tel.: +49 341 6025 1865</p> <p>→ <a href="http://www.ufz.de/index.php?en=43142">http://www.ufz.de/index.php?en=43142</a></p> <p><b>Prof. Dr. habil. Lorenz Adrian</b><br/>Mail: <a href="mailto:lorenz.adrian@ufz.de">lorenz.adrian@ufz.de</a><br/>Tel.: +49 341 6025 1435</p> <p>→ <a href="http://www.ufz.de/index.php?en=17545">http://www.ufz.de/index.php?en=17545</a></p> |
|  | <p><b>Alexander Harpke</b><br/>Mail: <a href="mailto:alexander.harpke@ufz.de">alexander.harpke@ufz.de</a><br/>Tel.: +49 341 6025 4312</p> <p>→ <a href="http://www.ufz.de/index.php?en=38628">http://www.ufz.de/index.php?en=38628</a></p> <p><b>Dr. rer. nat. Mark Frenzel</b><br/>Mail: <a href="mailto:mark.frenzel@ufz.de">mark.frenzel@ufz.de</a><br/>Tel.: +49 341 6025 4304</p> <p>→ <a href="http://www.ufz.de/index.php?en=30308">http://www.ufz.de/index.php?en=30308</a></p>  |  <p><b>Dr. agr. Steffen Zacharias</b><br/>Mail: <a href="mailto:steffen.zacharias@ufz.de">steffen.zacharias@ufz.de</a><br/>Tel.: +49 341 6025 1381</p> <p>→ <a href="https://www.ufz.de/index.php?en=51624">https://www.ufz.de/index.php?en=51624</a> tba</p>  |
|  | <p><b>Prof. Dr. Michael Rode</b><br/>Mail: <a href="mailto:michael.rode@ufz.de">michael.rode@ufz.de</a><br/>Tel.: +49 341 6025 4650</p> <p>→ <a href="http://www.ufz.de/index.php?en=2243">http://www.ufz.de/index.php?en=2243</a></p> <p><b>Dr. Christian Schmidt</b><br/>Mail: <a href="mailto:christian.schmidt@ufz.de">christian.schmidt@ufz.de</a><br/>Tel.: +49 341 6025 2408</p> <p>→ <a href="http://www.ufz.de/index.php?en=17681">http://www.ufz.de/index.php?en=17681</a></p> |  <p><b>Dr. rer. pol. Christian Klassert</b><br/>Mail: <a href="mailto:christian.klassert@ufz.de">christian.klassert@ufz.de</a><br/>Tel.: +49 341 6025 1743</p> <p>→ <a href="http://www.ufz.de/index.php?en=21310">http://www.ufz.de/index.php?en=21310</a> tba</p>  |
|  | <p><b>Prof. Dr. rer. nat. Jörg Hackermüller</b><br/>Mail: <a href="mailto:joerg.hackermueller@ufz.de">joerg.hackermueller@ufz.de</a><br/>Tel.: +49 341 6025 1561</p> <p>→ <a href="http://www.ufz.de/index.php?en=40876">http://www.ufz.de/index.php?en=40876</a> tba</p>  | <p>Scientific Management</p> <p><b>Dr. rer. nat. Dagmar Rosenow</b><br/>Mail: <a href="mailto:dagmar.rosenow@ufz.de">dagmar.rosenow@ufz.de</a><br/>Tel.: +49 341 6025 1057</p> <p>WKDV</p> <p><b>Dr. rer. nat. Thomas Wieser</b><br/>Mail: <a href="mailto:thomas.wieser@ufz.de">thomas.wieser@ufz.de</a><br/>Tel.: +49 341 6025 2253</p> <p>Guest</p> <p><b>Dr. rer. pol. Eva Katharina Donner</b><br/>Mail: <a href="mailto:katharina.donner@ufz.de">katharina.donner@ufz.de</a><br/>Tel.: +49 341 6025 1007</p>  |

## RDM Project Workflow



## RDM Workflow

<https://www.intranet.ufz.de/index.php?en=46455>

# Your Topics & Questions

(taken from the registration form)

- Questions around the **role 'data representative'**
  - Are there departments that have developed specific workflows on how to fulfill the role?
  - Official role and related time amount needs to be clear and **acknowledged by department leads!**
  - What are the primary and **most important tasks** of the data representative (DR) at the department? How can I strengthen my role?

# Your Topics & Questions

(taken from the registration form)

- Questions around RDM and the **RDM team** at UFZ
  - Is RDM able to evaluate and recommend a set of tools that are suitable for the research needs? How can standardized workflows and templates be developed?
  - Besides the courses and offers, I am not entirely sure **how you can help our department** regarding data management: data that are a bit harder to share due to either copyright or sensitivity concerns (e.g. interview data) or text data (e.g. from newspapers, closed access data)
  - How can I **report needs** to the RDM? How **RDM supports** my role as a DR?

# Your Topics & Questions

(taken from the registration form)

- The **future of RDM at UFZ**. Which **services** and **tools** are **missing**?
  - [...]it is rather about introducing available services & tools & **making DRs familiar with!**
  - With many tools available, it's difficult to determine which ones to use, how to use them, how to ensure compatibility between tools. Managing various data types requires different tools and expertise [...] **hard for data representatives to oversee everything** [...] hard to tell which services and tools are missing. [...] "**cultural change**" should be transported into the different departments [...] **community building** is an aspect which should be fostered and this meeting is a good opportunity!
- **Handbook for DR** - Role, tasks and guidance





- How did you became **DR**? (on-boarding? voluntarily vs. appointed?)
- How did you interpret your role, what tasks did you do as **DR**?
- How RDM (the practice) is **valued** in your department?
- How can we **improve our service** (documentation, regular consulting hours, visits to your departments)?
- Which topics should we cover in our **trainings**?



Ronny Gey



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<https://www.intranet.ufz.de/rdm>



Mattermost:

<https://mm.ufz.de/ufz/channels/rdm-community>

