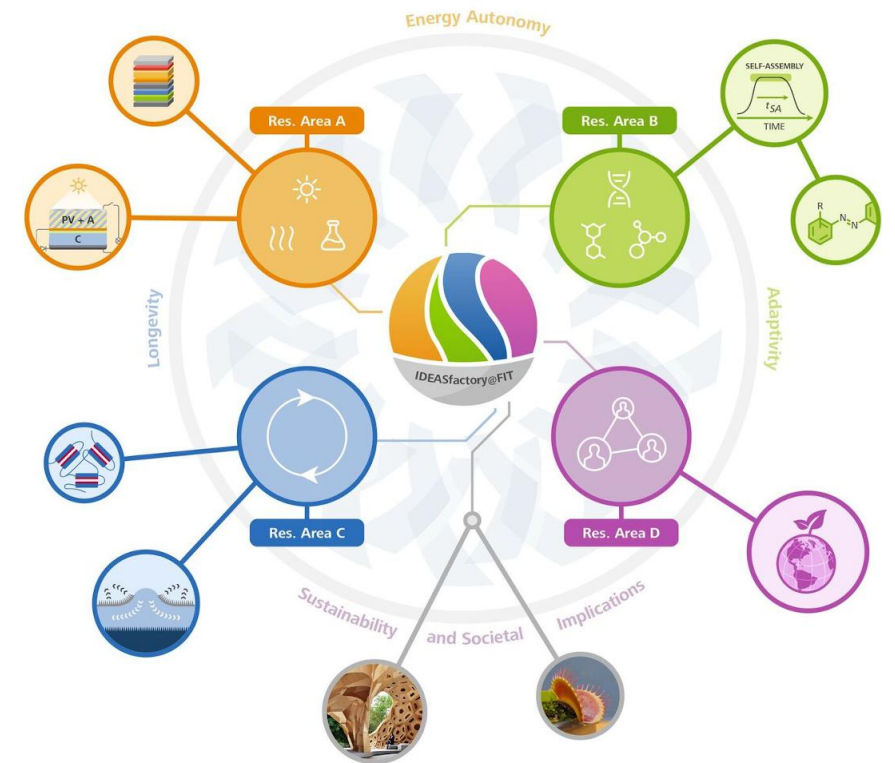


RDM @ livMatS

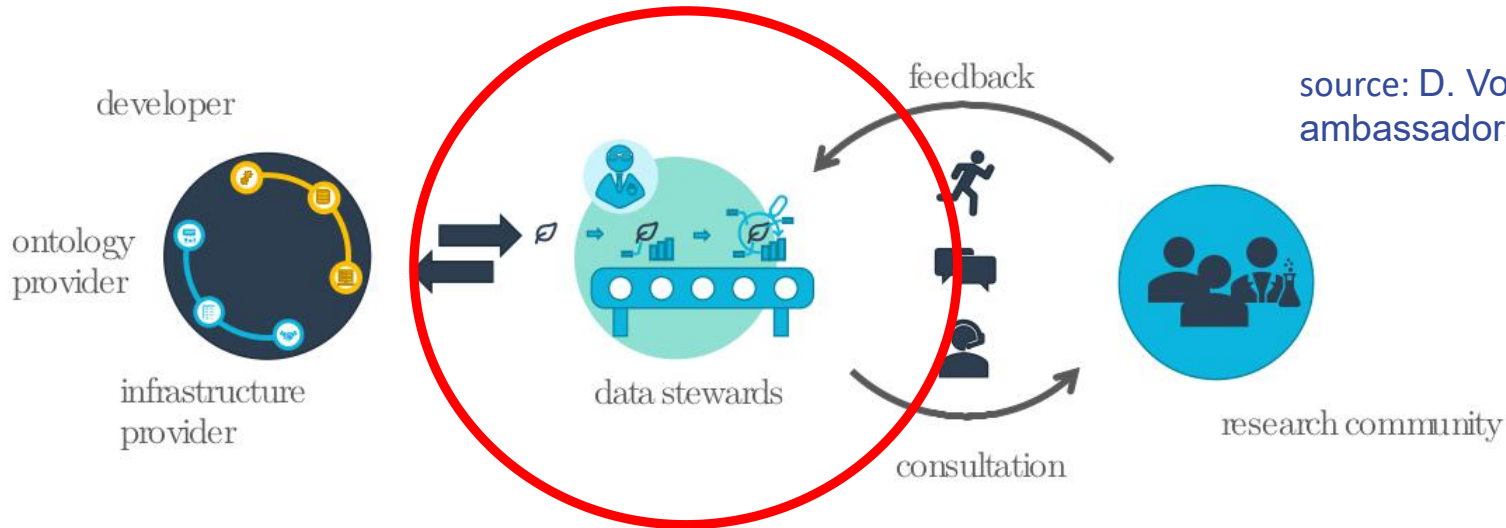
Research Data Management at the Cluster of Excellence Living, Adaptive and Energy-autonomous Materials Systems

Cluster of Excellence *livMatS* @ FIT – Freiburg Center for Interactive Materials and Bioinspired Technologies

Johannes L. Hörmann
Freiburg, 23. July 2025



The *livMatS* data steward



source: D. Von Suchodoletz et al., “Data Stewards as ambassadors between the NFDI and the community,” 2022

Living, Adaptive and Energy-autonomous
Materials Systems

- **July 2017:** started PhD at IMTEK Simulation (Prof. Pastewka) in computational nanotribology (molecular dynamics); grew into group-internal role of simulation workflow and data management specialist
- **June 2020:** birth of daughter
- **August 2021:** return from 7 months parental leave, fresh start as *livMatS* data steward
- **Late 2023:** withdrawal from most RDM activities

People



Johannes Hörmann

Data Steward

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The vision of the Cluster of Excellence Living, Adaptive and Energy-autonomous Materials Systems (livMatS) is to combine the best of two worlds – nature and technology. livMatS develops life-like materials systems inspired by nature.

...

*To turn this vision into reality, livMatS has assembled a team composed of researchers from a broad spectrum of disciplines such as **energy research, biomimetics and microsystems engineering** and combines them with **sustainability research, psychology and philosophy**.*

Source: <https://www.livmats.uni-freiburg.de>



Humanities

Economics and Behavioral Sciences

Chemistry and Pharmacy

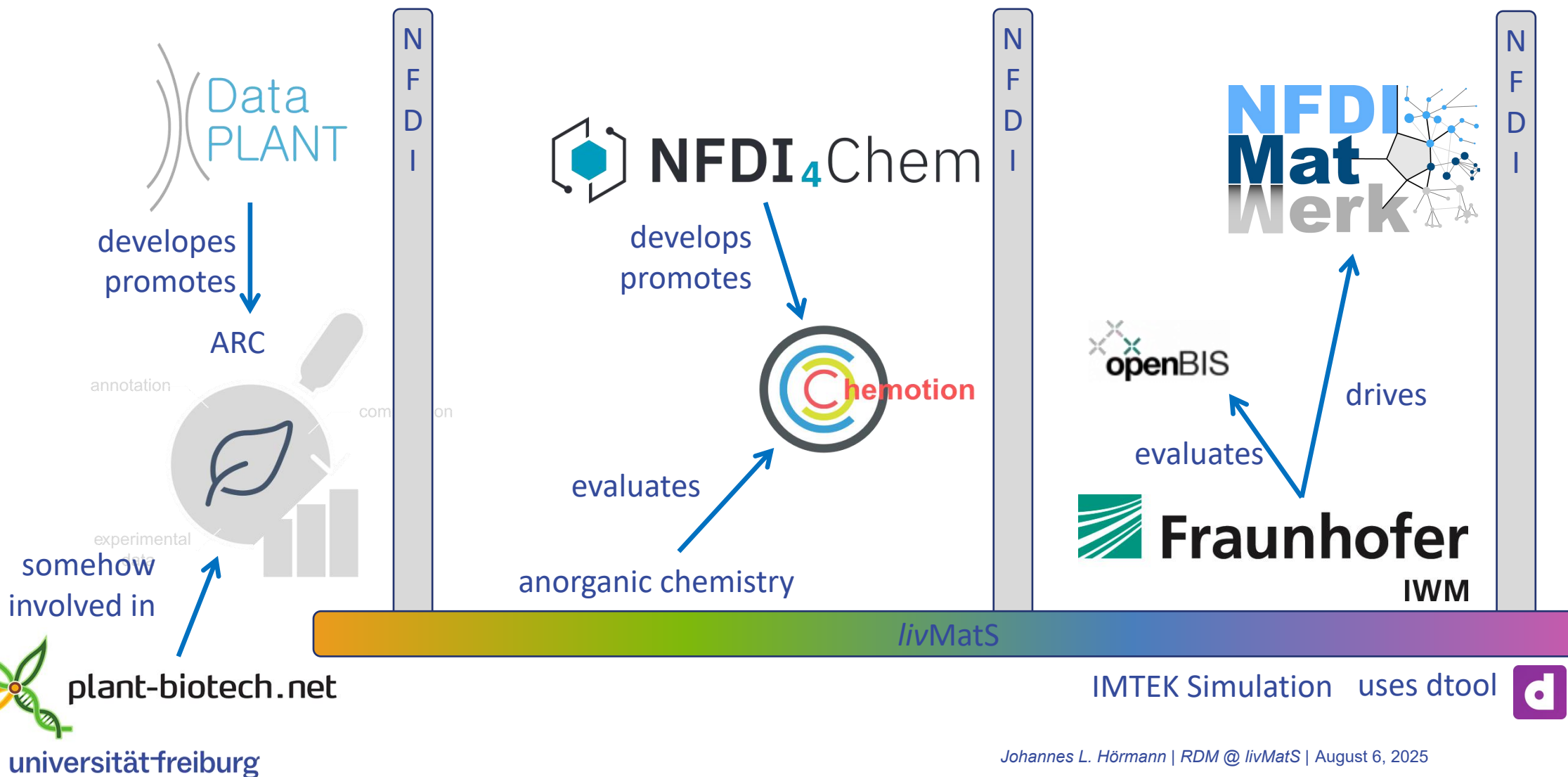
Engineering

Mathematics and Physics

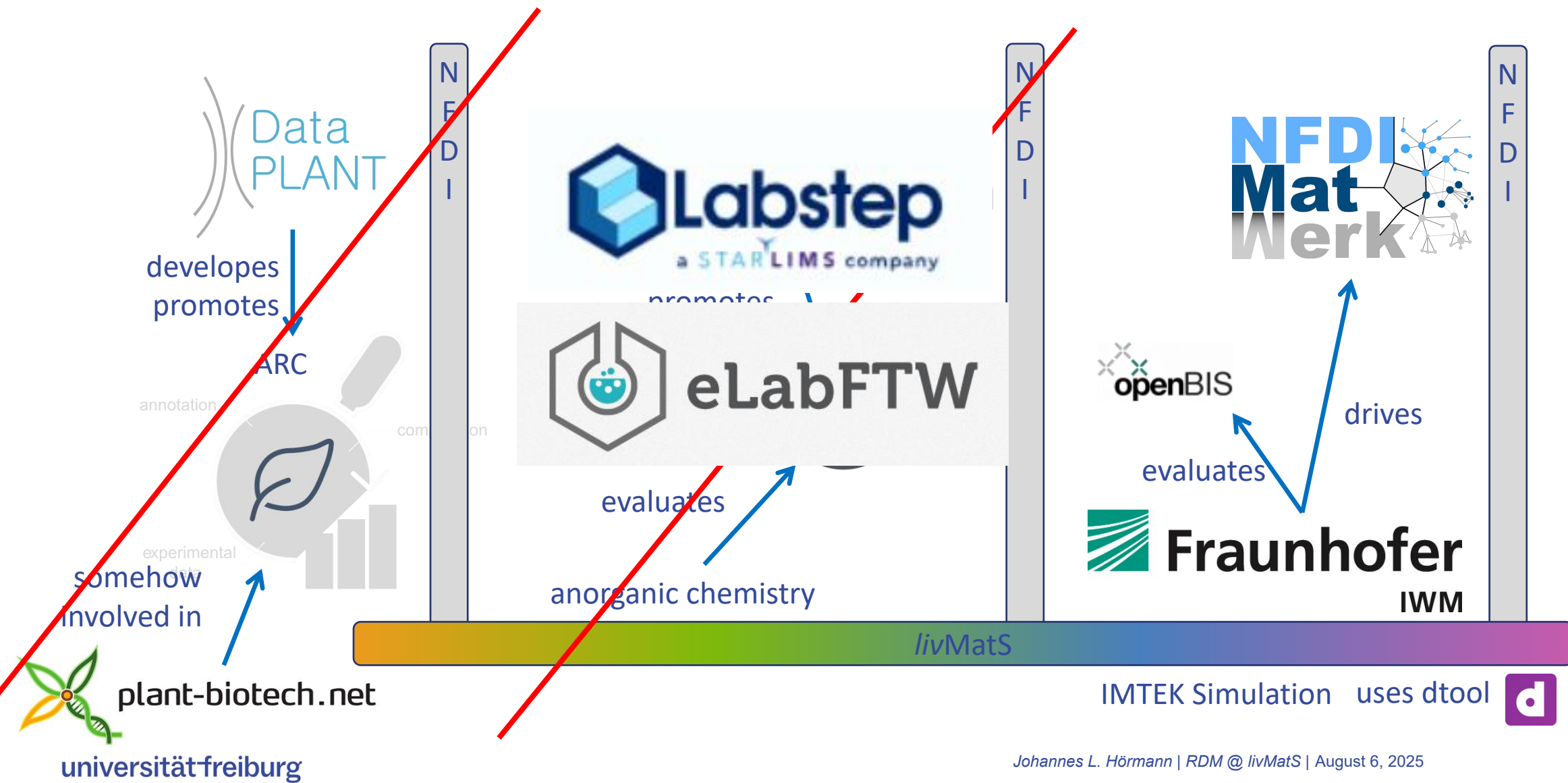
Biology



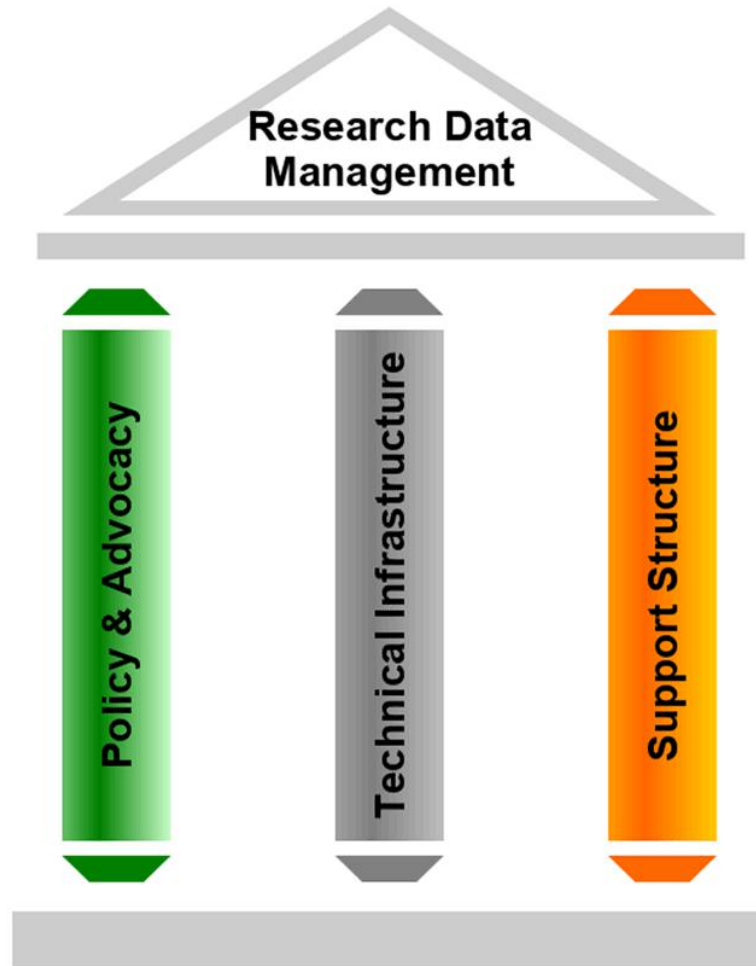
livMatS in the RDM landscape 2022



livMatS in the RDM landscape 2025



Research data management pillars



RDM policy & advocacy

Technical infrastructure

Support structure

- Source: <https://datascience.codata.org/articles/10.5334/dsj-2019-006/>

Public *livMatS* RDM landing page

<https://livmats.uni-freiburg.de/rdm>

The screenshot shows the livMatS RDM landing page. The header includes the livMatS logo and the text 'Living, Adaptive and Energy-autonomous Materials Systems'. The main content area is titled 'livMatS and Research Data Management (DRAFT)'. It contains a paragraph about the Cluster of Excellence, a section 'How RDM benefits you:' with three bullet points, and a section 'RDM support from livMatS' with three bullet points. The footer includes contact information for Johannes Hörmann, Data Steward, and logos for the University of Freiburg and DFG.

RDM support from *livMatS*

To assist with making data FAIR, the *livMatS* research data management (RDM) concept builds upon the three RDM pillars of advocacy, support, and technical infrastructure:

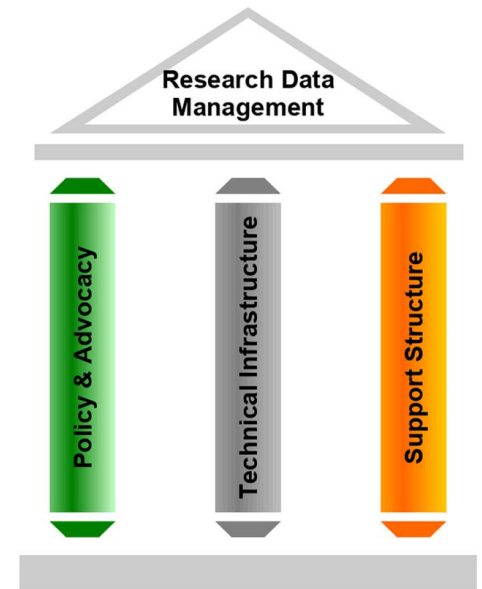
- We offer workshops, talks, and direct exchange to increase awareness and RDM best practices (**advocacy**)
- We help affiliates with data management-related questions, in particular in creating solid data management plans (**support**).
- On the technical level, this means the identification of suitable interoperable RDM services, platforms and tools. In addition, *livMatS* offers optional access to a *livMatS*-wide data repository based on bwSFS, the Baden-Württemberg- and DFG-funded S3 object Storage for Science (**infrastructure**).

To uphold these three pillars lies in the responsibility of the *livMatS* Data Steward.

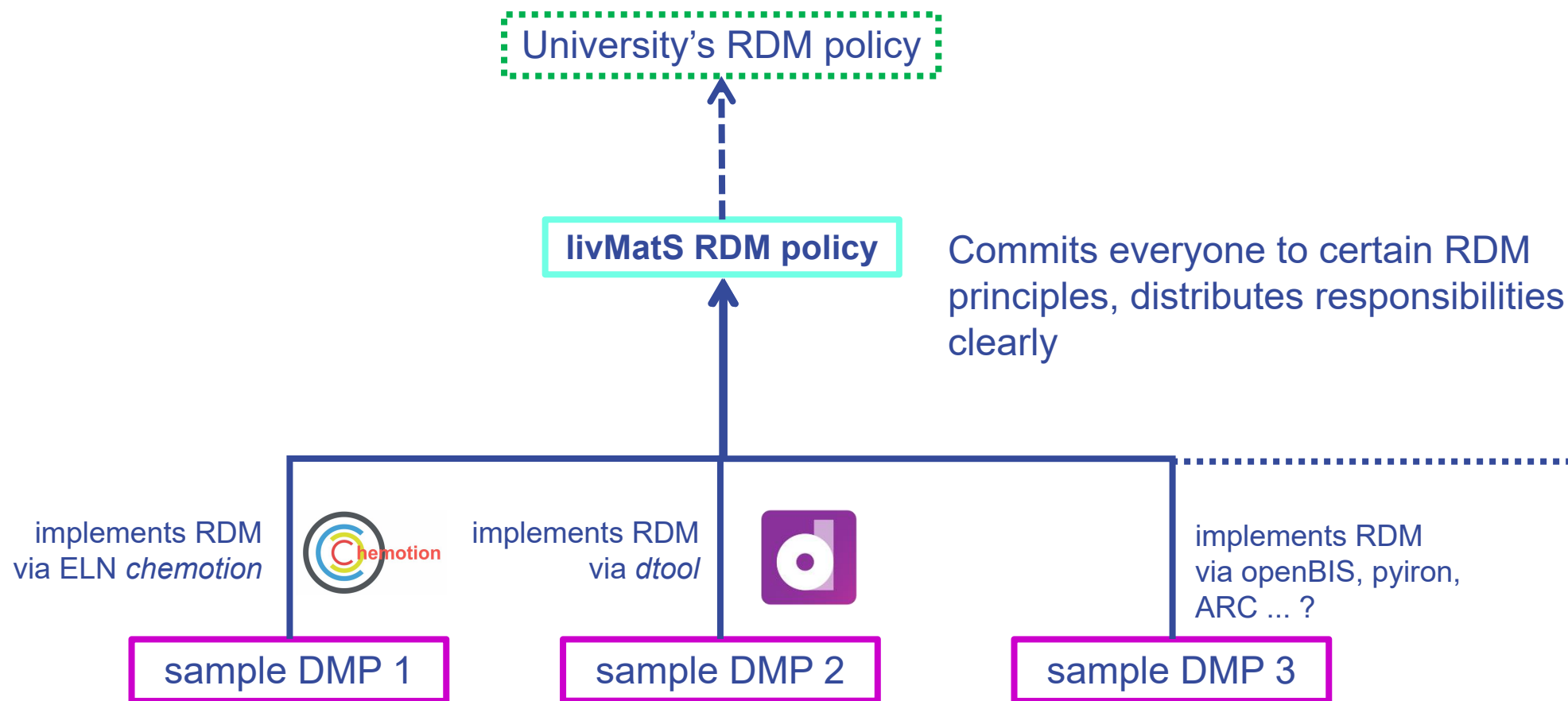
Source: <https://datascience.codata.org/articles/10.5334/dsj-2019-006/>

livMatS RDM policy

The *livMatS* RDM policy ([DRAFT, v0.32, 2022-06-07, PDF](#)) constitutes the foundation of this concept. The policy is friendly and open enough not to coerce any affiliated project into the use of particular services. It does however define a minimum set of binding data management principles that *livMatS* and all affiliated researchers shall adhere to, and distributes responsibilities clearly among you, *livMatS* and university-central or third-party services.

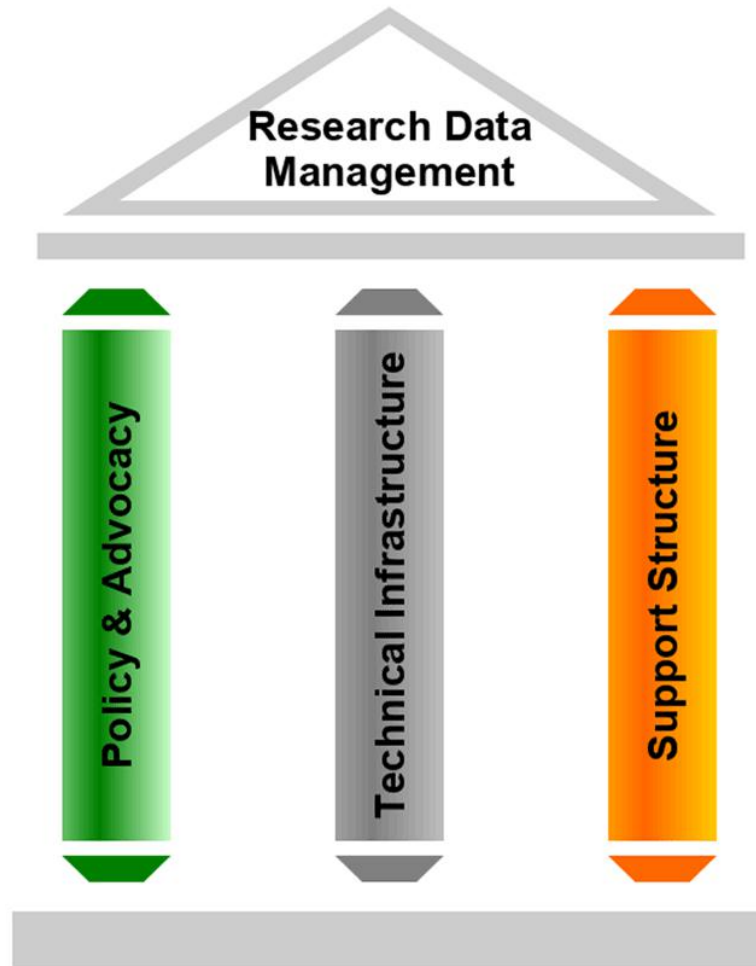


Virtue of the *livMatS* RDM policy



DMP = data management plan

Research data management pillars



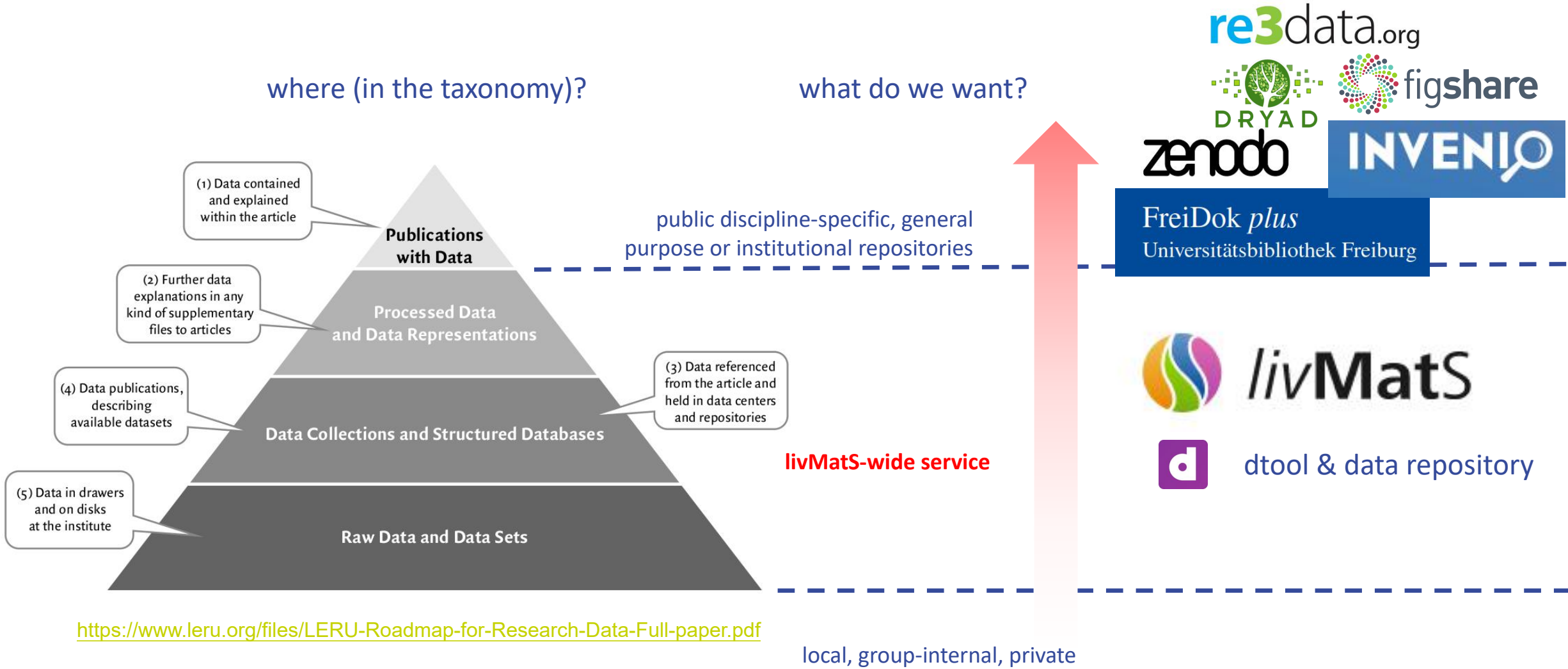
RDM policy & advocacy

Technical infrastructure

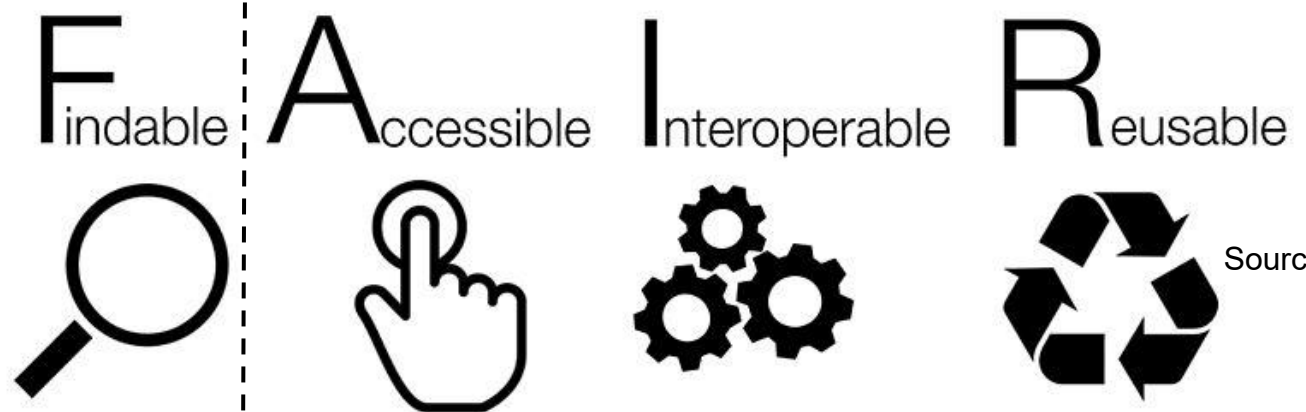
Support structure

- Source: <https://datascience.codata.org/articles/10.5334/dsj-2019-006/>

Data maturity: What does *livMatS* want to cover?



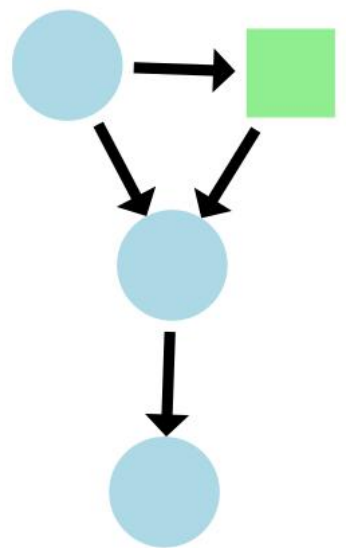
Sustainable data management *with dtool & dserver*



Source: Wikipedia

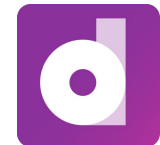
J. L. Hörmann et al., "dtool and dserver: A flexible ecosystem for findable data," PLOS ONE, vol. 19, no. 6, p. e0306100, 2024

T. S. G. Olsson and M. Hartley, "Lightweight data management with dtool," PeerJ, vol. 7, p. e6562, 2019

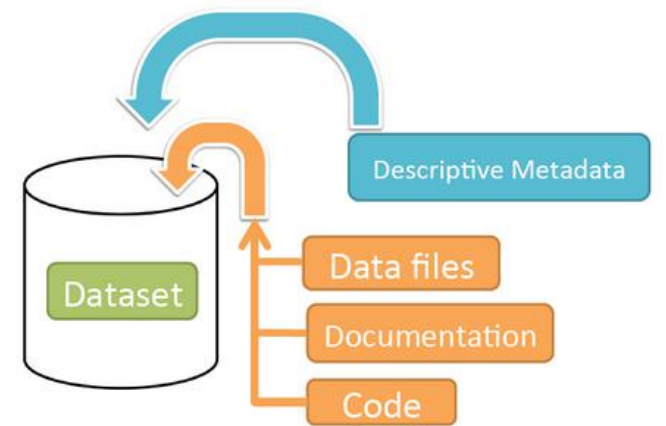


dserver

dtool

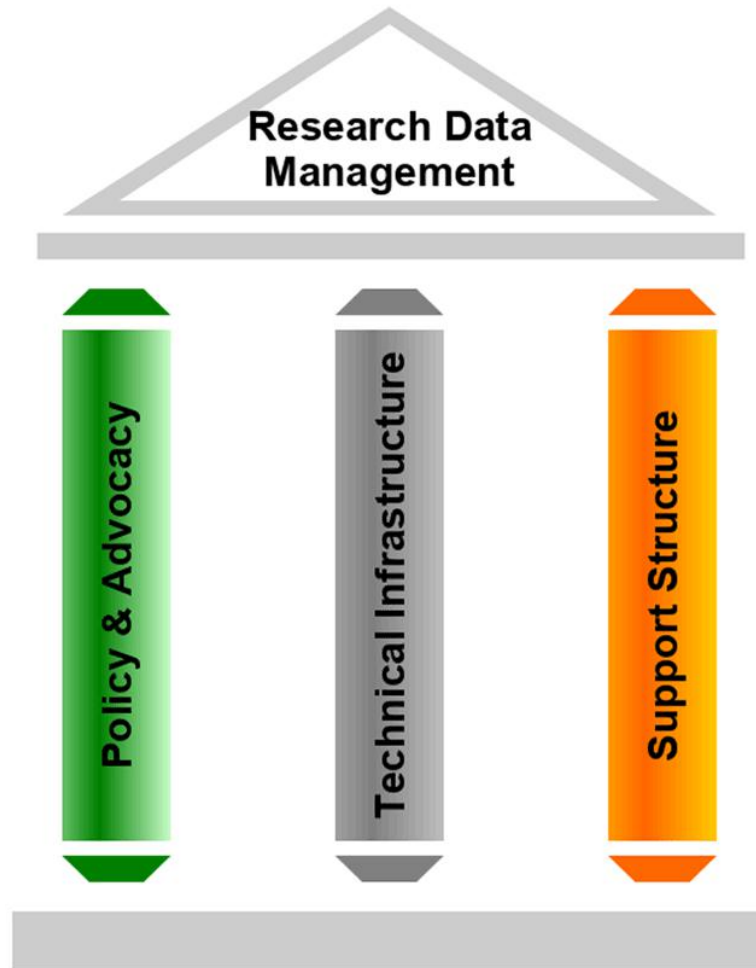


dtool landing page
www.dtool.dev



Source: <https://apps.fz-juelich.de/fdm/staging/6-data-linking/images/DatasetDiagram.png>

Research data management pillars



RDM policy & advocacy

Technical infrastructure

Support structure

- Source: <https://datascience.codata.org/articles/10.5334/dsj-2019-006/>



source: B. Steinke et al.,
 “Data Stewards an den
 TU9-Universitäten –
 Bestandsaufnahme,
 Handlungsfelder und
 Kooperationspotenzial,”
 Bausteine
 Forschungsdatenmana-
 gement, no. 1, Art. no.
 1, Mar. 2022

Tätigkeiten

- Entwicklung und Etablierung einer FDM-Policy ✓
- Entwicklung und Management einer IT Infrastruktur ✓
- Koordination von
 - Research Software
 - DMP
 - Datenpublikation
 - Datenorganisation
 - Datenteilen
- Aufbau und/ oder Etablierung einer Kommunikationsinfrastruktur
- Erstellen von best practice-Beispielen ✓
- Kontrolle der Datenqualität
- Toolentwicklung ✓
- Beratung -> Ansprechperson
- Ontologieentwicklung
- Git Support
- Entwicklung von Trainingskursen zusammen mit den zentralen Einrichtungen ✓



Fähigkeiten und Kompetenzen

- Kommunikationskompetenz
- Koordinationskompetenz
- Offen für neues
- Networking
- lösungsorientiert
- Expertise in Forschungsdatenmanagement
- IT Kenntnisse/ Expertise in Softwareentwicklung
- Fachwissen/ Expertise der jeweiligen Disziplin ✗
- Kenntniss über institutionelle Strukturen
- Expertise in Informationswissenschaften
- Expertise in Projektmanagement

Abbildung 3: Tätigkeiten sowie Fähigkeiten und Kompetenzen der TU9-Data Stewards

Specifically, the *livMatS* data steward is responsible for...



- ...supporting *livMatS* projects, PIs and staff with data-related questions. (~3 months FTE)
- ...connecting *livMatS* within the University of Freiburg to the central compute services (in particular in cooperation with Jan Lendertse and Dirk von Suchodoletz). (~1 month FTE)
- ...connecting *livMatS* to organizations and networks outside of the University of Freiburg. This includes the relevant NFDIs, the Exinirdm initiative, de-RSE, EOSC and others. (~1 month FTE)
- ...developing a written data management policy and processes for updating this policy in close conjunction with *livMatS* PIs. This will likely require the establishment of a steering committee consisting of PIs and staff. (~3 months FTE)
- ...developing a best practices handbook and coordinating it with *livMatS* PIs. (~3 months FTE)
- ...developing and carrying out training courses on implementing the data management policy and best practices within the individual projects and research groups. (~3 months FTE)
- ...organizing access to hardware infrastructure for the implementation of the data management policy. The hardware infrastructure is provided within the bwSFS project and operational. (~1 month FTE)
- ... developing missing software infrastructure including user interfaces. We recommend to base the implementation of the data management policy on dtool for the software infrastructure. (~6 months FTE)
- ...contributing to writing the proposal for the next funding period of *livMatS*. (~3 months FTE)
- ...regular reports to the *livMatS* board on data management issues. (~0 month FTE)

RDM @ livMatS

Relevant publications:

- J. L. Hörmann, L. Yanes, A. Vazhappilly, A. Sanner, H. Holey, L. Pastewka, M. Hartley, and T. S. G. Olsson, “dtool and dserver: A flexible ecosystem for findable data,” PLOS ONE, vol. 19, no. 6, p. e0306100, 2024.
- J. L. Hörmann, “livMatS Research Data Management Concept with a focus on the didactic use of dtool,” presented at the Data Stewardship Workshop 2022, Braunschweig, October 13th, 2022.

Johannes L. Hörmann

- on the web: jotelha.github.io
- on LinkedIn: [linkedin.com/in/jotelha](https://www.linkedin.com/in/jotelha)
- on github: github.com/jotelha

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