CHMC



FAIR Data Commons / Essential Services and Tools for Metadata Management **Supporting Science**

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Service Components & Tools

Search Index

KIT Data Manager

It is a Research Data Repository Platform consequently following state-of-the-art recommendations and standards for FAIRly managing research data.

- Platform to build-up community repositories Source code:
- https://github.com/kit-data-manae Documentation:
- https://kit-data-manager.github.io

FAIR Digital Object Lab

It allows creation, modification, and validation of FAIR DOs. This out-of-thebox infrastructure based on Docker allows to gain first experiences with FAIR DOs, either using real PIDs or with sandboxed

PIDs for testing purposes. https://github.com/kit-datamanager/FAIR-DO-Lab

Typed PID Maker

It provides a service for dealing with PID Information Types and Kernel Information Profiles according to the recommendations of the Research Data Alliance. The Typed PID Maker is one of the main building blocks for creating FAIR DOs and is a central part of the FAIR DO Testbed.

https://github.com/kit-data-manager/pit-service



DO's Metadata DO's Operations

Web Annotation Protocol Server

An annotation is extra information associated with a particular part of research data. In contrast to traditional metadata, it may contain contradictory and dynamic information from various sources. The Web Annotation Protocol Server is an implementation of the W3C Web Annotation Data Protocol standard for preserving and managing annotations of research data.

https://github.com/kit-data-manager/wap-server



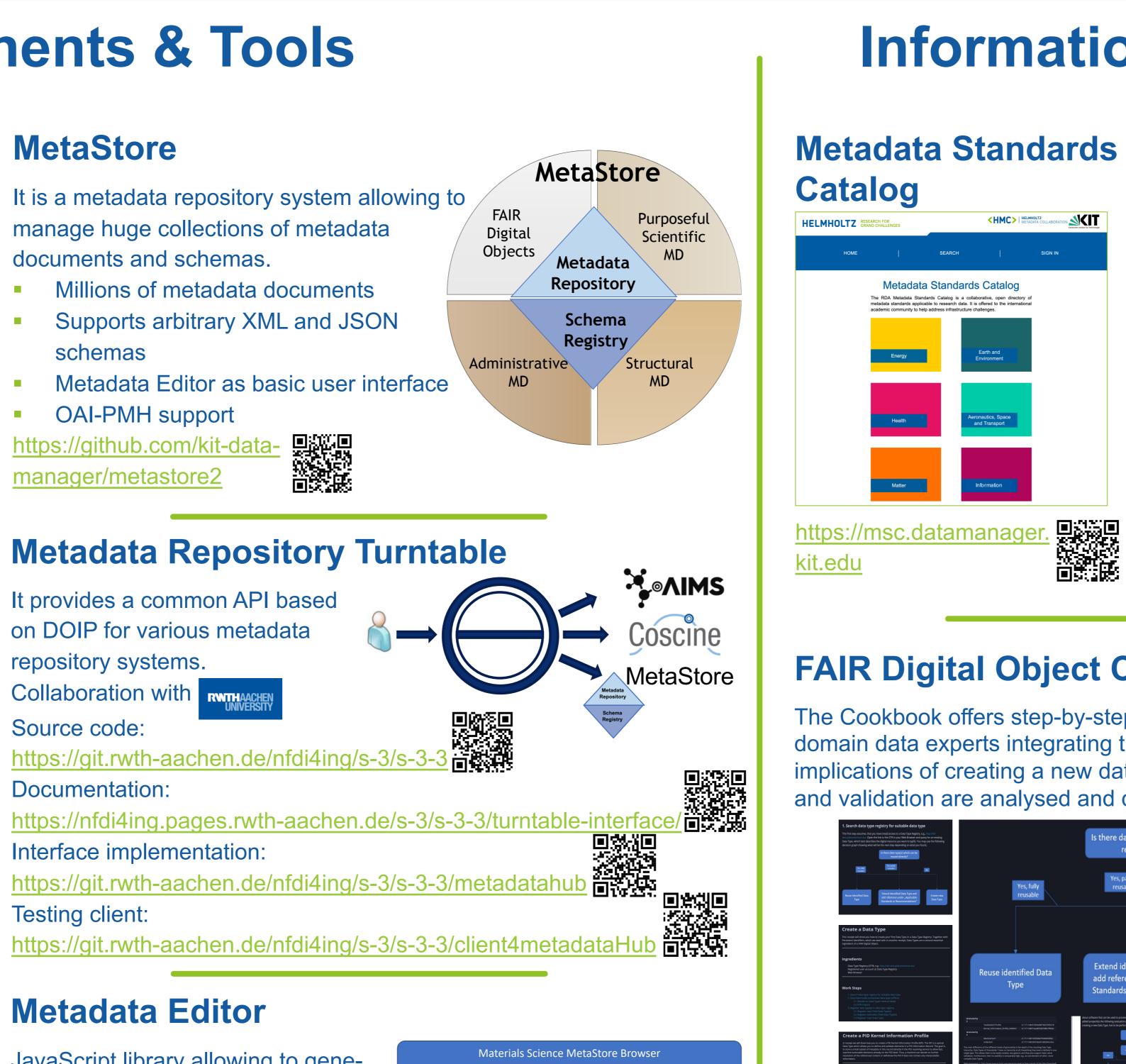
ro-crate-java

Java library to create, validate, and to modify research packages (RO-Crates). These packages allow to describe research data machinereadable as well as human-readable, making it FAIR.

https://github.com/kit-data-manager/ro-crate-jav

https://github.com/kit-data-manager/ro-crate-<u>benchmarks</u>





Metadata Editor

JavaScript library allowing to generate web forms and validate metadata in an intuitive and generic way. It builds a bridge between technical services and researchers.

Applications in materials science, nano science, digital humanities.

https://github.com/kit-datamanager/metadata-editor

| Identifier | | Related Resource | | Date Created | 4 | D | ate L | Jpda | ted | | | | |
|--------------------|---|---------------------|----|-------------------|-----|------|-------|------|------|-------|---|------|------|
| 004916a3-3958-4437 | 7 | 975c9e6a-1532-4fee | | 2021-12-07T09:17: | 46Z | 2 | 021-1 | 2-07 | T09: | 17:46 | | 0 | Ø |
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Integration of the Metadata Editor as basic user interface (example of MetaStore). It easily allows developers to create graphical frontends for existing, machine-actionable services managing (structured) metadata.

Collection Registry

Implementation of the Collection API proposed by the RDA recommendation on Research Data Collections to create and manage collections of arbitrary digital resources. It allows to compile virtual collections of heterogeneous research data from various data resources.



9.3. Functionality 9.4. Remarks 10.1. Features 10.2. Addtional Feature 10.3. Functionality 10.4. Remarks Open Science Framewo .1. Features 11.2. Addtional Features .3. Functionality 11.4. Remarks 12.1. Features

12.2. Addtional Featu

Vocabulary Service EVOKS

EVOKS allows to create, edit, curate, and manage SKOS vocabularies collaboratively in an easy manner.







Information Systems

Data Collections Explorer

| Hosting Institution: Typ | | | ype: | pe: | | | ct Area: | | | Open Access: | | | | |
|--------------------------|--|--|--------|---------------------------------|--------------------|------|----------------|-------|---------------------|----------------------------------|----------------------------|--|---------|--|
| All 👻 | | • | All | | | All | | | | All 👻 | | | | |
| | Antiperiod and Collection and Collec | ections | | Туре | Subject | t ti | Open Access | API 1 | Publication Cost | Dataset size limit (GB) | Search: | Comment | | |
| 17 | FID Montan, Bergbau, Hüttenwesen | Montanportal | | Bibliography | Mining | | undef. | | | (00) | Information about minin | portal concerning ev ng, raw materials, me ation with FiD GEO | | |
| 22 | FID Material Science | Fachinformationsdienst Materialwissenschaft und Werkstofftechnik | | Catalogue | Materia Science | | undef. | | | | | Integrated interface to MaterialHub and TIB search portal, service is currently beir set up | | |
| 24 | Eric Meier | The Wood Database | | Catalogue | Materia Science | | yes | | n/a | | various woo | Privately curated online database of various wood species and their characteristics, usage, etc. | | |
| 25 | SLUB | Material Hub | | Repository | Materia Science | | yes | | free | | | search repository with m science and indust | | |
| 26 | FAIR DI e.V. | NOMAD Novel Materials Dis | covery | Encyclopedia/Repository/Archive | Materia Science | | yes | yes | free | | novel mater | archive and encyclop rials, also provides an research on novel ma | AI tool | |
| 27 | NIST | Database of Novel and Eme Adsorbent Materials | rging | Catalogue | Materia Science | | undef. | yes | n/a | | | f adsorption characte merging materials; in sualisation | | |
| 28 | University of Chicago | Polymer Property Predictor Database | and | Database | Materia Science | | undef. | | n/a | | | | | |
| 29 | Northwestern University | The Open Quantum Materia Database | ls | Database | Materia Science | | yes | yes | n/a | | | Database of DFT-calculated thermodynamic and structural material properties | | |
| 44 | NIST/CHIMaD | PFHub | | Community Repository | Materia Science | | yes | | | | and verificat | nchmarks for testing, tion of results, a list o asic learning resource | f codes | |
| how | ring 1 to 9 of 9 entries | (filtered from 52 total entries |) | | | | | | | | | Previous | 1 Ne | |

https://rxp.datamanage kit.edu



FAIR Digital Object Cookbook

The Cookbook offers step-by-step guidance and good practice for domain data experts integrating the FAIR DO concept. The implications of creating a new data type in terms of effort, reusability and validation are analysed and displayed to the user.



Catalog of Repository Platforms

MetaStore

Status: 17.03.2021

Homepage

Introduction

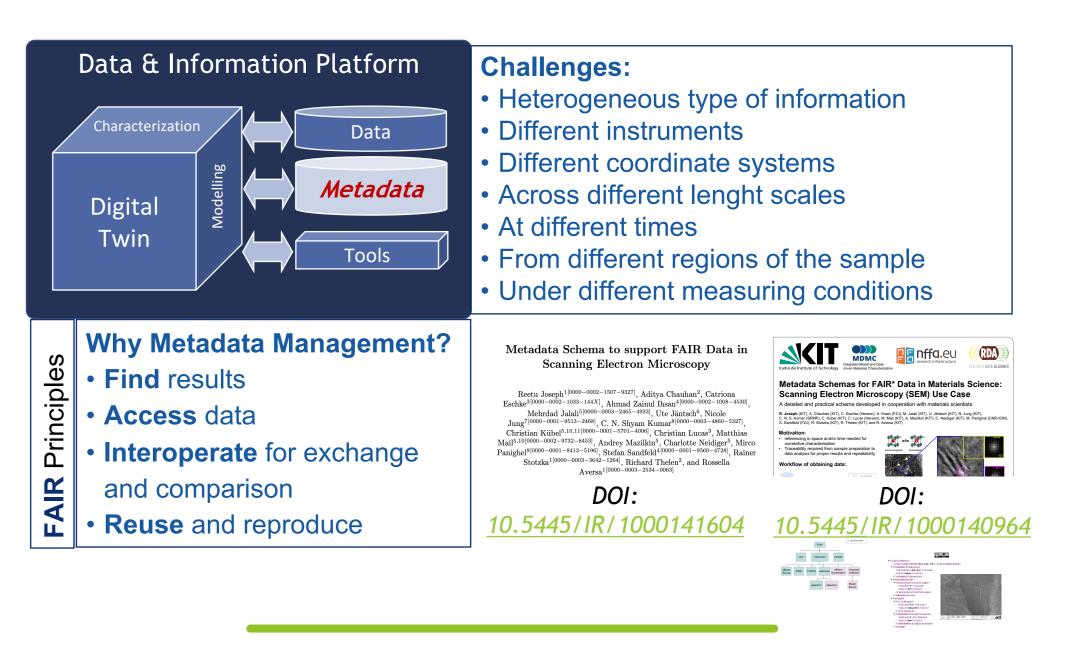
MetaStore is a metadata repository for managing millions of metadata documents. MetaStore supports communities with their specific schemas (XSD, JSON Schema). Datasheet

https://kit-datamanager.github.io/rep ository-platforms/



Metadata Schemas

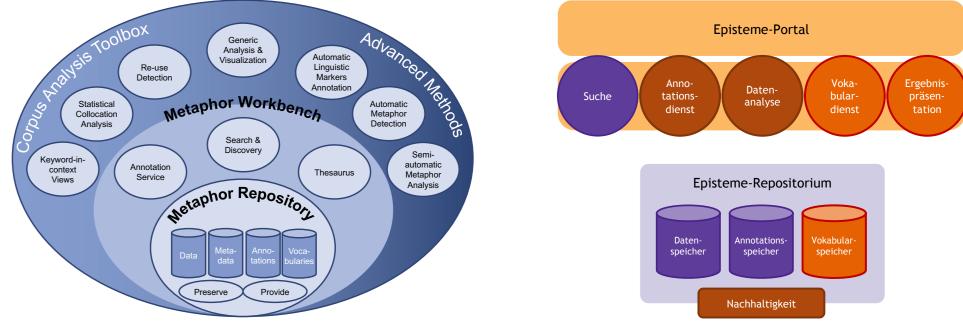
Metadata Schema for **Scanning Electron Microscopy**



Metadata Schema and FAIR DOs for Machine Learning

The FAIR Digital Object (FAIR DO) concept can be applied to simplify the composition of training data sets for Machine-Learning (ML) applications. For that, a FAIR DO profile is used that has been equipped with a simple metadata schema providing the category information required for supervised classification.

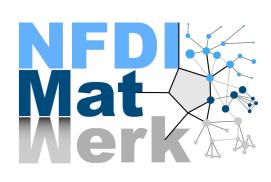




Research data management infrastructure concepts for Digital Humanities.

| | Mat |
|-------------------------------------|--|
| | Web Frontend Access to data & tools |
| Support Participant projects, | Platform Digital Materials Environment (Meta-)data representation, knowledge graphs |
| | FAIR D |
| docu- mentation | Metadata Services Harvesting, MD store, validation, provenance, annotatio |
| | Basic Research Data Infrastructure Services Storage, Repositories |

Research data management infrastructure concepts for Materials and Nano Sciences. The service components and tools are the basis for domain-specific high-level services and community-specific tools.



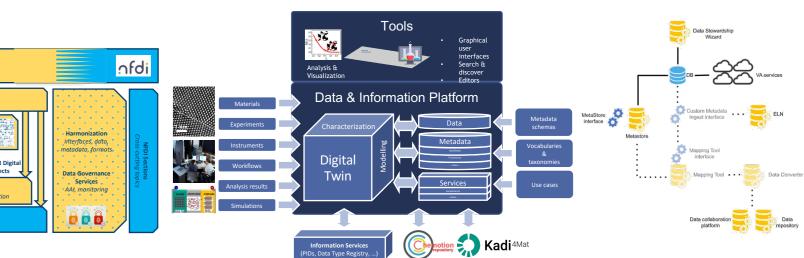






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Reference Architectures



HELMHOLTZ RESEARCH FOR GRAND CHALLENGES