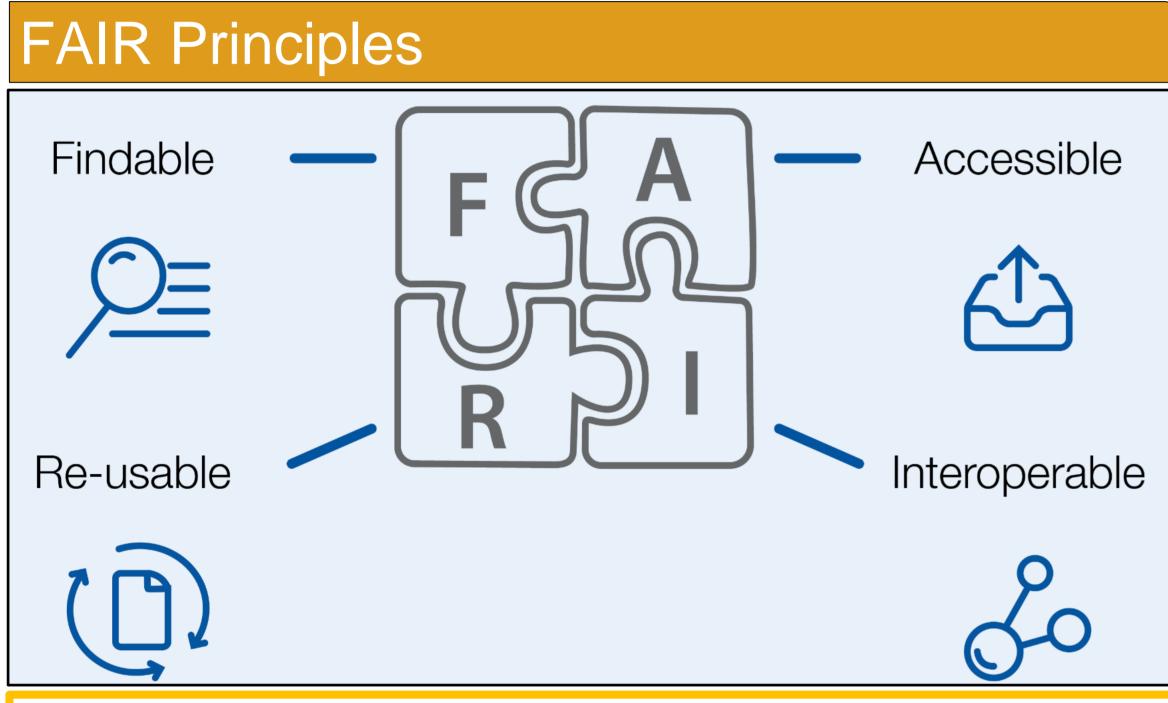


Long Term Interoperability of Distributed Research Data Infrastructures

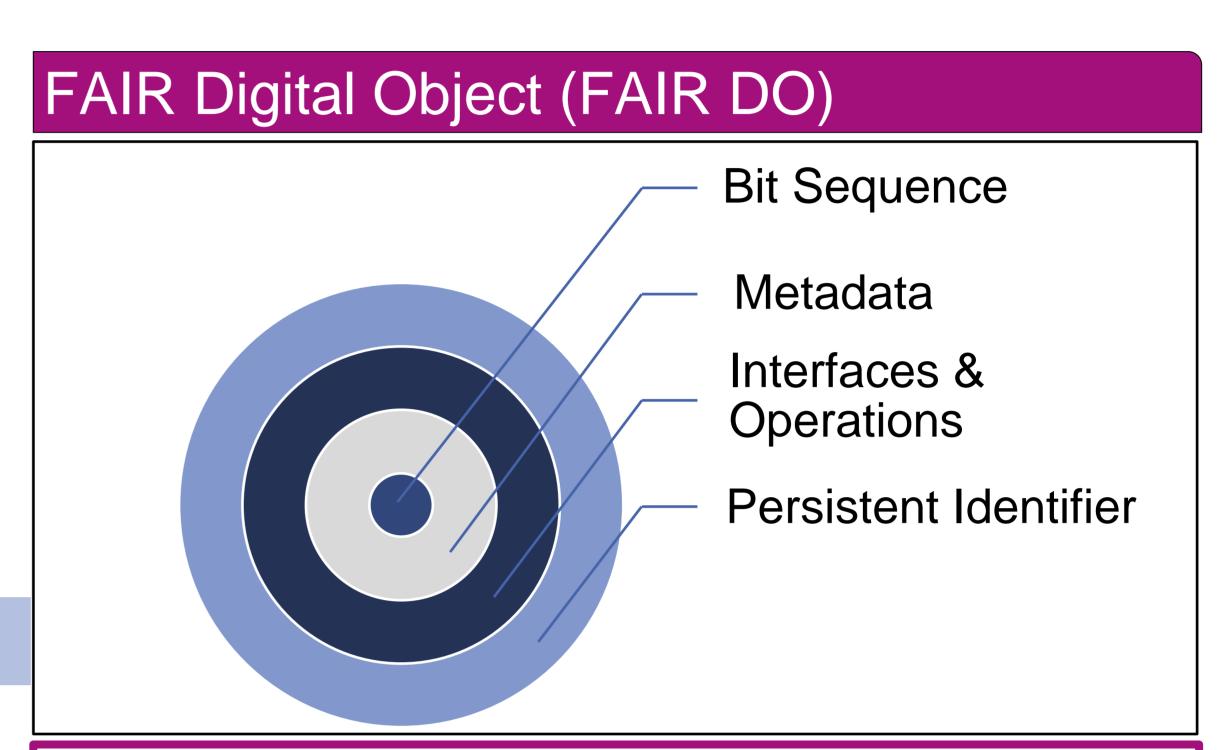
Marius Politze, Sirieam Hunke, Benedikt Heinrichs, Ilona Lang, Amirreza Moghaddam (RWTH), Yusra Shakeel, Philipp Ost, Rossella Aversa (KIT)

Our objective is to introduce and further implement the FAIR DO concept to ease researchers in handling their data according to the FAIR principles. This comprises developing the required infrastructure components to further ensure these recommended data management practices.



Adhering to FAIR principles allows the interconnection of data silos by adding a long term interoperability layer on top of the existing infrastructure components. This provides a practical solution for linking distributed research data infrastructures, such as NFDI, EOSC, and gaia-x, preventing the creation of data silos.

Enabling the interconnection with FAIR principles, results in FAIR DOs



A FAIR DO is a unit of data, represented as a sequence of bits, structured (typed) in a way that makes it interpretable by machines. The essential elements of a FAIR DO are: an associated unique persistent identifier, a type definition for the object as a whole and a metadata description of the properties of the object.

The FAIR DO implemented within the infrastructure, resulting in our architecture concept

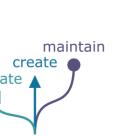
Our Services (RWTH Aachen + KIT)

We present a set of collectively working examples of this approach based on the FAIR DO concept, as recommended by the RDA and the European Commission.

Coscine (RDS Research data storage) Coscine



MatWerk Data Repository (Data and metadata storage)



Typed PID Maker (FAIR DO creation)



FAIR-DOscope (Visualisation and exploration)



Data can be stored in either Coscine or the MatWerk Data Repository, the Typed PID Maker builds FAIR DOs out of research data sets which can then be visualised with the FAIR-DOscope.

Our Concept for an IT Infrastructure

Scientists' Applications & Workflows

Knowledge Graph Representation

Data Representation: FAIR Digital Objects

Data & Metadata Services

Schematic overview of the envisioned architecture comprising the implementation of the FAIR DO concept. RWTH Aachen and KIT jointly propose this architecture for exemplary implementation within NFDI-MatWerk.

By allowing existing data infrastructures to make data FAIR, we enable researchers to access and reuse data from different domains, facilitating cross-disciplinary research and advancing new methods for scientific discoveries. The results will be transferred to other projects, for instance, the Helmholtz Metadata Collaboration (HMC) and various NFDI consortia, including NFDI4Chem, NFDI4Ing and NFDI4Microbiota.

Working examples

for FAIR DOs









