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HMC Impulse "HMC initiatives towards interoperable semantics in research"

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Scientific technology, the supporting infrastructure and the resulting data are highly complex and extremely diverse. The work of the past decades has achieved digitization of many aspects in research, such as exeriments, instrumentation or the publishing process. However these individual parts mostly remain "digitized islands"and, so far, we ar lacking a systematic, broad and interoperable connection between them. Here, both formalization and standardisation of data descriptions within and across research fields, i.e. research data interoperability, remain a major challenge.

A core HMC action is to support interoperabiltiy within the Helmholtz digital ecosystem, and to ensure its alignment with global technology and standards at the same time. Both of these tasks require cooperation on many levels, ranging from the level of domain scientists and their research data, the level of data stewardship and knowledge engineering to the infrastructural and institutional level.

In this talk we will present HMC initiatives, developments and services that are all working towards an interoperable Helmholtz digital ecosystem: At the application and domain level, we are working with the electron microscopy community towards homogenized and interoperable semantic descriptions in these fields. At the level of data stewardship and knowledge engineering, HMC provides services such as our lightweight PID service PIDA and develops the "Helmholtz digitization ontology"(HDO). Once released, HDO will provide a harmonized, formal and machine-actionable understanding of the key concepts around digital dataspaces. At the infrastructural and institutional level, we are developing a Helmholtz Knowledge Graph. We will present first steps and a sketch about how this Knoledge Graph will link Helmholtz infrastructures to create a system that allows research data to be found and exchanged, both within the Helmholtz association and with the globally operating systems.

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