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Data Stewardship in Everyday Research: Use Cases and Best Practices at HZDR

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Research data management (RDM) requirements have intensified over the past several years, particularly at large-scale Research Institutes (RI). At the Helmholtz-Centre Dresden-Rossendorf (HZDR), the interaction between internal processes and external developments illustrates this shift: growing demands for Open Science and FAIR data, funding policies of the DFG and the EU, the formation of national (NFDI) and European (EOSC) open science infrastructures, and strategic procedures within the Helmholtz Association—such as the Helmholtz Open Science Policy and Helmholtz Indicators for Research Data Management and Open Science—are shaping today's RDM environment. Simultaneously, day-to-day research at HZDR is marked by interdisciplinary collaboration, diverse scientific requirements, and operational complexities of large-scale facilities with international user communities. This environment demands data stewards and libraries—in collaboration with central scientific service departments—to practice both flexibility and strategic planning.

Since 2019, HZDR has appointed a Data Librarian to support RDM activities at the intersection of library services, IT infrastructure, and scientific institutes. With this role, several challenges typical for most research institutions but particularly pronounced at HZDR have been brought to light:

• The key challenge is to strike a balance in the institutional data repository RODARE: to establish standards that are detailed enough to meet the specific requirements of individual disciplines, while remaining flexible enough to describe the diverse outputs of interdisciplinary research.
• Data generation at large-scale research facilities or experiments, such as ELBE, HLD, and the Ion Beam Center—operated by shifts—still makes metadata curation and data sovereignty particularly challenging on a daily basis.
• Although the FAIR principles have widespread acceptance, their implementation is still perceived by many researchers as an extra burden, requiring not only technical services but rather a genuine cultural change.
• Entrenched practices ("We've always done it this way") are a barrier to innovation, despite the fact that funders increasingly request Open Access and RDM compliance.

At HZDR, support for RDM varies from repositories like ROBIS and RODARE, DOI registration, and data management plan consulting to workshops for postdocs and doctoral researchers. Among the success factors is the close collaboration of the library and the Scientific Data Management Group within the central IT department, which develops solutions for heterogeneous needs in a collaborative effort. Projects like HELIPORT and HERMES attempt to enable low-threshold access to RDM services with improved integration of metadata processes. The integration of facility-driven data streams into generic RDM frameworks remains a challenge—compounded by a project-based, temporary workforce.

Recognizing that progress in RDM cannot be achieved through isolated initiatives, HZDR initiated a center-wide process in 2024 to develop a sustainable, comprehensive approach that combines technical, organizational, and cultural components. Guided by our Data Policy and the HZDR Data Lifecycle Model, we are developing a Data Management Strategy that is purposely designed as a dynamic, living document. Its purpose is to create a catalog of demands that aligns existing resources (repositories, PID services, DMPs, lab notebooks) with the differing needs of our scientific communities—while maintaining congruence with national (DAPHNE4NFDI, PUNCH4NFDI) and international (PaNOSC/EOSC) RDM initiatives.

Importantly, this strategy is not a top-down requirement but a co-creative endeavor that engages researchers directly and gives them the structures and resources necessary to meet rising expectations. Initial workshops have already been held to take in input and detail demands, with further targeted sessions planned. Rather than imposing requirements, our strategy is to enable researchers, while establishing a basis to integrate RDM more profoundly into scientific practice and academic reward—through novel incentive mechanisms such as counting RDM outputs, relevance for Helmholtz's Program-Oriented Funding (POF), and alignment with Helmholtz quality metrics.

This talk will provide insight into how HZDR is navigating the challenging balancing act between generic infrastructure and discipline-specific customization, between service provision and the cultural change that is needed, and between Open Access and technology transfer. It becomes clear that data stewardship in everyday research is far more than a technical task —it is also a process of organizational development that requires lengthy coordination processes, overcoming resistance, and building bridges between diverse stakeholders and communities. The ongoing development of our Data Strategy should therefore not be seen as an endpoint,

but as an expression of this continuous negotiation process —including how we identify requirements and address the need for additional resources. In my talk, I will illustrate, using concrete examples from HZDR practice, how we are shaping this process, what challenges are emerging, and which approaches we are taking to gradually embed research data management as a natural part of the everyday practice of research of a large, international, and interdisciplinary research center.

Abstract

Poster

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