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Fair data initiatives at the Hereon Synchrotron beamlines

The Helmholtz-Zentrum Hereon is actively contributing to the FAIR data initiatives within the DAPHNE4NFDI project by implementing data management strategies across its beamlines. In the context of Task Area 1: Managing Data Production, the following efforts are included. A key component of this efforts is the Metadata Collector, which has overcome stability issues and is now successfully deployed at P07, with deployment at P05 micro ongoing as necessary user interface modifications are being implemented. To enhance metadata consistency, work is currently focused on synchronizing metadata schemas between P05 micro, P05 nano, and P07. Additionally, efforts are planned to establish a common metadata acquisition framework across beamlines by defining a shared ontology, metadata schema, and data format, ensuring interoperability and streamlined data management. Furthermore, regarding electronic logbooks, the Scilog system is scheduled for testing at P03 during the next beamtime. Future developments are required to enable automatic data ingestion into Scilog across other beamlines. In Task Area 2: (Meta)data Repositories and Catalogues, the Metadata Catalog is another significant advancement, with Scicat already deployed at P05, incorporating multiple datasets, and plans in place for extension to other beamlines. As part of Task Area 3: Infrastructure for Data and Software Reuse, Pydidias was developed to facilitate X-ray diffraction data analysis. Released as an open-source tool, Pydidias is designed for use both at the facility and the user's home institute, offering flexibility for a variety of diffraction experiments. It enables fast data reduction and analysis during experiments, providing rapid feedback on measurement progress and enhancing the efficiency of data analysis workflows. These initiatives reinforce Hereon's commitment to improving FAIR data principles, within the DAPHNE4NFDI framework, fostering a more efficient and standardized approach to data management.

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