

From Planning to Publication: The BIS (Biosample Information System) workflow

In an ongoing effort within the Helmholtz association to make research data FAIR, i.e. findable, accessible, interoperable and reusable, we also need to make biological samples visible and searchable. To achieve this, a first crucial step is to inventory already available samples, connect them to relevant metadata and assess the requirements for various sample types (e.g. experimental, time series, cruise samples). This high diversity of sample types is challenging for creating standardized workflows and providing a uniform metadata collection with complete and meaningful metadata for each sample. As part of the Helmholtz DataHub at GEOMAR, the Biosample Information System (BIS) has been developed, turning the former decentral sample management into a fully digital and centrally managed long-term sample storage and metadata system.

The BIS is based on the open-source research data management system CaosDB in LinkAhead from IndiScale Data Services, which offers a framework for managing diverse and heterogeneous data. We have designed a flexible datamodel and multiple WebUI modules to support scientists, technicians and data managers in digitalizing and centralising sample metadata. To show the availability of samples and metadata to the scientific community, they are also visible in central research data infrastructures like OSIS (<https://portal.geomar.de/osis>) and in a harmonized way with other sample types and repositories in the data viewer (<https://marine-data.de>). We manage sampling metadata along with publication relevant data to increase the FAIRness of registered samples.

After a year of working on so called lighthouse samples, we have now entered a new chapter in the developmental phase during which we include ongoing sampling campaigns and further adapt the BIS system based on new technical and user requirements. We present a generalized work flow from the planning of a sampling campaign until data publication.

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