

ODANext

Oceanographic Data Acquisition : the next age

DURATION
 15/12/2020-15/03/2023

BUDGET
 368 127 €

PROJECT DESCRIPTION

Oceanographic Research Vessels, like the current RV Belgica and the new RV Belgica, fulfil their scientific role by performing campaigns with specific scientific investigation and by continuously measuring the properties of the atmosphere and the water. The RV Belgica is a floating laboratory, composed of dozens of sensors and instruments, and a key Research Infrastructure of the Royal Belgian Institute of Natural Sciences (RBINS) and the Federal portfolio. It also deploys instruments in the water column or on the sea bottom for long-term time series. These continuous measurements (time series of deployments and 'en-route data') relate to meteorological, navigation, physical/chemical and operational parameters.

Continuous data (in human-readable and machine-to-machine forms) serve a wide range of users: the researchers, who only need the information from his or her campaign, the marine research community in general, and private companies, who potentially will make use of the new RV Belgica. On top of this, there are in-house dissemination tools (e.g. BELGICA website - <https://odnature.naturalsciences.be/belgica/>) and various Research and Open Data infrastructures that RBINS constitutes and contributes to (e.g. GOSUD, INSPIRE, ICOS, SeaDataNet, ...). All those users are expecting a high level of service and an increased cross-use of the data from the new RV Belgica regarding data acquisition, metadata and sensor descriptions.

Currently, the RV Belgica stores its en-route data in an obsolete database system, designed in 1996 (ODASIII, Oceanographic Data Acquisition System). The new vessel, which will be commissioned in 2021, must adopt a state-of-the-art continuous data management system which is the focus of this project.

The main objective of this project is an automatic data and metadata workflow for the new RV Belgica, by a collaboration between the marine data acquisition (MSO, Ostend), data management (BMDC, Brussels) and scientific websites (SWAP, Brussels) teams of RBINS.

This main objective can be subdivided in the following outcomes:

- Fully operational sensor-to-client data flow, for all bound sensors and a selected set of deployed client sensors,
- Rich, standardized data that can serve any (potential) client,
- Metadata enrichment when it matters,
- Optimized and secure data storage,
- Integration into relevant open science data repositories,
- Increased data governance by writing Data Management Plan (DMP) together with data providers.

METHODOLOGY

The new RV Belgica will be delivered in 2021. The main methods to timely reach the objectives are the writing of specifications that blueprint the implementation, using software development principles with the intent to provide durable software, and documenting procedures in DMPs to reconnect with data stakeholders. The project lasts two years. The first months will be devoted to writing specifications, starting the general DMP and installing components as proofs of concept. The individual task methodologies are described below.

To achieve the desired result, we have composed a multidisciplinary team that have the necessary know-how to accomplish the project. In order to address encountered problems, collaborators will make use of an issue tracker. A specific work package is devoted to this.



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The work packages are mostly cascading, so it is crucial that the development of a downstream component can already begin before the previous one(s) are fully completed. For this reason, specific elements will be marked by their priority using the MoSCoW method. 'Must haves' will be defined in terms of a functioning next component. Components will be tested both at their end stage and continually, at code and component level, during different phases, with different goals. Automated test suites and containerization are preferred. Deliverables follow the task deadlines detailed in the Gantt chart, and delays will be followed up. Participants will report delays as soon as possible. The yearly reports will report on the deliverables' outcome.

(Meta)data follows multiple steps from the moments it's measured down to the dissemination on the appropriate platforms. It is important that the environment developed around those data is coherent, well documented and that specific user needs are met along the data-flow. To achieve it, five thematic and complementary work packages are considered in this project, namely 1) the documentation, 2) technical specifications, 3) data usage definition, 4) the development and 5) deployment approach and the quality information. Those packages are sub-divided in work packages and specific tasks in the work plan.

Additionally, we will apply the FAIR (Findable, Accessible, Interoperable, Reusable) data principles to contribute to a conscientious and transparent attitude to data and data management. We will actively apply an open data license and will follow up the evolutions with respect to the data policy of RBINS so that it remains compatible with the data use of the RV Belgica. We take the ethical position that the only appropriate way for publicly funded research is by properly governed open data.

CONTACT INFORMATION

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LINKS

www.bmdc.be/NODC/odanext.xhtml

<https://odnature.naturalsciences.be/belgica/>