Sustainable Development of Research Software -Case Study of an Open Source Approach

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Typical use cases covered by research software comprise the management of research data sets (e.g. collected observation data) or tools for analysing data gathered in experiments or observation campaigns. These aspects are core activities of the Sensor Web, Geoprocessing, and Spatio-Temporal Data Science labs of the open source initiative 52°North.



The publication of research software comprises several challenges, especially:

- research activities to further advance the software projects and to ensure their maintenance.
- compatibility, and funding models.
- research software projects.



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Continuity: Often, research software results from the activities of specific research projects. As soon as such projects are completed, a common challenge is that the project teams move on to new tasks which leads to a risk that the development of project results is not continued. Thus, an approach is needed to ensure that the development of software is continued beyond the duration of the initial project. To address this challenge it is necessary to ensure a sufficient funding for continued

Open source publication: The publication of research software under open source licenses helps to increase the user and developer community as the functionality of the software can be analysed and modified by interested researchers. However, at the same time the publication of open source software projects requires specific consideration of further aspects such as license types, license

Community involvement: To ensure a broader re-use of research software projects and to ensure a continuous evolution, it is important to build, maintain and involve a user and developer community. This helps to identify future research directions and requirements, to validate new developments and ideas, and to create an ecosystem of contributors which help to advance and promote the

The aim of the H2020 project SeaDataCloud is to provide more efficient and faster access to marine observation research data. This comprises aspects such as new types of sensors but also innovative IT concepts (e.g. cloud infrastructures) and interoperability standards (e.g. INSPIRE guidelines for observation data). Consequently, SeaDataCloud aims at improving the current SeaDataNet infrastructure adopting cloud and high performance computing technology.

Example Projects

WaCoDiS

The aim of the WaCoDiS research project is to implement a geoinformation infrastructure for river basin water monitoring tasks, which has been specifically optimized to account for water quality control, water protection and protection of access to clean drinking water. For this purpose, remote sensing data from the Copernicus Program, weather data (i.e. from the German Weather Service, DWD) and in-situ sensor data for monitoring water bodies will be combined, merged and analysed via innovative and automated techniques. Input data, results, and the developed functionalities will be provided and cross-linked via interoperable services.



SeaDataCloud

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