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Requirements for Metadata of Energy Research Software

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Energy research software (ERS) is used in energy research for multiple purposes like visualization of processes and values, e.g., power quality, (co-)simulation of smart grids, or analysis of transition paths for energy systems. Within an exemplified research cycle, this software is often fundamental for producing new research results while it can also present a result of performed research. (1)

Metadata have shown to be one of the success factors for the so-called FAIRification of research software, especially to improve findability and, thus, reusability of research software (2), (3). To reach a high interoperability of metadata as part of the FAIRification these metadata should follow a defined schema with extensive reuse of relevant metadata elements from other schemas. Within the energy domain some approaches to collect metadata for energy research software already exist (e.g., the openmod wiki, or the Open Energy Platform). However, none of these approaches uses a formalized and interoperable metadata schema to open up the approach for further reuse for FAIR ERS.

As first step to develop a metadata schema requirements have to be gathered on which information should be included in the metadata (4). Therefore, the goal of our work is to gather these specific requirements for a metadata schema for ERS.

To this end, we follow a qualitative research approach to get relevant requirements from multiple stakeholders: we conducted semi-structured interviews with 36 researchers from different subdomains of energy research, e.g., research on power grids or specific components. The researchers use different types of software (from scripts over libraries to stand-alone software). Our interviews followed a rough interview guideline, based on the FAIR criteria, structured in five main categories: findability of general fitting ERS, selection of the right ERS for certain research, accessibility, interoperability, and reusability.

The interviews show a diverse field of requirements for ERS due to different reasons. First, depending on the subdomain, the ERS are highly diverse. Second, the scientific backgrounds of energy researchers lead to different requirements, e.g., regarding the choice of programming languages. The interviews show especially a need for information on the community and quality of ERS.

In our talk, we will present the results of our requirement analysis and discuss them with the audience.

References

(1) S. Ferenz, "Towards More Findable Energy Research Software by Introducing a Metadata-based Registry," in Abstracts of the 11th DACH+ Conference on Energy Informatics, Anke Weidlich, Gunther Gust and Mirko Schäfer, Ed., Springer, 2022. doi: 10.1186/s42162-022-00215-6.

(2) D. S. Katz, M. Gruenpeter, and T. Honeyman, "Taking a fresh look at FAIR for research software," Patterns, vol. 2, no. 3, Mar. 2021, doi: 10.1016/j.patter.2021.100222.

(3) A.-L. Lamprecht et al., "Towards FAIR principles for research software,"Data Sci., vol. 3, no. 1, pp. 37–59, Jan. 2020, doi: 10.3233/DS-190026.

(4) M. Curado Malta and A. A. Baptista, "Me4DCAP V0.1: a Method for the Development of Dublin Core Application Profiles," Min. Digit. Inf. Netw., pp. 33–44, 2013, doi: 10.3233/978-1-61499-270-7-33.

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