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The Revised DALIA Interchange Format

New Picklists for Describing Open Educational Resources

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Abstract

The scientific infrastructure project DALIA (“Data Literacy Alliance”) aims to index, connect, and make accessible existing learning materials on data literacy. It builds and maintains a platform that encompasses materials for the National Research Data Infrastructure (NFDI), federal Research Data Management (RDM) initiatives, data competence centers, and beyond. Within the platform, the differing requirements of professions, career levels, and disciplines must be considered and integrated. Among these are professors, researchers, students, and professionals from libraries and archives. The disciplines span the full range of scientific fields, such as engineering, natural and life sciences, the arts and humanities. The competency levels on data literacy may also vary.

For the linking and integration of the learning resources, DALIA has been developing a knowledge graph. To ensure the interoperability of teaching and learning materials for this knowledge graph, a schematization of their metadata was developed: The DALIA Interchange Format (DIF, currently V1.3) provides a framework for making metadata consistent and smoothly integrable into the DALIA platform. It was developed in a multi-feedback process and describes the metadata fields for the online publication of educational resources [1], [2]. The selection of the description elements is based on the Dublin Core Tabular Application Profile (DCTAP) [3]. Cardinality and value constraints of attributes are specified. For example, a *license* must be assigned exactly one value, defined by picklists. The DIF consists of elements compiled from well-established vocabularies, especially *dcterms* [4] and *schema.org* [5]. In cases where standardized definitions are lacking or too broad, custom terms are defined in the underlying MoDALIA ontology [6]. For instance, the specifications of *MediaType*, *LearningResourceType*, and *TargetGroup* are tailored to address the specific needs of educational resources related to data literacy or research data management, as well as the learner requirements.

DIF V1.3 has been well-received in the OER communities and influenced other schemas; for example, the UAG Schulungen/Fortbildungen of the DINI/nestor AG Forschungsdaten optimized their schema for interoperability [7]. The data competence center HERMES is currently developing a metadata schema according to their specific requirements, with DIF serving as one of the foundations [8]. The Working Group Cookbooks, Guidance and Best Practices of the NFDI Section Metadata, Terminologies, Provenance collaborated on compiling a checklist for the use of the DIF [9]. Constantly community-driven and designed to foster open scientific discourse and interoperability, the metadata schema has been revised based on community feedback and recent developments, while maintaining full backward compatibility.

In particular, the development of picklists presents a complex challenge. While some picklists can be compiled from existing controlled vocabularies, such as licenses from the SPDX License List [10], defined by the class *spdx:ListedLicense* in the SPDX terms [11], others encounter issues with unclear boundaries. For example, assigning values for *LearningResourceTypes* posed challenges in differentiating between tutorials and lectures. Definitions must be clear, concise, and, whenever possible, refer to a standard. The diversity of materials, ranging from texts and lectures to code notebooks and podcasts, necessitates the development of context-specific picklists.

This presentation focuses on the compilation of picklists for the DALIA Interchange Format, aiming to simplify the description and classification of teaching and learning materials.

Keywords: Open Educational Resources, Metadata Specification, Data Literacy

Resources

- DALIA Search Platform. <https://search.dalia.education/basic> "Search platform for OER regarding data literacy."
- MoDalia Ontology. <https://dalia.pages.rwth-aachen.de/dalia-ontology/index-en.html>. BMBF DALIA project (2024), in collaboration with A. A. Desouki, M. Fuhrmans, P. C. Steiner, F. Lange. "Ontology for the backend of the DALIA search platform."

Author contributions

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Competing interests

The authors declare that they have no competing interests.

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