

First steps of the basic service Terminology Services 4 NFDI - Step by step through the initialization to the integration phase

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Abstract:

Terminologies are crucial for creating semantically rich metadata that convey the full meaning of research data. They establish consensus definitions for entities, ensuring conceptual consistency across various disciplines, despite differing nomenclatures.

Terminology Services provide access to domain-specific collections of ontologies, terminologies, or vocabularies, offering comprehensive functions for human users via GUIs or for machines via APIs.

The basic service Terminology Services 4 NFDI (TS4NFDI) aims to develop a cross-domain, interoperable service to provide, curate, develop, harmonize, and map terminologies for the communities of the National Research Data Infrastructure (NFDI). The service will foster the harmonization and standardization of terminology management within the NFDI, facilitating consensus-building across communities.

We present our work on the initialization of the Basic Terminology Service, addressing the following key objectives:

- Provision of a consortia-agreed IT-Architecture with a harmonized API gateway to access multiple terminology services technologies based on OLS [1], OntoPortal [2] or SKOSMOS [3].
- Development of a Terminology Service Suite (TSS) to support uniform terminology access for provision, management, curation, publication, archiving, and subscription of terminologies.
- Promotion of consensus-finding, harmonization, and alignment by integrating TS4NFDI service components and adopting common practices to harmonize terminologies across disciplines.

We report on the measures taken to achieve the objectives and their respective outcomes. Our comprehensive requirement analysis included a detailed analysis of current terminology service technology stacks, tools, and services used by NFDI consortia to identify needs and gaps. Results were obtained by a survey and extensive interviews with experts from various NFDI consortia representing the diversity of scientific disciplines. We demonstrate reusable JavaScript-based GUI widgets for easy integration into user interfaces and visualization of semantic information as part of Terminology Service Suite. Several small prototypes and demonstrators were developed within the various NFDI consortia, showcasing the desired networking of terminology experts and the TS4NFDI project. We further present a pilot implementation of a service wrapper and API gateway integrating selected backend services of the aforementioned three main terminology service technologies. We further report on the integration of a central Mapping Service to create, manage, and provide cross-domain mappings for terminologies, utilizing the Simple Standard for Sharing Ontology Mappings (SSSOM) [4].

We present collected and derived use case scenarios and their evaluation against the pilot to prove the concept of envisioned architecture.

As an outlook, we will provide future work on the integration phase of the Basic Terminology including necessary steps to incorporate the service into the common NFDI service architecture. We will expand the use case scenarios including further participants from additional communities. The work will also include additional features and functionality to support the measures of ontology harmonization and mapping across the NFDI consortia.

Keywords: terminology service, ontology mappings, ontology, terminology

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