# Knowledge Graph Development as a Collaborative Process

*Wednesday 11 October 2023 14:03 (3 minutes)*

Establishing semantic data and knowledge graphs in scientific working groups is no easy feat. In most cases there is neither a user friendly tool chain nor experience with ontologies for the respective research field. But without a start, said experience can never be gained. The same is true for individuals that want to start into the field.

We thus see knowledge graph development not as a task of expert individuals that already know everything, but as a collaborative (learning) process of working groups and organisations. At the start of this process the right ontologies are not known and the individuals do not yet have experience with expressing information in knowledge graphs. Thus, a tool chain must provide basic knowledge to help newcomers to get started. It must also support the learning process and the selection of terms and ontologies, while users are already working with their own data and metadata. Additionally, the tool chain must support cooperation and lateral transfer of knowledge within organisations and working groups as well as between working groups world wide.

We therefore propose to establish a data infrastructure in every research organisation consisting of the following elements: An organisational knowledge graph, integration of (global) ID services, links to FAIR ontologies, policies, and a graph editing tool. This editing tool must support simultaneously the input of graph data, the extension of ontologies, the development of data structures, and finding and reusing existing ontologies and data structures not only from other persons inside the organisation but also from globally emerging metadata standards. While searching for a fitting term from a predefined set of ontologies, the tool would also allow for the creation of an internal term, when no fitting one is found. While trying to create a new term, fitting ones are automatically searched and proposed. The here proposed graph editing tool would provide the possibility to refactor existing data to newly selected ontologies, e.g. through replacing terms or whole structures, while keeping the original history in a git+GitLab like structure. This would also allow for access control and cooperation within the organisation and beyond. Such refactoring translations would also be described in terms of graph data and be published, so that others considering the same transition could use them without much effort.

We think that in the presented infrastructure users could establish processes that would foster harmonization and convergence of ontologies and data structures, while not impeding the collection of data and learning processes of individuals before harmonization is achieved.

## Please assign your contribution to one of the following topics

Infrastructure and common practices for consolidating (meta)data

## Please specify "other" (stakeholder)

## In addition please add keywords.

knowledge graph
collaborative data development
metadata harmonization
research data interoperability

## Please assign yourself (presenting author) to one of the stakeholders.

Data professionals and stewards

**Primary authors:** Prof. VAN DEN BOOGAART, Karl Gerald (Helmholtz Institute Freiberg); STEINMEIER, Leon (Helmholtz Institute Freiberg); SCHALLER, Theresa

**Presenter:** STEINMEIER, Leon (Helmholtz Institute Freiberg)

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