

# Facilitating creation, (re)use and interoperability for Knowledge Graphs in NFDI: the vision behind KGI4NFDI

## Authors:

Lozana Rossenova<sup>1\*</sup>, Renat Shigapov<sup>2</sup>, Moritz Schubotz<sup>3</sup>, Fidan Limani<sup>4</sup>, Benjamin Zapilko<sup>5</sup>, Till Sauerwein<sup>6</sup>, and Konrad U. Förstner<sup>7</sup>

\*Lead presenter

<sup>1</sup> [lozana.rossenova@tib.eu](mailto:lozana.rossenova@tib.eu), TIB – Leibniz Information Centre for Science and Technology, Hannover

<sup>2</sup> [renat.shigapov@uni-mannheim.de](mailto:renat.shigapov@uni-mannheim.de), Mannheim University Library, Mannheim

<sup>3</sup> [Moritz.Schubotz@fiz-Karlsruhe.de](mailto:Moritz.Schubotz@fiz-Karlsruhe.de), FIZ Karlsruhe – Leibniz Institute for Information Infrastructure, Berlin

<sup>4</sup> [flimani@zbw-workspace.eu](mailto:flimani@zbw-workspace.eu), ZBW – Leibniz Information Centre for Economics, Kiel

<sup>5</sup> [Benjamin.Zapilko@gesis.org](mailto:Benjamin.Zapilko@gesis.org), GESIS - Leibniz Institute for the Social Sciences, Cologne

<sup>6</sup> [sauerwein@zbmed.de](mailto:sauerwein@zbmed.de), ZB MED – Information Centre for Life Sciences, Cologne

<sup>7</sup> [foerstner@zbmed.de](mailto:foerstner@zbmed.de), ZB MED – Information Centre for Life Sciences, Cologne

## Abstract:

A graph-structured knowledge base known as a Knowledge Graph (KG) consists of a terminology (vocabulary or ontology) along with interconnected data entities, all based on semantic web technologies like RDF and SPARQL. Knowledge Graphs represent an important and powerful tool for achieving interoperability in and across research domains and fulfilling the mission of the NFDI (National Research Data Infrastructure). Several consortia are building their own KG solutions, embedded in their overall data management strategy. The Working Group "Knowledge Graphs" (WG KGs) was established in the NFDI Section "(Meta)data, Terminologies, Provenance" to coordinate the development and use of KGs in all NFDI consortia. It has carried out an evaluation of the state of the art of KG adoption as well as the need for additional support in the NFDI. This led to the development of the KGI4NFDI (Knowledge Graph Infrastructure for the German National Research Data Infrastructure) service proposal which will support NFDI consortia by providing guidance and documentation around development practices as well as software dedicated to the creation and (re)use of KGs, including tools for data import, validation and export, collaborative frontends, search APIs, SPARQL endpoints, and tools for visualizing query results.

Besides decentralised tooling, the service will establish a registry of KGs utilized by NFDI consortia, which will be presented in the form of its own KG. Alongside this, the service will devise an interoperability strategy, conduct surveys, and demonstrate the application of KGs across various research fields and scenarios using diverse methods. The implementation will leverage a widely-used FLOSS technology stack to ensure maximum reusability and sustainability, with any generated solutions being made available under open source and content licenses for others to benefit from.

This presentation will outline the mission and core objective of KGI4NFDI that will be developed starting in the summer of 2024. We would like to use this opportunity to gather feedback as well as engage with the NFDI and research community.

**Keywords:** Knowledge Graph, Semantification, Research Data Management