The NFDI Knowledge Graph Infrastructure service for FAIR data management: KGI4NFDI

Lozana Rossenova[1], Renat Shigapov[2], Erblina Qeli[2], Moritz Schubotz[3], Daniel Mietchen[3], Fidan Limani[4], Benjamin Zapilko[5], Till Sauerwein[6], Muhammad Elhossary[6] and Konrad U. Förstner[6]
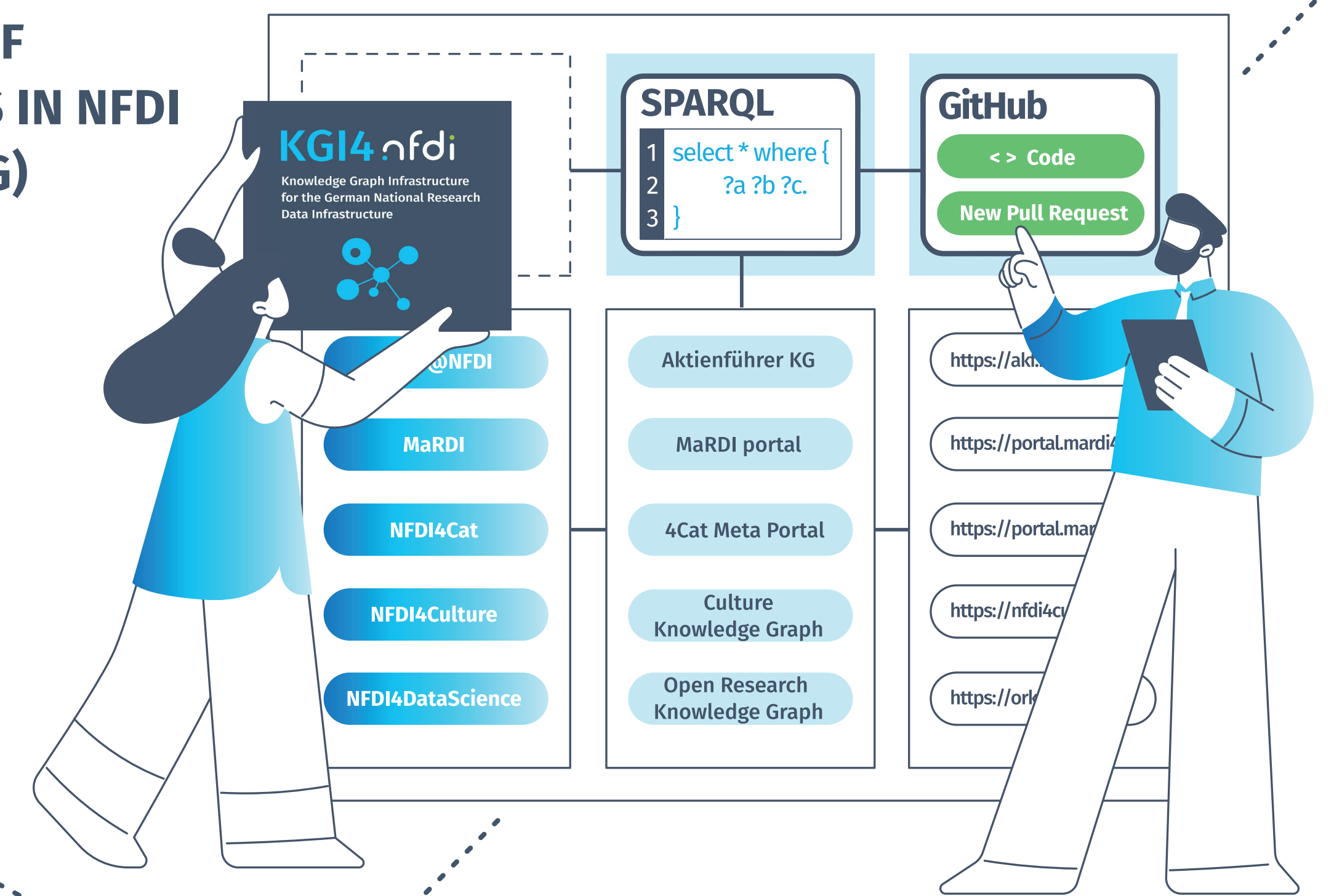
Knowledge Graphs (KGs) are data management technologies consisting of terminologies (vocabularies and ontologies) along with interconnected data entities, based on semantic web standards like RDF and SPARQL. KGs are powerful tools for the application of the FAIR data principles in and across research domains, and thereby supporting the mission of the National Research Data Infrastructure (NFDI) in Germany. The NFDI Association includes subject-specific consortia, responsible for delivering research data resources and services to their respective communities. Additionally, the Base4NFDI consortium provides services deemed to be broadly applicable to all domains.

The Knowledge Graph Infrastructure (KGI4NFDI) Base Service provides guidance, documentation and software for creating and reusing KGs, alongside a registry of all KGs in use by NFDI consortia. Overall, this integrated approach will seek to enhance data integration and foster standardized ontological practices. It will make a significant contribution in supporting the FAIRification of data across disciplines and will complement international KG initiatives, such as those promoted by the European Open Science Cloud (EOSC).

1. KGI SERVICE HUB COMPRISING:

CENTRAL REGISTRY OF KNOWLEDGE GRAPHS IN NFDI (IN THE FORM OF A KG)

SEARCH AND QUERY PLATFORM

4. SUPPORTING ADOPTION THROUGH:

SHOW CASES
• Exchange between select KGs
• Model queries
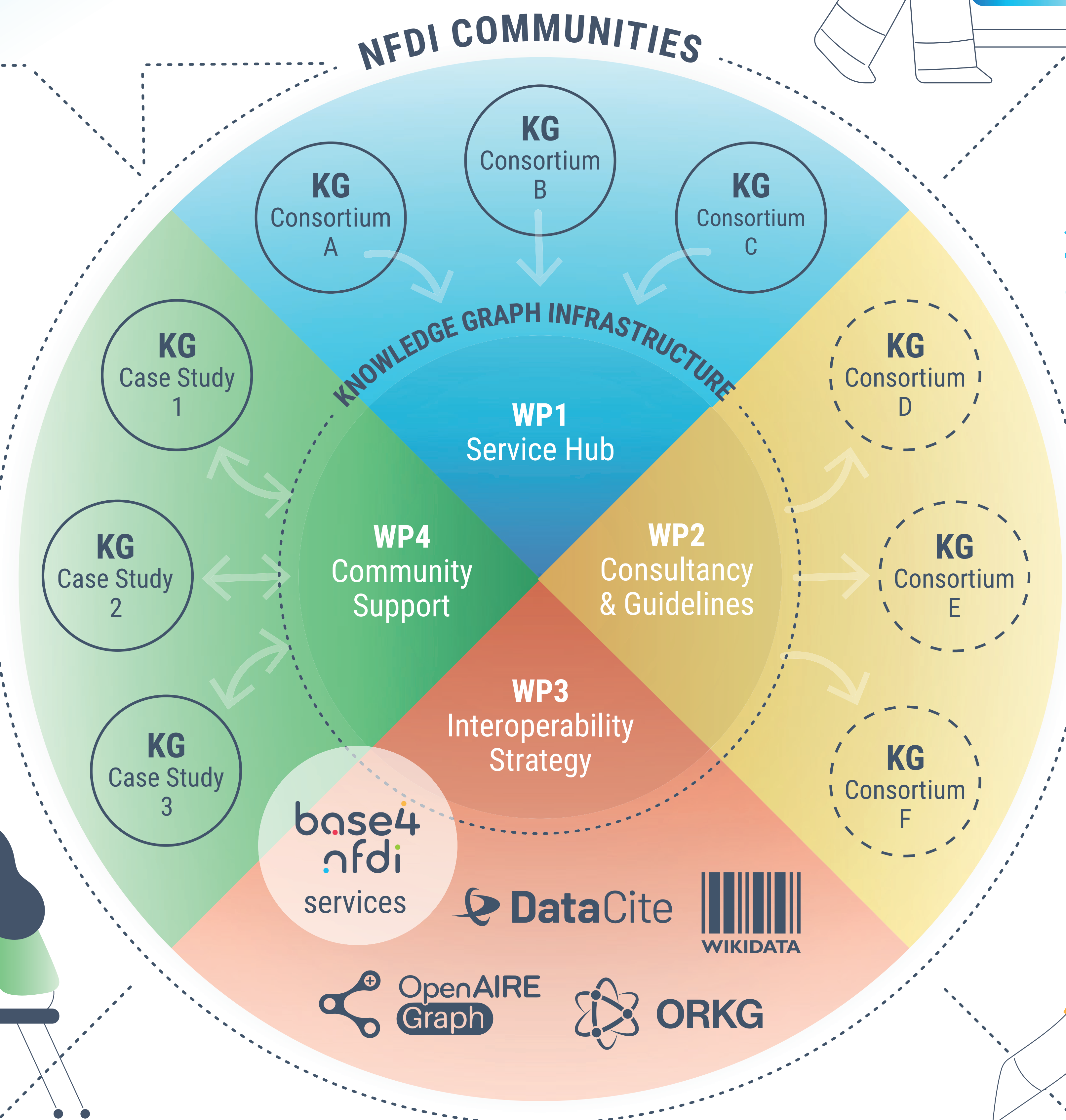• Examples of ontology harmonization

COMMUNITY SURVEY

2. FACILITATING KG CREATION THROUGH:

GUIDELINES
• Installation and configuration
• Data modeling and import
• Querying

CONSULTING SERVICE

3. IMPROVED INTER-OPERABILITY THROUGH:

STRATEGY FOR METADATA MAPPING, LINKING, AND INTEGRATION
• Consensus-building processes
• Guidelines and best practices

COOPERATION WITH NATIONAL AND INTERNATIONAL KG INITIATIVES

NFDI COMMUNITIES

KNOWLEDGE GRAPH INFRASTRUCTURE

KG Consortium A
KG Consortium B
KG Consortium C
KG Consortium D
KG Consortium E
KG Consortium F
KG Case Study 1
KG Case Study 2
KG Case Study 3

WP1 Service Hub
WP2 Consultancy & Guidelines
WP3 Interoperability Strategy
WP4 Community Support

base4nfdi services
DataCite
WIKIDATA
OpenAIRE Graph
ORKG

https://kgi.services.base4nfdi.de/

DFG Deutsche Forschungsgemeinschaft

TIB LEIBNIZ INFORMATION CENTRE FOR SCIENCE AND TECHNOLOGY UNIVERSITY LIBRARY

UNIVERSITÄT MANNHEIM

FIZ Karlsruhe Leibniz Institute for Information Infrastructure

ZBW Leibniz-Informationszentrum Wirtschaft Leibniz Information Centre for Economics

GESIS Leibniz-Institut für Sozialwissenschaften

ZB MED Informationszentrum Lebenswissenschaften

base4 nfdi Basic Services for NFDI

nfdi Nationale Forschungsdaten Infrastruktur