

Semantic x-Lab Kick-Off Event

Use-Cases

Use-Cases - Agenda

- General Introduction to Uses-Cases
- Presentation of two Use-Cases:
 - UC1: Data and Metadata at High-Power Laser-Plasma-Experiments
(max. 10 min)
 - UC2: Determination of stable metal(loid) isotopes in soil samples
(max. 10 min)
- 5 min Key Questions, Discussion



Use-Cases - Why Use-Cases

- Why Use-Cases?
- Key to understanding the actual needs in the laboratory
- Describe how researchers specifically work or plan to work in the lab
- Tool in requirements analysis to find out expectations and requirements a user has of a system
- Show how the user wants to use the system to achieve a specific goal
- Describe the exact process of this interaction



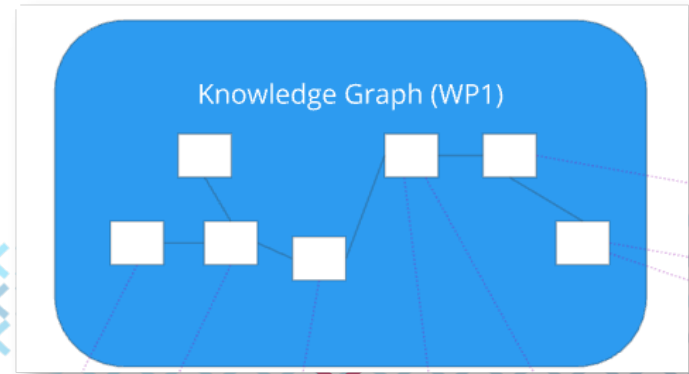
Use-Cases - Two Use-Cases

- Two main Use-Cases that drive the development throughout the project:
- **Use-Case 1:** Data and Metadata at High-Power Laser-Plasma-Experiments (HZDR, GSI/HIJ)
- Focus on development of digital twins for laser experiments
- **Use-Case 2:** Determination of stable metal(loid) isotopes in soil samples (GFZ, HZDR/HIF)
- Focus on documentation as a base for proposals, laboratory procedures etc.
- Guide our work as representation of real needs from different research areas



Use-Cases - Focus 1: Concepts

- Which concepts (terms) do we need in the knowledge graph?
- These concepts specify the things of interest and how they are related to each other
- We select suitable ontologies (structured vocabularies) that define the required terms and their relationships



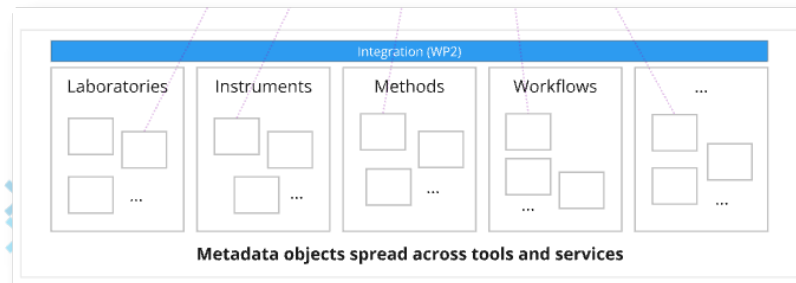
Use-Cases - Focus 2: Search and Query

- What questions do researchers in the lab want to ask of a knowledge graph?
- What kind of information you search for or what complex questions you would like to answer?
- Base of the search and exploration of the graph



Use-Cases - Focus 3: Metadata Systems

- Which third-party systems that hold metadata should be connected to the system?
- Metadata is distributed across many different systems (e.g. ELNs, sample databases, instrument data bases, repositories)
- Include metadata into the knowledgegraph
- Identify the most important systems, connect them to the system



Use-Case 1

Data and Metadata at High-Power Laser-Plasma-Experiments

Hans-Peter Schlenvoigt, HZDR



Use-Case 2

Determination of stable metal(loid) isotopes in soil samples

Jutta Schlegel, GFZ



Use-Cases - Key Questions and Discussion

Project preparation: Support with research

- Are there **similar instruments** in the field?
- Have **similar samples** already been measured, e.g. from a study area?
- Which **other groups** have already worked on this topic?
- Are there **potential project partners**?
- When working with new sample types -> Does anyone have **experience with these samples**?

For interdisciplinary work

- How can I get support with **interpreting results**?
- How can I search for **samples from a specific context**, e.g. geological epoch?

Use for external parties

- What does the Helmholtz **infrastructure** look like?
- What **vocabularies**, including synonyms, are used?
- How are **processes** documented?

