



# Knowledge Graphs

## Lecture 4 – Ontologies as Key to Knowledge Representation

### Hands-On 4.2 - Reasoning in Protégé

Sasha Bruns & Prof. Dr. Harald Sack

FIZ Karlsruhe – Leibniz Institute for Information Infrastructure

AIFB – Karlsruhe Institute of Technology

Autumn 2023



# What is Protégé?

- Protégé is a free, open-source ontology editor and knowledge management system.
- Allows to create, edit, and manage ontologies.
- Provides a graphical user interface for defining classes, properties, instances
- Supports popular ontology languages like OWL and RDF.

**Does Protégé allow for reasoning?**

- Protégé allows for automated reasoning on ontologies.
- Supports several different reasoning engines, including HermiT, Pellet, and FaCT++.
- Provides tools for debugging and testing reasoning results.

# Let's try it together!

# Knowledge Inference: Class Definition

Is it a pizza?

# Knowledge Inference: Property Hierarchy

Pizza base is also an ingredient of  
pizza.



# Property Characteristics: Functionality

Only one pizza base for my pizza!

# Property Characteristics: Transitivity

What is in your Pasta Carbonara?

# Property Characteristics: Symmetry

To Casa Nostra or to Gustoso?

# Error/Inconsistency Check: Disjoint Classes

It's either pizza or pasta!



Thank you very much  
for your Attention!

## Knowledge Graphs - Lecture 4 – Ontologies as Key to Knowledge Representation

### Hands-On 4.2

Sasha Bruns & Prof. Dr. Harald Sack

FIZ Karlsruhe – Leibniz Institute for Information Infrastructure & AIFB – Karlsruhe Institute of Technology

Autumn 2023