# Part 5.6
# Phase 4 - Knowledge Definition

# Phase 4 - Knowledge Definition (Practice)

1. Protégé
2. Schema Alignment in KGE

# what is Protégé?

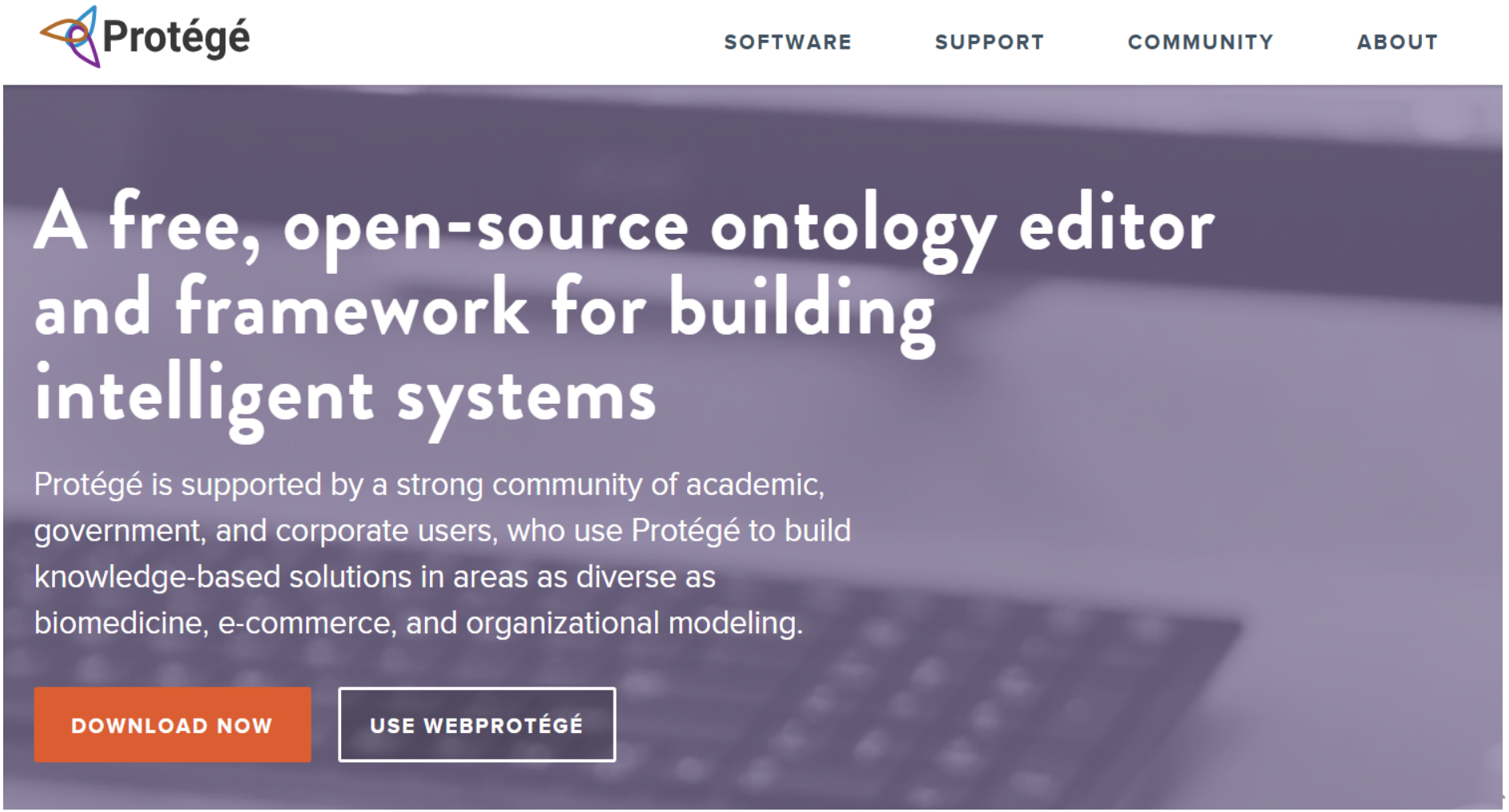
## What is Protégé? (from their webpage)

A free, open-source ontology editor and framework for building intelligent systems

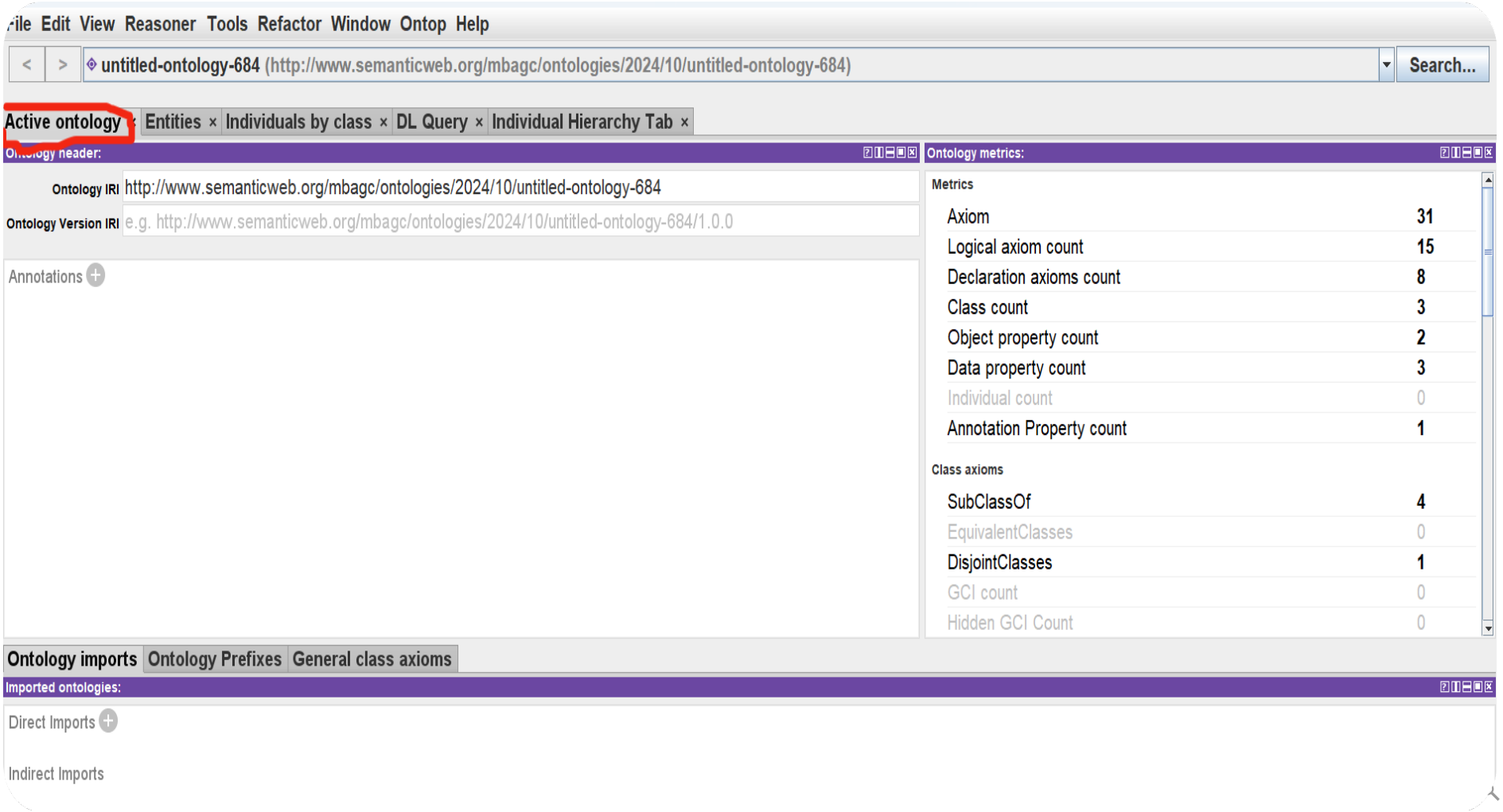
Protégé is supported by a strong community of academic, government, and corporate users, who use Protégé to build knowledge-based solutions in areas as diverse as biomedicine, e-commerce, and organisational modelling.

Where to get it: `http://protege.stanford.edu/`

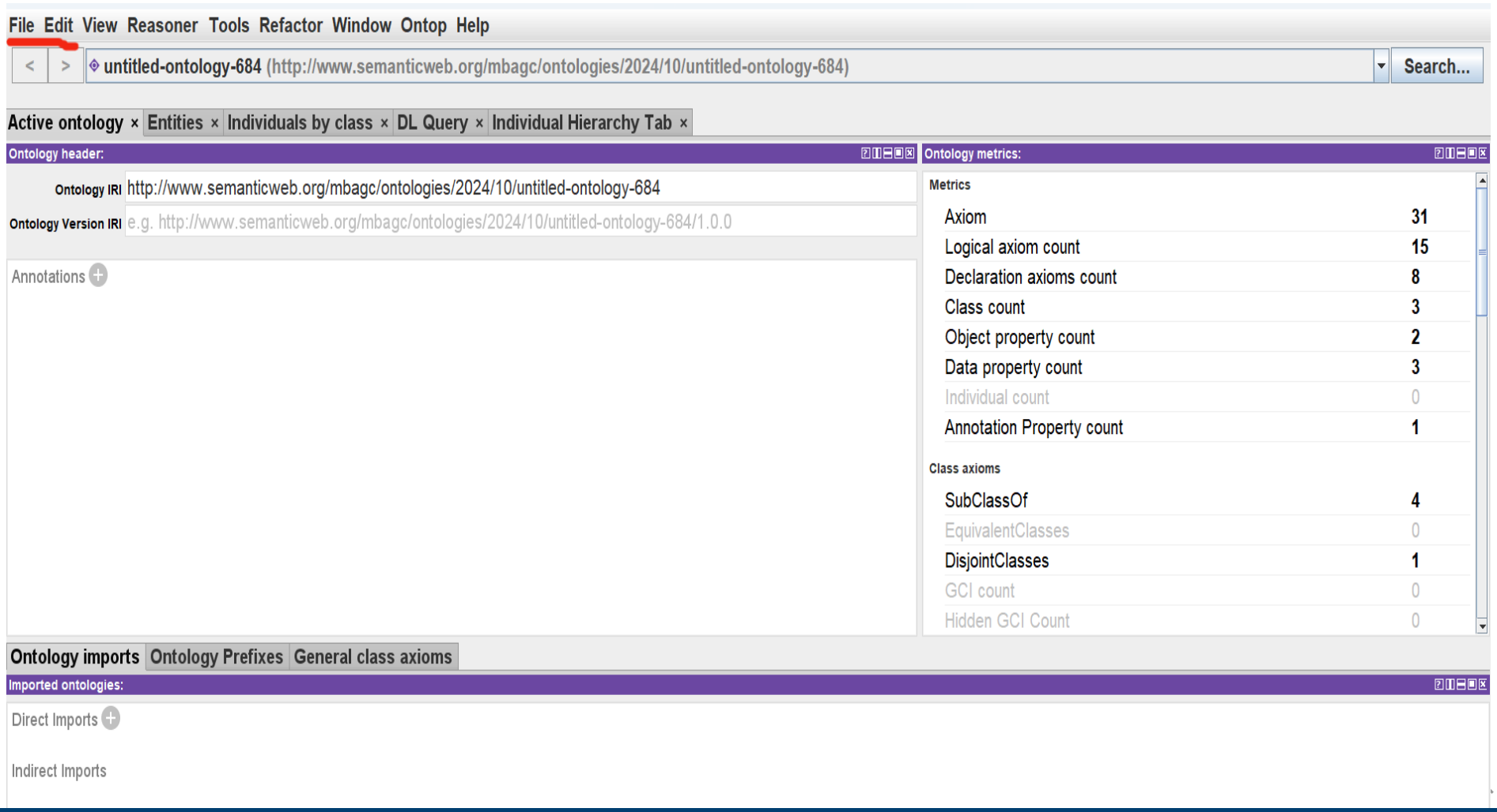
# Protégé Website



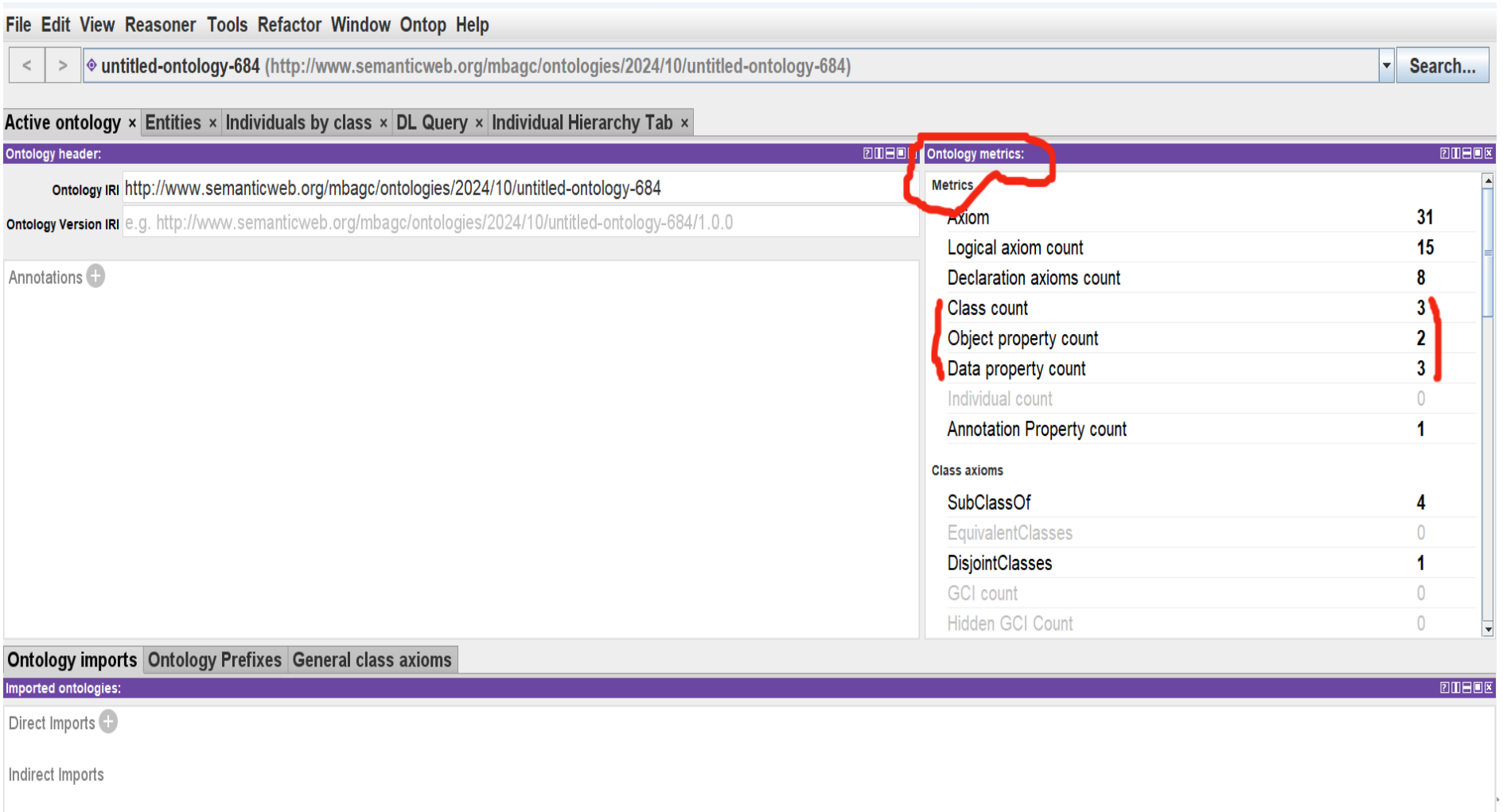
# Active Ontology Tab



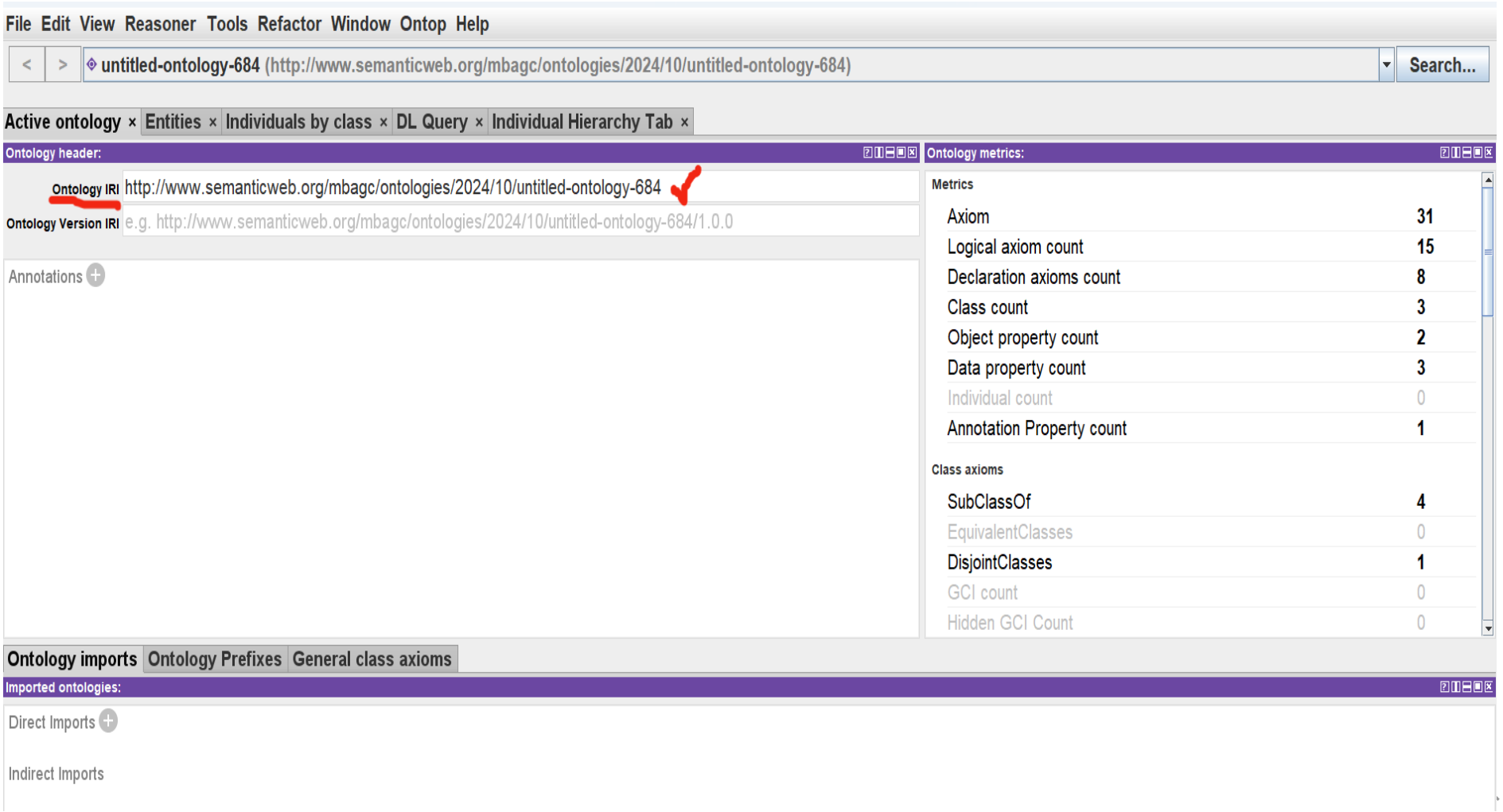
# Create/Edit Ontologies



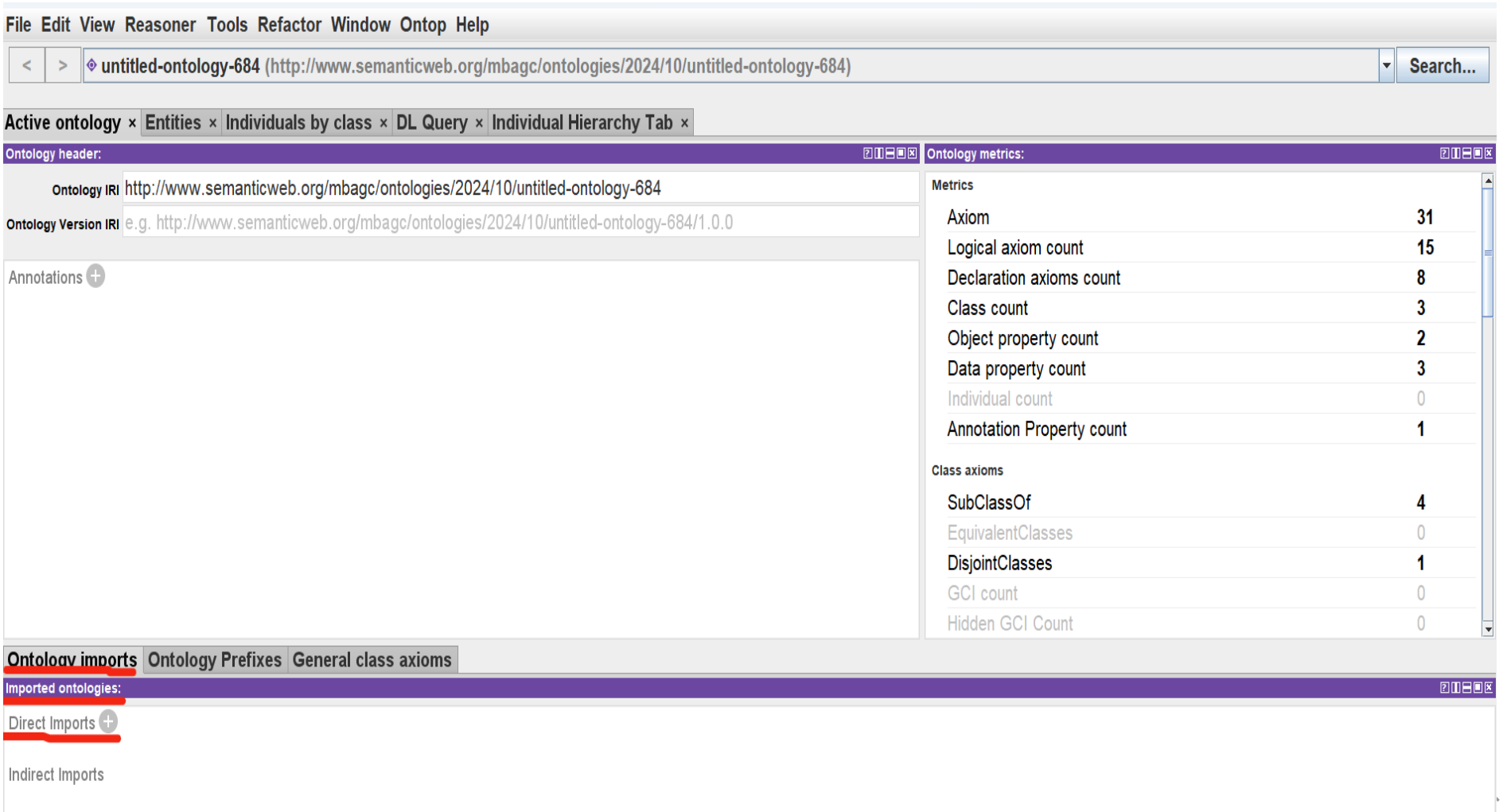
# Ontology Statistics



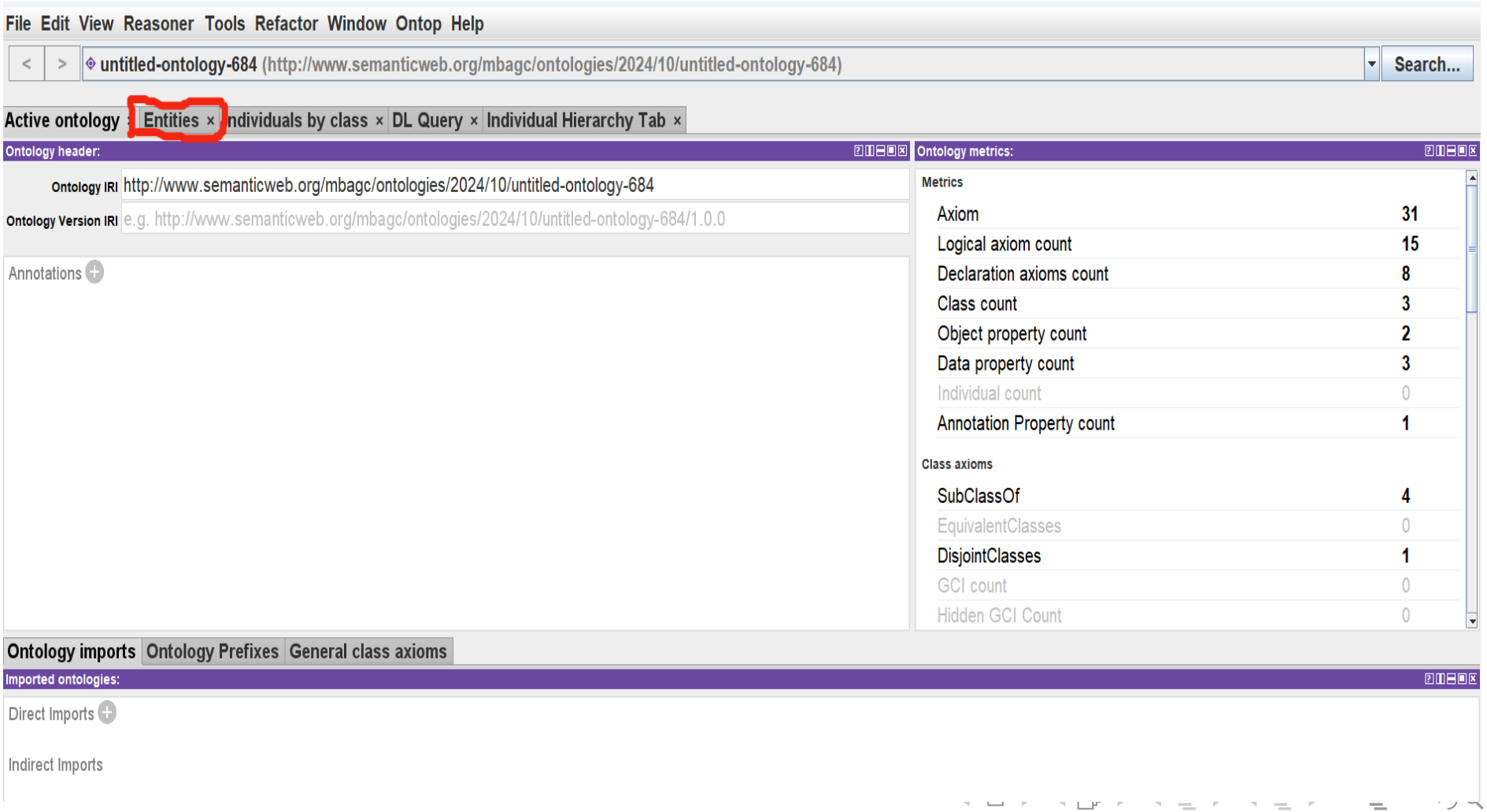
# Ontology IRI



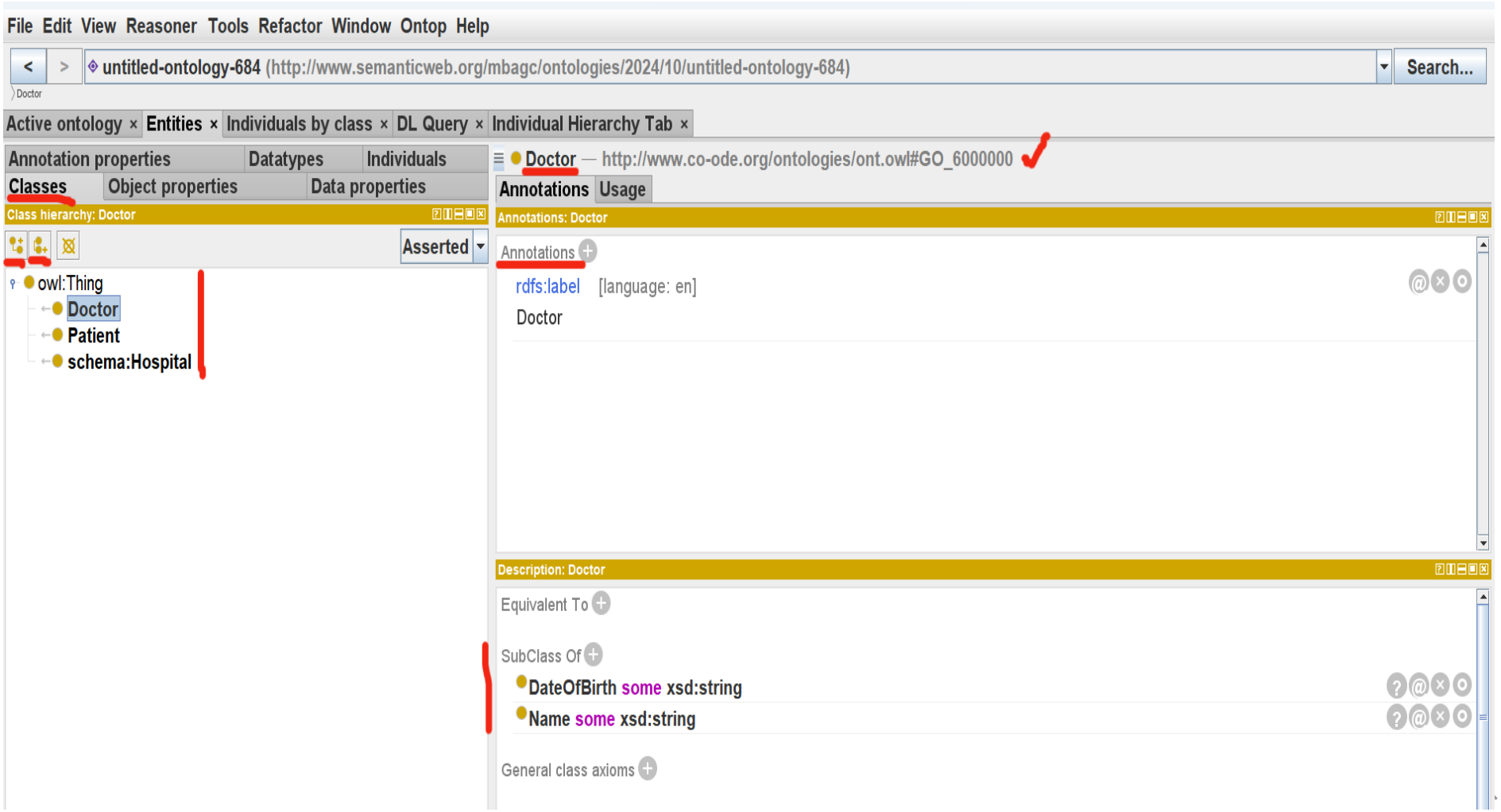
# Ontology Import



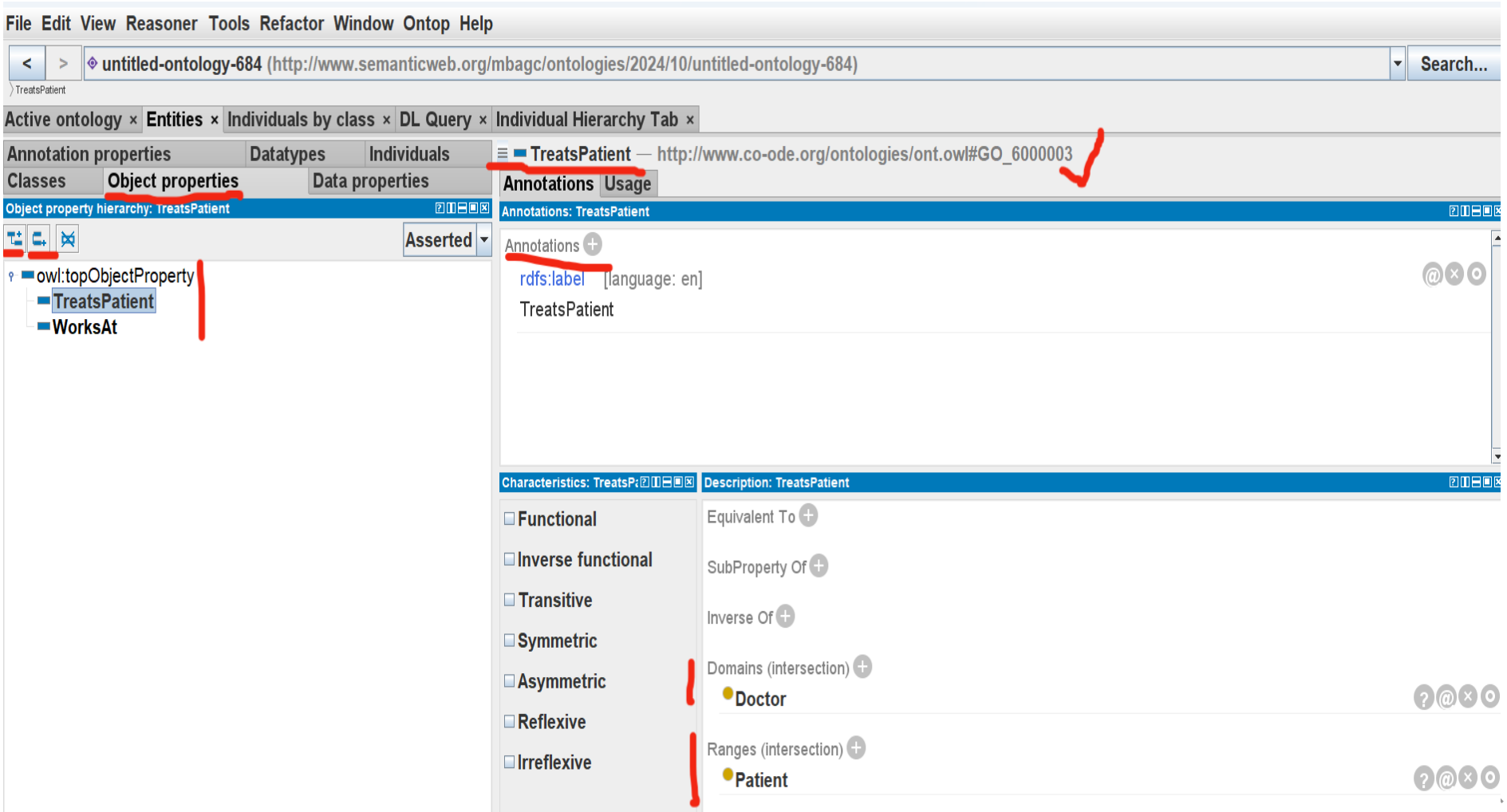
# Entities Tab



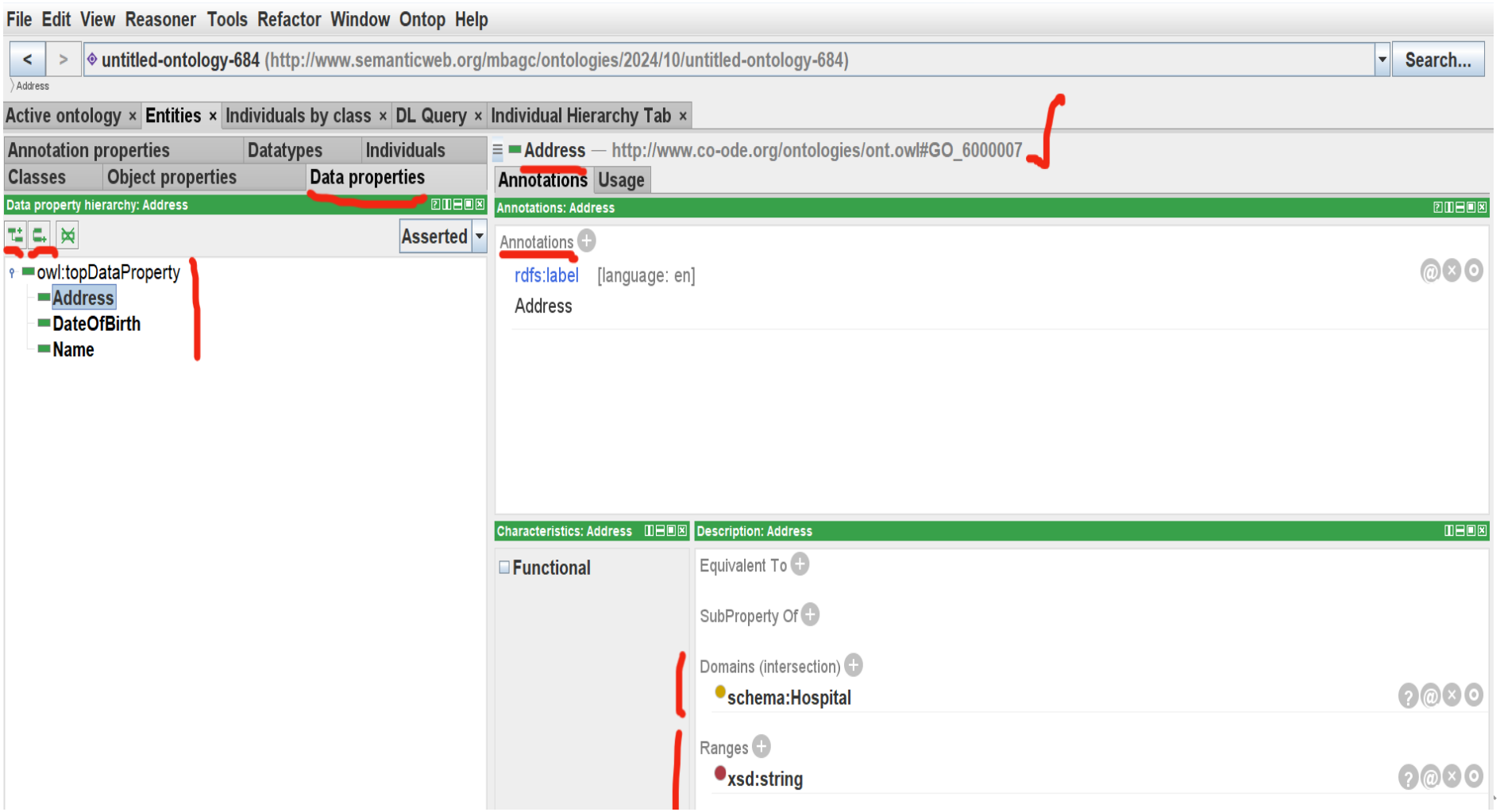
# Class Hierarchy View



# Object Property View



# Data Property View



# Phase 4 - Knowledge Definition (Practice)

1. Protégé
2. Schema Alignment in KGE - Practical

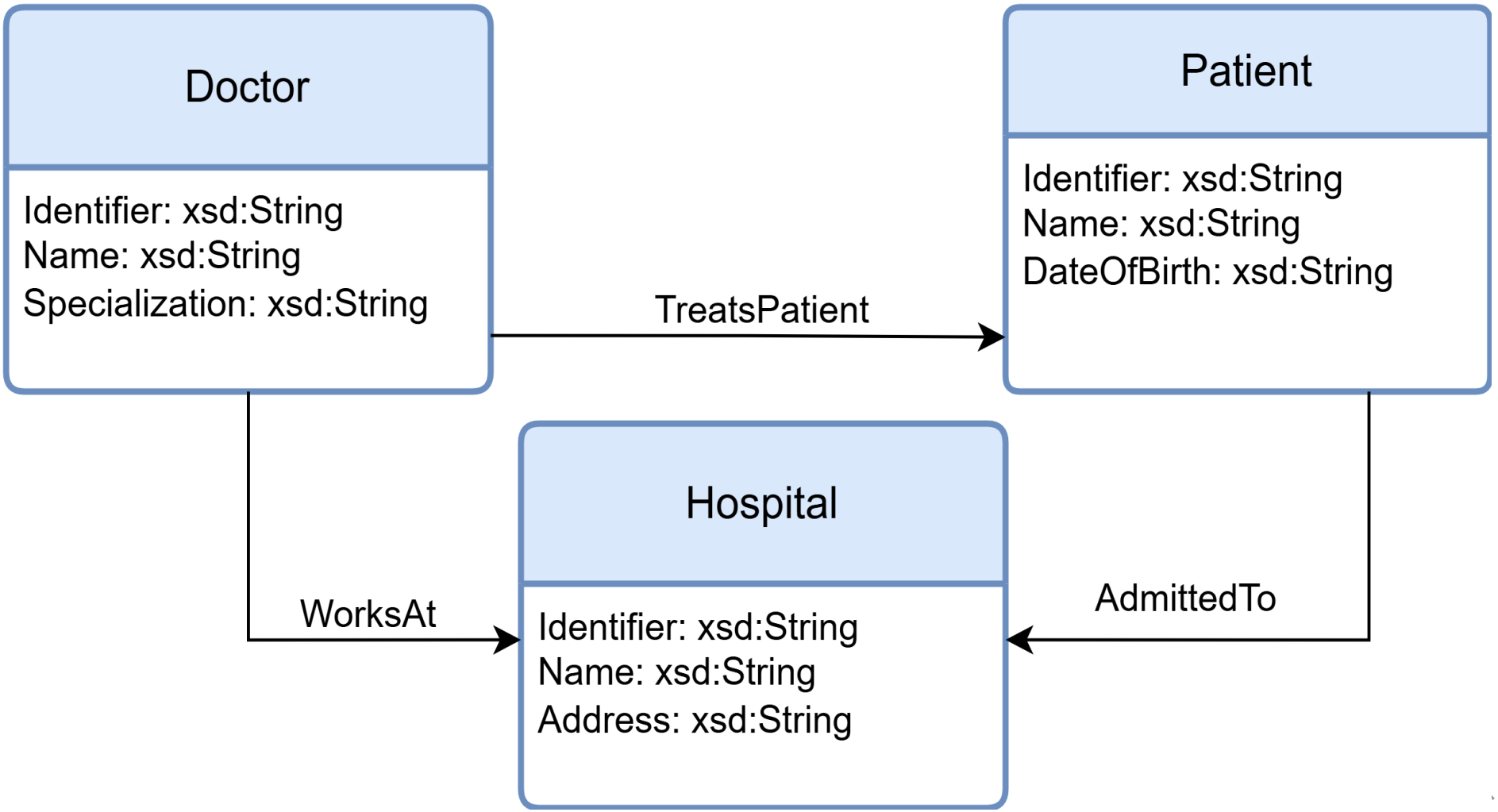
## Schema Alignment in KGE

- We have the purpose already specified as an informal ER model.
- We formalize the informal ER model as an OWL file.
- We align the entity types of the above formal OWL file to their general entity types in the chosen knowledge teleontology (also in OWL) for the KGE purpose. This is a formalization of the EER model for the KGE purpose.

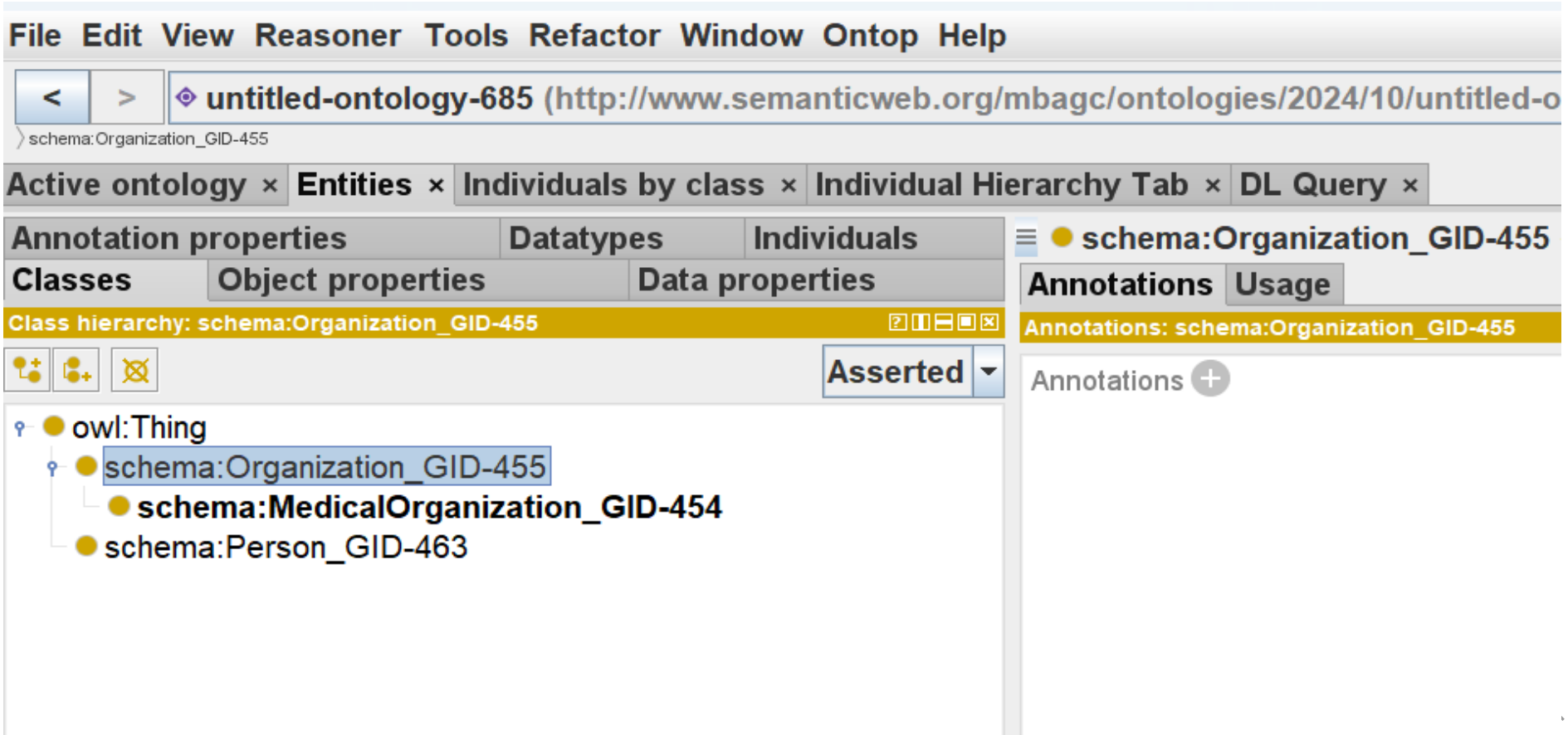
## Schema Alignment in KGE (contd.)

- Finally, the **teleology** is produced as an OWL file by:
  - first, identifying only the leaf entity types for which we have data
  - second, dropping all the entity types more general to the leaf entity types
  - third, adding all the purpose-specific object and data properties of the general entity types to the leaf entity types (if applicable)
- **Revisiting and rechecking language definition**: In case any entity type, object property or data property are left without a unique UKC identifier, such a definition is achieved here.
- Next, we define the notion of a teleology in more detail and provide illustrations of an example schema alignment.

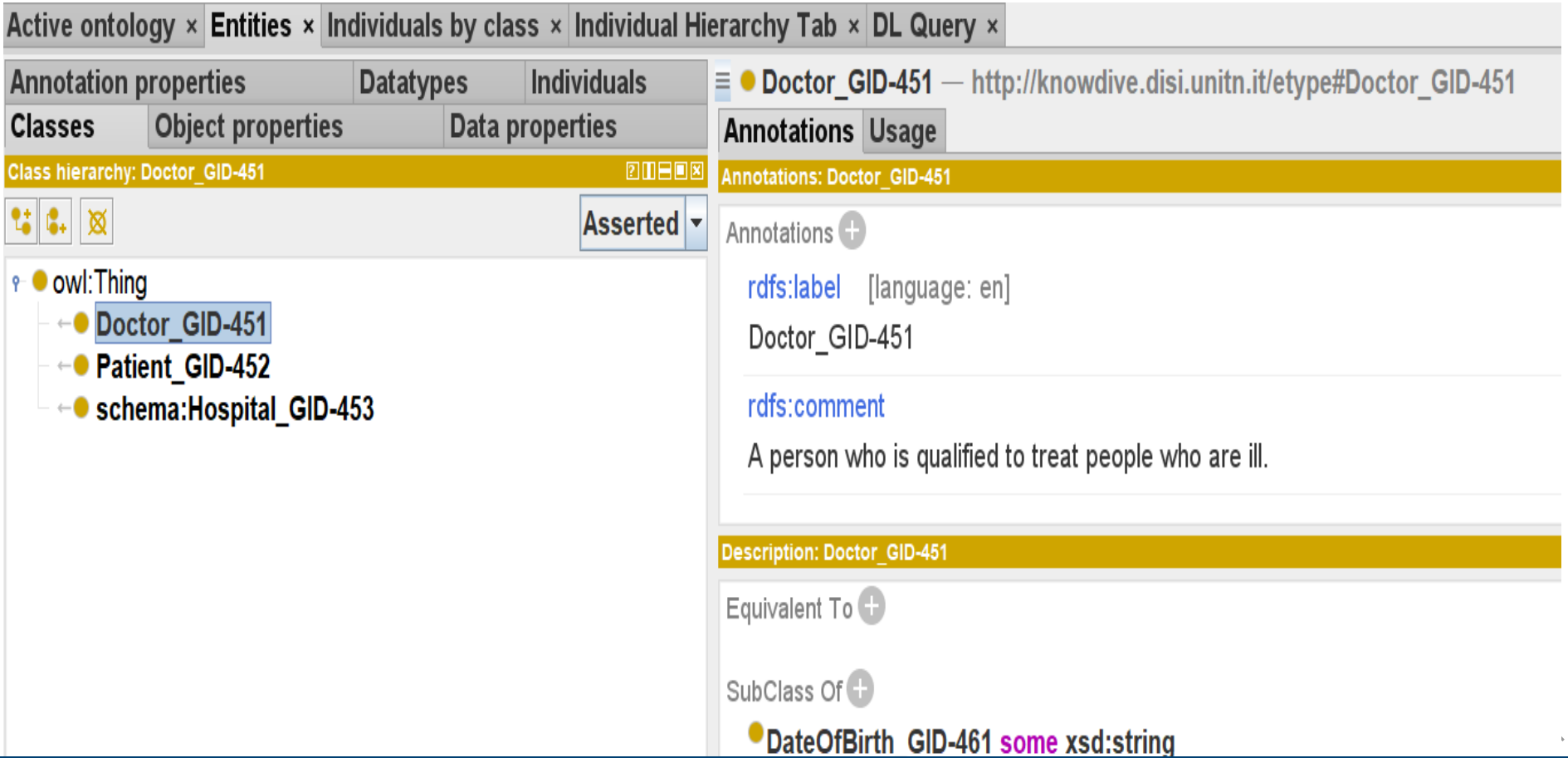
# Schema Alignment Input: ER Model



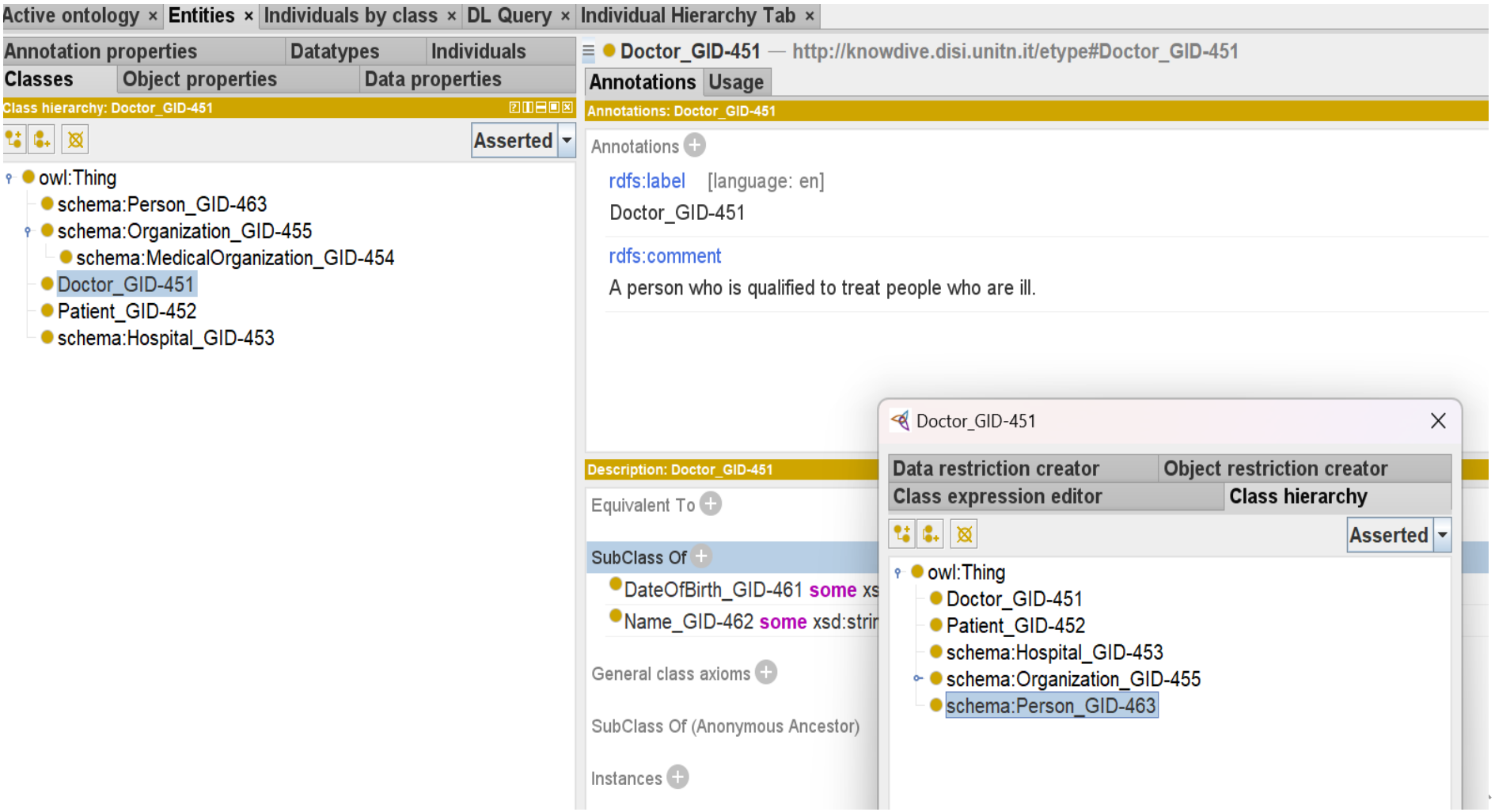
# Alignment Input: Knowledge Teleontology



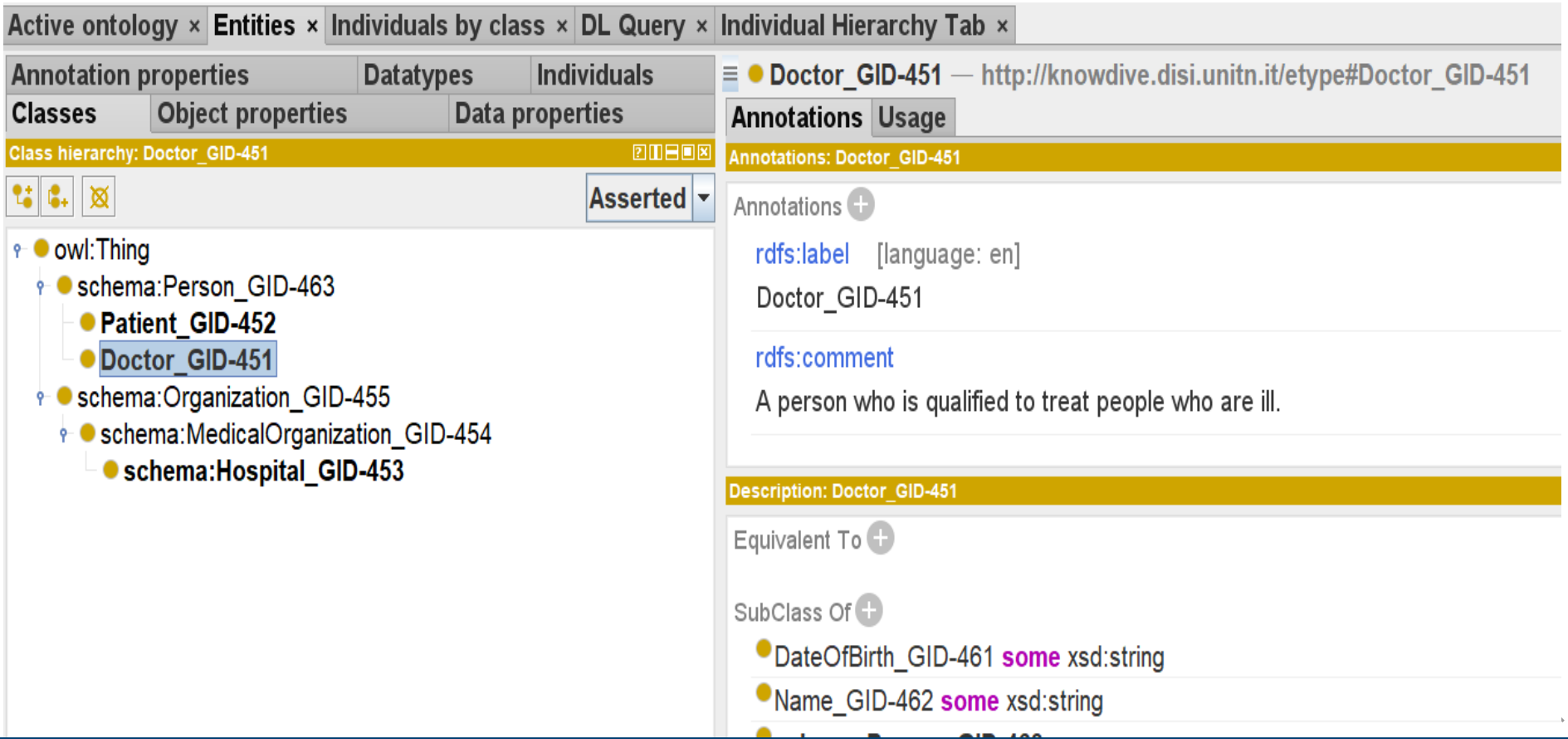
# Schema Alignment Process: formalize ER Model



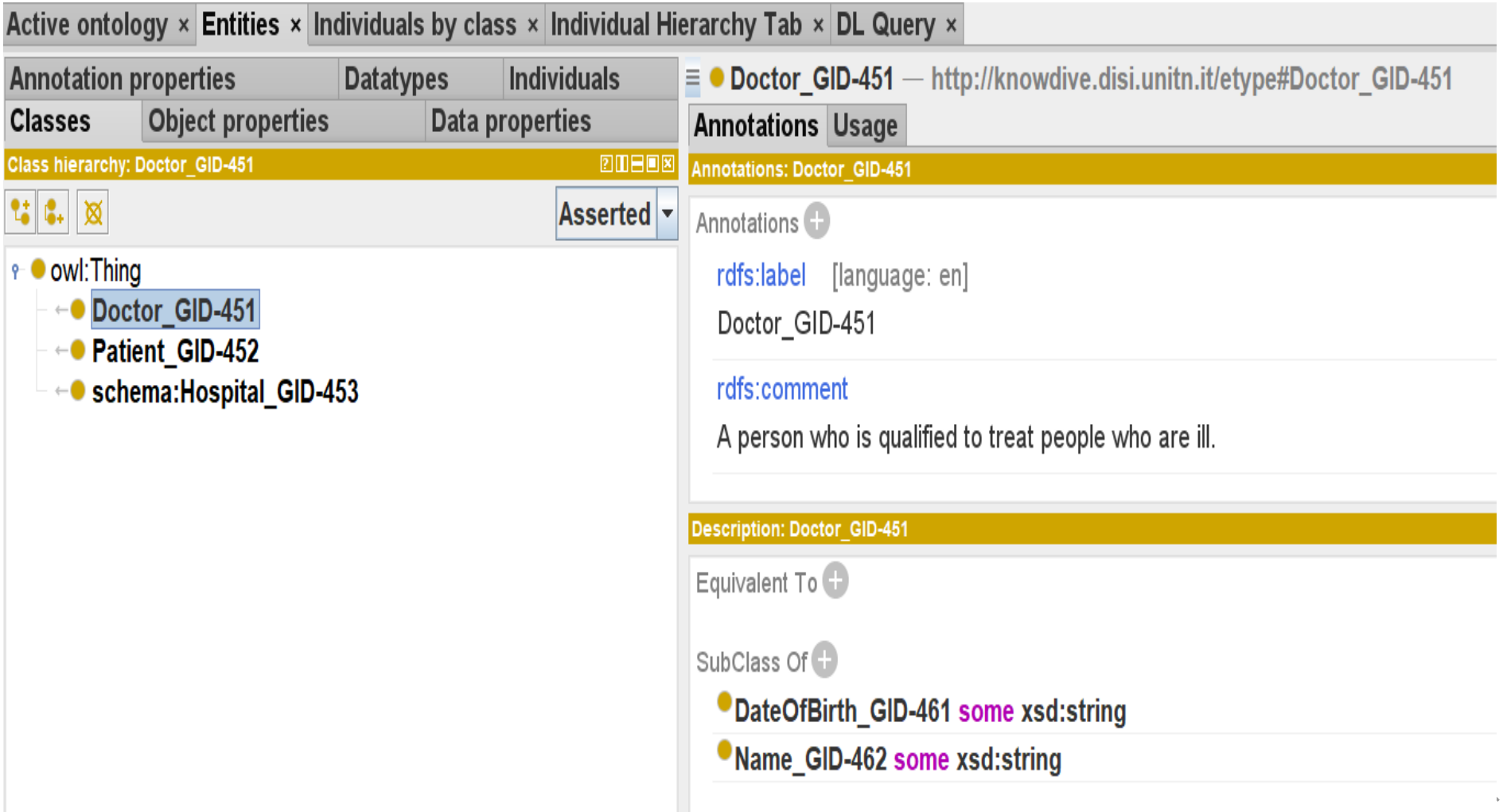
# Schema Alignment Step



# Schema aligned to Knowledge Teleontology



# Teleology


Active ontology
Entities
Individuals by class
Individual Hierarchy Tab
DL Query
Annotation properties
Datatypes
Individuals
Classes
Object properties
Data properties
Class hierarchy: Doctor_GID-451
Asserted
owl:Thing
Doctor_GID-451
Patient_GID-452
schema:Hospital_GID-453
Doctor_GID-451 — http://knowdive.disi.unitn.it/etype#Doctor_GID-451
Annotations
Usage
Annotations: Doctor_GID-451
Annotations
rdfs:label [language: en]
Doctor_GID-451
rdfs:comment
A person who is qualified to treat people who are ill.
Description: Doctor_GID-451
Equivalent To
SubClass Of
DateOfBirth_GID-461 some xsd:string
Name_GID-462 some xsd:string

## Revisit Language Definition

- Finally, each teleology concept: {entity type, object property and data property}, one at a time, is checked with the language resource sheet whether its UKC Global Identifier (GID) exist.
- There can be two cases:
  1. if the UKC GID exists in the language resource sheet, then check whether it is written in the teleology OWL file. If not, rewrite the GID as, e.g., **conceptname_GID-theactualGID**, e.g., **doctor_GID-451**, OR,
  2. if the UKC GID does not exist in the language resource sheet, then perform language definition for the concept and do the rewriting in the OWL file.