

Semantic Web Technologies II

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Übung: Qualität von Ontologien

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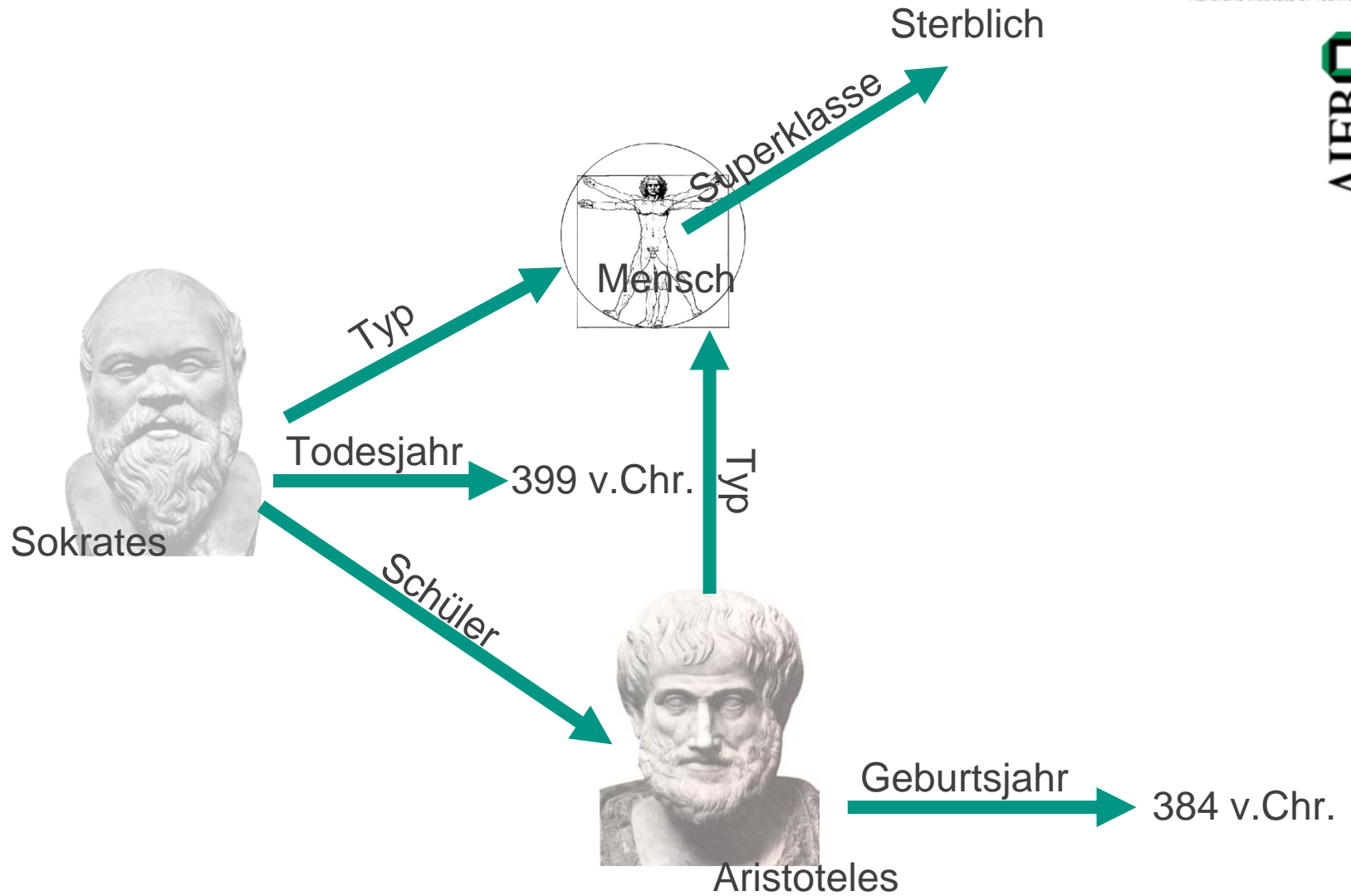
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User Interface & Applications

Trust

Proof

Unifying Logic

Query:
SPARQL

Ontology:
OWL

RDFS

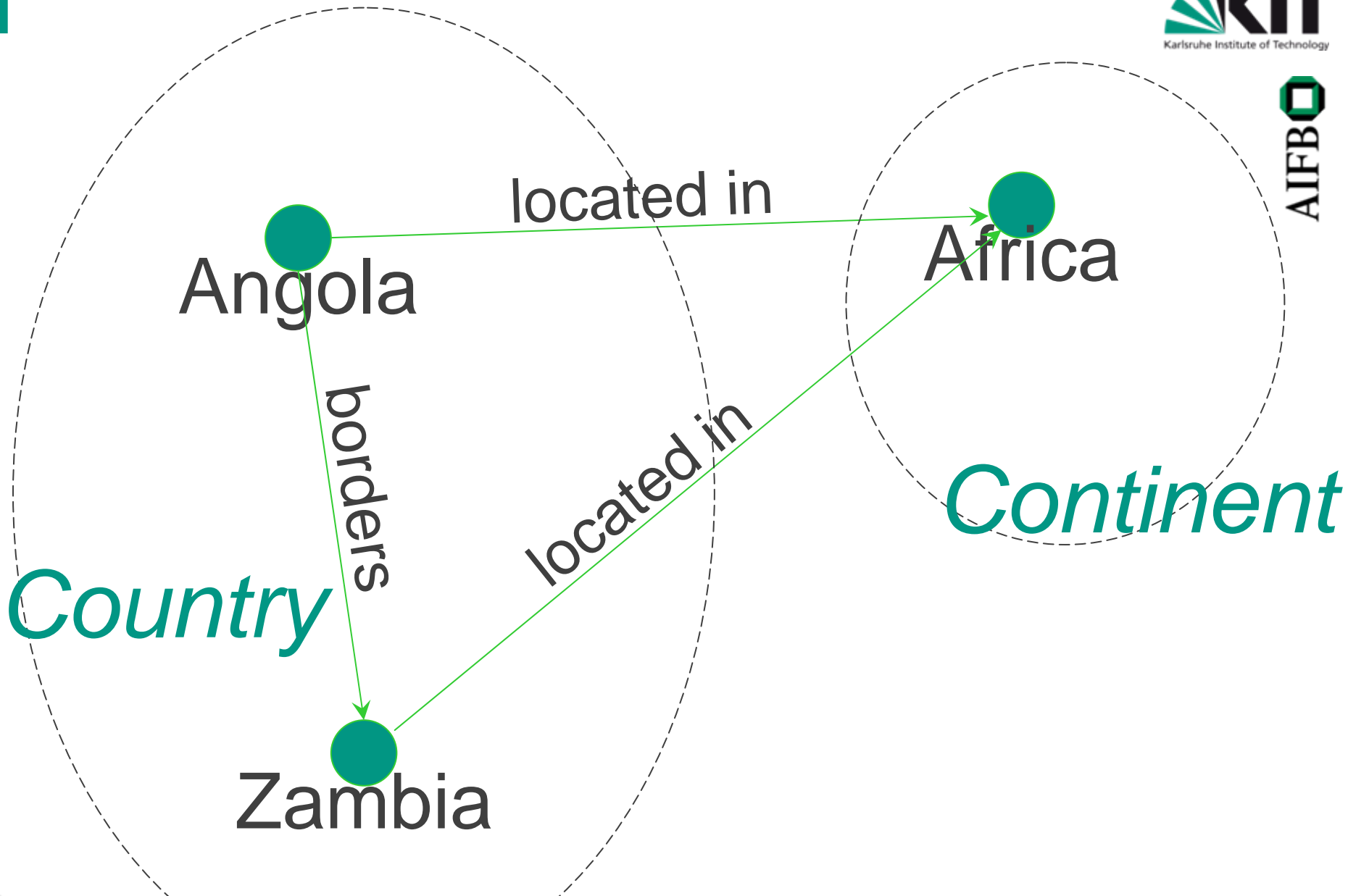
Rule:
RIF

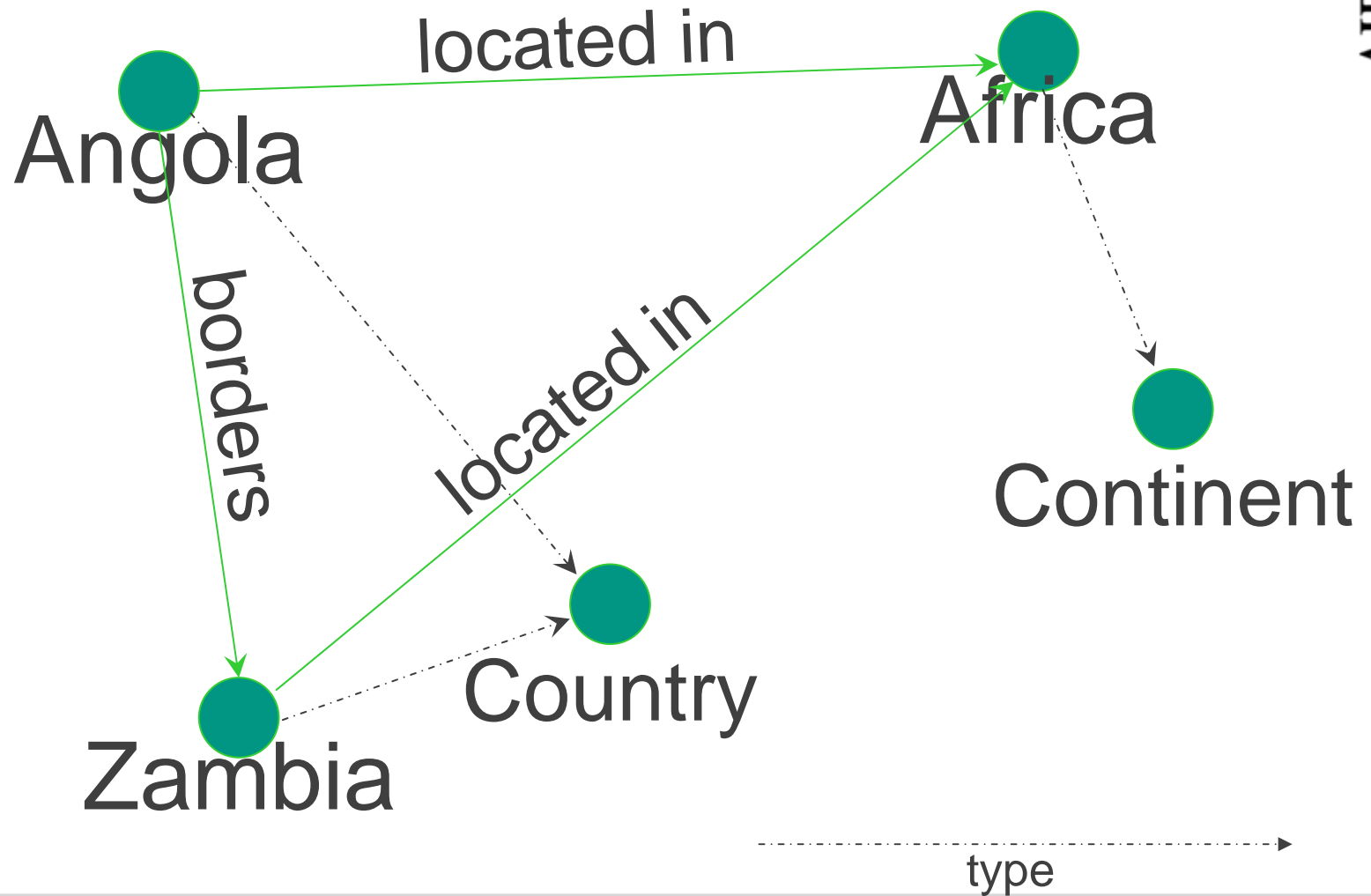
Crypto

Data interchange:
RDF

XML

URI/IRI



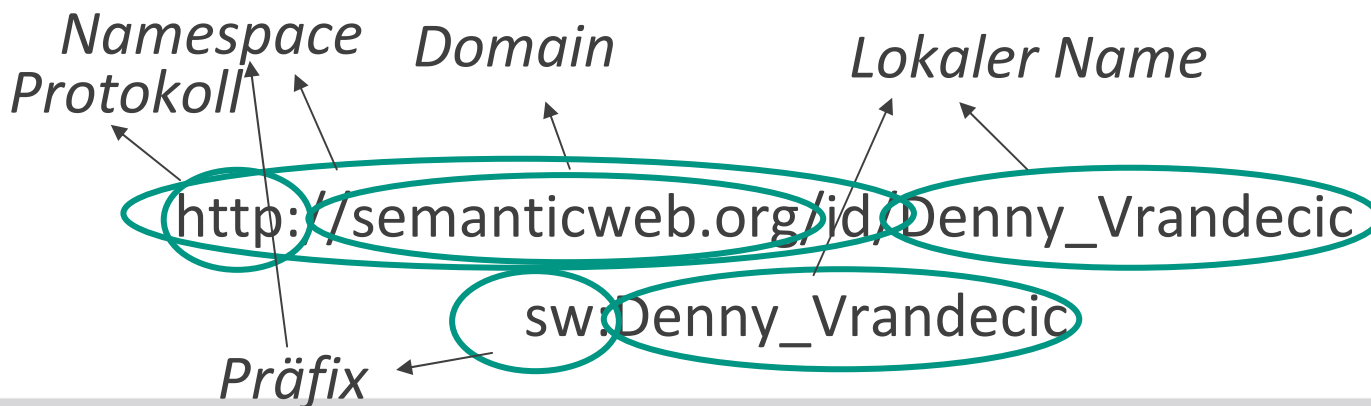


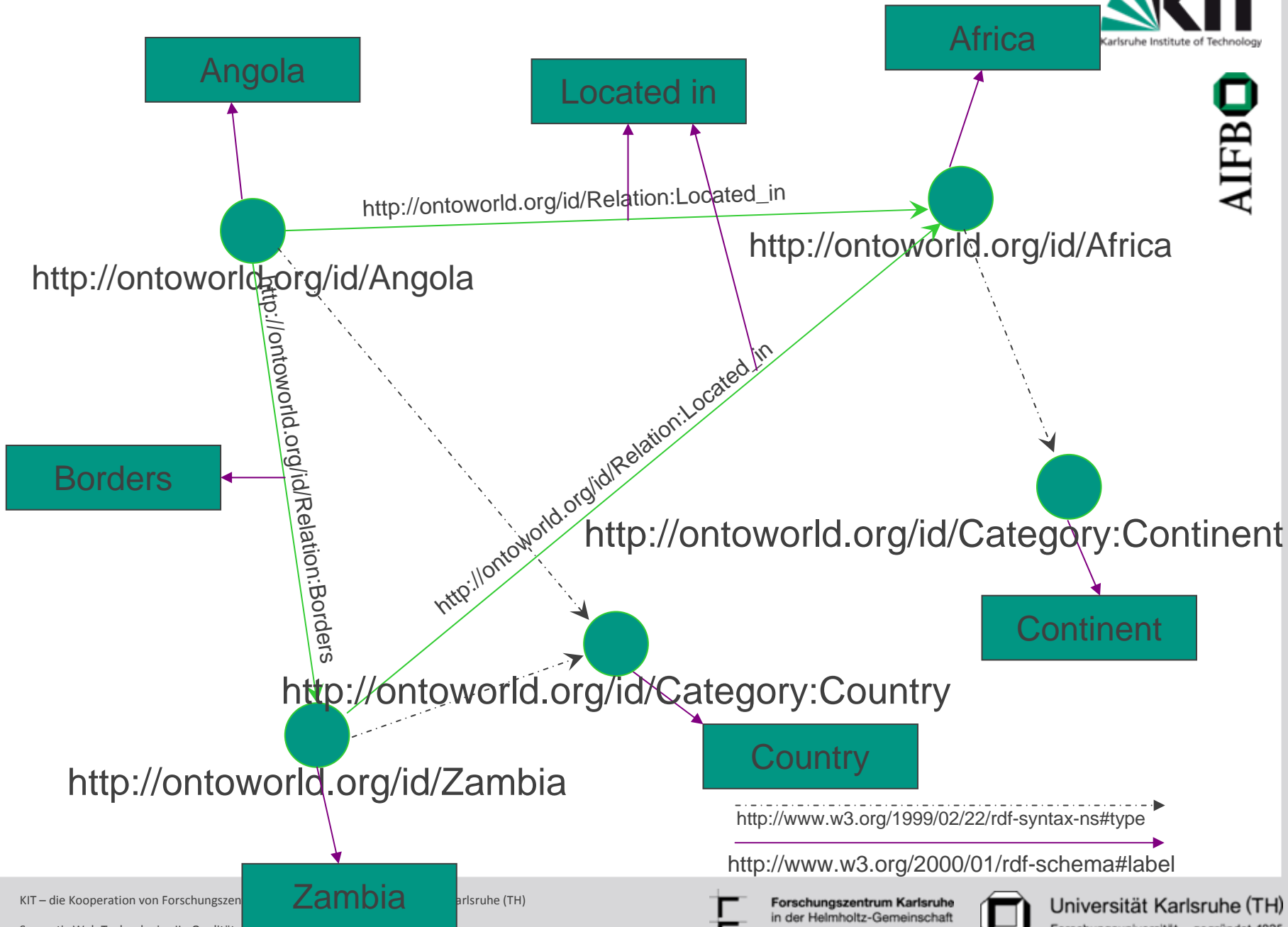
RDF

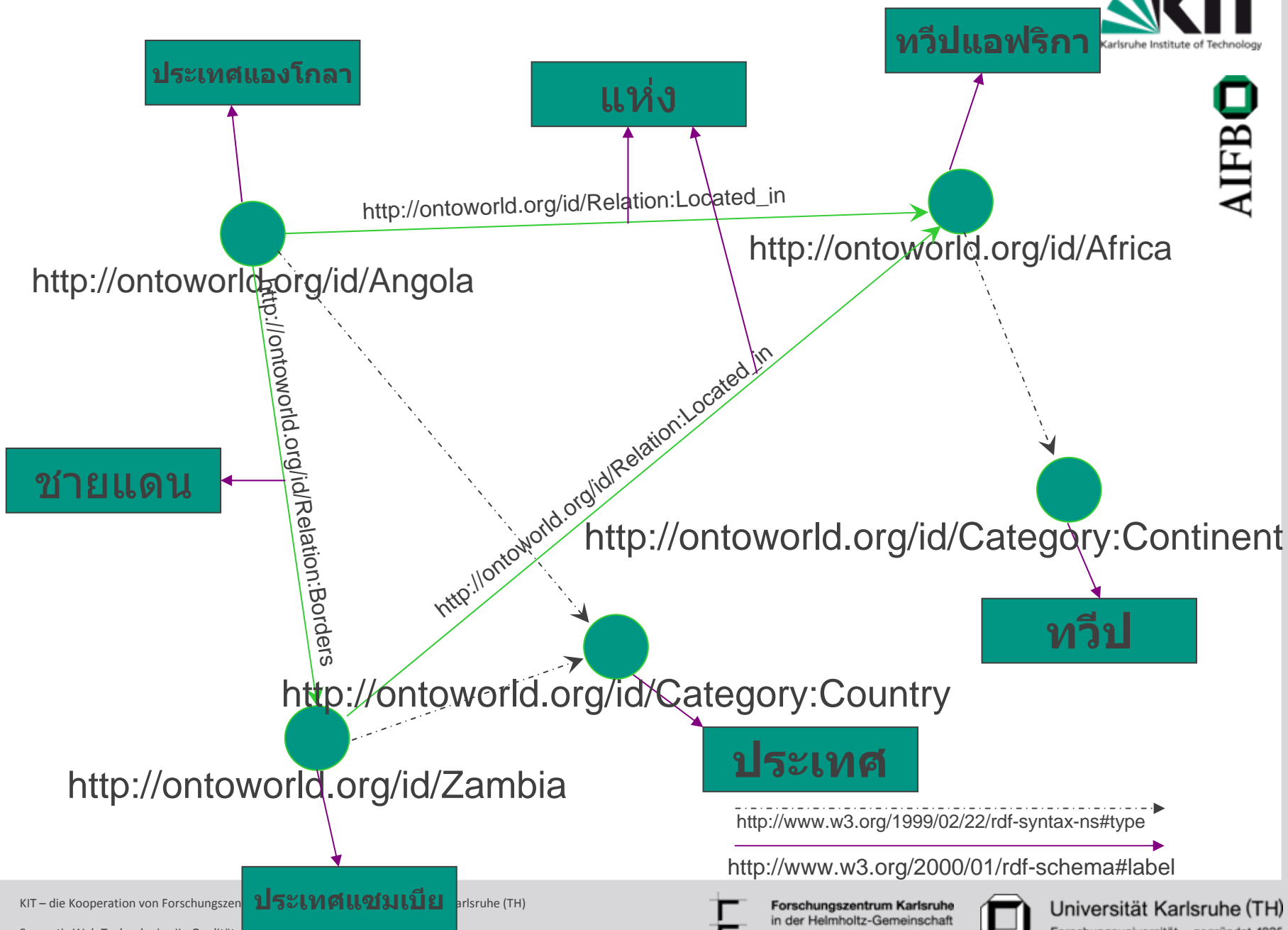
- Eine Menge von Tripeln
- Tripel bestehen aus Subjekt, Prädikat, Objekt

URIs / IRIs

- URI: “Uniform Resource Identifiers”
 - IRI: Unicode-basierte “Internationalized Resource Identifiers”
- Jede URI identifiziert eine Entität
- Semantic Web URI normalerweise HTTP
 - HyperText Transfer Protocol
 - Kan aufgelöst werden für mehr Daten (ideal)
 - Linked data
- QName als Abkürzung







```
<xmins:attribute- &attribute; >
<!-- reference to the Semantic MediaWiki schema -->
<owl:AnnotationProperty rdf:about="&smw;hasArticle">
    <rdfs:isDefinedBy rdf:resource="http://smw.ontoware.org/2005/smw"/>
</owl:AnnotationProperty>
<owl:AnnotationProperty rdf:about="&smw;hastype">
    <rdfs:isDefinedBy rdf:resource="http://smw.ontoware.org/2005/smw"/>
</owl:AnnotationProperty>
<owl:Class rdf:about="&smw;Thing">
    <rdfs:isDefinedBy rdf:resource="http://smw.ontoware.org/2005/smw"/>
</owl:Class>
<!-- exported page data -->
<smw:Thing rdf:about="&thing;Angola">
    <rdfs:label>Angola</rdfs:label>
    <smw:hasArticle rdf:resource="&wikiurl;Angola"/>
    <rdfs:isDefinedBy rdf:resource="&wikiurl;Special:ExportRDF/Angola"/>
    <rdf:type rdf:resource="&thing;Category-3ACountry"/>
    <relation:Borders rdf:resource="&thing;Atlantic_Ocean"/>
    <relation:Borders rdf:resource="&thing;Zambia"/>
    <relation:Borders rdf:resource="&thing;Democratic_Republic_of_the_Congo"/>
    <relation:Borders rdf:resource="&thing;Namibia"/>
    <relation:Located_in rdf:resource="&thing;Africa"/>
    <attribute:Area-23km-C2-B2 rdf:datatype="http://www.w3.org/2001/XMLSchema#decimal"/>
    <attribute:Population rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"/>
</smw:Thing>
<smw:Thing rdf:about="&thing;Republic_of_the_Congo">
    <rdfs:label>Republic of the Congo</rdfs:label>
    <smw:hasArticle rdf:resource="&wikiurl;Republic_of_the_Congo"/>
    <rdfs:isDefinedBy rdf:resource="&wikiurl;Special:ExportRDF/Republic_of_the_Congo"/>
    <rdf:type rdf:resource="&thing;Category-3ACountry"/>
    <relation:Borders rdf:resource="&thing;Democratic_Republic_of_the_Congo"/>
    <relation:Borders rdf:resource="&thing;Gulf_of_Guinea"/>
    <relation:Borders rdf:resource="&thing;Angola"/>
    <relation:Borders rdf:resource="&thing;Central_African_Republic"/>
    <relation:Borders rdf:resource="&thing;Gabon"/>
    <relation:Borders rdf:resource="&thing;Cameroon"/>
```

SPARQL : RDF Query Language

PREFIX rdfs:

<http://www.w3.org/2000/01/rdf-schema#>

PREFIX thing:

<http://ontoworld.org/id/>

PREFIX relation:

<http://ontoworld.org/id/Relation:>

SELECT ?label

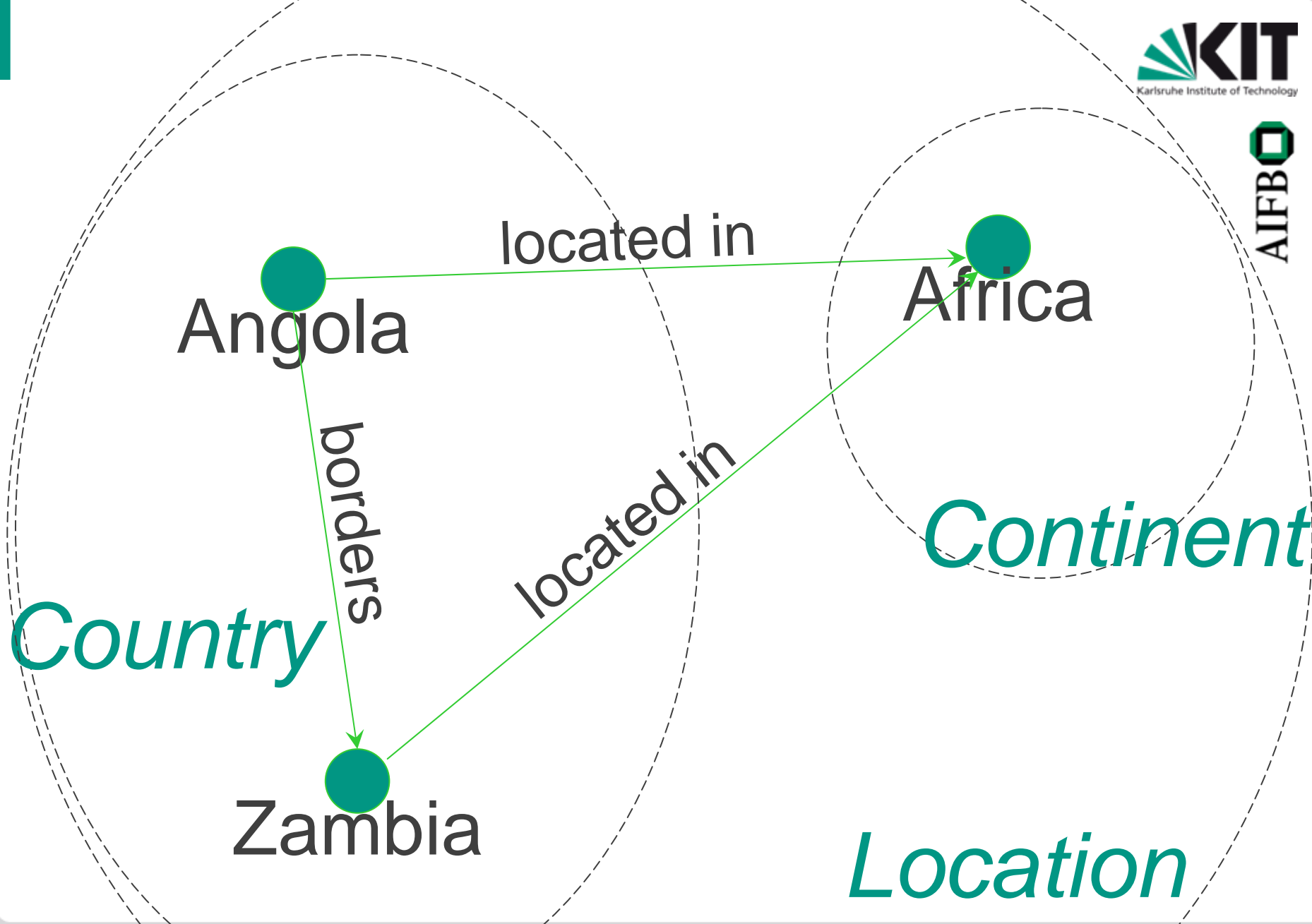
WHERE {

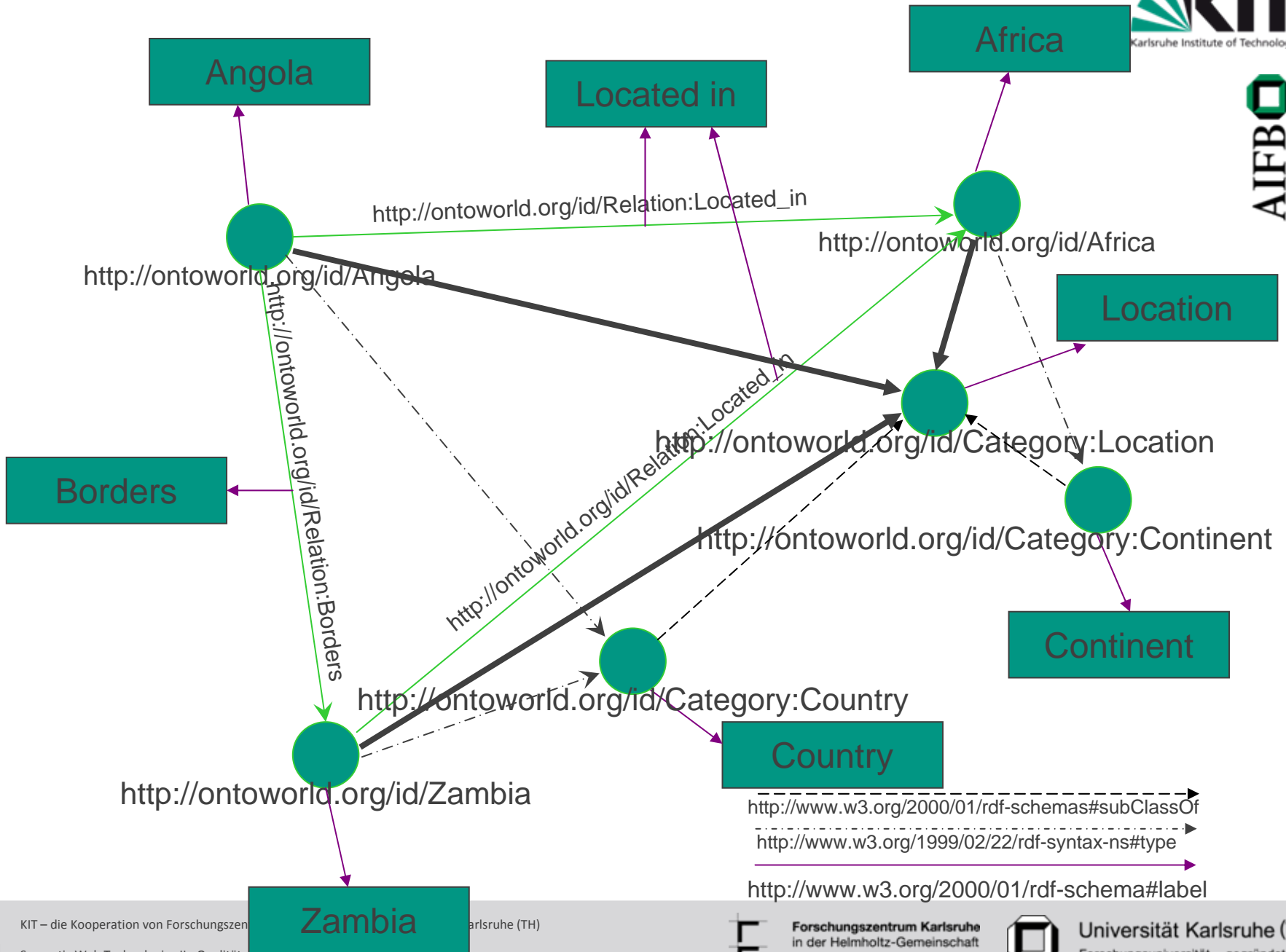
thing:Angola relation:Located_in ?c .

?c rdfs:label ?label

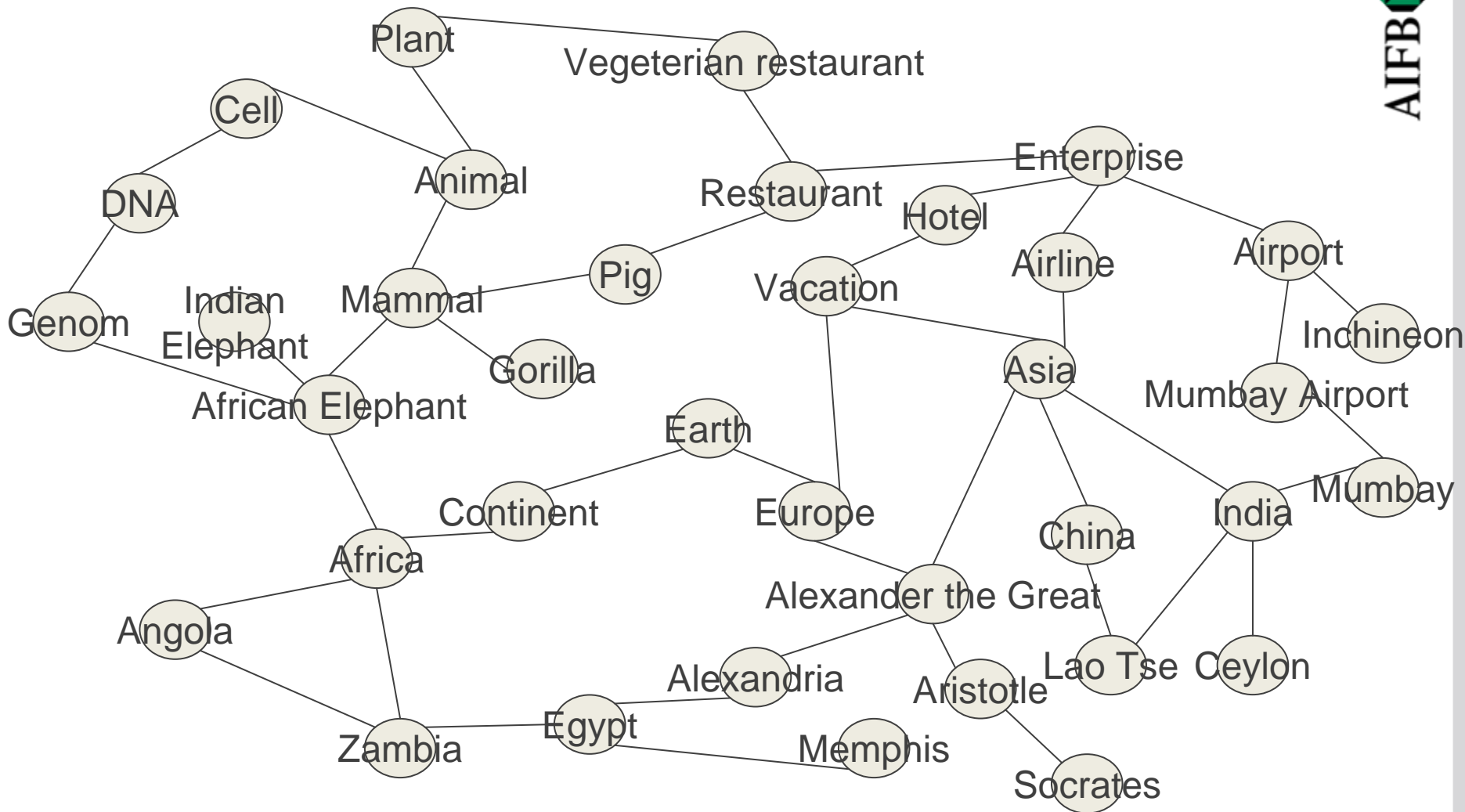
}

- Definiert formale Beziehungen zwischen Entitäten
- In RDF(S):
 - subClassOf
 - subPropertyOf
 - Und mehr (domain, range, list, collection, etc.)
- Beispiel:
 - Country subClassOf Location
 - Continent subClassOf Location
- Erlaubt Schlüsse
 - Angola type Country
 - Country subClassOf Location
 - -> Angola type Location





Semantic Web



Offene Fragen

- Anwendungen
- Competency questions
- Ontologiebau und Qualität

Competency questions

- Darf Sebastian das Tiramisu essen?
- Welcher Wein passt zur Forelle Blau?
- Wie viele Portionen Hummer Napoleon können noch zubereitet werden?
- Wie viele BE hat das Tagesgericht 2?
- Welche der Desserts sind mit Schokolade aus Ecuador?

```
select ?gericht where {  
  ?gericht rdf:type food:Dessert .  
  ?gericht food:ingredient ?zutat .  
  ?zutat rdf:type food:Chocolate .  
  ?zutat food:origin country:Ecuador .  
}
```