Methods and Tools for Modular Ontology Modeling
Part I: Introduction to Ontology Design
Patterns and First Pattern Examples

Pascal Hitzler
Data Semantics Laboratory (DaSe Lab)
Data Science and Security Cluster (DSSC)
Wright State University
http://www.pascal-hitzler.de
See IOS Press booth

This Tutorial (all parts)

• Pascal Hitzler (60 mins):
  Introduction and first examples

• Karl Hammar (30 mins):
  Worked Example

coffee

• Cogan Shimizu (90 mins):
  Three tools: OPLa, OPLa Annotator, SDOnt

lunch

• Md Kamruzzaman Sarker (with intro by Pascal Hitzler) (90 mins):
  Two tools: OWLAx and ROWL

coffee

• Karl Hammar (90 mins):
  Tool: eXtreme Design for Protégé
What this is about

• A tutorial about modular ontology modeling best practices and some available modeling tools.

• Coming from the “Ontology Design Patterns” community.

• Recommended by us for all types of ontology modeling, including as graph schema for linked data and knowledge graphs.

• We are approaching a point where our experiences can consolidate into crisp recommendations, but we’re not quite there yet. I.e. there’s still work (and research) to be done.

• Join us if you’re interested:
  Google Group called “Ontology Design Patterns”
Very first example

Generic AgentRole pattern

Generic NameStub pattern

Joined:
Very first example

Joined AgentRole and NameStub patterns:

Used as a template for a concrete modeling problem:
Very first example

Recording the alignment (e.g. in a separate file):

```
owl:Thing
  providesAgentRole
  hasActor

Agent
  performedBy
  hasName
  xsd:string

Movie
  hasActor

ActorRole
  assumedBy
  hasName
  xsd:string

Person
```
The Role Patterns

- range
- domain
- inverse
- range
- domain
- inverse
- existential
- scoped range
- range cardinality
- range cardinality
- existentials
- disjointness
The Agent Role Pattern

Axioms: all previous plus the following.

\[
\text{AgentRole} \sqsubseteq \text{Role} \\
\exists \text{rolePerformedBy}. \text{Agent} \sqsubseteq \text{AgentRole} \\
\text{AgentRole} \sqsubseteq \forall \text{rolePerformedBy}. \text{Agent}
\]
Quantities and Units

Borrowed from the QUDT ontology
Provenance

Borrowed from PROV-O
The Stub Metapattern

Bottom: The CookingEquipmentStub derived from it.
Thanks!
References


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