Representation of the Data Documentation Initiative using Semantic Web Technologies

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Thomas Bosch
(research associate, GESIS Leibniz Institute for the Social Sciences)
Agenda

• What is the Semantic Web (SW)?

• Why should the SW be applied in the context of DDI?

• Tale-aways and Discussion
RDF Triples

Subject: Age
Predicate: references
Object: What age?
Ontologies

Variable

domain

references

property

range

class

Question

domain

Age

type

class

type

What age?

resource

references

resource

resource

type
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Semantic Queries

• What kinds of problems can be solved?
• Queries on multiple, distributed and merged DDI instances
• Formulation using DDI domain concepts

```
SELECT ?question
WHERE { questionScheme contains ?question. }
```
Publish and Link DDI Data and Metadata

Expressiveness of Ontologies

Precision

Concepts

Expressiveness

Semantics
Integration of Other Ontologies

- Ontology domain classes can relate to similar concepts of external ontologies
- Reasoner may use additional semantic information
DDI Consistency Check

- Definition of 'consistency'
- OWL reasoning techniques
- Class consistency
- Global consistency
- Global consistency of DDI ontology
  → Global consistency of DDI data model
DDI Elements’ Comparability

- Necessary conditions (equality, inequality, similarity, ...)

Diagram:
- Grade_USA
- Grade_Germany
- A
- 1.0
- Variable
- Code
- hasCode
- subClassOf
References

OtherMaterial

Citation

DCElements

Title

Creator

ExternalURL Reference

Relationship

RelatedTo Reference

URN
Drawbacks:

- Complex data model
- No intuitive semantics
- Bibliographic citation limits
- Ensure reusability?
Semantic References

Referencing Publication references Publication

Publication subClassOf Variable

Publication publicationReferencedBy Referencing Publication

Publication references Publication

Publication ID

Publication Title

Publication Creator

Publication Date

Publication URL
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Thank you for your attention...