Extending the Metadata Registry for Semantic Web
- Enforcing the MDR for supporting ontology concept -

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  - MDR
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Background

- **MDR(ISO/IEC 11179)**
  - Is used whenever data must be used consistently within an organization or group of organizations

- **Web Ontology**
  - For the web, ontology is about the exact description of web information and relationships between web information.
  - RDF, RDF-S, and OWL
  - Consists of classes, instances, properties
  - Triple set \(<S,P,O>\)
Motivation: Why a MDR needs to be extended to support OWL

- Web Ontology is widely used
- Web Ontology includes many metadata
- These metadata needs to be registered
- But, current MDR can not support these, for example
  - Property’s relation
  - Restriction
  - intersectionOf
- So, we need....
Purpose

Knowledge exchange & share

Extending

Web Ontology

MDR
(ISO/IEC 11179)
Relationships in MDR

Object Class → Object Class

Concept_Relationship

OC

Data_Element_Concept

Data_Element_Concept

Data_Element_Concept_Relationship

OC

Property

Property

Conceptual_Domain

Conceptual_Domain

Conceptual_Domain_Relationship

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Mapping between MDR & OWL

Map Object Property with Concept Relationship

Map Datatype Property with Data Element
Example of mapping:
between OWL ObjectProperty & Concept_Relationship

Concept

Concept_Relationship

Property

OC

DEC

CD

DE

VD

Conceptual Level

Representational Level

Semantic Web Level

OWL ObjectProperty

Concept

Conceptual Level

Representational Level

Semantic Web Level

OWL Class

FullProfessor

Student

PID

Int

Name

String

Major

String

$teaches$

SID

Int

Name

String

Major

String

value_domain_relationship
Example of mapping: between OWL DatatypeProperty & DataElement

Conceptual Level

Representational Level

Semantic Web Level

Example of mapping:

ConceptMapping

Example of mapping:

ConceptMapping

Example of mapping:

ConceptMapping
Future Issues

- The MDR does not have the definition about the relation between Properties.
- Anonymous Class needs to be considered
  - There is no Id
    - For example, a class is intersection of three classes using AC
Summary

- The current MDR does not support to register metadata of Web Ontology
- Using mapping between MDR and Web Ontology, we can exchange data between MDR and Web Ontology
Thank you!!

Q&A