

**Progress Status Report of the study period on  
Extending the Metadata Registry for Semantic Web  
ISO/IEC SC 32/WG 02 Interim Meeting  
17 November (Monday) ~ 21 November (Friday) 2007  
Vilamoura, Portugal**

Date: November 19, 2008

Source: Jeong-Dong Kim, Dongwon Jeong, and Doo-Kwon Baik

References:

- SC32N1777-WG2N1127, Extending the Metadata Registry for Semantic Web
- WG2-N1177-WHU-ROS-009, Extending the Metadata Registry for Semantic Web

## **1. INTRODUCTION**

This document describes the progress status of the proposal titled Extending the Metadata Registry for the Semantic Web. This document contains the scope, purpose, and contribution of the proposal. The request for extension of the study period on Extending the Metadata Registry for the Semantic Web has been approved at the last ISO/IEC JTC 1/SC 32 plenary and WGs meetings held in Sydney, Australia, and this document is composed to report the proposal process status. This proposal has been presented in the Workshop on

## **2. SCOPE**

Current MDR provides a good introduction to metadata concepts, including a lot of insight into certain aspects of the granularity of metadata, approaches to its management and suggestions about naming conventions. Two features of the standard enable the MDR to contribute knowledge integrity in a large scale. First, the simplicity provides the organization of

implemental adaptation. Second, the representational simplicity allows for easy sharing of metadata. Both of these features encourage the utilization of MDR in many fields where information is shared. Its wide adoption reflects advantages of this proposal.

Semantic Web promotes structured metadata representation, such as an ontology schema, in which data concepts are associated via relationships. In other words, for creating Web ontology, concepts are first defined and then relationships are linked between the concepts.

Web ontology becomes widely used to describe information of metadata on the Semantic Web. It causes the needs to manage metadata using a MDR.

Therefore, this proposal considers structures of MDR and Web Ontology for mapping. If MDR objects are used for creating Web ontology schemas, this proposal provides the following contributions:

- It provides a more formalized way for definition of concepts for ontology.
- We can save much effort for definition of concepts and relations for ontology.
- We can build ontology using more generalized and standardized concepts that domain experts and general users in correspondent application fields can accept as correct and precise concepts.
- It supports facility to guarantee the precision and common understanding of the defined Web ontology.

### **3. PURPOSE**

This proposal is proposed as a framework to facilitate usability of MDR. Many concepts (for example, Object Class, Property, Conceptual\_Domain, Data\_Element\_Concept, Value\_Domain, and Data\_Element, etc.) are used for specification of ontology. They will be designed to cover structured metadata. Especially, relationships among Object Classes, Data\_Element\_Concept, Concept\_Domain, and Value\_Domain will support concept relationship in ontology.

This proposal is based on the content of ISO/IEC 11179 International Standard. The organization of this proposal is as follows:

- Part 1: Framework  
: The extended MDR consists of three levels: the MDR level, the PSO level, the Semantic Web level.  
The MDR level contains two main parts: the conceptual level and the representational

level. The conceptual level contains the classes for the data element concept and conceptual domain. Both classes represent concepts. The representational level contains the classes for data element and value domain. Both classes represent containers for data values.

The PSO level contains mapping models and mapping processes between MDR and Web ontology. At the PSO level, concepts and relationships are extracted from the MDR level and mapped to classes, predicates, and so on in Web ontology.

- Part 2: Mapping Model between MDR and Web Ontology  
: This part defines the relationships between components of MDR and Web Ontology and defines a metamodel for management of the mapping relations.
- Part 3: Procedure for Specification  
: This part contains the overall process for specification of Web ontology, and develops and defines detailed operations (algorithms) of each process including constraints.

However, this proposal does not contain ontology building methods in specific ontology description languages such as RDF, RDF-S, OWL, Topic Maps, KIF, and so on.

#### **4. Summary of Progression**

- 1) The scope is redefined for clear understanding of the purpose and contribution of this proposal.
  - The scope of the previous version considered an ontology building method in OWL, an ontology description language. However, this proposal does not contain ontology building methods in specific ontology description languages such as RDF, RDF-S, OWL, Topic Maps, KIF, and so on.
- 2) The purpose and contribution is clearly redefined.
- 3) Details are added in the latest version as follows:
  - All processes required
  - Defines roles of each process
  - Mapping rules are refined more concrete than the previous version