
Study Period on

Extending the MDR for Semantic Web

- Procedure for the Specification of Web Ontology -

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SC32/WG32 Interim Meeting

Vilamoura, Portugal

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Background

❖ ISO/IEC 11179, MDR (Metadata Registry) is

- ✓ Used whenever data must be used consistently within an organization or group of organizations

❖ Semantic Web

- ✓ Extension of the current Web, Next generation Web, Intelligent Web
- ✓ Ref.: *Wikipedia*, http://en.wikipedia.org/wiki/Semantic_Web
 - *The Semantic Web is an evolving extension of the World Wide Web that the semantics of information and services on the web are defined, making it possible for the web to understand and satisfy the requests of people and machines to use the web content*

❖ Web Ontology

- ✓ For the web, ontology is about the exact description of web information and relationships between web information
- ✓ Consists of concepts (classes), and their relations (predicates)
- ✓ Triple set <S, P, O>

❖ MDR

- ✓ provides a good introduction to metadata concepts, including a lot of insight into certain aspects of the granularity of metadata
- ✓ MDR contributes knowledge integrity in a large scale
 - The simplicity provides the organization of implemental adaptation
 - The representational simplicity allows for easy sharing of metadata
- ✓ In a word, MDR contains standardized concepts for various applications fields.

❖ **Semantic Web promotes structured metadata representation, such as an ontology schema that concepts are associated via relationships**

❖ **For creating Web ontology, concepts are firstly defined, and then relationships are linked between the concepts**

Motivation (cont.)

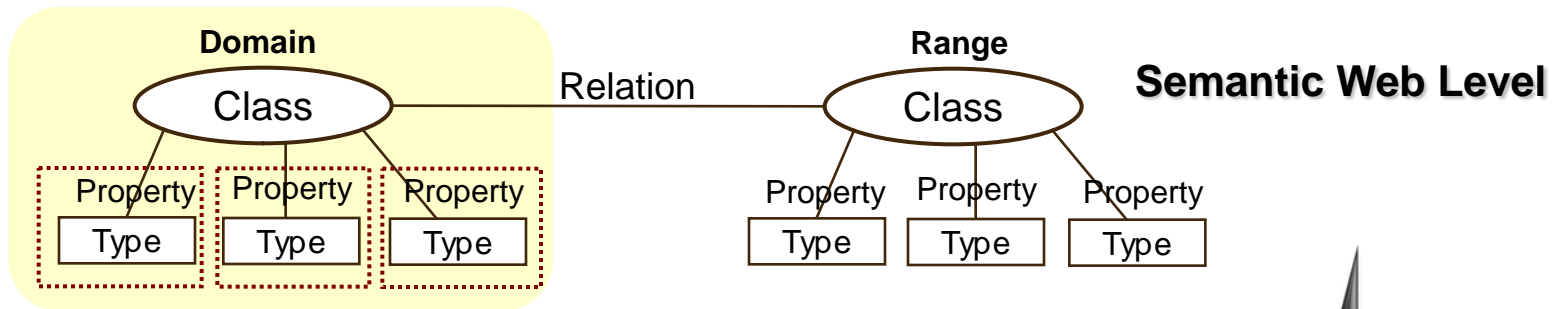
- ❖ Under such a situation, we can use the standardized concepts in MDR for building Ontology.
- ❖ In other words,
we need to specify Web ontology using standardized concepts in MDR for Semantic Web
- ❖ However, there is no standard for specifying Ontology using concepts in a registry
- ❖ The goal of this proposal is to provide the specification support of Ontology using the concepts in a registry

Purpose

- ❖ **The purposes of this proposal are to promote the followings:**
 - ✓ Ease of definition of Web Ontology schema
 - ✓ Creation of Web Ontology schema consisting of standardized concepts
 - i.e., well-known concepts or generalized concepts, which are accepted by general users as well as domain experts
 - ✓ Common understanding of concepts across corresponding application fields
 - ✓ More formalized specification of Web ontology

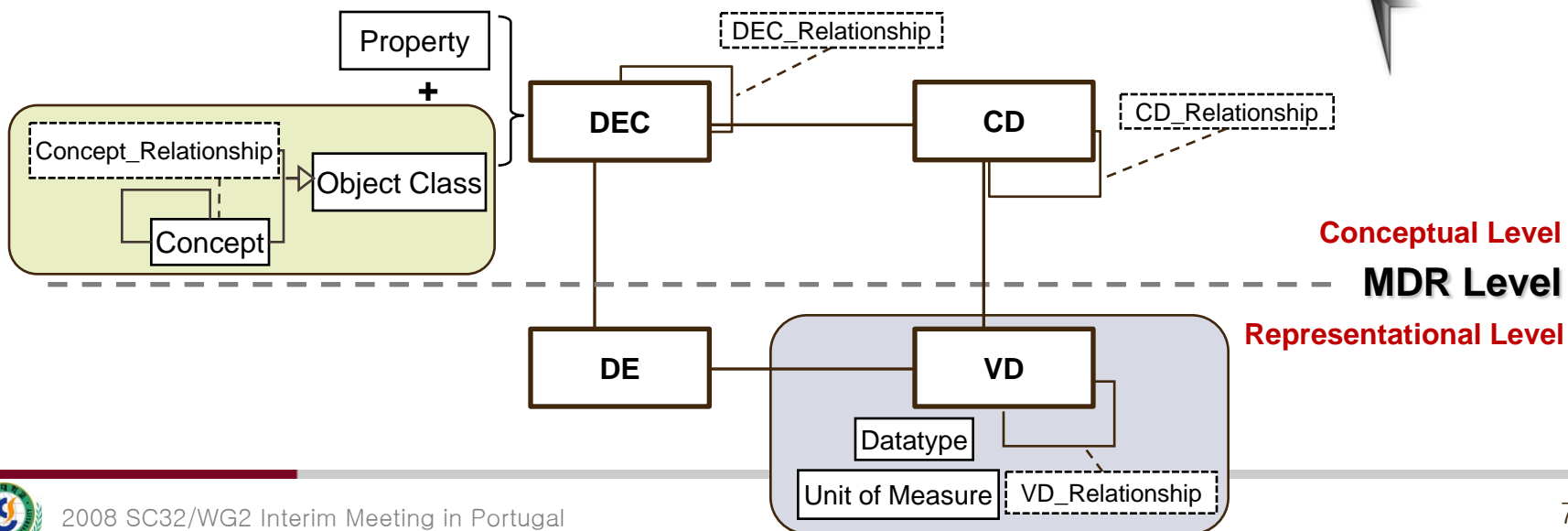
Purpose (cont.)

❖ Specifying Ontology using concepts in MDR



Between MDR level and Semantic Web level
 Procedure for the specification of Web Ontology using standardized concepts in MDR

How to..?



Discussion History of the Proposal

- ❖ **The idea of this proposal has been presented in the following meetings**
 - ✓ SC32 Plenary and WG Meetings, Australia, May 2008
 - N1127 Extending the Metadata Registry for Semantic Web
 - ✓ SC32 Workshop on ROR – ODMS - SMMP Study Period, Wuhan, China June, 2008
 - N1177 Extending the Metadata Registry for Semantic Web

❖ This proposal consists of the following parts:

- ✓ Part 1: Framework
- ✓ Part 2: Mapping Model between MDR and Web Ontology
- ✓ Part 3: Procedure for Specification

❖ This proposal does not contain

- ✓ Ontology building methods by a specific ontology description language, such as RDF, RDF-S, OWL, Topic Maps, KIF, and so on

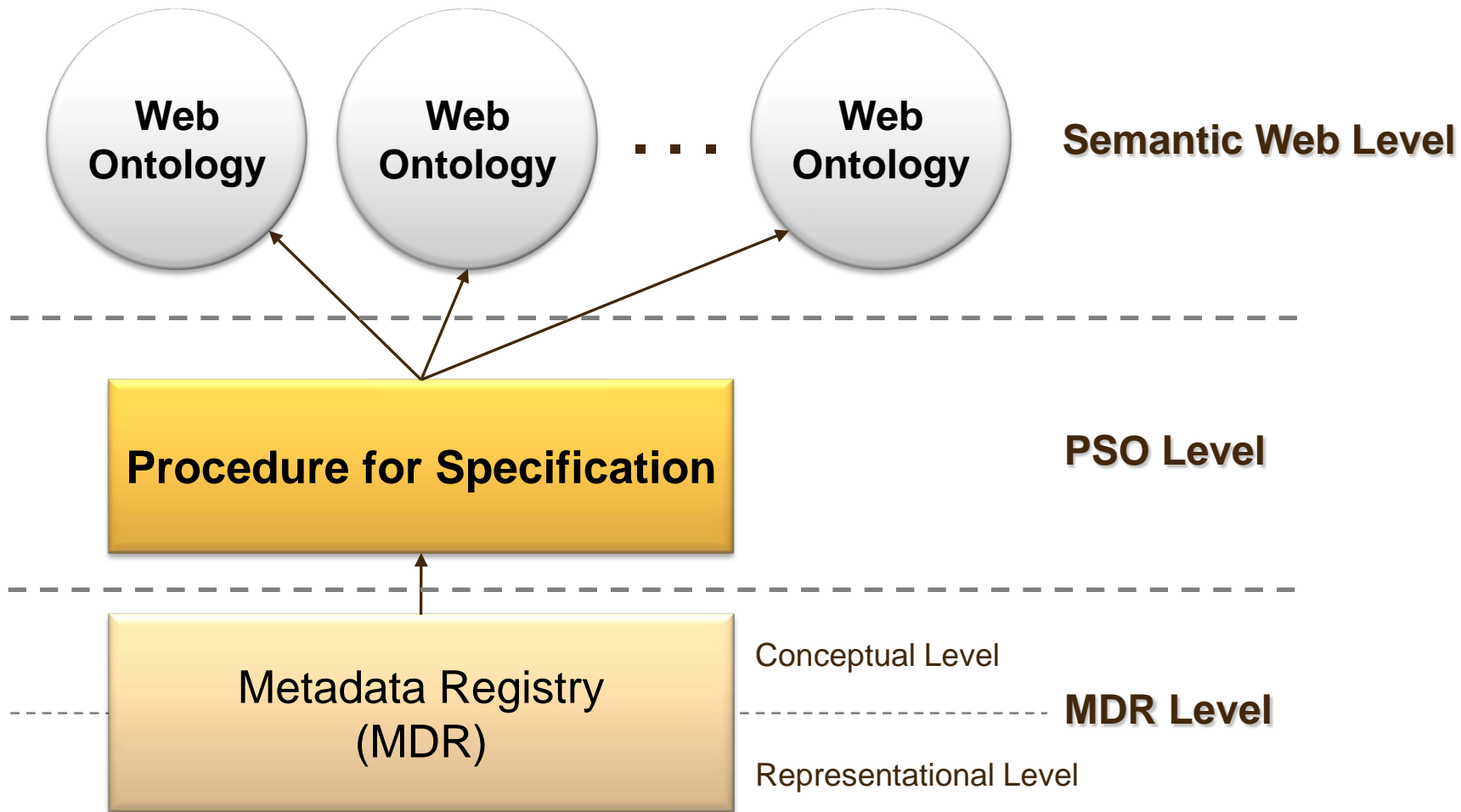


Our Proposal

- ❖ **Part 1: Framework**
- ❖ **Part 2: Mapping Model between MDR and Web Ontology**
- ❖ **Part 3: Procedure for Specification**

Our Proposal(cont.)

❖ Part 1: Framework



Our Proposal(cont.)

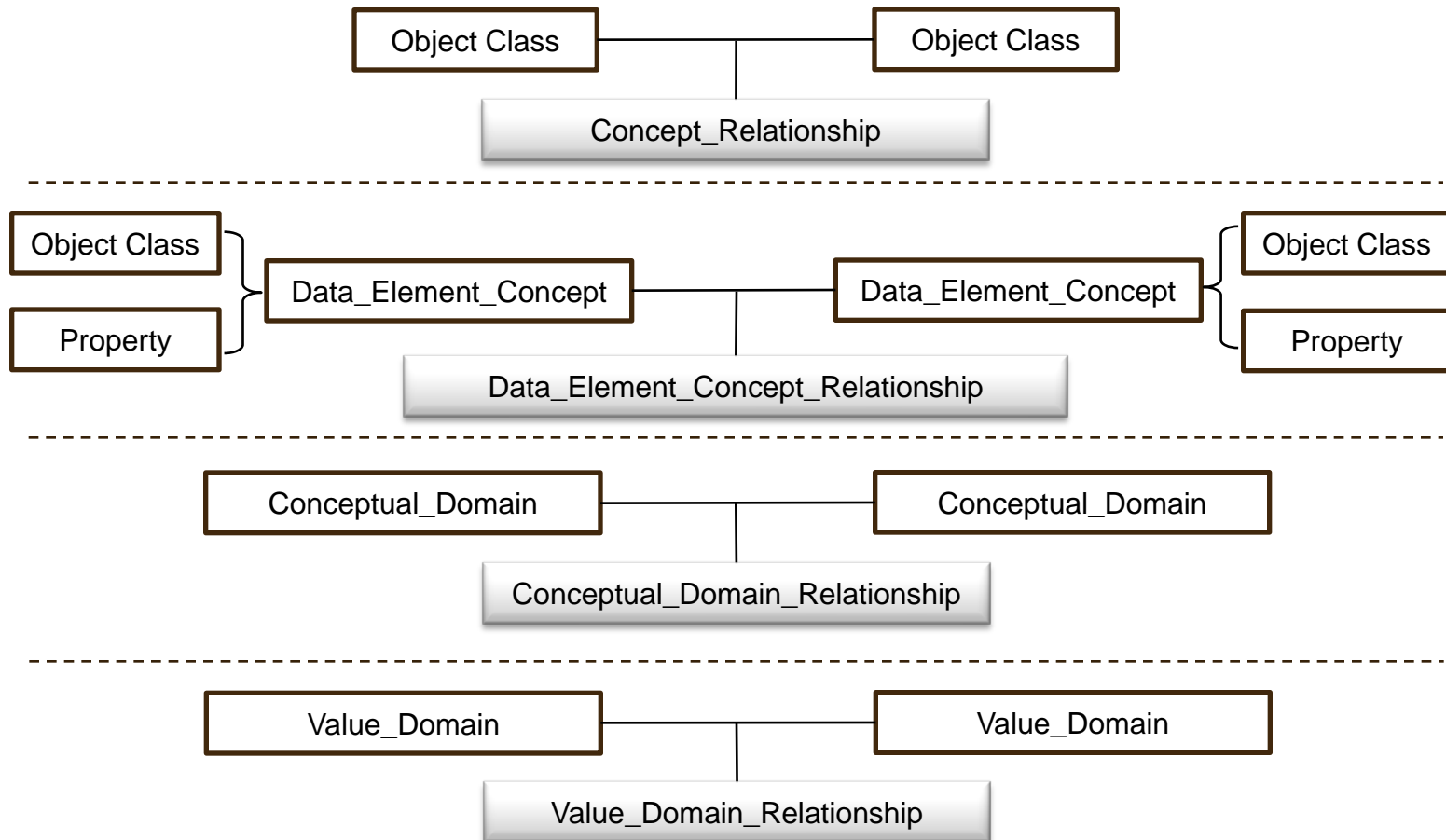
❖ Part 2: Mapping Model between MDR and Web Ontology

- ✓ Analyzes mapping relations between Web ontology and MDR
- ✓ Defines the relationships between components of MDR and Web Ontology
- ✓ Defines a metamodel for the mapping relations between MDR and Web ontology

Our Proposal(cont.)

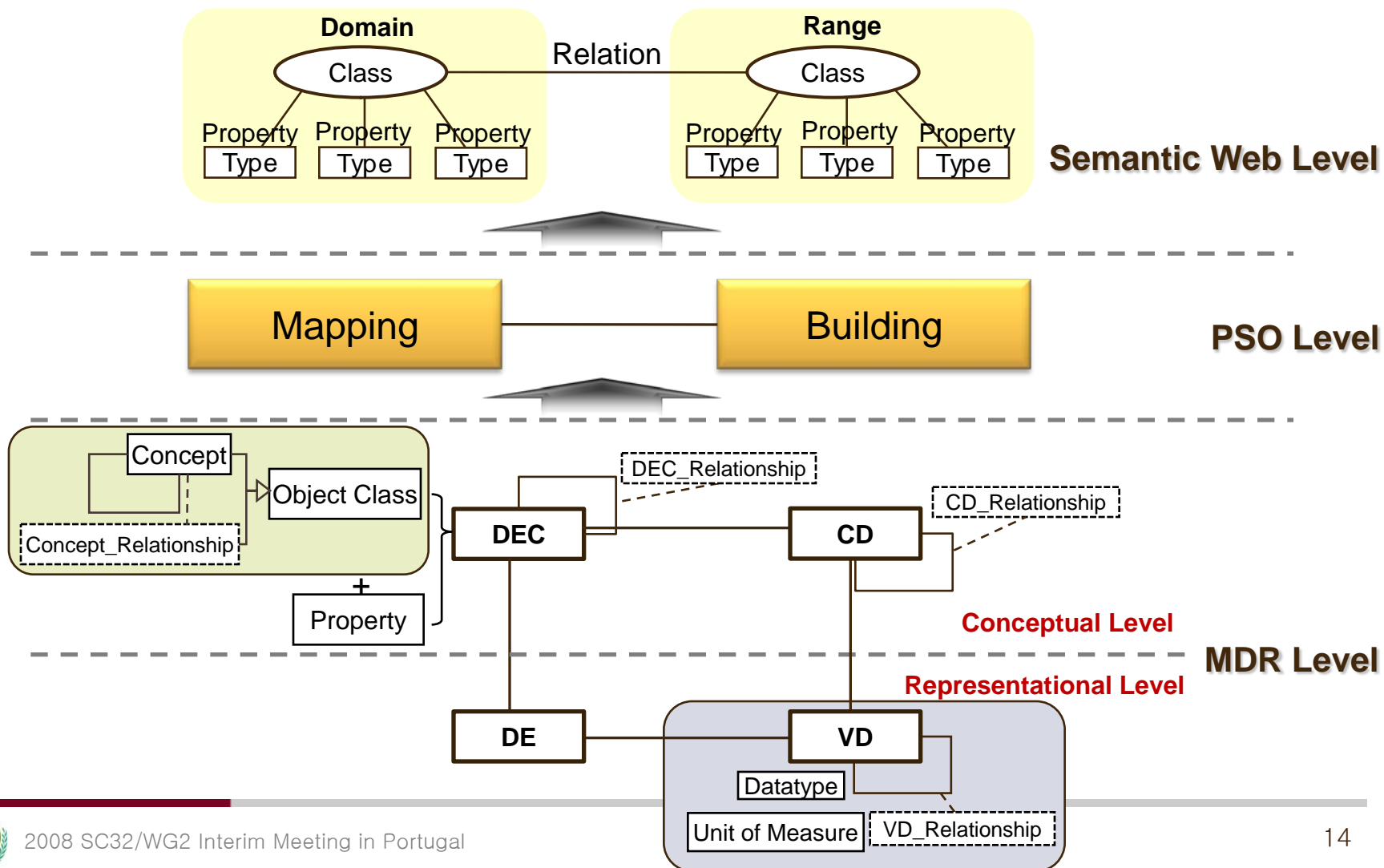
❖ Part 2: Mapping Model between MDR and Web Ontology

- ✓ Concepts and Relationships in MDR



Our Proposal(cont.)

❖ Part 2: Mapping Model between MDR and Web Ontology



Our Proposal(cont.)

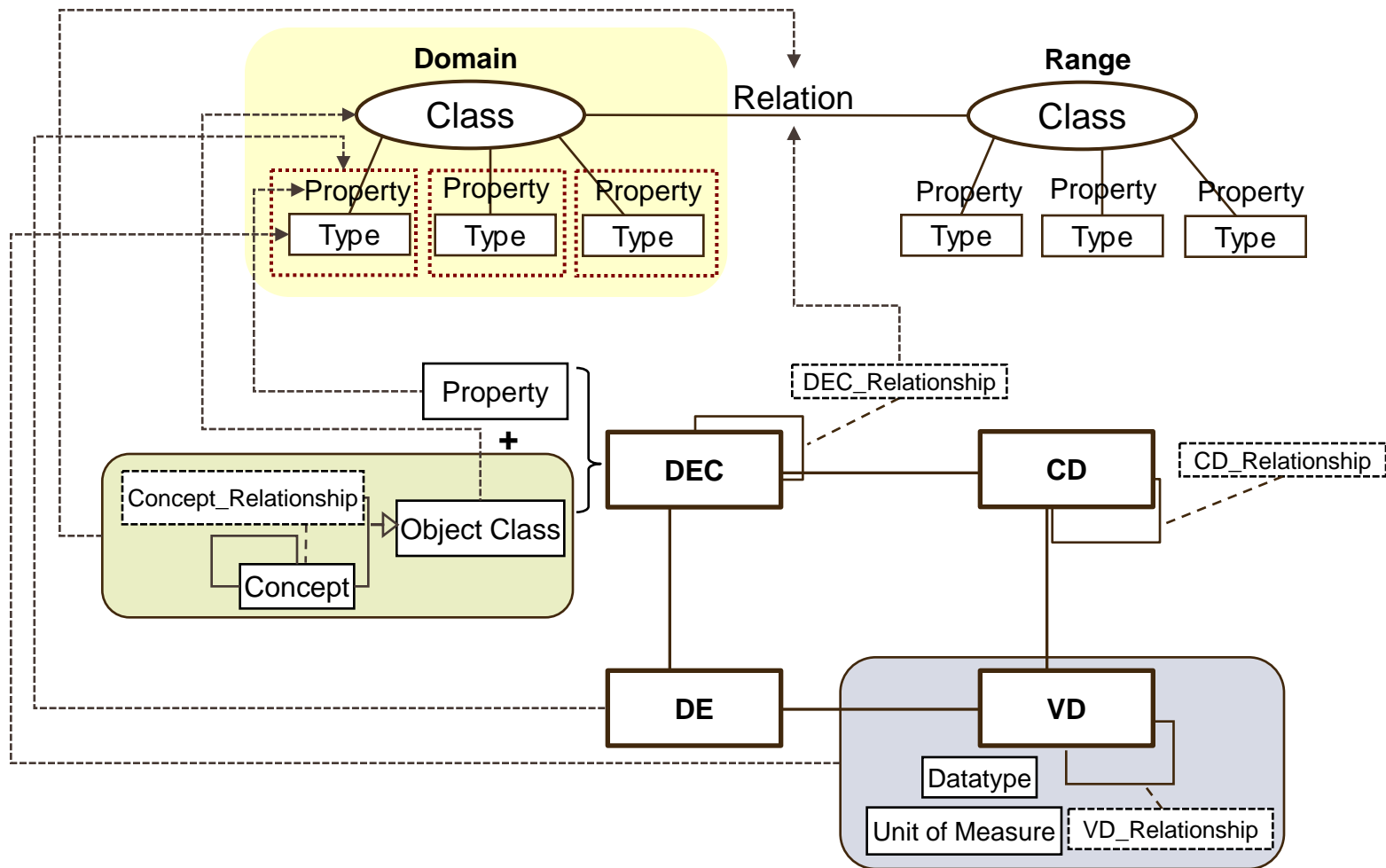
❖ Part 3: Procedure for Specification

- ✓ This part contains the overall process for building Web ontology, and develops and defines concrete/detailed operations of each process.



Our Proposal(cont.)

❖ A Case of Specifying Ontology Using Concepts in MDR



Conclusion

❖ The goal of this proposal is

- ✓ To specify ontology using standardized concepts registered and managed in MDR

❖ This proposal

- ✓ facilitates usability of MDR
- ✓ enables creation of Web Ontology consisting of standardized concepts
- ✓ supports common understanding of concepts across corresponding application fields
- ✓ enables a more formalized specification of Web ontology

Thank you!

