OMG: Ontology Definition Metamodel (ODM)

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Table 1: Data sheet for Ontology Definition Metamodel

Title	Ontology Definition Metamodel
Acronym	ODM
Version	vvv
OMG Document Number	
Release Date	September 2014
About Specification	https://www.omg.org/spec/ODM/
Document	https://www.omg.org/spec/ODM/1.1/PDF

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Scope

The authors believe that this specification represents the foundation for an extremely important set of enabling capabilities for Model Driven Architecture (MDA) based software engineering, namely the formal grounding for representation, management, interoperability, and application of business semantics.

The ODM specification offers a number of benefits to potential users, including:

- *Options in the level of expressivity, complexity, and form available for designing and implementing conceptual models, ranging from familiar UML and ER methodologies to formal ontologies represented in description logics or first order logic.*
- *Grounding in formal logic, through standards-based, model-theoretic semantics for the knowledge representation languages supported, sufficient to enable reasoning engines to understand, validate, and apply ontologies developed using the ODM.*
- *Profiles and mappings sufficient to support not only the exchange of models developed independently in various formalisms but to enable consistency checking and validation in ways that have not been feasible to date.*
- *The basis for a family of specifications that marry MDA and Semantic Web technologies to support semantic web services, ontology and policy-based communications and interoperability, and declarative, policy-based applications in general.*

The specification defines a family of independent metamodels, related profiles, and mappings among the metamodels corresponding to several international standards for ontology and Topic

Maps definition, as well as capabilities supporting conventional modeling paradigms for capturing conceptual knowledge, such as entity-relationship modeling.

The ODM is applicable to knowledge representation, conceptual modeling, formal taxonomy development and ontology definition, and enables the use of a variety of enterprise models as starting points for ontology development through mappings to UML and MOF. ODM-based ontologies can be used to support:

- *interchange of knowledge among heterogeneous computer systems,*
- *representation of knowledge in ontologies and knowledge bases,*
- *specification of expressions that are the input to or output from inference engines. The ODM is not intended to encompass*
- *specification of proof theory or inference rules,* * specification of translation and transformations between the notations used by heterogeneous computer systems, * free logics, * conditional logics, * methods of providing relationships between symbols in the logical “universe” and individuals in the “real world,” * issues related to computability using the knowledge representation formalisms represented in the ODM (e.g.,

optimization, efficiency, tractability, etc.).

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