OMG: Distributed Ontology, Model, and Specification Language (DOL)

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Table 1: Data sheet for Distributed Ontology, Model, and Specification Language (DOL)

Title	Distributed Ontology, Model, and Specification Language
Acronym	DOL
Version	1.0
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About Specification	https://www.omg.org/spec/DOL/1.0/Beta1/About-DOL/
Document	https://www.omg.org/spec/DOL/1.0/Beta1/PDF

Note: The following is an excerpt from the actual document. It is provided here as a convenience and is not authoritative. Refer to the original document as the authoritative reference.

Scope

General

This OMG Specification specifies the Distributed Ontology, Modeling and Specification Language (DOL). DOL is designed to achieve integration and interoperability of ontologies, specifications and MDE models (OMS for short). DOL is a language for distributed knowledge representation, system specification, and model-driven development across multiple OMS, particularly OMS that have been formalized in different OMS languages. This OMG Specification responds to the OntoIOp Request for Proposals.

Background Information

Logical languages are used in several fields of computing for the development of formal, machine-processable texts that carry a formal semantics. Among those fields are 1) Ontologies formalizing domain knowledge, 2) (formal) Models of systems, and 3) the formal Specification of systems. Ontologies, MDE models and specifications will (for the purpose of this document) henceforth be abbreviated as OMS.

An OMS provides formal descriptions, which range in scope from domain knowledge and activities (ontologies, MDE models) to properties and behaviors of hardware and software systems (MDE models, specifications). These formal descriptions can be used for the analysis and verification of domain models, system models, and systems themselves, using rigorous and effective reasoning

tools. As systems increase in complexity, it becomes concomitantly less practical to provide a monolithic logical cover for all. Instead, various MDE models are developed to represent different viewpoints or perspectives on a domain or system. Hence, interoperability becomes a crucial issue, in particular, formal interoperability, i.e. interoperability that is based on the formal semantics of the different viewpoints. Interoperability is both about the ability to interface different domains and systems and the ability to use several OMS in a common application scenario. Further, interoperability is about coherence and consistency, ensuring at an early stage of the development that a coherent system can be reached.

In complex applications, which involve multiple OMS with overlapping concept spaces, it is often necessary to identify correspondences between concepts in the different OMS; this is called OMS alignment. While OMS alignment is most commonly studied for OMS formalized in the same OMS language, the different OMS used by complex applications may also be written in different OMS languages, which may even vary in their expressiveness. This OMG Specification faces this diversity not by proposing yet another OMS language that would subsume all the others. Instead, it accepts the diverse reality and formulates means (on a sound and formal semantic basis) to compare and integrate OMS that are written in different formalisms. It specifies DOL, a formal language for expressing not only OMS but also mappings between OMS formalized in different OMS languages.

Thus, DOL gives interoperability a formal grounding and makes heterogeneous OMS and services based on them amenable to checking of coherence (e.g. consistency, conservativity, intended consequences, and compliance). ~~DISCUSSION:on|Outstanding Issues~~ ~~DISCUSSION:off~~