A Framework for Semantics

We are living in an information-centric world where decision-making is increasingly automated based on data coming from a myriad of sources, now including pervasive devices. To ensure information is captured, combined, processed and shared correctly and consistently requires more than just names and structures — it is vital to understand its meaning in a formal way — that's semantics.

The Object Management Group® (OMG®) is an international, open membership, not-for-profit technology standards consortium. OMG members have developed and implemented numerous specifications that are grounded in formal logic, and build on standards from the World Wide Web Consortium (W3C) and the International Standards Organization (ISO), such as Resource Description Framework (RDF) and Web Ontology Language (OWL). In addition, rules and other approaches have been used to specify the meaning of the actions in OMG modeling languages. OMG specifications such as these are part of a *Framework for Semantics* that is emerging within OMG to support meaning in models in a formal way. This framework provides new capabilities for both human and machine understanding.

Value Proposition

The OMG framework for semantics enables its users to leverage existing information and models to create semantic content for people and for automated understanding, interchange, and reasoning, by:

- facilitating collaborative development and better understanding of semantics through graphical models that map to the logics required for a variety of use cases
- providing specifications, including programming interfaces, for unambiguous and consistent interchange and management of semantic models and vocabularies
- applying transformations to allow semantic models to drive the creation of more conventional models and code
- providing domain-specific, reusable semantic models for vertical markets such as aerospace, finance, retail, and robotics
- ensuring rigorous specification and simulation of IT systems using OMG modeling languages such as UML® or SysML®

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OMG Framework for Semantics

Infrastructure – specifications for languages, integration, and services for semantic content. A specification appears in all the categories that it supports.

- Logic languages − Ontology Definition Metamodel™ (ODM™), Semantics of Business Vocabulary and Business Rules™ (SBVR™)
- Rule languages − Decision Model and Notation™ (DMN™), Production Rule Representation™ (PRR™), SBVR
- Knowledge Integration Framework − Distributed Ontology, Model, and Specification Language™ (DOL™), APIs for Knowledge Platforms (API4KP), Model Driven Message Interoperability™ (MDMI®), Semantic Modeling for Information Federation (SMIF), MOF™ to RDF Structural Mapping in Support of Linked Open Data (MOF2RDF)
- Terminology Support – Multiple Vocabulary Facility (MVF), Common Terminology Services 2™ (CTS2™), SBVR
- Precise UML model specifications – Precise Semantics of UML Composite Structures™, Precise Semantics of UML State Machines, and Semantics of a Foundational Subset of UML Models

Ontologies and Vocabularies – specifications for standard semantic content

- Domain Independent Ontologies – Languages, Countries and Codes (LCC), Data-Time Vocabulary™ (DTV™), Specification Metadata
- Domain Dependent Ontologies and Vocabularies – for Aerospace (emerging), C4I (emerging), Finance (Financial Industry Business Ontology®, Financial Instrument Global Identifier®, and others in work), Middleware (Information Exchange Framework™), Retail (emerging), Robotics (emerging)

The Object Management Group® (OMG®) is an international, open membership, not-for-profit computer industry standards consortium. OMG Task Forces develop enterprise integration standards for a wide range of technologies and an even wider range of industries. OMG modeling standards enable powerful visual design, execution and maintenance of software and other processes. Visit **www.omg.org** for more information.

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Next Step

We are happy to discuss how OMG membership will benefit your organization! Explore our website at **www.omg.org** and when you are ready, please contact bd-team@omg.org or call + 1-781-444-0404 to get started.

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