



Introduction

The Object Management Group® Manufacturing Technology and Industrial Systems Domain Taskforce (MantIS DTF), founded in 1996 as the Manufacturing Domain Task force and in 2002 merged with the Utilities DTF, develops technical specifications to enable the manufacturing industry to exchange and seamlessly integrate product data and production systems. Its mission is to foster the emergence of cost effective, timely, commercially available and interoperable software components. The focus has been on the IT systems supporting product development and engineering. As industry is moving from traditional, 3D-CAD-centric product development and Product Lifecycle Management (PLM) to integrated, model-based engineering (MBE), our focus moved to the development of specifications in support of a continuous and interoperable engineering toolchain.

Value Proposition

Today's innovative manufactured products like machine tools, automobiles and airplanes are characterized by an ever-growing complexity in terms of the number of connected systems and subsystems. This calls for new approaches to the development and production of these complex products and is manifested by mega-trends such as the "Industrial Internet of Things", "Smart Manufacturing" and "Industrie 4.0". Multiple engineering disciplines must be well coordinated to cope with the challenge; both organization and technology are affected. Our goal is to establish a solid foundation for a lifecycle spanning the development and manufacturing process, called Model-Based Engineering (MBE). Specifically, the information management in the product conception phase, including the interoperability of the supporting IT infrastructure, are of prime importance for the whole product lifecycle. Designing these complex systems is facilitated by OMG SysML¹, a general-purpose graphical language for specifying, analyzing, designing and verifying complex systems that may include hardware, software, personnel, procedures, and facilities. In particular, the language provides graphical representations with a semantic foundation for modeling system requirements, behaviors, and structures. MantIS closely collaborates with OMG's Systems Engineering Domain Special Interest Group (SE-DSIG) to leverage MBSE (Model-Based Systems Engineering) using SysML® in the context of PLM.

¹SysML has recently been adopted by ISO/IEC as ISO/IEC 19514:2017.

OMG ManTIS Specifications

Specifications developed and sponsored by ManTIS include:

- **OMG ReqIF™** – Requirements management has been an integral part of the development process in various industries (especially in the software, automotive, aerospace, medical device, and defense industries) for many years. As disciplined requirements management has spread across the manufacturing industry in recent years, more manufacturers have been making use of dedicated requirements authoring tools. Now with this established discipline in place, manufacturers and suppliers want to undertake collaborative requirements management, where requirements information can be interchanged reliably between companies up and down the supply chain. The Requirements Interchange Format™ specification provides standards-based exchange of requirements authored in different Requirements Management (RM) tools; almost all RM and SysML modeling tools today support ReqIF import and export.
- **EXPRESS Metamodel** – an OMG MOF™ metamodel of the ISO STEP (ISO 10303 series) EXPRESS modeling language, which was developed within the ISO STEP (Standard for the Exchange of Product data) standards framework. This specification creates a bridge between the hundreds of major information models for manufacturing and construction information that are formally specified in EXPRESS and standardized by ISO, and the many sophisticated and widely-used graphical modeling tools based on the OMG's SysML and UML® modeling language standards.
- **OMG Product Lifecycle Management Services** – an integration standard to support the interoperability of PLM Systems. OMG PLM Services is a standard made of standards: the Information Model of the current version 2.1 was derived from the ISO 10303-214 STEP model, while the Functional Model is based on OMG PDM Enablers V1.3. PLM Services provide a solid foundation for collaborative engineering use cases (e.g. browsing in supplier product data structures, design in context and digital mock-up). Utilizing OMG's Model Driven Architecture® (MDA®), the PLM Services specification is intended to serve for a wide range of implementation platforms. Currently it is targeted at web services, XML™ Schema, SOAP, and Java.

Next Step

We are happy to discuss how OMG specifications and/or membership will benefit your organization! OMG specifications are free and openly published on its website at www.omg.org/spec/. Feel free to explore our website at www.omg.org and when you are ready, please contact bd-team@omg.org or call + 1-781-404-4444 to get started.

About OMG

The Object Management Group® (OMG®) is an international, open membership, not-for-profit computer industry standards consortium with representation from government, industry and academia. OMG Task Forces develop enterprise integration standards for a wide range of technologies and an even wider range of industries. OMG's 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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