
**Information technology — Object
Management Group Unified Profile for
DoDAF and MODAF (UPDM), 2.1.1**

*Technologies de l'information — Profil unifié pour DoDAF et MODAF
(UPDM) de l'OMG, 2.1.1*





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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by the Object Management Group (OMG) and was adopted, under the PAS procedure, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

This document is related to:

- ITU-T Recommendation X.902 (1995) | ISO/IEC 10746-2:1995, Information Technology - Open Distributed Processing - Reference Model: Foundations
- ITU-T Recommendation X.903 (1995) | ISO/IEC 10746-3:1995, Information Technology - Open Distributed Processing - Reference Model: Architecture
- ITU-T Recommendation X.920 (1997) | ISO/IEC 14750:1997, Information Technology - Open Distributed Processing - Interface Definition Language

Apart from this Foreword, the text of this document is identical with that for the OMG specification for Unified Profile for DoDAF and MODAF (UPDM), v2.1.1.

Introduction

The rapid growth of distributed processing has led to a need for a coordinating framework for this standardization and ITU-T Recommendations X.901-904 | ISO/IEC 10746, the Reference Model of Open Distributed Processing (RM-ODP) provides such a framework. It defines an architecture within which support of distribution, interoperability and portability can be integrated.

RM-ODP Part 2 (ISO/IEC 10746-2) defines the foundational concepts and modeling framework for describing distributed systems. The scopes and objectives of the RM-ODP Part 2 and the UML, while related, are not the same and, in a number of cases, the RM-ODP Part 2 and the UML specification use the same term for concepts which are related but not identical (e.g., interface). Nevertheless, a specification using the Part 2 modeling concepts can be expressed using UML with appropriate extensions (using stereotypes, tags, and constraints).

RM-ODP Part 3 (ISO/IEC 10746-3) specifies a generic architecture of open distributed systems, expressed using the foundational concepts and framework defined in Part 2. Given the relation between UML as a modeling language and Part 3 of the RM-ODP standard, it is easy to show that UML is suitable as a notation for the individual viewpoint specifications defined by the RM-ODP.

This International Standard for Unified Profile for DoDAF and MODAF (UPDM) is a standard for the technology specification of an ODP system. It defines a technology to provide the infrastructure required to support functional distribution of an ODP system, specifying functions required to manage physical distribution, communications, processing and storage, and the roles of different technology objects in supporting those functions.

Subpart I - Introduction

This subpart contains the following clauses and sub clauses:

1 Scope

2 Compliance

- 2.1 Compliance Levels
 - 2.1.1 Level 0 : Based on UML 2 and Partial SoaML Import
 - 2.1.2 Level 1 : Based on UML 2 and Full SysML Import
- 2.2 Compliance to DoDAF 2.0.2

3 Normative References

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4 Terms and Definitions

5 Symbols and Acronyms

6 Additional Information

- 6.1 Additional Materials
- 6.2 Overview of this International Standard
 - 6.2.1 Intended Audience
 - 6.2.2 Organization

INTERNATIONAL STANDARD

**Information technology - Object Management Group
Unified Profile for DoDAF and MODAF (UPDM 2.1.1)**

1 Scope

This International Standard provides a specification language, UPDM, that is readily understandable not only by the community of architects of information technology systems but also by a wide range of end users including executives and enterprise management that sponsor such systems, program managers that oversee their development, developers of supporting hardware and software (design, implementation, and testing), subject matter experts, and end users. UPDM bridges the gap from setting of requirements to high level system design and to visualization for practitioners. While designed in the context of military organizations and their procurement processes, UPDM can also be applied in entirely civilian industrial and service organization contexts.

UPDM 2.1.1 supports the capability to:

- model architectures for a broad range of complex systems, which may include hardware, software, data, personnel, and facility elements;
- model consistent architectures for system-of-systems down to lower levels of design and implementation;
- model service oriented architectures;
- support the analysis, specification, design, and verification of complex systems; and
- improve the ability to exchange architecture information among related tools that are UML based and tools that are based on other standards.

The profile provides the modeling of operational capabilities, services, system activities, nodes, system functions, ports, protocols, interfaces, performance, and physical properties and units of measure. In addition, the profile enables the modeling of related architecture concepts such as DoD's doctrine, organization, training material, leadership & education, personnel, and facilities (DOTMLPF) and the equivalent UK Ministry of Defence Lines of Development (DLOD) elements.

UPDM 2.1.1, as illustrated in Figure 1.1, addresses DoDAF and MODAF Viewpoints as well as enabling extensions to new architecture perspectives (e.g., Services views, Custom views, Logistics views cost views, etc.). MODAF terminology has been used for simplicity.

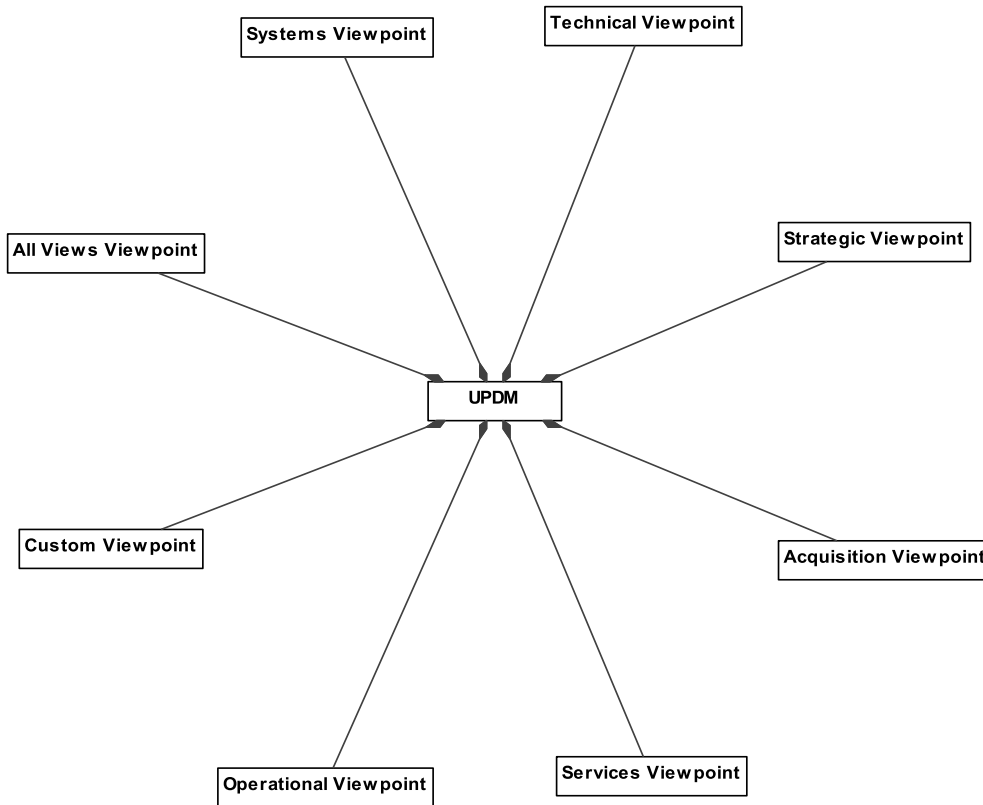


Figure 1.1 - UPDM Viewpoint Support Illustration

2 Compliance

2.1 Compliance Levels

UPDM 2.1.1 specifies two compliance levels corresponding to supporting a UML-based profile and a UML+ OMG SysML profile as seen in Figure 2.1

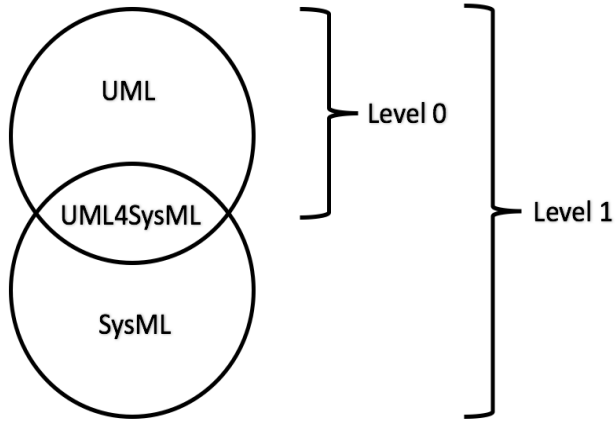


Figure 2.1- UPDM Compliance Levels 0 and 1

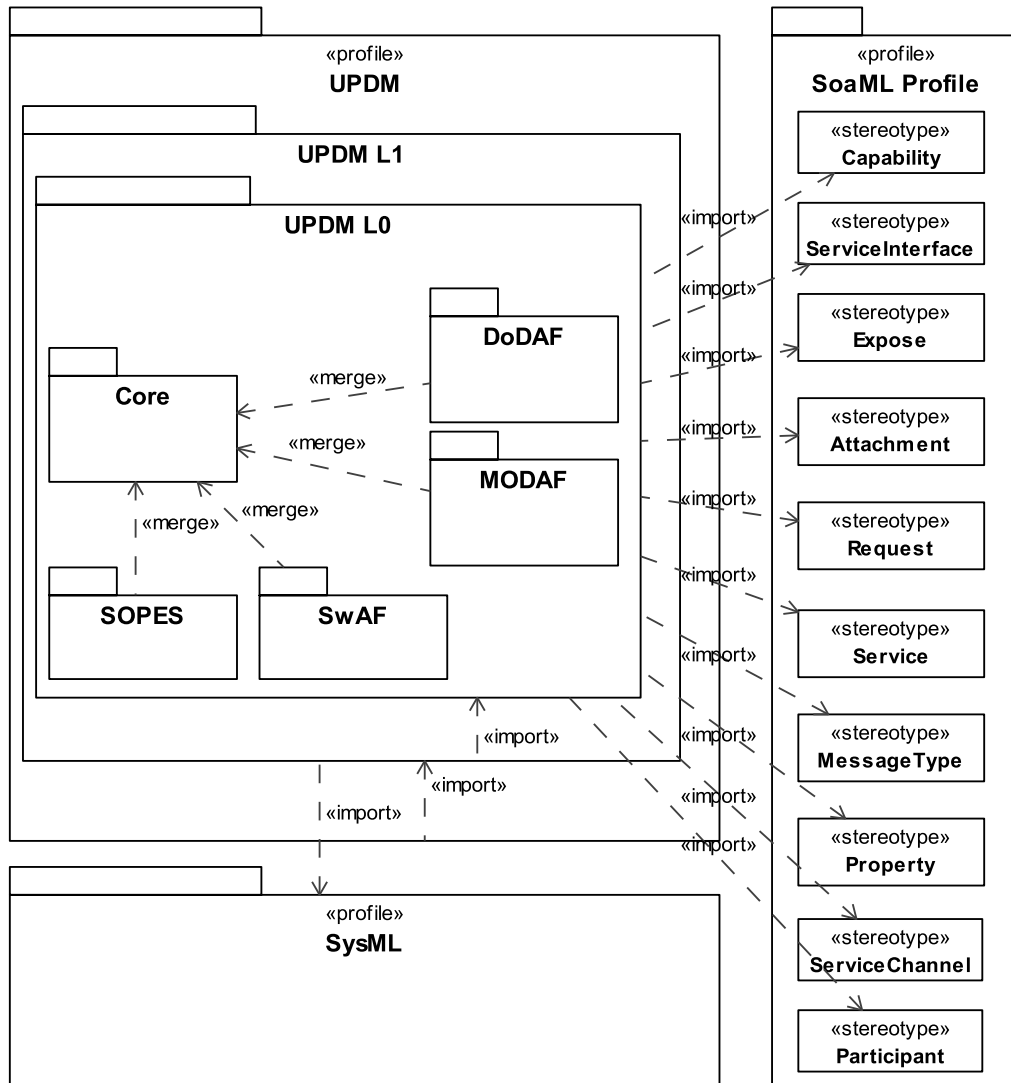


Figure 2.2 - L0 and L1

2.1.1 Level 0 : Based on UML 2 and Partial SoaML Import

Figure 2.2 illustrates that UPDM 2.1.1 Compliance Level 0 is an implementation of UPDM extending UML 2 and importing several SoaML stereotypes - namely Capability, ServiceInterface, Expose, Attachment, Request, Service, MessageType, Property, ServiceChannel, Participant. In order for a tool to be considered as compliant with L0, the following must be true:

- All stereotypes, classes, attributes, constraints, associations, and package structures that are scoped to the L0 package (including sub-packages) must exist and be compliant with this International Standard.
- XMI import and export of the user model and profile must be supported.
- A Level 0 compliant implementation must be able to import and export Level 0 UPDM 2.1.1 models with 100% fidelity (i.e., no loss or transforms).
- A Level 0 compliant implementation must be able to import Level 1 UPDM 2.1.1 models with only minimal losses.

2.1.2 Level 1 : Based on UML 2 and Full SysML Import

Figure 2.2 illustrates that UPDM 2.1.1 Compliance Level 1 includes everything in Level 0 and imports the SysML profile (with all its subprofiles). As part of UPDM Compliance Level 1, constraints are defined in UPDM L1 that pair together the application of SysML and UPDM 2.1.1 stereotypes. This provides a UPDM 2.1.1 implementation that can be seamlessly taken forward into SysML modeling. For a tool to be considered as compliant with L1, the following must be true:

- All stereotypes, classes, attributes, constraints, associations and package structures that are scoped to the L1 package (including sub-packages) must exist and be compliant with this International Standard.
- XMI import and export of the user model and profile must be supported.
- A Level 1 compliant implementation must be able to import and export Level 1 UPDM 2.1.1 models with 100% fidelity (i.e., no loss or transforms).
- A Level 1 compliant implementation must be able to import Level 0 UPDM 2.1.1 models with no loss, and transformations where necessary.

2.2 Compliance to DoDAF 2.0.2

The Unified Profile for DoDAF and MODAF version 2.1, conforms with DoDAF 2.0.2.

3 Normative References

3.1 Overview

The following normative documents contain provisions, which through reference in this text, constitute provisions of this International Standard. Subsequent amendments to, or revisions of, any of these publications do not apply.

3.2 References

- ISO/IEC 19505-2 , Information technology — OMG Unified Modeling Language (OMG UML) Version 2.4.1 — Part 2: Superstructure; pas/2011-08-06
- OMG Specification formal/ 2010-05-03, UML Infrastructure, v2.3
- OMG Specification formal/ 2010-05-05, UML Superstructure, v2.3
- OMG Specification formal/ 2005-09-01, XML Metadata Interchange (XMI), v2.1

- OMG Specification formal/2006-05-01, Object Constraint Language, v2. 0
- OMG Specification formal/2012-03-01, SoaML, v1.0
- OMG Specification formal/2010-06-01, SysML, v1.2
- The MOD Architectural Framework (MODAF) Version 1.2.002 (<https://www.gov.uk/guidance/mod-architecture-framework>)
- The DoD Architecture Framework (DoDAF) Version 2.02 (<http://dodcio.defense.gov/Library/DoDArchitectureFramework.aspx>)