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Table of Contents

Foreword x
Introduction xi

1 Scope 3

2 Compliance 4
2.1 Compliance Levels 4
2.1.1 Level 0 : Based on UML 2 and Partial SoaML Import 6
2.1.2 Level 1 : Based on UML 2 and Full SysML Import 7
2.2 Compliance to DoDAF 2.0.2 7

3 Normative References 7
3.1 Overview 7
3.2 References 7

4 Terms and Definitions 8

5 Symbols and Acronyms 8

6 Additional Information 9
6.1 Additional Materials 9
6.2 Overview of this International Standard 10
6.2.1 Intended Audience 10
6.2.2 Organization 10

7 Language Architecture 13
7.1 Introduction 13
7.2 Philosophy 13
7.3 Core Principles 13
7.4 Representing Stereotype Constraints 14
7.5 UML Constraint Representation 18
7.6 Important Areas of the Architecture 18
7.6.1 Aliases 18
7.6.2 SoaML Reuse in L0 19
7.6.3 SysML Reuse in L1 19
7.6.4 SOPES Reuse in L1 19

8 UPDM Profile 21
8.1 Introduction 21
8.2 DoDAF Class Library 21

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8.2.1 ClassificationType 22
8.2.2 CommunicationsLinkProperties 22
8.2.3 DataElementProperties 22
8.2.4 ExchangeProperties 22
8.2.5 InformationAssuranceProperties 22
8.2.6 InformationElementProperties 22
8.2.7 OperationalActivityProperties 23
8.2.8 SecurityAttributes 23
8.3 UPDM L1 23
8.3.1 UPDM L1::UPDM L0 28
8.3.1.1 UPDM L1::UPDM L0::Core 28
8.3.1.1.1 UPDM L1::UPDM L0::Core::AcquisitionElements 28
8.3.1.1.1.1 UPDM L1::UPDM L0::Core::AcquisitionElements::Milestone 28
8.3.1.1.1.1.1 ActualProject 28
8.3.1.1.1.1.2 ActualProjectMilestoneRole 30
8.3.1.1.1.1.3 OrganizationalProjectRelationship 30
8.3.1.1.1.1.4 ProjectMilestoneRole 31
8.3.1.1.1.1.5 ProjectType 32
8.3.1.1.2 UPDM L1::UPDM L0::Core::AllElements 33
8.3.1.1.2.1 Exchange 34
8.3.1.1.2.2 UPDMElement 34
8.3.1.1.2.3 UPDM L1::UPDM L0::Core::AllElements::Behavior 35
8.3.1.1.2.3.1 Activity 35
8.3.1.1.2.3.2 CapableElement 36
8.3.1.1.2.3.3 Implements 37
8.3.1.1.2.3.4 IsCapableOfPerforming 38
8.3.1.1.2.4 UPDM L1::UPDM L0::Core::AllElements::Environment 39
8.3.1.1.2.4.1 ActualLocation 39
8.3.1.1.2.4.2 ConditionType 41
8.3.1.1.2.4.3 Environment 41
8.3.1.1.2.4.4 EnvironmentProperty 42
8.3.1.1.2.4.5 LocationHolder 43
8.3.1.1.2.4.6 LocationKind 44
8.3.1.1.2.4.7 LocationType 45
8.3.1.1.2.4.8 LocationTypeKind 46
8.3.1.1.2.5 UPDM L1::UPDM L0::Core::AllElements::Measurements 46
8.3.1.1.2.5.1 ActualMeasurement 46
8.3.1.1.2.5.2 ActualProperty 47
8.3.1.1.2.5.3 ActualPropertySet 49
8.3.1.1.2.5.4 ActualPropertySetKind 50
8.3.1.1.2.5.5 Measurement 50
8.3.1.1.2.5.6 MeasurementSet 51
8.3.1.1.2.5.7 Property 52
8.3.1.1.2.5.8 PropertySet 52
8.3.1.1.2.6 UPDM L1::UPDM L0::Core::AllElements::Structure 53
8.3.1.1.2.6.1 ExchangeElement 53
8.3.1.1.2.6.2 ExchangeElementKind 55
8.3.1.1.2.6.3 Participant 55
8.3.1.1.2.6.4 Resource 56
8.3.1.1.2.6.5 Rule 56
8.3.1.1.2.6.6 RuleKind 57
8.3.1.1.2.7 UPDM L1::UPDM L0::Core::AllElements::Views 58
8.3.1.1.2.7.1 ArchitecturalDescription 58
8.3.1.1.2.7.2 ArchitecturalReference 60

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8.3.1.1.2.7.3 ArchitectureFrameworkKind 60
8.3.1.1.2.7.4 ArchitectureMetadata 61
8.3.1.1.2.7.5 Metadata 61
8.3.1.1.2.7.6 View 62
8.3.1.1.2.7.7 Viewpoint 63
8.3.1.1.3 UPDM L1::UPDM L0::Core::ExternalTypes 64
8.3.1.1.3.1 ISO8601DateTime 64
8.3.1.1.4 UPDM L1::UPDM L0::Core::OperationalElements 65
8.3.1.1.4.1 UPDM L1::UPDM L0::Core::OperationalElements::Behavior 65
8.3.1.1.4.1.1 NodeOperation 65
8.3.1.1.4.1.2 OperationalActivity 66
8.3.1.1.4.1.3 OperationalActivityAction 68
8.3.1.1.4.1.4 OperationalActivityEdge 69
8.3.1.1.4.1.5 OperationalEventTrace 70
8.3.1.1.4.1.6 OperationalMessage 71
8.3.1.1.4.1.7 OperationalParameter 72
8.3.1.1.4.1.8 OperationalState 72
8.3.1.1.4.1.9 OperationalStateDescription 73
8.3.1.1.4.1.10 SubjectOfOperationalStateMachine 74
8.3.1.1.4.2 UPDM L1::UPDM L0::Core::OperationalElements::Data 75
8.3.1.1.4.2.1 LogicalDataModel 75
8.3.1.1.4.3 UPDM L1::UPDM L0::Core::OperationalElements::Flows 75
8.3.1.1.4.3.1 Command 75
8.3.1.1.4.3.2 OperationalExchange 76
8.3.1.1.4.3.3 OperationalExchangeItem 78
8.3.1.1.4.3.4 OperationalExchangeKind 79
8.3.1.1.4.4 UPDM L1::UPDM L0::Core::OperationalElements::Structure 80
8.3.1.1.4.4.1 ArbitraryConnector 80
8.3.1.1.4.4.2 Competence 81
8.3.1.1.4.4.3 ConceptItem 81
8.3.1.1.4.4.4 ConceptRole 82
8.3.1.1.4.4.5 HighLevelOperationalConcept 83
8.3.1.1.4.4.6 KnownResource 84
8.3.1.1.4.4.7 LogicalArchitecture 85
8.3.1.1.4.4.8 Specializations 86
8.3.1.1.4.4.9 Mission 86
8.3.1.1.4.4.10 Needline 87
8.3.1.1.4.4.11 Node 88
8.3.1.1.4.4.12 NodeParent 89
8.3.1.1.4.4.13 NodePort 90
8.3.1.1.4.4.14 NodeRole 91
8.3.1.1.4.4.15 OperationalConstraint 92
8.3.1.1.4.4.16 SecurityDomain 93
8.3.1.1.4.4.17 SubjectOfOperationalConstraint 93
8.3.1.1.4.4.18 UPDM L1::UPDM L0::Core::OperationalElements::Structure::Organizational 94
8.3.1.1.5 UPDM L1::UPDM L0::Core::ServiceElements 110
8.3.1.1.5.1 UPDM L1::UPDM L0::Core::ServiceElements::Behavior 110
8.3.1.1.5.1.1 ServiceFeature 110
8.3.1.1.5.1.2 ServiceFunction 111
8.3.1.1.5.1.3 ServiceFunctionAction 112
8.3.1.1.5.1.4 ServiceFunctionEdge 112
8.3.1.1.5.1.5 ServiceInteraction 113
8.3.1.1.5.1.6 ServiceMessage 114
8.3.1.1.5.1.7 ServiceMessageHandler 115

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8.3.1.1.5.1.8 ServiceOperation 116
8.3.1.1.5.1.9 ServiceParameter 117
8.3.1.1.5.1.10 ServiceStateMachine 118
8.3.1.1.5.2 UPDM L1::UPDM L0::Core::ServiceElements::Structure 119
8.3.1.1.5.2.1 AsynchronousMessage 119
8.3.1.1.5.2.2 Request 120
8.3.1.1.5.2.3 Service 121
8.3.1.1.5.2.4 ServiceAttribute 121
8.3.1.1.5.2.5 ServiceInterface 122
8.3.1.1.5.2.6 ServiceLevelValue 124
8.3.1.1.5.2.7 ServiceLevelValueSet 125
8.3.1.1.5.2.8 ServicePolicy 125
8.3.1.1.5.2.9 ServicePort 126
8.3.1.1.6 UPDM L1::UPDM L0::Core::StrategicElements 128
8.3.1.1.6.1 UPDM L1::UPDM L0::Core::StrategicElements::Structure 128
8.3.1.1.6.1.1 Capability 128
8.3.1.1.6.1.2 CapabilityProperty 129
8.3.1.1.6.1.3 DesiredState 130
8.3.1.1.6.1.4 Desirer 130
8.3.1.1.6.1.5 EnterpriseGoal 131
8.3.1.1.6.1.6 EnterprisePhase 132
8.3.1.1.6.1.7 EnterpriseVision 133
8.3.1.1.6.1.8 Exhibits 134
8.3.1.1.6.1.9 MapsToCapability 135
8.3.1.1.6.1.10 StructuralPart 136
8.3.1.1.6.1.11 TemporalPart 137
8.3.1.1.6.1.12 VisionStatement 137
8.3.1.1.7 UPDM L1::UPDM L0::Core::SystemsElements 138
8.3.1.1.7.1 UPDM L1::UPDM L0::Core::SystemsElements::Behavior 138
8.3.1.1.7.1.1 Function 138
8.3.1.1.7.1.2 FunctionAction 140
8.3.1.1.7.1.3 FunctionEdge 140
8.3.1.1.7.1.4 ResourceEventTrace 141
8.3.1.1.7.1.5 ResourceMessage 142
8.3.1.1.7.1.6 ResourceOperation 143
8.3.1.1.7.1.7 ResourceParameter 144
8.3.1.1.7.1.8 ResourceState 145
8.3.1.1.7.1.9 ResourceStateMachine 146
8.3.1.1.7.2 UPDM L1::UPDM L0::Core::SystemsElements::Data 147
8.3.1.1.7.2.1 DataModel 147
8.3.1.1.7.2.2 PhysicalDataModel 148
8.3.1.1.7.3 UPDM L1::UPDM L0::Core::SystemsElements::Flows 148
8.3.1.1.7.3.1 ResourceInteraction 148
8.3.1.1.7.3.2 ResourceInteractionItem 150
8.3.1.1.7.4 UPDM L1::UPDM L0::Core::SystemsElements::Structure 151
8.3.1.1.7.4.1 CapabilityConfiguration 151
8.3.1.1.7.4.2 FieldedCapability 151
8.3.1.1.7.4.3 Forecast 152
8.3.1.1.7.4.4 Materiel 153
8.3.1.1.7.4.5 PhysicalArchitecture 154
8.3.1.1.7.4.6 PhysicalResource 154
8.3.1.1.7.4.7 ResourceArtifact 155
8.3.1.1.7.4.8 ResourceConnector 156
8.3.1.1.7.4.9 ResourceConstraint 158
8.3.1.1.7.4.10 ResourceInterface 158

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8.3.1.1.7.4.11 ResourcePort 159
8.3.1.1.7.4.12 ResourceRole 160
8.3.1.1.7.4.13 RoleKind 162
8.3.1.1.7.4.14 Software 162
8.3.1.1.7.4.15 SubjectOfForecast 163
8.3.1.1.7.4.16 SubjectOfResourceConstraint 164
8.3.1.1.7.4.17 SystemResource 164
8.3.1.1.7.4.18 VersionOfConfiguration 166
8.3.1.1.7.4.19 WholeLifeConfiguration 167
8.3.1.1.8 UPDM L1::UPDM L0::Core::TechnicalStandardsElements 167
8.3.1.1.8.1 Protocol 168
8.3.1.1.8.2 ProtocolImplementation 168
8.3.1.1.8.3 Standard 169
8.3.1.1.8.4 StandardConfiguration 171
8.3.1.1.8.5 UPDM L1::UPDM L0::Core::TechnicalStandardsElements::Data 171
8.3.1.1.8.5.1 Details 171
8.3.1.1.8.5.2 EntityAttribute 172
8.3.1.1.8.5.3 EntityItem 173
8.3.1.1.8.5.4 EntityRelationship 174
8.3.1.2 UPDM L1::UPDM L0::DoDAF 175
8.3.1.2.1 UPDM L1::UPDM L0::DoDAF::AcquisitionElements 175
8.3.1.2.1.1 ActivityPartOfProject 175
8.3.1.2.1.2 Project 176
8.3.1.2.1.3 ProjectActivity 177
8.3.1.2.1.4 ProjectActivityAction 178
8.3.1.2.1.5 ProjectActivityEdge 178
8.3.1.2.2 UPDM L1::UPDM L0::DoDAF::AllElements 179
8.3.1.2.2.1 Information 179
8.3.1.2.2.2 InformationKind 180
8.3.1.2.2.3 UPDM L1::UPDM L0::DoDAF::AllElements::Behavior 181
8.3.1.2.2.3.1 ActivityPerformedByPerformer 181
8.3.1.2.2.4 UPDM L1::UPDM L0::DoDAF::AllElements::Environment 181
8.3.1.2.2.4.1 Condition 182
8.3.1.2.2.4.2 ConditionProperty 182
8.3.1.2.2.4.3 GeoPoliticalExtent 183
8.3.1.2.2.4.4 GeoPoliticalExtentKind 185
8.3.1.2.2.4.5 GeoPoliticalExtentType 185
8.3.1.2.2.4.6 GeoPoliticalExtentTypeKind 187
8.3.1.2.2.4.7 Location 187
8.3.1.2.2.5 UPDM L1::UPDM L0::DoDAF::AllElements::Measurements 187
8.3.1.2.2.5.1 Measure 188
8.3.1.2.2.5.2 MeasureType 188
8.3.1.2.3 UPDM L1::UPDM L0::DoDAF::OperationalElements 189
8.3.1.2.3.1 UPDM L1::UPDM L0::DoDAF::OperationalElements::Structure 189
8.3.1.2.3.1.1 Performer 189
8.3.1.2.3.1.2 UPDM L1::UPDM L0::DoDAF::OperationalElements::Structure::Organizational 189
8.3.1.2.4 UPDM L1::UPDM L0::DoDAF::ServiceElements 192
8.3.1.2.4.1 ServiceAccess 192
8.3.1.2.4.2 ServiceDescription 193
8.3.1.2.5 UPDM L1::UPDM L0::DoDAF::StrategicElements 194
8.3.1.2.5.1 ActivityPartOfCapability 194
8.3.1.2.5.2 CapabilityOfPerformer 194
8.3.1.2.5.3 DesiredEffect 195
8.3.1.2.5.4 Vision 196

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8.3.1.2.6 UPDM L1::UPDM L0::DoDAF::SystemElements 196
8.3.1.2.6.1 UPDM L1::UPDM L0::DoDAF::SystemElements::Structure 197
8.3.1.2.6.1.1 System 197
8.3.1.2.7 UPDM L1::UPDM L0::DoDAF::TechnicalStandardsElements 197
8.3.1.2.7.1 FunctionalStandard 197
8.3.1.2.7.2 TechnicalStandard 198
8.3.1.2.7.3 UPDM L1::UPDM L0::DoDAF::TechnicalStandardsElements::Data ... 198
8.3.1.2.7.3.1 AssociationOfInformation 198
8.3.1.2.7.3.2 SecurityAttributesGroup 199
8.3.1.3 UPDM L1::UPDM L0::MODAF 200
8.3.1.3.1 UPDM L1::UPDM L0::MODAF::AcquisitionElements 200
8.3.1.3.1.1 UPDM L1::UPDM L0::MODAF::AcquisitionElements::Milestones 200
8.3.1.3.1.1.1 ActualProjectMilestone 200
8.3.1.3.1.1.2 IncrementMilestone 201
8.3.1.3.1.1.3 MilestoneSequence 202
8.3.1.3.1.1.4 OutOfServiceMilestone 202
8.3.1.3.1.1.5 ProjectMilestone 203
8.3.1.3.1.1.6 ProjectOwnership 204
8.3.1.3.1.1.7 ProjectSequence 204
8.3.1.3.1.2 UPDM L1::UPDM L0::MODAF::AcquisitionElements::Structure 205
8.3.1.3.1.2.1 ProjectStatus 205
8.3.1.3.1.2.2 ProjectTheme 206
8.3.1.3.1.2.3 StatusIndicators 207
8.3.1.3.2 UPDM L1::UPDM L0::MODAF::AllElements 208
8.3.1.3.2.1 UPDM L1::UPDM L0::MODAF::AllElements::Environment 208
8.3.1.3.2.1.1 Climate 208
8.3.1.3.2.1.2 LightCondition 209
8.3.1.3.2.2 UPDM L1::UPDM L0::MODAF::AllElements::Ontology 210
8.3.1.3.2.2.1 Alias 210
8.3.1.3.2.2.2 Definition 211
8.3.1.3.2.2.3 ExternalIndividual 211
8.3.1.3.2.2.4 ExternalTuple 212
8.3.1.3.2.2.5 ExternalTupleType 212
8.3.1.3.2.2.6 ExternalType 213
8.3.1.3.2.2.7 OntologyReference 213
8.3.1.3.2.2.8 Overlap 214
8.3.1.3.2.2.9 SameAs 215
8.3.1.3.2.2.10 StereotypeExtension 216
8.3.1.3.3 UPDM L1::UPDM L0::MODAF::OperationalElements 216
8.3.1.3.3.1 UPDM L1::UPDM L0::MODAF::OperationalElements::Behavior 217
8.3.1.3.3.1.1 ActivitySubject 217
8.3.1.3.3.1.2 OwnsProcess 217
8.3.1.3.3.1.3 Process 218
8.3.1.3.3.1.4 StandardOperationalActivity 219
8.3.1.3.3.2 UPDM L1::UPDM L0::MODAF::OperationalElements::Flows 220
8.3.1.3.3.2.1 Control 220
8.3.1.3.3.3 UPDM L1::UPDM L0::MODAF::OperationalElements::Structure 221
8.3.1.3.3.3.1 Energy 221
8.3.1.3.3.3.2 ProblemDomain 222
8.3.1.3.3.3.3 Trustline 222
8.3.1.3.3.3.4 UPDM L1::UPDM L0::MODAF::OperationalElements:: Structure::Organizational 223
8.3.1.3.4 UPDM L1::UPDM L0::MODAF::StrategicElements 224
8.3.1.3.4.1 UPDM L1::UPDM L0::MODAF::StrategicElements::Milestones 224
8.3.1.3.4.1.1 DeployedMilestone 224

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8.3.1.3.4.1.2 NoLongerUsedMilestone 225
8.3.1.3.4.2 UPDM L1::UPDM L0::MODAF::StrategicElements::Structure 226
8.3.1.3.4.2.1 EnduringTask 226
8.3.1.3.4.2.2 WholeLifeEnterprise 227
8.3.1.3.5 UPDM L1::UPDM L0::MODAF::TechnicalStandardsElements 228
8.3.1.3.5.1 ProtocolLayer 228
8.3.1.4 UPDM L1::UPDM L0::SOPES 229
8.3.1.4.1 Contract 229
8.3.1.4.2 Semantic 230
8.3.1.4.3 SemanticAttribute 230
8.3.1.4.4 Transactional 231
8.3.1.4.5 TransactionalAttribute 231
8.3.1.4.6 Wrapper 232
8.3.1.4.7 WrapperAttribute 232
8.3.1.5 UPDM L1::UPDM L0::SwAF 232
8.3.1.5.1 DesignRule 233
8.3.1.5.2 DevelopmentStatus 234

Annex A: Domain Metamodel (DMM) 237
Annex B: UPDM views (Profile) 291
Annex C: UPDM Elements Traceability 333
Annex D: Sample Problem 353
Annex E: Bibliography 411
Annex F: Legal Information 413

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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).

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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.

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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.

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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

- 3.1 Overview
- 3.2 References

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

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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.

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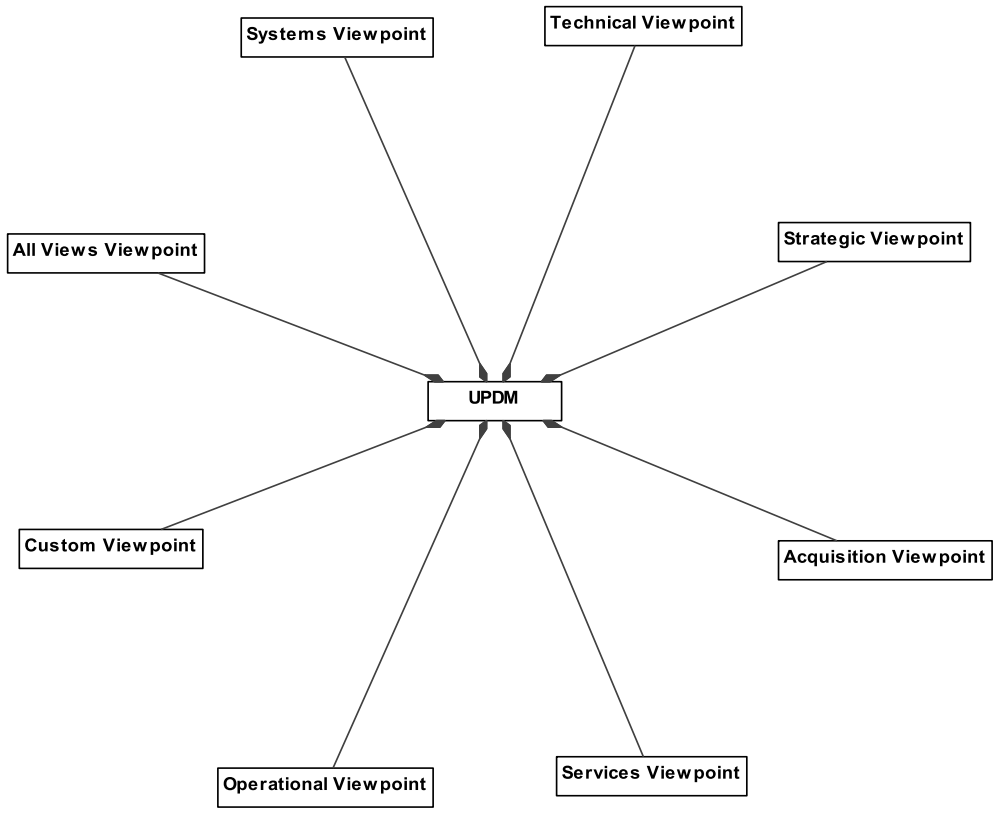


Figure 1.1 - UPDM Viewpoint Support Illustration

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

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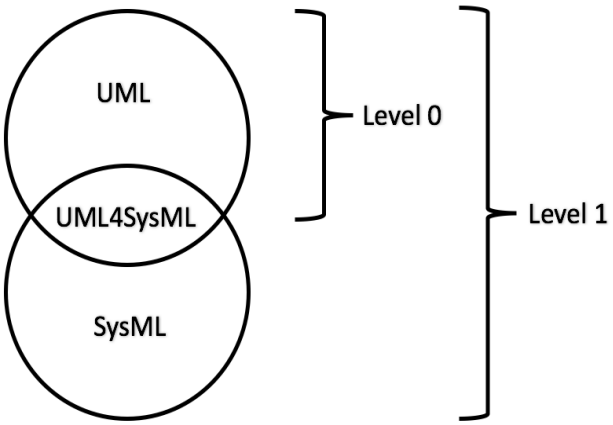


Figure 2.1- UPDM Compliance Levels 0 and 1

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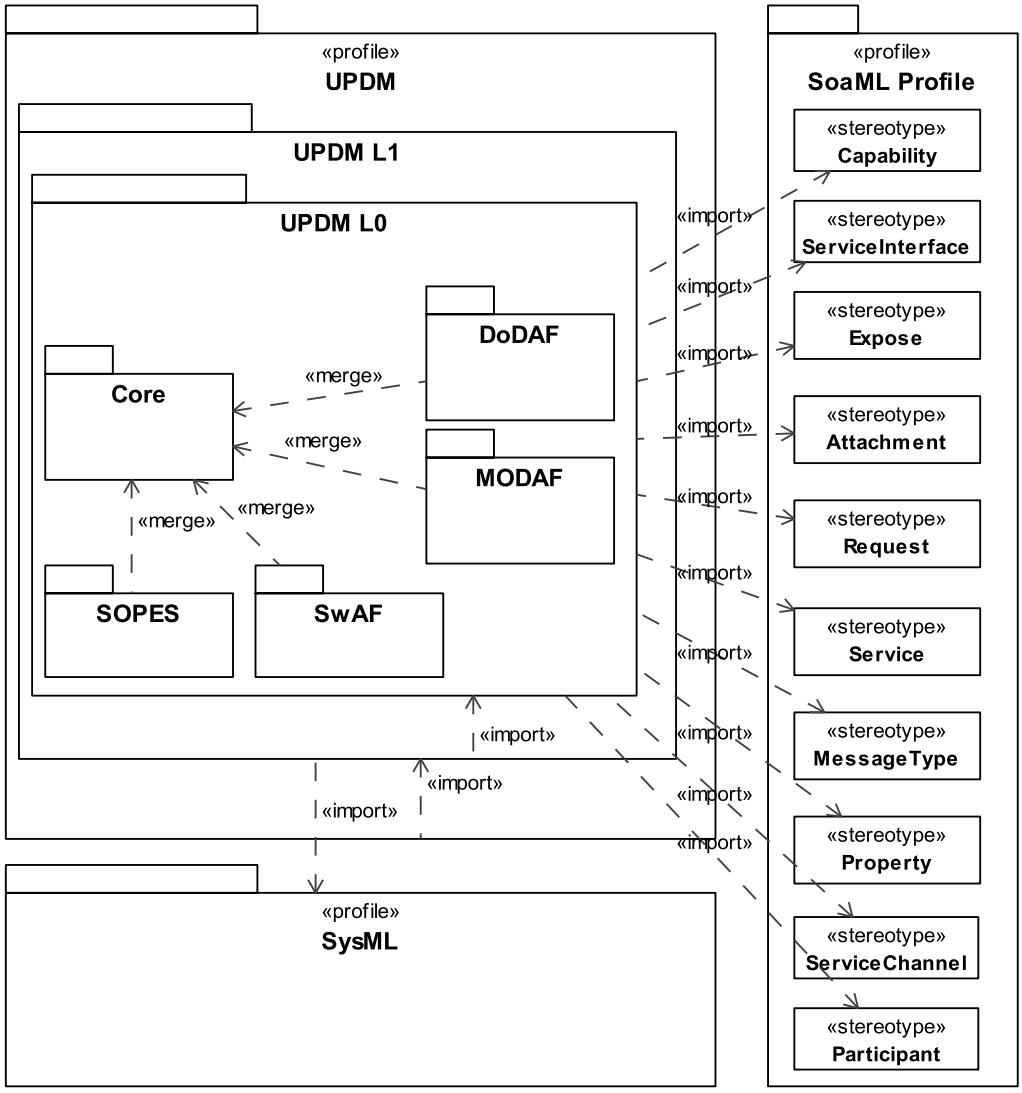


Figure 2.2 - L0 and L1

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:

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- 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

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- 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)

4 Terms and Definitions

Any additional terms created to implement UPDM have been defined within this standard.

5 Symbols and Acronyms

Table 5.1 - Glossary of abbreviations and acronyms

AcV-*	Acquisition View
AV-*	All View
BPMN	Business Process Model and Notation
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
COI	Communities of Interest
CV-*	Capability View
DIV-*	Data and Information Views
DM2	DoDAF Meta Model
DMM	UPDM Domain Meta Model
DoD	United States Department of Defense
DoDAF	Department of Defense Architecture Framework
DOTMLPF	Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities
EIE	Enterprise Information Environment
IDEAS	International Defense Enterprise Architecture Exchange
IDEF	Integrated DEFinition
JCIDS	Joint Capabilities Integration and Development System
JETL	Joint Essential Task List
MOD	United Kingdom Ministry of Defence
MODAF	Ministry of Defence Architecture Framework

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