INTERNATIONAL STANDARD

ISO/IEC 19513

First edition
2017-10

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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Reference number
ISO/IEC 19513:2017(E)

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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).

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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
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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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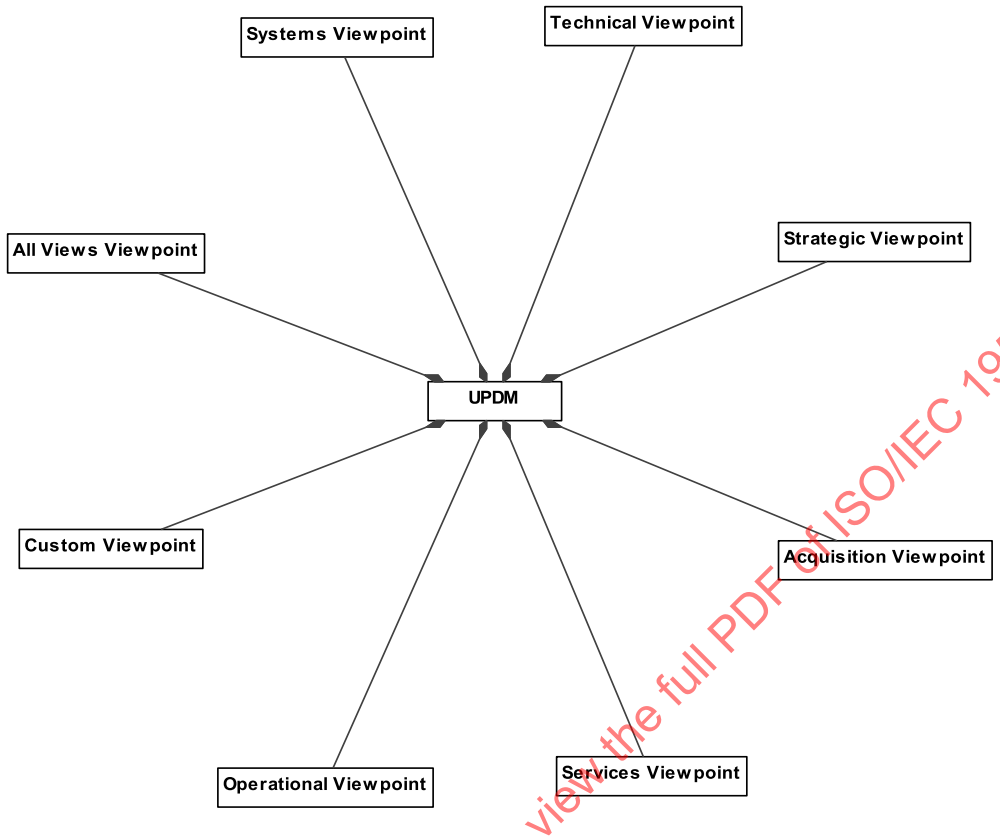

Figure 1.1 - UPDM Viewpoint Support Illustration

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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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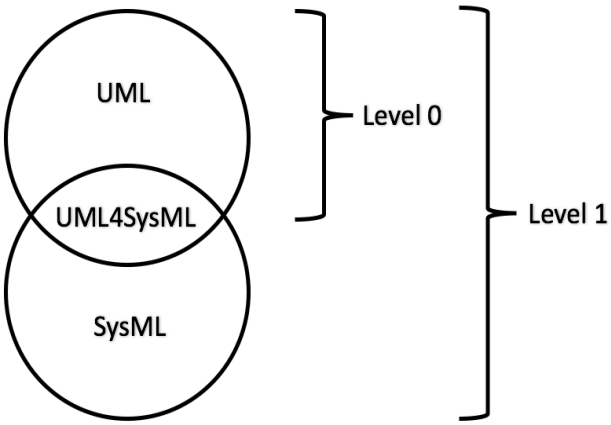

Figure 2.1- UPDM Compliance Levels 0 and 1

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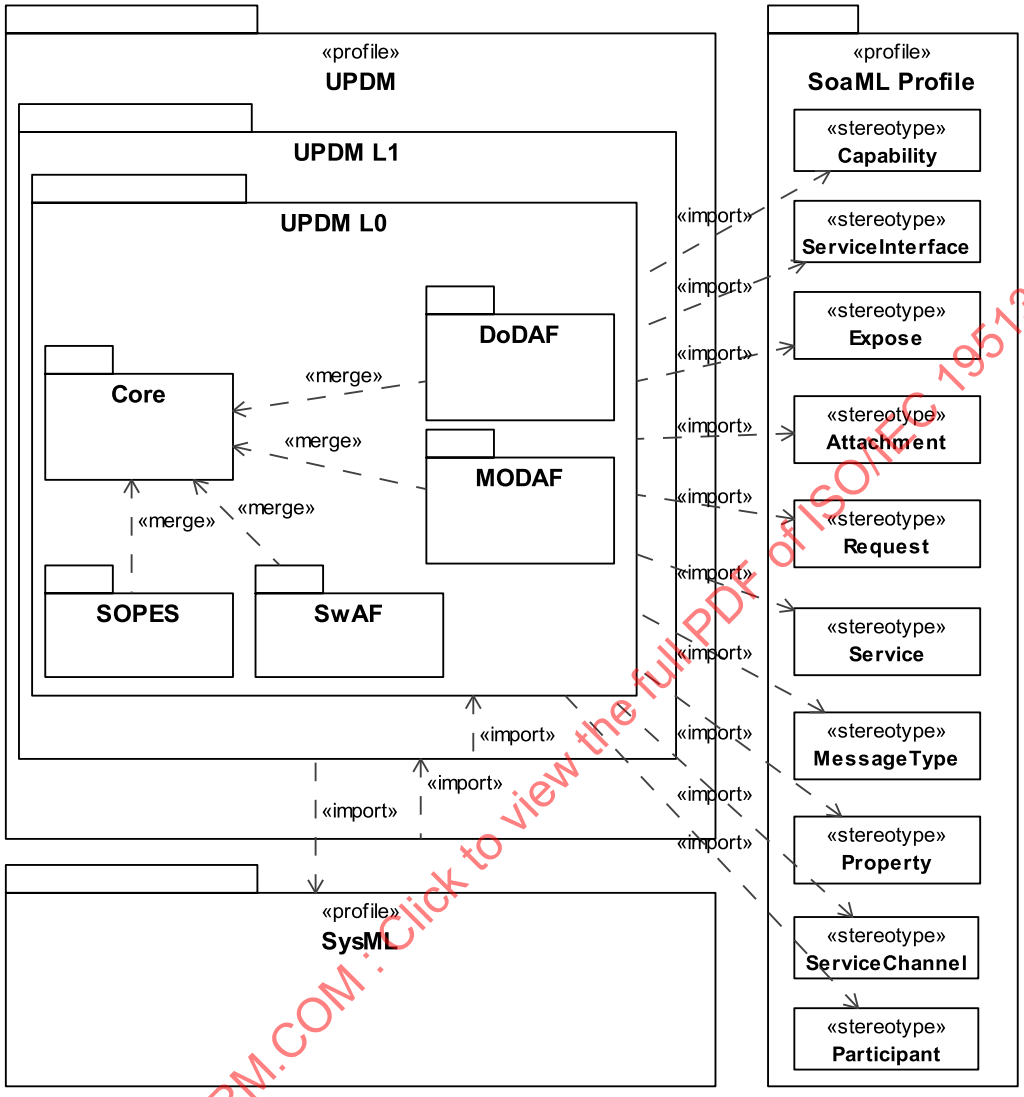

Figure 2.2 - L0 and L1

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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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Table 5.1 - Glossary of abbreviations and acronyms

NAF	NATO Architecture Framework
NEC	Network Enabled Capability
NCW	NetCentric Warfare
NCAT	NetCentric Assessment Tool
NCOIC	NetCentric Operations Industry Consortium
OV-*	Operational View
PES	DoDAF Physical Exchange Specification
POC	Proof of Concept
PV-*	Project View
SoS	System of Systems
SOV-*	Service Oriented View
StdV-*	Standards View
STV-*	Strategic View
SV-*	System View
SvcV-*	Service View
TPPU	Task, Post, Process, and Use
TV-*	Technical View
UPDM	Unified Profile for DoDAF and MODAF

6 Additional Information

6.1 Additional Materials

Accompanying this International Standard are XMI files and requirements documents, as listed below.

Table 6.1 - Additional Materials

Title	OMG Document Number	Supersedes
UPDM Profile Submission	dtc/2012-12-17	dtc/12-01-03
UPDM Profile Submission - ERRATA	N/A	N/A
UPDM 2.1 specification with change notes	dtc/2012-12-18	N/A
Inventory List	dtc/2012-12-15	N/A
Final Report	dtc/2012-12-16	N/A
UPDM XMI Document for UML	dtc/2012-10-04, dtc/2012-11-05	dtc/2011-06-15
UPDM Requirements Traceability Document	N/A	N/A
UPDM Requirements Traceability Document - ERRATA	N/A	N/A

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6.2 Overview of this International Standard

6.2.1 Intended Audience

It is expected that this International Standard will be of interest to end users, commercial, industrial and military, who expect to use this profile, and to tool vendors interested in developing tool support for the development of enterprise and system of systems architectures.

6.2.2 Organization

DoDAF and MODAF are formally expressed as domain-specific meta-models known as the DoDAF Meta Model (DM2) and the MODAF Meta Model (M3) respectively, this provides the foundation for the UPDM domain metamodel and profile. There is also a set of viewpoints and views that address the concerns of a well-defined set of stakeholders. This International Standard organizes the presentation of the UPDM 2.1.1 abstract and concrete syntax around the meta-models, with effort made to establish a maximum set of common Core models and a minimum set of DoDAF DM2 or MODAF M3 specific models. Significant effort has also been made to continue to support the now over 50 viewpoints that can be derived from these meta-models as well as "user-defined views." This allows tool-vendors to specify views, based upon a common metamodel that are more applicable to industrial and commercial concerns than just military, it also ensures that the discussion is well-connected to the domain experts required to produce these views. The rest of this document contains the technical content of this International Standard. As background for this International Standard, readers may wish to review the UML, OMG SysML, and SoaML specifications that complement this International Standard.

Although the clauses are organized in a logical manner and can be read sequentially, this is a reference International Standard that can be read in a non-sequential manner.

Part I describes the details of the International Standard.

Part II provides the technical details essential to understanding the International Standard.

The specification of the Profile language. The profile includes both a Compliance Level 0 that extends UML and a Compliance Level 1 that extends UML and OMG SysML. The elements of the profile are organized by the specific viewpoints required by DoDAF and MODAF. Within each of the viewpoint-specific sub clauses, e.g., Operational Views (OVs), the elements are presented in alphabetical order.

Annex A presents a non-normative view of various diagrams that document the Domain Metamodel (DMM) that document the DoDAF 2.02 and MODAF 1.2 integrated model. This model was used as a basis for creating the UPDM 2.1.1 profile.

Annex B presents a non-normative view of the various diagrams that document the views from the UPDM Profile that implement the DoDAF 2.02 and MODAF 1.2 views in the Domain Meta-Model described in Annex A.

Annex C presents the traceability among UPDM 2.1.1 stereotypes and DoDAF/MODAF elements. Please note that not all DoDAF/MODAF elements have corresponding UPDM 2.1.1 stereotypes. Those DoDAF/MODAF elements are modeled by UML artifacts directly, which is shown in the Metaclass column. Annex C also contains a mapping table showing traceability between the NAF 3.1 and MODAF 1.2 views and elements, and the DoDAF 2.02 and the MODAF 1.2 views.

Annex D Sample Problem illustrating UPDM 2.1.1 concepts.

Annex E contains the bibliography providing a listing of additional consulted artifacts.

Annex F includes Legal Information.

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Subpart II - Language Architecture, UPDM Profile

This subpart contains the following clauses and sub clauses:

7 Language Architecture

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

8 UPDM Profile

- 8.1 Introduction
- 8.2 DoDAF Class Library
  - 8.2.1 ClassificationType
  - 8.2.2 CommunicationsLinkProperties
  - 8.2.3 DataElementProperties
  - 8.2.4 ExchangeProperties
  - 8.2.5 InformationAssuranceProperties
  - 8.2.6 InformationElementProperties
  - 8.2.7 OperationalActivityProperties
  - 8.2.8 SecurityAttributes
- 8.3 UPDL L1
  - 8.3.1 UPDM L1::UPDM L0
    - 8.3.1.1 UPDM L1::UPDM L0::Core
    - 8.3.1.2 UPDM L1::UPDM L0::DoDAF
    - 8.3.1.3 UPDM L1::UPDM L0::MODAF
    - 8.3.1.4 UPDM L1::UPDM L0::SOPES
    - 8.3.1.5 UPDM L1::UPDM L0::SwAF

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7 Language Architecture

7.1 Introduction

This International Standard reuses a subset of UML 2 and provides additional extensions needed to address the requirements of developing UPDM. We have used those requirements as the basis for this International Standard. This International Standard documents the language architecture in terms of the parts of UML 2 that are reused and the extensions to UML 2, as well as defining how to implement UPDM in SysML. This clause explains design principles and how they are applied to define the UPDM language architecture.

7.2 Philosophy

The UPDM was developed using a model-driven approach. A simple description of the work process is:

- The Domain Metamodel (DMM) was created using UML Class models to represent the concepts in DoDAF and MODAF. Concepts common to both DoDAF and MODAF were captured in a Core package.
- The DMM concepts were mapped to corresponding stereotypes in the Profile.
- The Profile was analyzed and refactored to reflect language architecture, tool implementation, and reuse considerations.
- The conformance levels were finalized including mapping to SysML.
- The Profile diagrams, stereotype descriptions, and documentation were added.
- The International Standard was generated from the profile model.

The DMM is intended to be informative and was used to develop an understanding of the foundational concepts from which the UPDM profile evolved. It remains useful for understanding the architectural concepts required to implement UPDM. It is expected that UML and SysML tool vendors who implement UPDM would implement the profile rather than the DMM; however, it is possible non-UML tool vendors may wish to implement UPDM in their by tool by following the DMM.

This approach allowed the team to concentrate on architecture issues rather than documentation production. Consistency was automatically maintained by the UML tool.

The UML tool also enabled traceability to be maintained between the profile and the DMM where every stereotype is linked to the DMM element using UML Abstraction relationship.

7.3 Core Principles

The fundamental design principles for UPDM are:

- **Requirements-driven**: UPDM is intended to satisfy the requirements of the UPDM RFC Mandatory Requirements.
- **Domain meta model (DMM) driven**: The DMM was created first by domain experts and it served as a foundation for profile development.
- **Reuse of existing standards**: UPDM reuses UML/SysML wherever practical to satisfy the requirements of the UPDM RFC and leverage features from both UML and SysML to provide a robust modeling capability. Consequently, UPDM

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is intended to be relatively easy to implement for vendors who support UML 2. The UPDM team intended to reuse UPMS. However, since UPMS had not been formally adopted at the time of this International Standard, a separate service profile in UPDM was developed that used similar concepts, with the intent to replace it with UPMS in the future.

- **Partitioning**: The UPDM profile is organized as a number of hierarchical packages that are used to group elements, and to provide a namespace for those grouped elements. The top level structure of these packages can be seen in Figure 2.2. (Packages are represented in the diagram by a rectangle with a tab in the upper left hand corner).
- **Compliance levels**: UPDM includes two compliance levels. L0 is a UML only profile and L1 extends L0 to enable seamless integration with SysML modeling and to leverage the features of SysML in UPDM modeling.
- **Interoperability**: UPDM inherits the XMI interchange capability from UML.

7.4 Representing Stereotype Constraints

The profile uses a non-standard notation to represent stereotype constraints in the profile to improve readability of the profile.

"metaconstraint" dependency

"metaconstraint" is a stereotype that extends the Dependency metaclass. It is used to specify constrained elements within the profile.

A sample of the "metaconstraint" dependency is a diagram for stereotype extending the Dependency metaclass. See the following example:

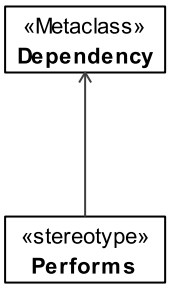

Figure 7.1 - Performs Stereotype

Performs is a stereotype that extends Dependency. The constraint on this stereotype is that its client end must be stereotyped by a Performer and its supplier end must be stereotyped by Activity. But as this constraint is not visible, the diagram does not communicate the needed information. We are using the "metaconstraint" dependency to visualize the constraint.

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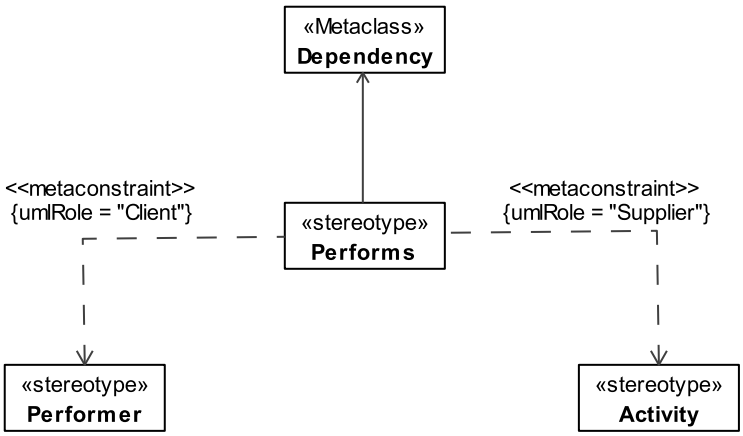

Figure 7.2 - Performs Hierarchy

This diagram should be read as follows:

> Performs is a stereotype extending the Dependency metaclass and is used for modeling a relationship between a Performer (or its specializations) and an Activity (or its specializations). A Dependency stereotyped Performs must have its values for the client property stereotyped as Performer, and its values for the supplier property must be stereotyped Activity.

The «metaconstraint» dependency will appear only in the diagrams, but not the profile XMI.

NOTE: When stereotype extends Connector, the stereotype property umlRole has values “end[0].role” and “end[1].role.”

For example:

This is done because Connector has no direct “linkage” to the connected element; it links to the Connector Ends, which references the linked element. So, end[n] gives the reference to the ConnectorEnd, and role gives the reference to the linked element.

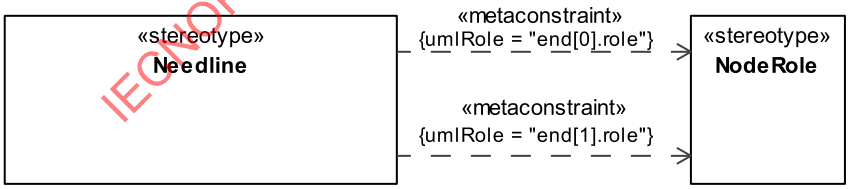

Figure 7.3 - Connector Extension

“metarelationship” dependency

“metarelationship” is a stereotype for dependency, showing that certain domain concepts will be implemented using regular UML relationships.

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For example: A Capability may depend on other Capabilities, but this concept cannot be visualized on the diagram:

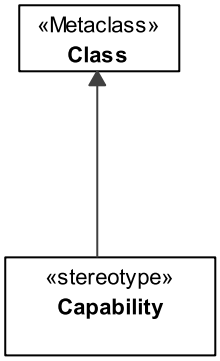

Figure 7.4 - Capabilities Generalization

We are using the “metarelationship” dependency to visualize the dependency concept.

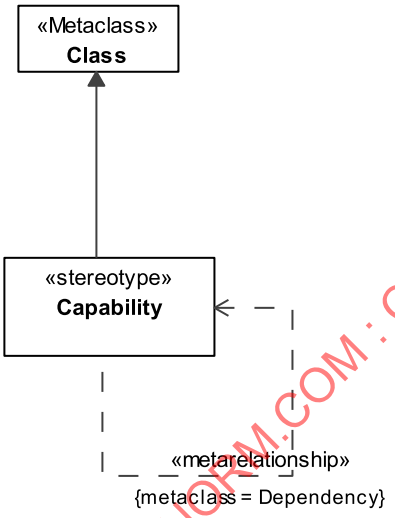

Figure 7.5 - Visualizing “metarelationship”

This diagram should be read as follows:

Capability may have other Capabilities related to it, using the UML Dependency metaclass.

The “metarelationship” dependency will appear only in the diagrams, but not the profile XMI.

“stereotyped relationship” dependency

Although the “metaconstraint” dependency creates a good way to show the constrained ends of the stereotyped relationship, it also creates some overhead when showing the relationship between two stereotypes.

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For example, shows that one of the set of elements that are representative of the abstract element CapableElement Exhibits a Capability. A «stereotyped relation» is specified and then applied to express the constraint. First, the necessary «Exhibits» stereotype is specified.

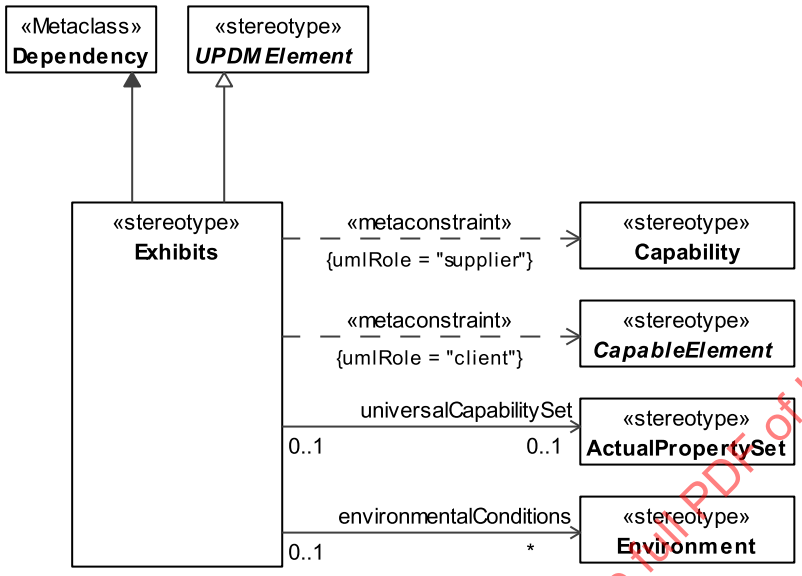

Figure 7.6 - "Exhibits" extends the UML Dependency metaclass

Then, the "stereotyped relationship" dependency can then be used as follows:

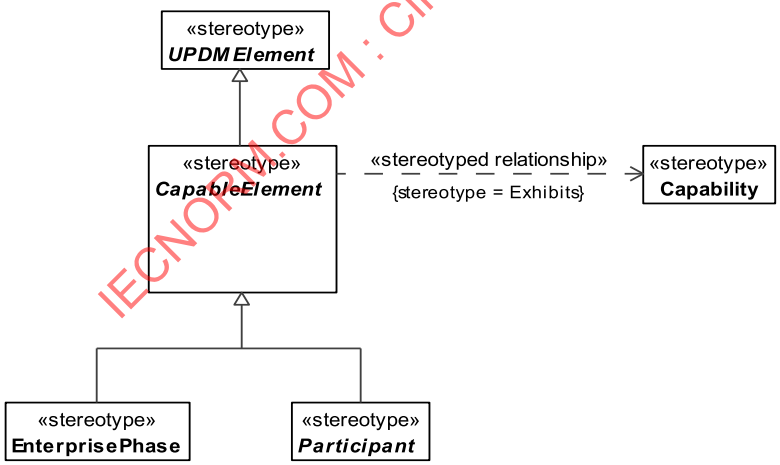

Figure 7.7 - Use of the Exhibits "stereotyped relationship" dependency

The "stereotyped relationship" dependency appears only in the diagrams and not within the profile XMI.

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7.5 UML Constraint Representation

This International Standard uses the Object Constraint Language (OCL), as defined in Clause 6, “Object Constraint Language Specification” of the UML standard, for expressing well-formedness rules. The following conventions are used to promote readability:

- Self - which can be omitted as a reference to the metaclass defining the context of the invariant, has been kept for clarity. UML Infrastructure Standard, v2. 1.2 25
- In expressions where a collection is iterated, an iterator is used for clarity, even when formally unnecessary. The type of the iterator is usually omitted, but included when it adds to understanding.
- The ‘collect’ operation is left implicit where this is practical.
- The context part of an OCL constraint is not included explicitly, as it is well defined in the sub clause where the constraint appears.

The OCL constraints are stored with the profile and can be interchanged via XMI standard. Below is the pattern to represent constraint for stereotyped relationship in OCL as per UML 2.1:

- To constraint the client of the stereotyped relationship that should be a particular stereotyped element: self.client->forAll(getAppliedStereotype(CLIENT_STEREOTYPE)-> notEmpty()
- To constraint the supplier of the stereotyped relationship that should be a particular stereotyped element: self.supplier->forAll(getAppliedStereotype(SUPPLIER_STEREOTYPE)-> notEmpty()

The constraint represented in Figure 7.7 can be represented in OCL as follows:

- self.client->forAll(getAppliedStereotype(‘UPDM: :AllElements: :Behavior : :Performer’)-> notEmpty() self. supplier->forAll(getAppliedStereotype(“UPDM: :AllElements: :Behavior : :Activity')->notEmpty())

7.6 Important Areas of the Architecture

7.6.1 Aliases

Although there are similar concepts in DoDAF and MODAF, they are not named the same. To keep interoperability and to fit the needs of both audiences, the UPDM International Standard uses generalizations as a way to alias concepts.

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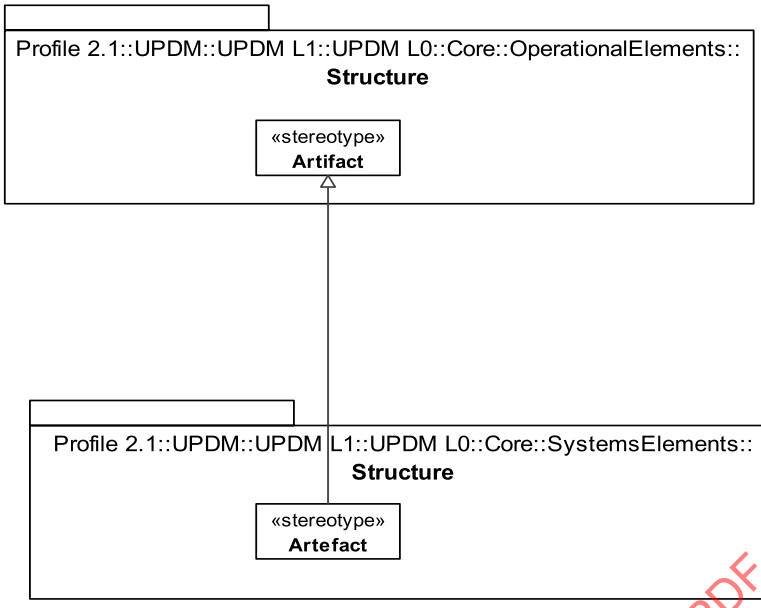

Figure 7.8 - Aliases

7.6.2 SoaML Reuse in L0

SoaML is quickly becoming the standard modeling choice for capturing and creating service oriented architectures. By importing the SoaML stereotypes, a UPDM model gains access to these powerful features. They can be used and viewed in a UPDM model using the standard SoaML approach and as such have not been further documented.

7.6.3 SysML Reuse in L1

Defining an architectural framework in UPDM provides the highest level abstraction of what will one day become integrated pieces of hardware and software. Being able to trace from the architectural framework to the various levels of implementation is critical for ensuring the initial goals have been reached. By including the full SysML profile inside UPDM, a modeler can have all of the architectural, system, and software design in the same place. This provides huge benefits in analysis, cross abstraction level communication, traceability, and reuse. As in L0, all of the stereotypes contained in SysML can be used and displayed using standard SysML approaches while still being able to be connected to UPDM elements such as Nodes and Artifacts.

7.6.4 SOPES Reuse in L1

SOPES IEDM use of UML is becoming a standards based model for specifying and describing the rules governing the aggregation, marshalling, and processing of information across system interfaces. By importing the SOPES stereotypes, a UPDM 2.1.1 models gains higher fidelity in the specification and design of information exchange requirements. Additional information on the SOPES modeling approach can be found in http://www.omg.org/spec/SOPES/.

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8 UPDM Profile

8.1 Introduction

UPDM L1 contains UPDM L0 and imports the entire SysML profile. This compliance level contains a set of constraints that specify which SysML stereotypes are applied to the L0 elements. The use of this compliance level is intended to provide more seamless integration with system modeling using SysML and to be able to fully leverage the capabilities of SysML in UPDM.

8.2 DoDAF Class Library

A library of Measurements, MeasurementSets, and SecurityAttributesGroup derived from DoDAF.

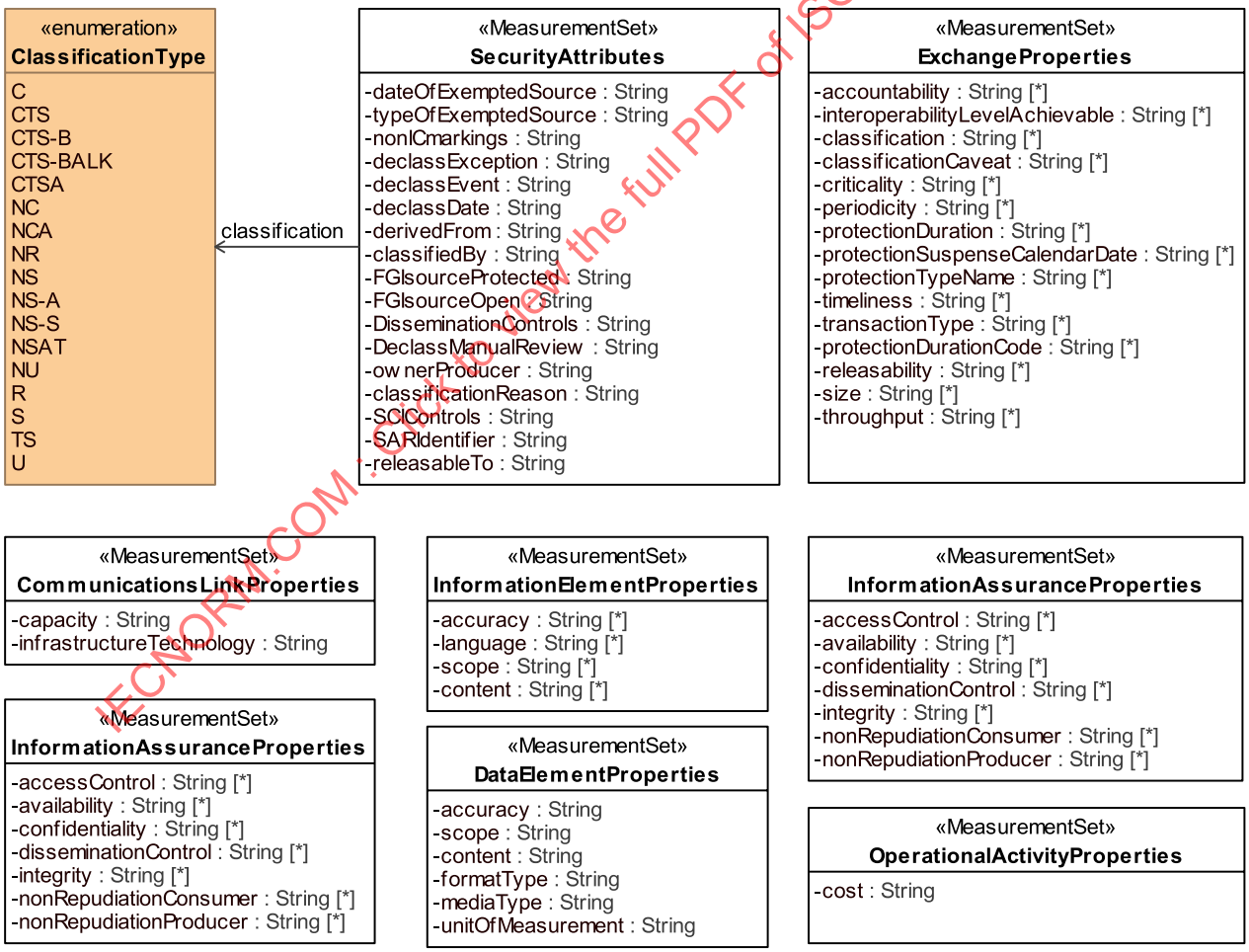

Figure 8.1 - DoDAF Class Library

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8.2.1 ClassificationType

Enumeration of types of security classification, derived from DoDAF.

- Enumeration Literals

The following are enumeration literals for ClassificationType:

- C - Confidential
- CTS - COSMIC TOP SECRET
- CTS-B - COSMIC TOP SECRET - BOHEMIA
- CTS-BALK - COSMIC TOP SECRET - BALK
- CTSA - COSMIC TOP SECRET ATOMAL
- NC - NATO Confidential
- NCA - NATO Confidential Atomal
- NR - NATO Restricted (similar to US For Official Use only)
- NS - NATO Secret
- NS-A - NATO Atomal
- NS-S - NATO Secret
- NSAT - NATO Secret Atomal
- NU - NATO Unclassified
- R - Restricted Data (RD) US Nuclear Information OR FOR OFFICIAL USE ONLY
- S - Secret
- TS - Top Secret
- U - Unclassified

8.2.2 CommunicationsLinkProperties

Properties detailing aspects of Resource Interfaces.

8.2.3 DataElementProperties

Properties detailing the aspects of a DataElement.

8.2.4 ExchangeProperties

Properties detailing aspects of exchange for Operational Exchange and/or Resource Interaction.

8.2.5 InformationAssuranceProperties

Properties indicating the assurance of a piece of information.

8.2.6 InformationElementProperties

Predefined additional DoDAF properties for InformationElement.

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8.2.7 OperationalActivityProperties

Properties detailing aspects of OperationalActivities.

8.2.8 SecurityAttributes

W3C XML Schema for the Intelligence Community Metadata Standard for Information Security Marking (IC-ISM), which is part of the IC standards for Information Assurance.

8.3 UPDM L1

UPDM L1 contains UPDM L0 and imports the entire SysML profile. This compliance level contains a set of constraints that specify which SysML stereotypes are applied to the L0 elements. The use of this compliance level is intended to provide more seamless integration with system modeling using SysML and to be able to fully leverage the capabilities of SysML in UPDM.

Capability

- ```
  context Class inv:
  UPDM::Capability::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

CapabilityConfiguration

- ```
  context Class inv:
  UPDM::CapabilityConfiguration::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

Climate

- ```
  context DataType inv:
  UPDM::Climate::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::ValueType::allInstances()->exists(b| b.base_Class = self)
  ```

Commands

- ```
  context InformationFlow inv:
  UPDM::Commands::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::ItemFlow::allInstances()->exists(b| b.base_Class = self)
  ```

Condition

- ```
  context DataType inv:
  UPDM::Condition::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::ValueType::allInstances()->exists(b| b.base_Class = self)
  ```

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  ```

Control

- ```
  context InformationFlow inv:
  UPDM::Control::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::ItemFlow::allInstances()->exists(b| b.base_Class = self)
  ```

Energy

- ```
  context Class inv:
  UPDM::Energy::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

EnterpriseGoal

- ```
  context Class inv:
  UPDM::EnterpriseGoal::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Requirement::allInstances()->exists(b| b.base_Class = self)
  ```

EntityItem

- ```
  context Class inv:
  UPDM::EntityItem::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

Environment

- ```
  context DataType inv:
  UPDM::Environment::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

ExchangeElement

- ```
  context Class inv:
  UPDM::ExchangeElement::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML:Block::allInstances()->exists(b| b.base_Class = self)
  ```

ExternalType

- ```
  context Class inv:
  UPDM::ExternalType::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

GeoPoliticalExtentType

- ```
  context DataType inv:
  UPDM::GeoPoliticalExtentType::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::ValueType::allInstances()->exists(b| b.base_Class = self)
  ```

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HighLevelOperationalConcept

- ```
  context Class inv:
  UPDM::HighLevelOperationalConcept::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

LightCondition

- ```
  context DataType inv:
  UPDM::LightCondition::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::ValueType::allInstances()->exists(b| b.base_Class = self)
  ```

LocationType

- ```
  context DataType inv:
  UPDM::LocationType::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::ValueType::allInstances()->exists(b| b.base_Class = self)
  ```

LogicalArchitecture

- ```
  context Class inv:
  UPDM::LogicalArchitecture::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

Materiel

- ```
  context Class inv:
  UPDM::Materiel::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

MeasurementSet

- ```
  context DataType inv:
  UPDM::MeasurementSet::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::ValueType::allInstances()->exists(b| b.base_Class = self)
  ```

MeasureType

- ```
  context DataType inv:
  UPDM::MeasureType::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::ValueType::allInstances()->exists(b| b.base_Class = self)
  ```

Node

- ```
  context Class inv:
  UPDM::Node::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

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NodePort

- ```
  context Port inv:
  UPDM::NodePort::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::FlowPort::allInstances()->exists(b| b.base_Class = self)
  ```

OperationalExchange

- ```
  context InformationFlow inv:
  UPDM::OperationalExchange::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::ItemFlow::allInstances()->exists(b| b.base_Class = self)
  ```

Organization

- ```
  context Class inv:
  UPDM::Organization::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

OrganizationType

- ```
  context Class inv:
  UPDM::OrganizationType::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

Performer

- ```
  context Class inv:
  UPDM::Performer::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

PersonType

- ```
  context Class inv:
  UPDM::PersonType::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

PhysicalArchitecture

- ```
  context Class inv:
  UPDM::PhysicalArchitecture::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

Post

- ```
  context Class inv:
  UPDM::Post::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

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ResourceArtifact

- ```
  context Class inv:
  UPDM::ResourceArtifact::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

ResourceInteraction

- ```
  context InformationFlow inv:
  UPDM::ResourceInteraction::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::ItemFlow::allInstances()->exists(b| b.base_Class = self)
  ```

ResourcePort

- ```
  context Port inv:
  UPDM::ResourcePort::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::FlowPort::allInstances()->exists(b| b.base_Class = self)
  ```

Responsibility

- ```
  context Class inv:
  UPDM::Responsibility::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

RoleType

- ```
  context Class inv:
  UPDM::RoleType::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

SecurityAttributesGroup

- ```
  context DataType inv:
  UPDM::SecurityAttributesGroup::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::ValueType::allInstances()->exists(b| b.base_Class = self)
  ```

SecurityDomain

- ```
  context Class inv:
  UPDM::Node::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

ServiceAccess

- ```
  context Class inv:
  UPDM::ServiceAccess::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

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Software

- ```
  context Class inv:
  UPDM::Software::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

System

- ```
  context Class inv:
  UPDM::System::allInstances()->
  exists(n|n.base_Class=self) implies
  SysML::Block::allInstances()->exists(b| b.base_Class = self)
  ```

8.3.1 UPDM L1::UPDM L0

UPDM L0 contains all the Core, DoDAF, and MODAF elements, reuses UML and imports parts of SoaML. This compliance level is primarily based on UML 2 and the import of a minimum of SoaML stereotypes. The SoaML stereotypes imported are Capability, ServiceInterface, Expose, Attachment, Request, Service, MessageType, Property, ServiceChannel, and Participant.

8.3.1.1 UPDM L1::UPDM L0::Core

The Core contains most of the elements of UPDM profile. These elements are common to both DoDAF and MoDAF or are critical to a complete model of core concepts. The Core is always associated with either the DoDAF or MoDAF profiles.

If desired, there is no prohibition of using both MoDAF and DoDAF, and Core should the end-user desire to use some or all of the concepts represented.

8.3.1.1.1 UPDM L1::UPDM L0::Core::AcquisitionElements

The AcquisitionElements describe project details, including dependencies between projects and capability integration. These Views guide the acquisition and fielding processes.

8.3.1.1.1.1 UPDM L1::UPDM L0::Core::AcquisitionElements::Milestone

Milestone elements from the acquisition section of the profile.

8.3.1.1.1.1.1 ActualProject

MODAF: (MODAF::Project): A time-limited endeavor to create a specific set of products or services.
DoDAF: (DoDAF::Project): A temporary endeavor undertaken to create Resources or Desired Effects.

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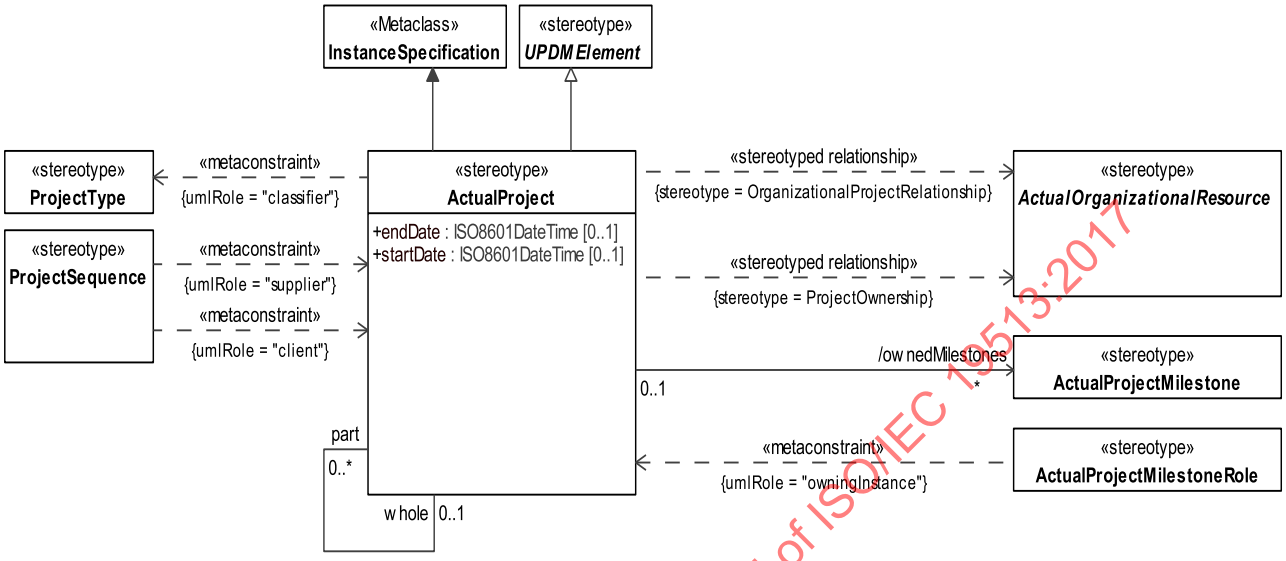

Figure 8.2 - ActualProject

Constraints

The following are constraints for ActualProject:

- ActualProject.classifier - Classifier property value must be stereotyped “Project” or its specializations.

Attributes

The following are attributes for ActualProject:

- endDate : ISO8601DateTime[0..1] - End time for this Project.
- ownedMilestones : ActualProjectMilestone[*] - Milestones associates with this project.
- part : ActualProject[0..*] - Sub-projects.
- startDate : ISO8601DateTime[0..1] - Start time for this Project.
- whole : ActualProject[0..1] - Parent project.

Extensions

The following metaclasses are extended by ActualProject:

- InstanceSpecification

Specializations

The ActualProject element is a specialization of:

- UPDMElement

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8.3.1.1.1.1.2 ActualProjectMilestoneRole

UPDM: An instance of a ProjectMilestoneRole in the context of an ActualProject.

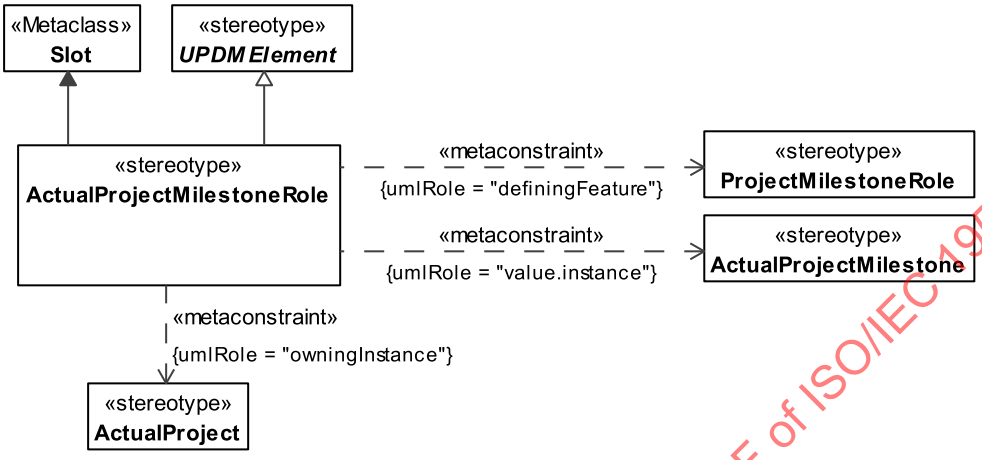

Figure 8.3 - ActualProjectMilestoneRole

Constraints

The following are constraints for ActualProjectMilestoneRole:

- ActualProjectMilestoneRole.definingFeature - Value for definingFeature property has to be stereotyped "ProjectMilestoneRole" or its specializations.
- ActualProjectMilestoneRole.owningInstance - Value for owningInstance property has to be stereotyped "ActualProject" or its specializations.

Extensions

The following metaclasses are extended by ActualProjectMilestoneRole:

- Slot

Specializations

The ActualProjectMilestoneRole element is a specialization of:

- UPDMElement

8.3.1.1.1.1.3 OrganizationalProjectRelationship

MODAF:A relationship between an ActualOrganization and a Project.

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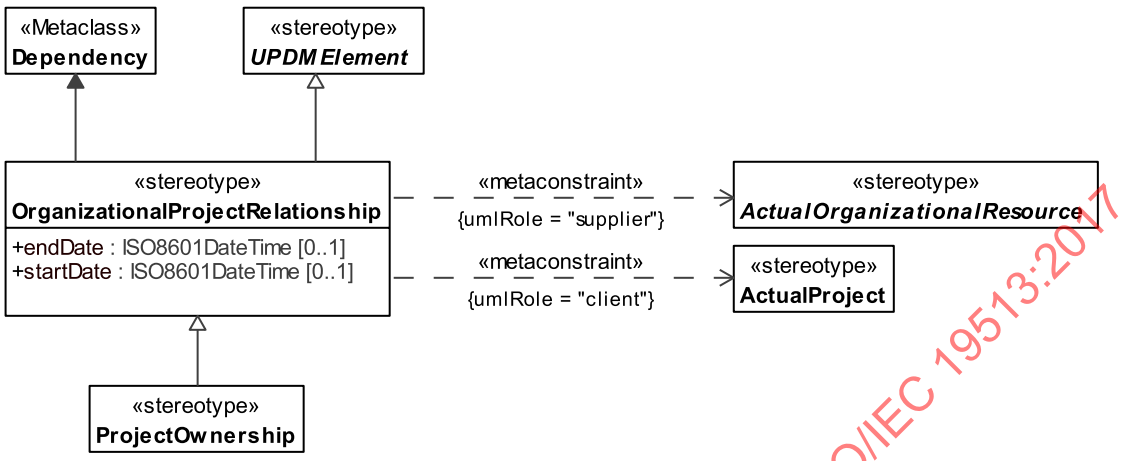

Figure 8.4 - OrganizationalProjectRelationship

Constraints

The following are constraints for OrganizationalProjectRelationship:

- OrganizationalProjectRelationship.client - Value for the client property must be stereotyped “ActualProject” or its specializations.
- OrganizationalProjectRelationship.supplier - Value for the supplier property must be stereotyped a specialization of “ActualOrganizationalResource.”

Attributes

The following are attributes for OrganizationalProjectRelationship:

- endDate : ISO8601DateTime[0..1] - End date
- startDate : ISO8601DateTime[0..1] - Start date

Extensions

The following metaclasses are extended by OrganizationalProjectRelationship:

- Dependency

Specializations

The OrganizationalProjectRelationship element is a specialization of:

- UPDMElement

8.3.1.1.1.1.4 ProjectMilestoneRole

UPDM: The role played by a ProjectMilestone in the context of an ActualProjectMilestone

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MODAF: NA

DoDAF: NA

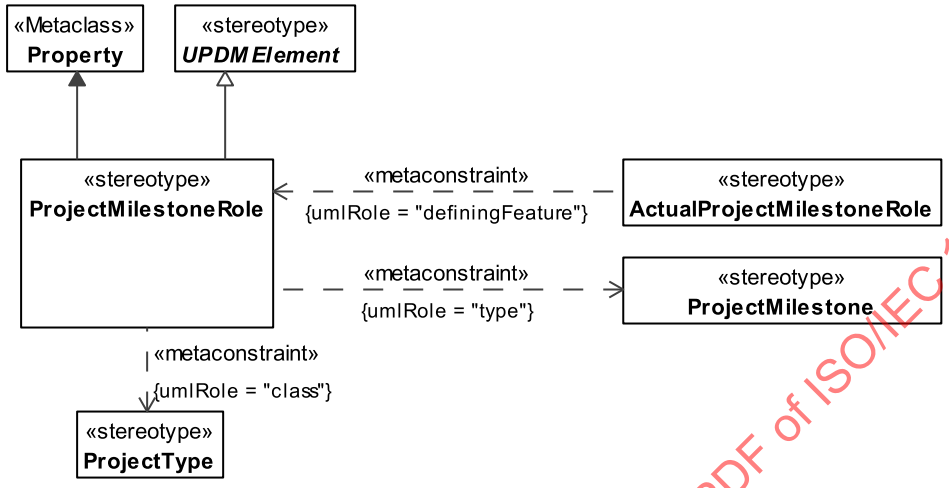

Figure 8.5 - ProjectMilestoneRole

Constraints

The following are constraints for ProjectMilestoneRole:

- ProjectMilestoneRole.class - Value for the class property must be stereotyped “Project” or its specializations.
- ProjectMilestoneRole.type - Value for the type property must be stereotyped “ProjectMilestone” or its specializations.

Extensions

The following metaclasses are extended by ProjectMilestoneRole:

- Property

Specializations

The ProjectMilestoneRole element is a specialization of:

- UPDMElement

8.3.1.1.1.1.5 ProjectType

MODAF: A Project (MODAF::ProjectType) is used to define a category of project: For example, “Program,” “Acquisition Project,” or “Training Program.”

DoDAF: NA (only Individual Project in DoDAF).

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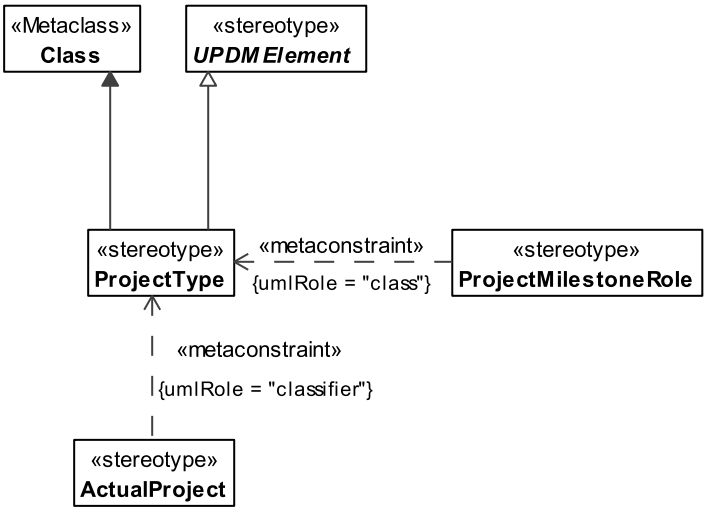

Figure 8.6 - ProjectType

Constraints

The following are constraints for ProjectType:

- Project.ownedAttribute - Values for ownedAttribute property must be stereotyped “ProjectMilestoneRole” or its specializations.

Extensions

The following metaclasses are extended by ProjectType:

- Class

Specializations

The ProjectType element is a specialization of:

- UPDMElement
- Desirer

8.3.1.1.2 UPDM L1::UPDM L0::Core::AllElements

The AllEllements are elements that are part of the All View. The All-Views (AVs) provide an overarching description of the architecture, its scope, ownership, timeframe and all of the other meta data that is required in order to effectively search and query architectural models. They also provide a place to record any findings arising from the architecting process. The AVs include a dictionary of the terms used in the construction of the architecture, which helps others fully understand its meaning at a later date. Since the AVs provide critical information for the future access and exploitation of an architectural model their population is essential whenever an architecture is created or modified. The AVs provide a critical input into the processes that provide architectural governance.

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8.3.1.1.2.1 Exchange

UPDM: Abstract grouping for interactions that exchange messages.

MODAF:NA

DoDAF:NA

Note: Exchange is abstract.

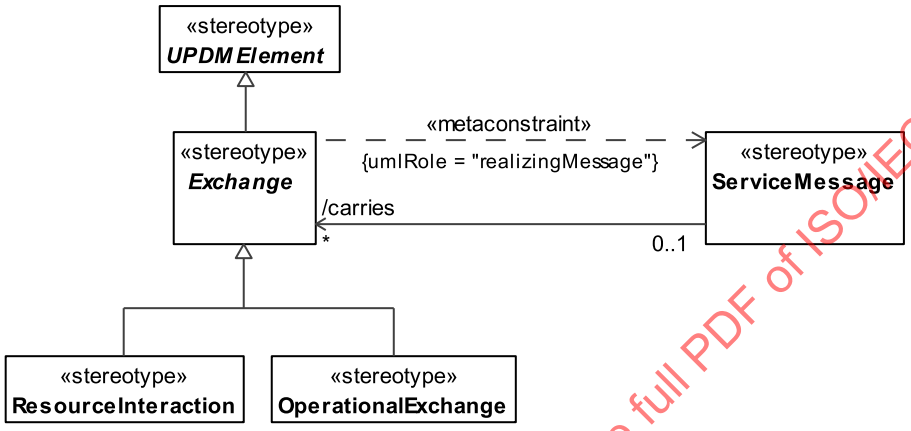

Figure 8.7 - Exchange

Specializations

The Exchange element is a specialization of:

- UPDMElement

8.3.1.1.2.2 UPDMElement

UPDM Artifact: Super type for many of the UPDM elements. It provides a means of extending UPDM elements in a common way. With links to the measurement set, it also allows quantitative metrics to be associated with structural and behavioral elements.

Note: UPDMElement is abstract.

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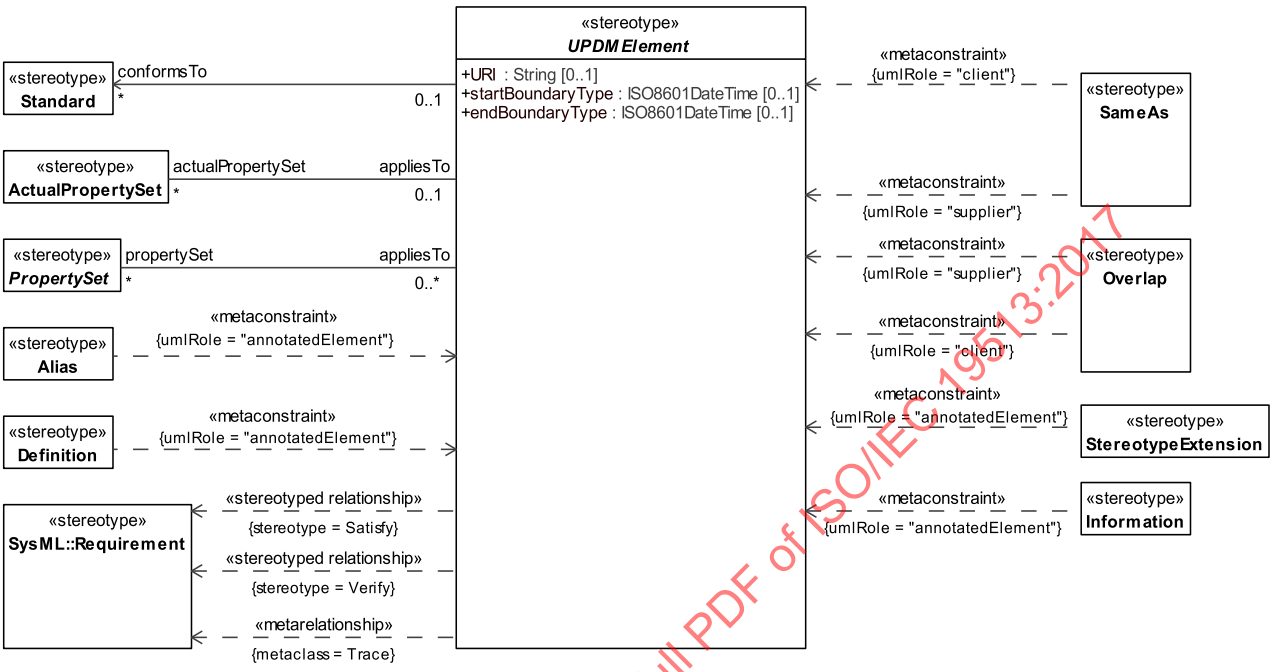

Figure 8.8 - UPDMElement

Attributes

The following are attributes for UPDMElement:

- actualPropertySet : ActualPropertySet[*] - The actual measurements to which the element must conform.
- conformsTo : Standard[*] - Standard that this UPDM element is conforming to.
- endBoundaryType : ISO8601DateTime[0..1] - End time of boundary.
- propertySet : PropertySet[*] - Types of measurements corresponding to the actual measurements.
- startBoundaryType : ISO8601DateTime[0..1] - Start time of a boundary.
- URI : String[0..1] - Unique identifier for the element.

8.3.1.1.2.3 UPDM L1::UPDM L0::Core::AllElements::Behavior

The behavioral portion of the AllElements profile.

8.3.1.1.2.3.1 Activity

UPDM: An abstract element that represents a behavior (i.e., a Function or OperationalActivity) that can be performed by a Performer.

MODAF: NA

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DoDAF: Work, not specific to a single organization, weapon system or individual that transforms inputs (Resources) into outputs (Resources) or changes their state.

Note: Activity is abstract.

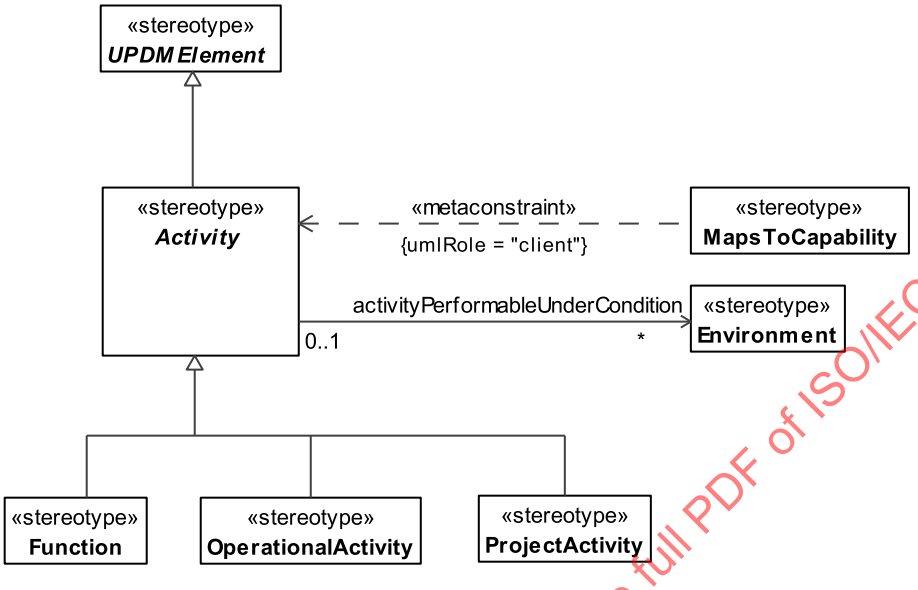

Figure 8.9 - Activity

Attributes

The following are attributes for Activity:

- activityPerformableUnderCondition : Environment[*] - The environment under which an activity is performed.

Specializations

The Activity element is a specialization of:

- UPDMElement
- Desirer

8.3.1.1.2.3.2 CapableElement

UPDM An abstract element that represents a structural element that can perform behaviors (i.e., PerformedActivity).

DoDAF: NA

Note: CapableElement is abstract.

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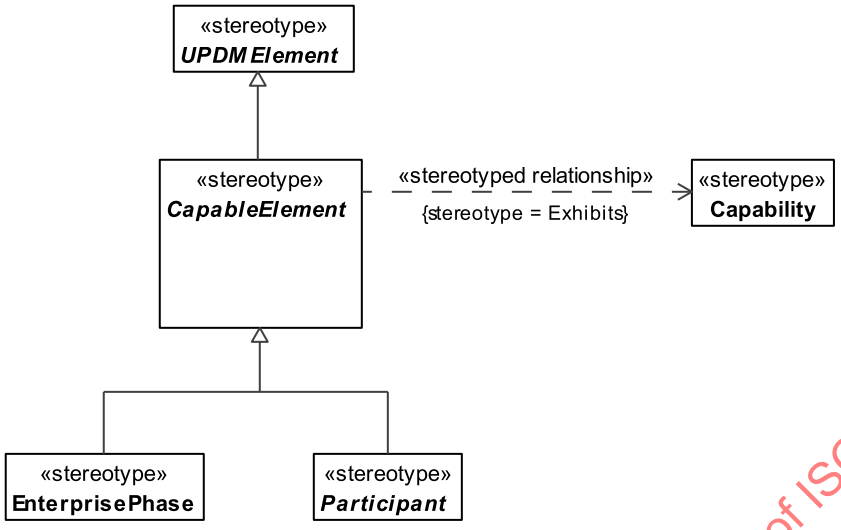

Figure 8.10 - CapableElement

Specializations

The CapableElement element is a specialization of:

- UPDMElement

8.3.1.1.2.3.3 Implements

UPDM:Tuple defining the relationship between systems and service elements and operational elements.

MODAF: ActivityToFunctionMapping, Asserts that a Function (at least in part) performs or assists in the conducting of an OperationalActivity.

DoDAF: N/A

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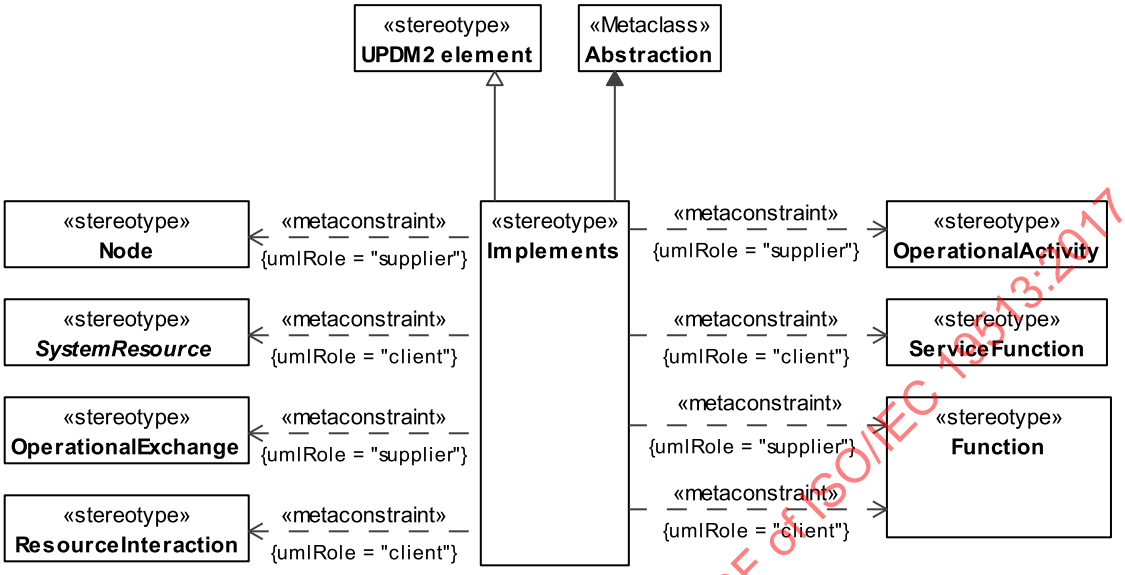

Figure 8.11 - Implements

Constraints

The following are constraints for Implements:

- Implements.client - Values for the client property must be stereotyped “SystemResource,” “ResourceInteraction,” “Function,” “ServiceFunction,” or their specializations.
- Implements.supplier - Values for the supplier property must be stereotyped “Node,” “OperationalActivity,” ”OperationalExchange,” “Function,” or their specializations.

Extensions

The following metaclasses are extended by Implements:

- Abstraction

Specializations

The Implements element is a specialization of:

- UPDM2 element

8.3.1.1.2.3.4 IsCapableOfPerforming

UPDM: Links a Performer to the behavior that it can perform.

DoDAF: The Performs (DoDAF::activityPerformedByPerformer) relationship is an overlap between a Performer and a PerformedActivity (DoDAF::Activity) wherein the activity is performed by the Performer.

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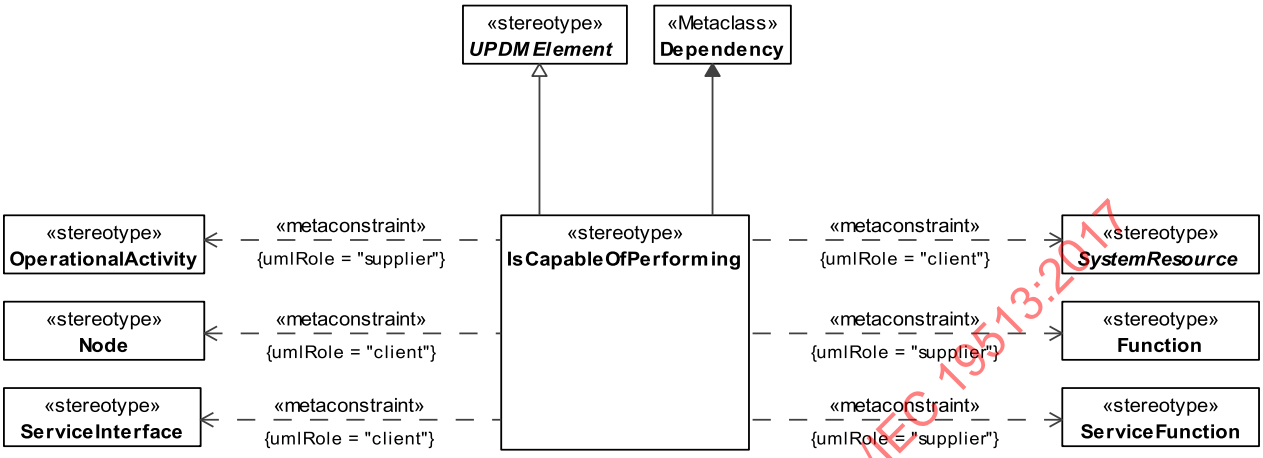

Figure 8.12 - IsCapableOfPerforming

Constraints

The following are constraints for IsCapableOfPerforming:

- IsCapableOfPerforming.client - Values for the client property must be stereotyped “Node,” “SystemResource,” “ServiceInterface,” or their specializations.
- IsCapableOfPerforming.supplier - Values for the supplier property must be stereotyped “OperationalActivity,” “Function,” “ServiceFunction,” or their specializations.

Extensions

The following metaclasses are extended by IsCapableOfPerforming:

- Dependency

Specializations

The IsCapableOfPerforming element is a specialization of:

- UPDMElement

8.3.1.1.2.4 UPDM L1::UPDM L0::Core::AllElements::Environment

The environmental aspects of the AllElements profile.

8.3.1.1.2.4.1 ActualLocation

MODAF: A PhysicalLocation (MODAF::ActualLocation) is a location anywhere on the earth. The means of describing the location is a string (locationDescription). The information contained in that string is governed by the taxonomy reference (e.g., if the PhysicalLocation is a “GPS reference,” the string will contain the GPS coordinates). NOTE: this has been extended in UPDM to include non-earth locations.

DoDAF: All subtypes of << IndividualType>> Location, such as Facility, Site, etc.

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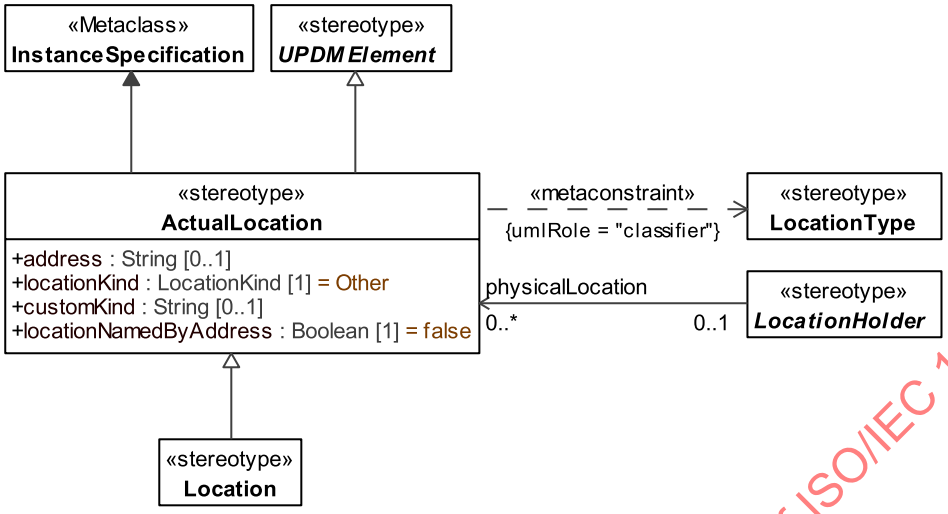

Figure 8.13 - ActualLocation

Constraints

The following are constraints for ActualLocation:

- ActualLocation.classifier - Classifier property value must be stereotyped “LocationType” or its specializations.

Attributes

The following are attributes for ActualLocation:

- address : String[0..1] - String describing the address of the actual location, i.e., “1600 Pennsylvania avenue” describes the address of the actual location “The White House.”
- customKind : String[0..1] - String describing a location kind that is not on the enumerated list.
- locationKind : LocationKind[1] - Enumerated value describing the kind of location.
- locationNamedByAddress : Boolean[1] - Boolean, by default = false, that indicates if the location address is embedded in the location name.

Extensions

The following metaclasses are extended by ActualLocation:

- InstanceSpecification

Specializations

The ActualLocation element is a specialization of:

- UPDMElement

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8.3.1.1.2.4.2 ConditionType

Abstract element indicating what an EnvironmentProperty can be typed by.

Note: ConditionType is abstract.

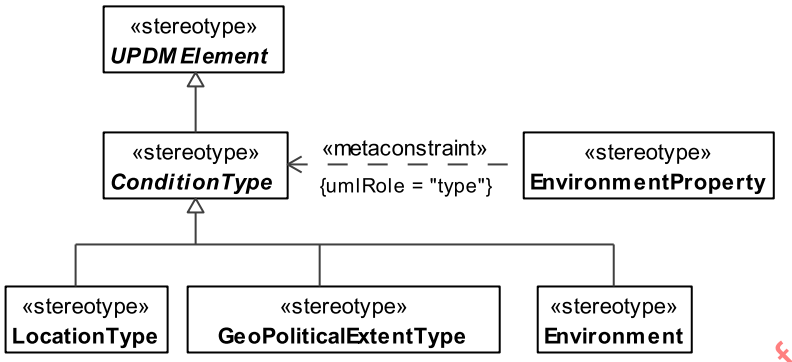

Figure 8.14 - ConditionType

Specializations

The ConditionType element is a specialization of:

- UPDMElement

8.3.1.1.2.4.3 Environment

MODAF:A definition of the conditions in which something exists or functions.

DoDAF:NA

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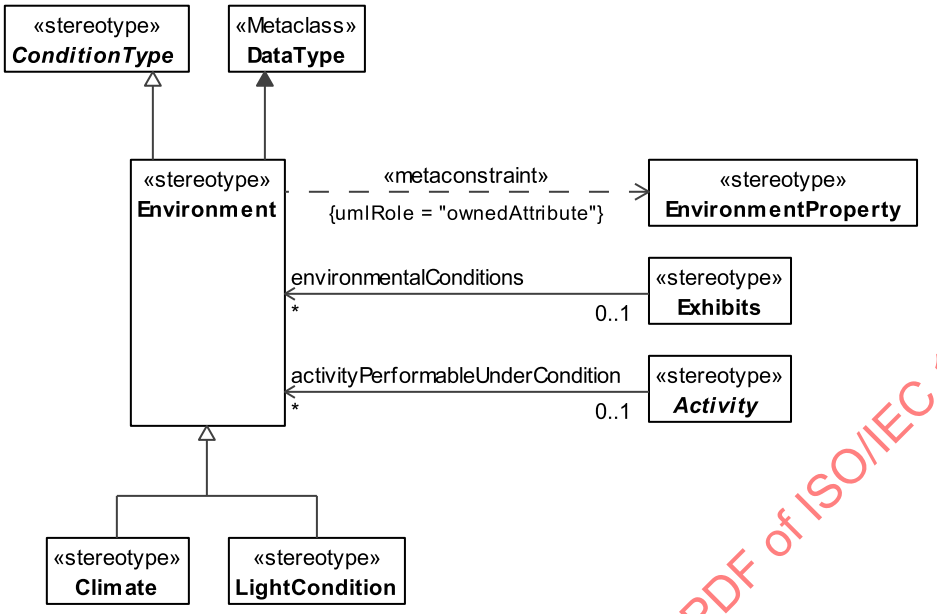

Figure 8.15 - Environment

Constraints

The following are constraints for Environment:

- Environment.ownedAttributes - Owned attributes have to be stereotyped <<EnvironmentProperty>>.

Extensions

The following metaclasses are extended by Environment:

- DataType

Specializations

The Environment element is a specialization of:

- ConditionType
- PropertySet

8.3.1.1.2.4.4 EnvironmentProperty

MODAF:Asserts that an Environment has one or more properties. These may be Climate, LocationType, or LightCondition.

DoDAF:NA

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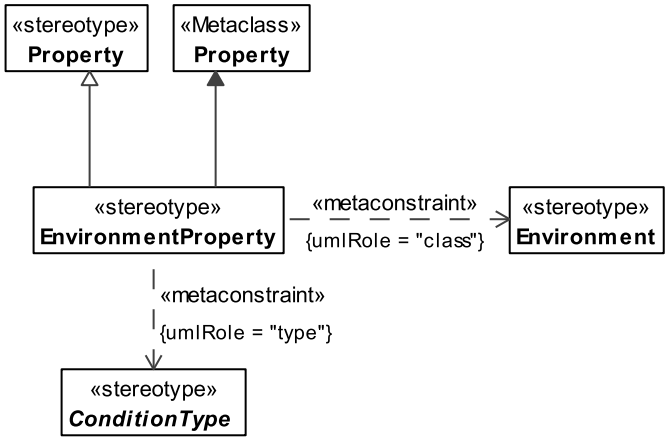

Figure 8.16 - EnvironmentProperty

Constraints

The following are constraints for EnvironmentProperty:

- EnvironmentalProperty.class - Value for the class property must be stereotyped “Environment” or its specializations.
- EnvironmentalProperty.type - Value for the type property must be stereotyped “ConditionType” or its specializations.

Extensions

The following metaclasses are extended by EnvironmentProperty:

- Property

Specializations

The EnvironmentProperty element is a specialization of:

- Property

8.3.1.1.2.4.5 LocationHolder

UPDM:Abstract grouping to capture elements that can have a location.

Note: LocationHolder is abstract.

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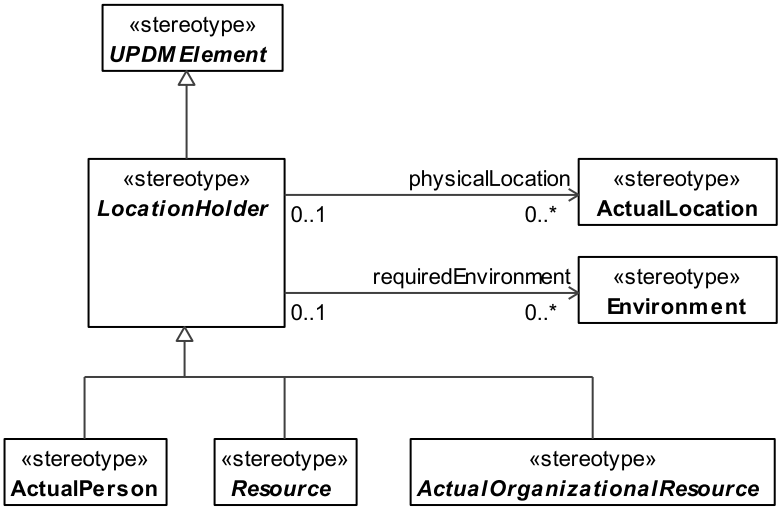

Figure 8.17 - LocationHolder

Attributes

The following are attributes for LocationHolder:

- physicalLocation : ActualLocation[0..*] - The ActualLocation associated with a LocationHolder(Abstract).
- requiredEnvironment : Environment[0..*] - The Environment in which a LocationHolder(Abstract) is active.

Specializations

The LocationHolder element is a specialization of:

- UPDMElement

8.3.1.1.2.4.6 LocationKind

Enumeration of location kinds, derived from DoDAF, used to support the locationKind tag of the LocationKind stereotype.

Enumeration Literals

The following are enumeration literals for LocationKind:

- CircularArea - The space enclosed by a circle.
- ElipticalArea - The space enclosed by an ellipse.
- GeoStationaryPoint - Unidimensional Individual (dimensionless in space, existent over all time).
- Line - A geometric figure formed by a point moving along a fixed direction and the reverse direction.
- Other - Other Location kind that is not on the enumerated list.
- PlanarSurface - A two-dimensional portion of space.

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- Point - Unidimensional Individual (dimensionless in space, existent over all time).
- PolygonArea - The space enclosed by a polygon.
- RectangularArea - The space enclosed by a rectangle.
- SolidVolume - The amount of space occupied by a three-dimensional object of definite shape; not liquid or gaseous.
- Surface - A portion of space having length and breadth but no thickness or regards to time.

8.3.1.1.2.4.7 LocationType

MODAF: A general specification of the surroundings / scenario in which an operation may take place. Examples would be: “desert,” “arctic,” “at sea,” etc.

DoDAF: A point or extent in space that may be referred to physically or logically. Includes concepts such as: Facility, Installation, RealProperty, Site, and instances of conditions such as underwater (as specified in UJTLs).

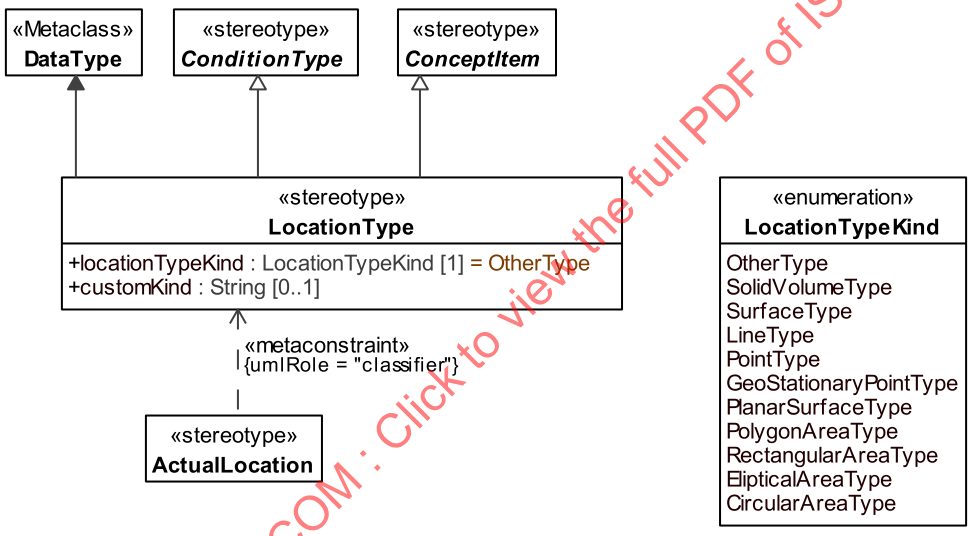

Figure 8.18 - LocationType

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Attributes

The following are attributes for LocationType:

- customKind : String[0..1] - String defining custom kinds of locationTypes.
- locationTypeKind : LocationTypeKind[1] - Kind of location taken from the DOD UJTLs.

Extensions

The following metaclasses are extended by LocationType:

- DataType

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Specializations

The LocationType element is a specialization of:

- ConceptItem
- ConditionType

8.3.1.1.2.4.8 LocationTypeKind

Enumeration of kinds of location types, derived from DoDAF, used to support the LocationTypeKind tag of the LocationTypeKind stereotype.

Enumeration Literals

The following are enumeration literals for LocationTypeKind:

- CircularAreaType - Powertype Of CircularArea
- ElipticalAreaType - Powertype Of EllipticalArea
- GeoStationaryPointType - Powertype Of GeoStationaryPoint
- LineType - Powertype Of Line
- OtherType - Other LocationType kind that is not on the enumerated list
- PlanarSurfaceType - Powertype Of PlanarSurface
- PointType - Powertype Of Point
- PolygonAreaType - Powertype Of PolygonArea
- RectangularAreaType - Powertype Of RectangularArea
- SolidVolumeType - Powertype Of SolidVolume
- SurfaceType - Powertype Of Surface

8.3.1.1.2.5 UPDM L1::UPDM L0::Core::AllElements::Measurements

The measurement portion of the AllElements profile.

8.3.1.1.2.5.1 ActualMeasurement

UPDM: An actual value of the Measurement.

MODAF: NA

DoDAF: NA

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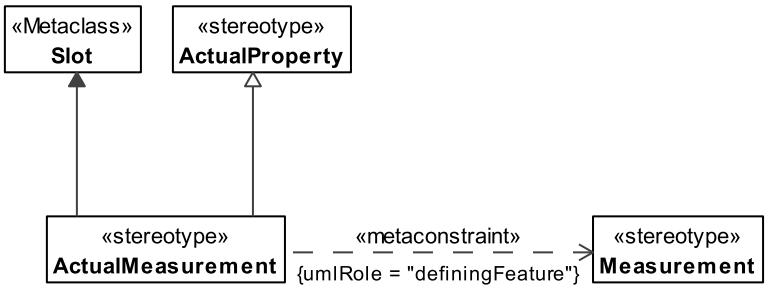

Figure 8.19 - ActualMeasurement

Constraints

The following are constraints for ActualMeasurement:

- ActualMeasurement.definingFeature - Value for definingFeature property must be stereotyped “Measurement” or its specializations.

Extensions

The following metaclasses are extended by ActualMeasurement:

- Slot

Specializations

The ActualMeasurement element is a specialization of:

- ActualProperty

8.3.1.1.2.5.2 ActualProperty

UPDM: The value of a Measure.

MODAF:NA

DoDAF:NA

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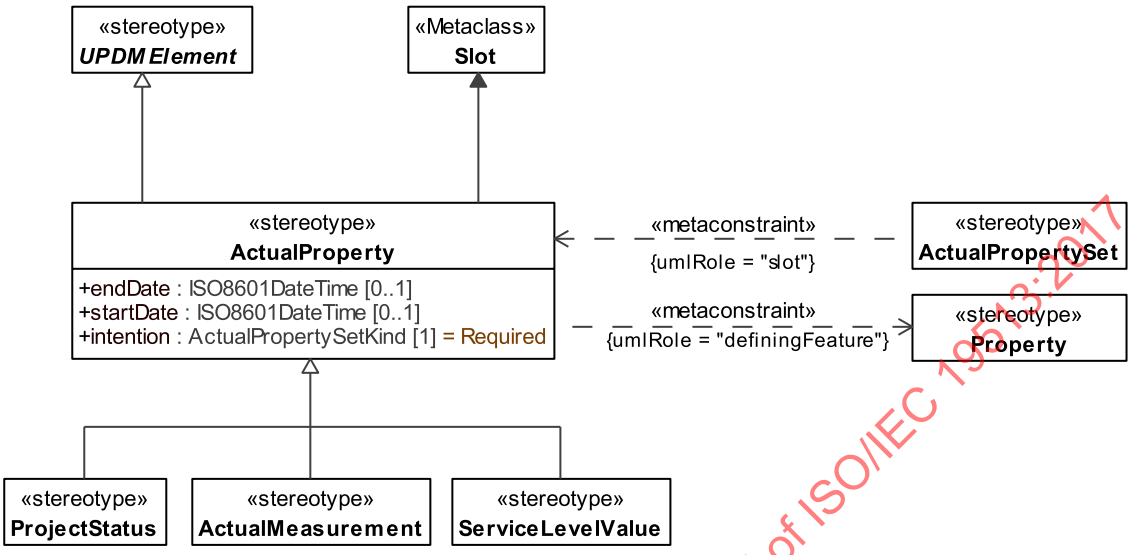

Figure 8.20 - ActualProperty

Constraints

The following are constraints for ActualProperty:

- ActualProperty.definingFeature - Value for definingFeature property must be stereotyped “Property” or its specializations.
- ActualProperty.owningInstance - Value for owningInstance property has to be stereotyped “ActualPropertySet” or its specializations.

Attributes

The following are attributes for ActualProperty:

- endDate : ISO8601DateTime[0..1] - Applicable end date of the measured property.
- intention : ActualPropertySetKind[1] - Possible kinds of ActualMeasurementSet intention.
- startDate : ISO8601DateTime[0..1] - Applicable end date of the measured property.

Extensions

The following metaclasses are extended by ActualProperty:

- Slot

Specializations

The ActualProperty element is a specialization of:

- UPDMElement

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8.3.1.1.2.5.3 ActualPropertySet

UPDM: A set or collection of ActualMeasurement(s). A date of measurement can be set. An intent of ActualMeasurementSet can be “Result,” “Required,” or “Estimate.”

MODAF: NA

DoDAF: NA

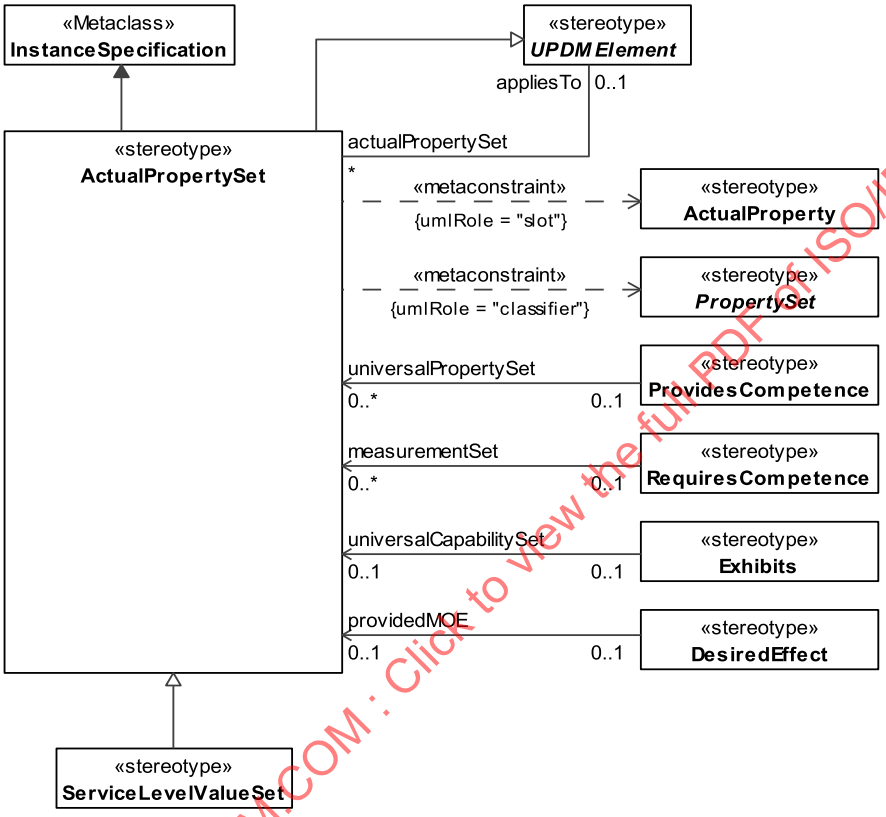

Figure 8.21 - ActualPropertySet

Constraints

The following are constraints for ActualPropertySet:

- ActualPropertySet.classifier - Value for the classifier property must be stereotyped “PropertySet” or its specializations.
- ActualPropertySet.slot - Value for the slot property must be stereotyped “ActualProperty” or its specializations.

Attributes

The following are attributes for ActualPropertySet:

- appliesTo : UPDMElement[0..1] - Measured element

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Extensions

The following metaclasses are extended by ActualPropertySet:

- InstanceSpecification

Specializations

The ActualPropertySet element is a specialization of:

- UPDMElement

8.3.1.1.2.5.4 ActualPropertySetKind

Possible kinds of ActualMeasurementSet intention, derived from DoDAF.

Enumeration Literals

The following are enumeration literals for ActualPropertySetKind:

- Actual - Actual Measure
- Estimate - Estimate
- Required - Required Measure

8.3.1.1.2.5.5 Measurement

MODAF: MeasurableProperty: A property of something in the physical world, expressed in amounts of a unit of measure. The property may have a required value - either specified by the [defaultValue] from UML::property attribute, or the [minValue] and [maxValue] to specify a required range.

DoDAF: Measure: A Measurement (DoDAF::Measure) is the magnitude of some attribute of an individual.

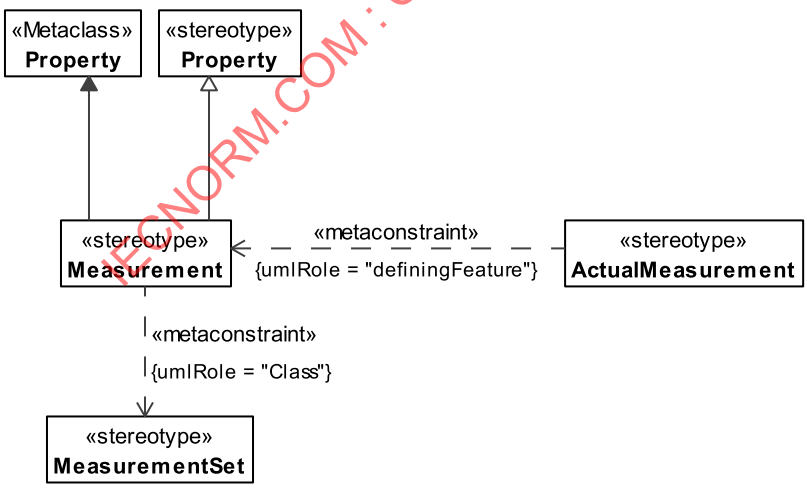

Figure 8.22 - Measurement

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Extensions

The following metaclasses are extended by Measurement:

- Property

Specializations

The Measurement element is a specialization of:

- Property

8.3.1.1.2.5.6 MeasurementSet

UPDM: A collection of Measurements.

MODAF: N/A

DoDAF: N/A

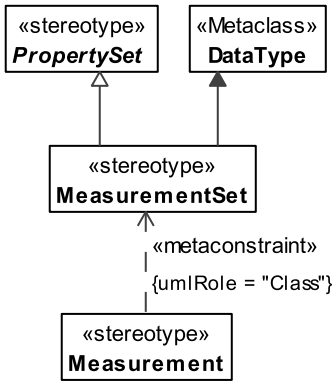

Figure 8.23 - MeasurementSet

Constraints

The following are constraints for MeasurementSet:

- MeasurementSet.ownedAttributes - Owned attributes have to be stereotyped <<Measurement>>.

Extensions

The following metaclasses are extended by MeasurementSet:

- DataType

Specializations

The MeasurementSet element is a specialization of:

- PropertySet

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8.3.1.1.2.5.7 Property

UPDM: The defining feature of an actual property, used to capture measurements.

MODAF: NA

DoDAF: NA

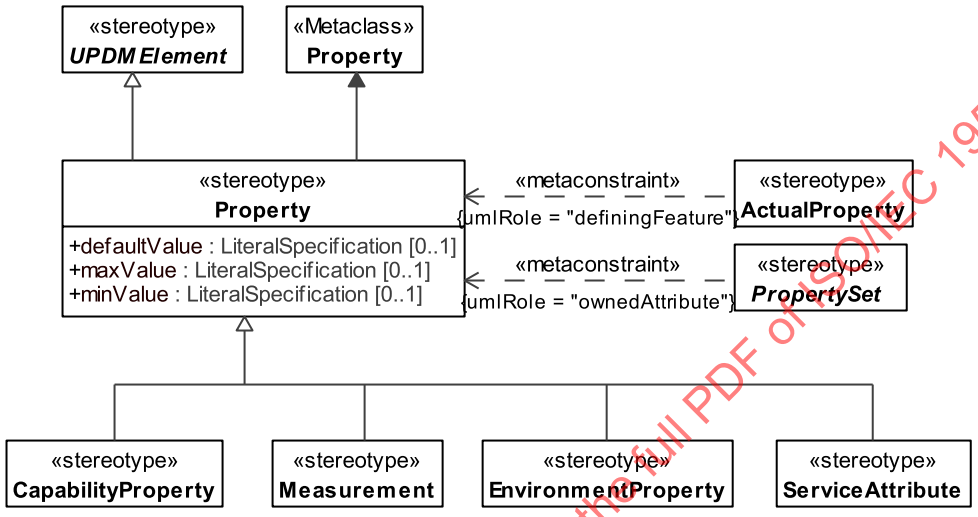

Figure 8.24 - Property

Attributes

The following are attributes for Property:

- defaultValue : LiteralSpecification[0..1] -
- maxValue : LiteralSpecification[0..1] -
- minValue : LiteralSpecification[0..1] -

Extensions

The following metaclasses are extended by Property:

- Property

Specializations

The Property element is a specialization of:

- UPDMElement

8.3.1.1.2.5.8 PropertySet

UPDM: A set or collection of Measurement(s)

MODAF: NA

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DoDAF: NA

Note: PropertySet is abstract.

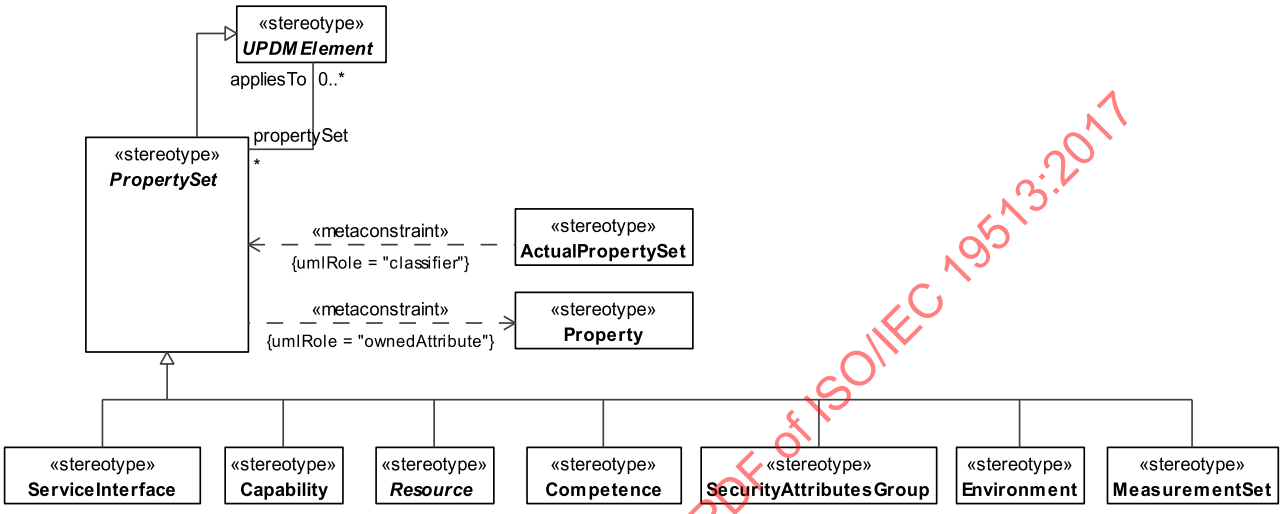

Figure 8.25 - PropertySet

Constraints

The following are constraints for PropertySet:

- PropertySet.ownedAttribute - Values for the ownedAttribute property must be stereotyped “Property” or its specializations.

Attributes

The following are attributes for PropertySet:

- appliesTo : UPDMElement[0..*] - Measured element.

Specializations

The PropertySet element is a specialization of:

- UPDMElement

8.3.1.1.2.6 UPDM L1::UPDM L0::Core::AllElements::Structure

This sub clause contains the Structural Aspects of the All Elements sub clause.

8.3.1.1.2.6.1 ExchangeElement

MODAF: A relationship specifying the need to exchange information between nodes.

DoDAF: NA - this is a specialization of OperationalExchange (DoDAF::Interface).

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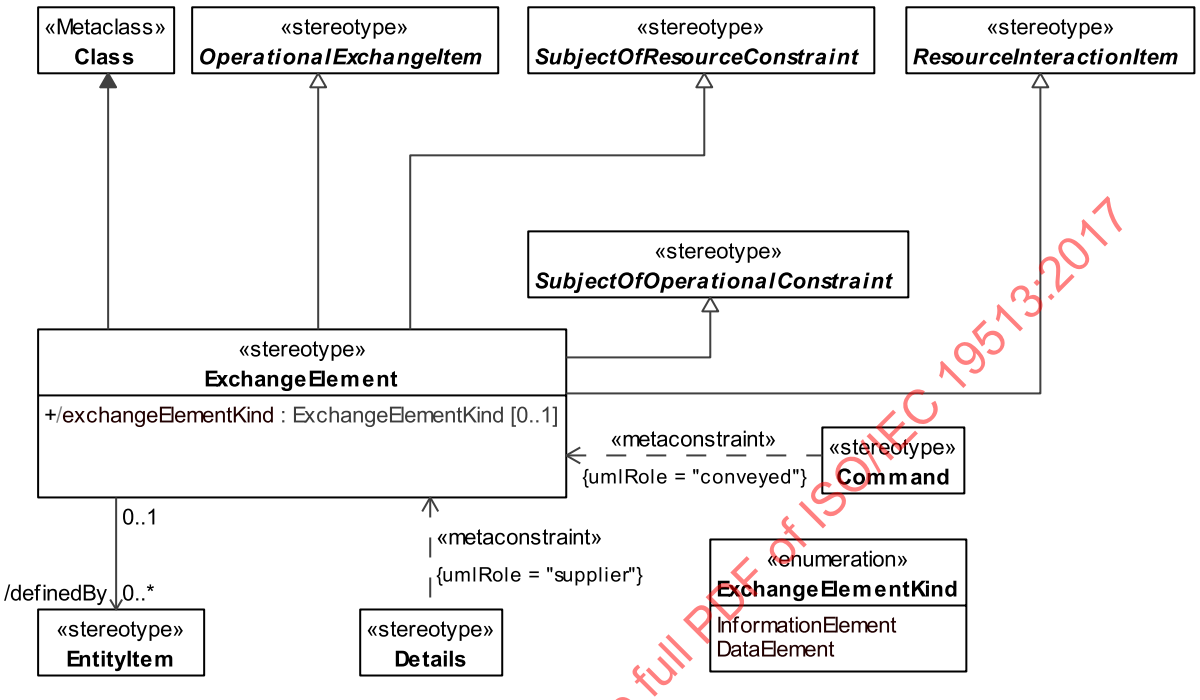

Figure 8.26 - ExchangeElement

Attributes

The following are attributes for ExchangeElement:

- definedBy : EntityItem[0..*] - The relationship between the EntityElement that defines the ExchangeElement.
- exchangeElementKind : ExchangeElementKind[0..1] - Enumeration of the kinds of information being exchanged.

Extensions

The following metaclasses are extended by ExchangeElement:

- Class

Specializations

The ExchangeElement element is a specialization of:

- OperationalExchangeItem
- SubjectOfResourceConstraint
- ResourceInteractionItem
- SubjectOfOperationalConstraint

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8.3.1.1.2.6.2 ExchangeElementKind

Enumeration of the types of element being exchanged on an information exchange.

Enumeration Literals

The following are enumeration literals for ExchangeElementKind:

- DataElement - A formalized representation of data which is managed by or exchanged between resources.
- InformationElement - An item of information that flows between Operational Activities and Nodes. The structure of an InformationElement may be defined using a LogicalDataModel.

8.3.1.1.2.6.3 Participant

UPDM: A participant is the abstract type of a provider and/or consumer of services. In the business domain a participant may be a person, organization, or system. In the systems domain a participant may be a system, application, or component.

Note: Participant is abstract.

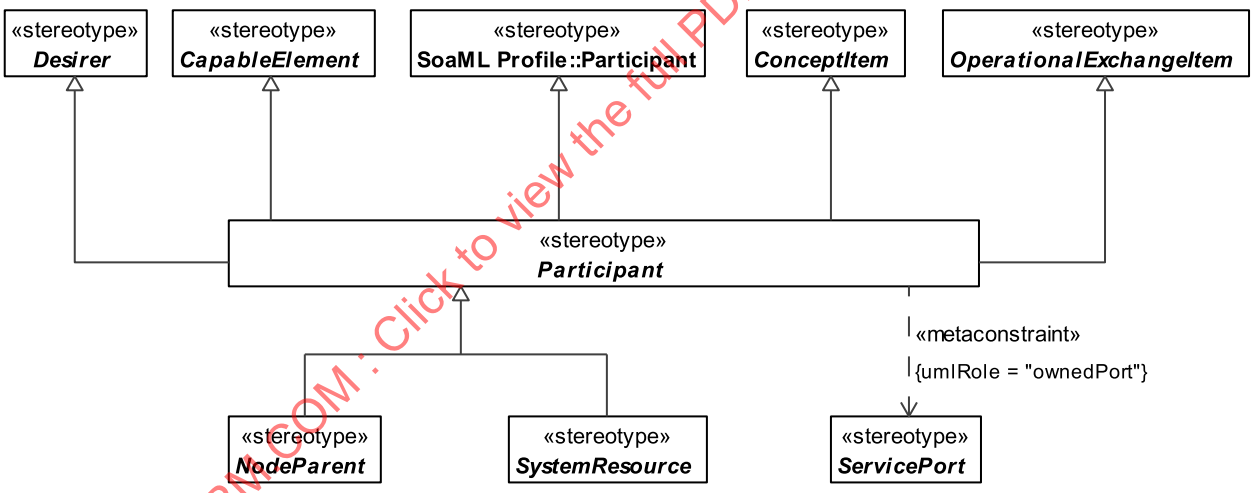

Figure 8.27 - Participant

Constraints

The following are constraints for Participant:

- Participant.ownedPort - Values for the ownedPort property must be stereotyped “ServicePort” or its specializations.

Specializations

The Participant element is a specialization of:

- CapableElement
- ConceptItem

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- OperationalExchangeItem
- Desirer
- Participant

8.3.1.1.2.6.4 Resource

UPDM: Abstract element placeholder to indicate that resources can be exchanged in Operational and Systems views.

MODAF: NA

DoDAF: Data, Information, Performers, Materiel, or Personnel Types that are produced or consumed.

Note: Resource is abstract.

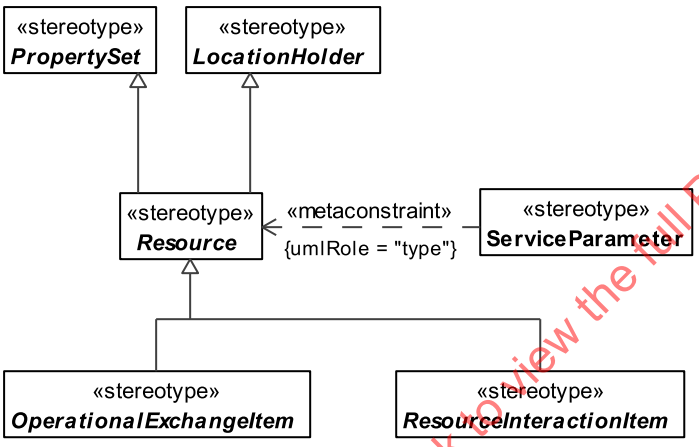

Figure 8.28 - Resource

Specializations

The Resource element is a specialization of:

- LocationHolder
- PropertySet
- SubjectOfResourceConstraint

8.3.1.1.2.6.5 Rule

MODAF: An abstract Class that is extended by

- OperationalConstraint (a rule governing an operational behavior or property), and
- ResourceConstraint (a rule governing the structural or functional aspects of an implementation) .

This may also include constraints on OrganizationalResources that are part of an implementation.

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DoDAF: Rule: A principle or condition that governs behavior; a prescribed guide for conduct or action. Subtype: Constraint: The range of permissible states for an object.

Note: Rule is abstract.

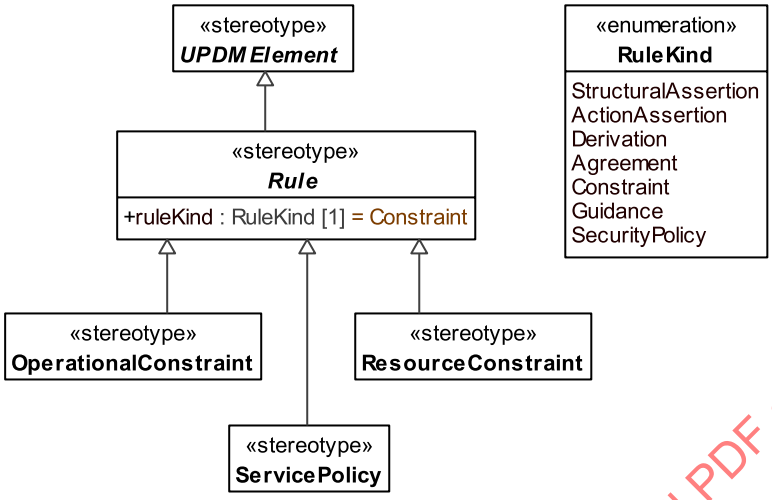

Figure 8.29 - Rule

Attributes

The following are attributes for Rule:

- ruleKind : RuleKind[1] -

Specializations

The Rule element is a specialization of:

- UPDMElement

8.3.1.1.2.6.6 RuleKind

Enumeration of possible kinds for constraints.

Enumeration Literals

The following are enumeration literals for RuleKind:

- ActionAssertion - Statement that concerns some dynamic aspect of the business.
- Agreement - A consent among parties regarding the terms and conditions of activities that said parties participate in.
- Constraint - Business Rule, Rule, Restraint, Operational Limitation.
- Derivation - Rule derived from another rule.
- Guidance - An authoritative statement intended to lead or steer the execution of actions.

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- SecurityPolicy - An OperationalConstraint that specifies policy for information handling, physical security, encryption, etc.
- StructuralAssertion - Statement that something of importance to the business either exists as a concept of interest or exists in relationship to another thing of interest.

8.3.1.1.2.7 UPDM L1::UPDM L0::Core::AllElements::Views

The views section of the AllElements profile.

8.3.1.1.2.7.1 ArchitecturalDescription

MODAF: A specification of a system of systems at a technical level which also provides the business context for the system of systems.

DoDAF: Information describing an architecture such as an OV-5 Activity Model document.

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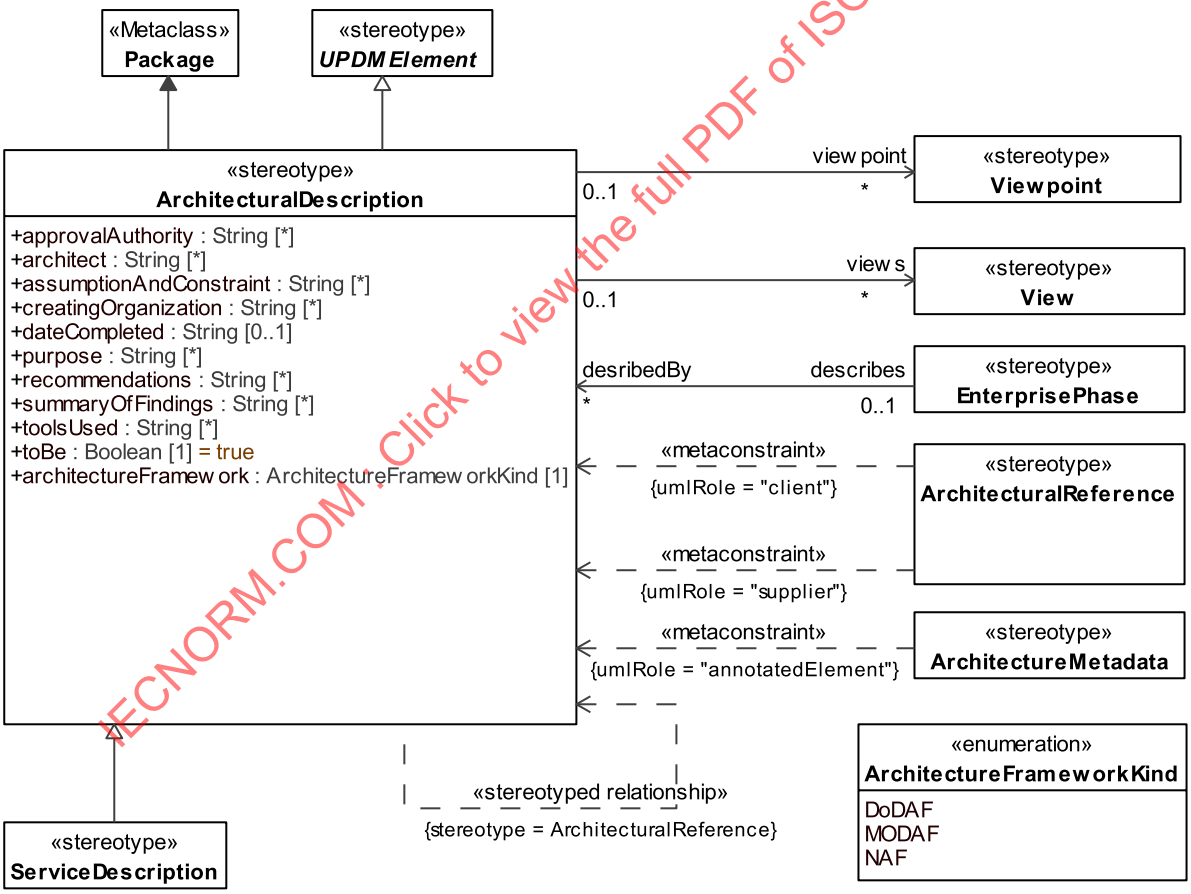

Figure 8.30 - ArchitecturalDescription

Constraints

The following are constraints for ArchitecturalDescription:

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- ArchitecturalDescription.architectureFramework:
  - If the property is set to DoDAF, only aliases scoped under the DoDAF profile can be used.
  - If set to MODAF, then only MODAF aliases can be used.
  - Should the property be set to nothing, none of the aliases can be used.

Attributes

The following are attributes for ArchitecturalDescription:

- approvalAuthority : String[*] - References the actual organizational resource that has the authority to approve the architectural description.
- architect : String[*] - The name of the architect responsible for the ArchitecturalDescription.
- architectureFramework : ArchitectureFrameworkKind[1] - Indicates the type of framework used.
- assumptionAndConstraint : String[*] - Any assumptions, constraints, and limitations contained in the ArchitecturalDescription, including those affecting deployment, communications performance, information assurance environments, etc.
- creatingOrganization : String[*] - Describes the ActualOrganizationalResource creating the ArchitecturalDescription.
- dateCompleted : String[0..1] - Date that the Architectural Description was completed.
- purpose : String[*] - Explains the need for the Architecture, what it will demonstrate, the types of analyses that will be applied to it, who is expected to perform the analyses, what decisions are expected to be made on the basis of each form of analysis, who is expected to make those decisions, and what actions are expected to result.
- recommendations : String[*] - States the recommendations that have been developed based on the architecture effort. Examples include recommended system implementations, and opportunities for technology insertion.
- summaryOfFindings : String[*] - Summarizes the findings that have been developed so far. This may be updated several times during the development of the ArchitecturalDescription.
- toBe : Boolean[1] - Indicates whether the ArchitecturalDescription is existing or future.
- toolsUsed : String[*] - Identifies any tools used to develop the ArchitecturalDescription as well as file names and formats if appropriate.
- viewpoint : Viewpoint[*] - Indicates which viewpoints are used in the architecture.
- views : View[*] - Indicates which views are used in the architecture.

Extensions

The following metaclasses are extended by ArchitecturalDescription:

- Package

Specializations

The ArchitecturalDescription element is a specialization of:

- UPDMElement

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8.3.1.1.2.7.2 ArchitecturalReference

MODAF: Asserts that one architectural description (referrer) refers to another (referred).

DoDAF: NA

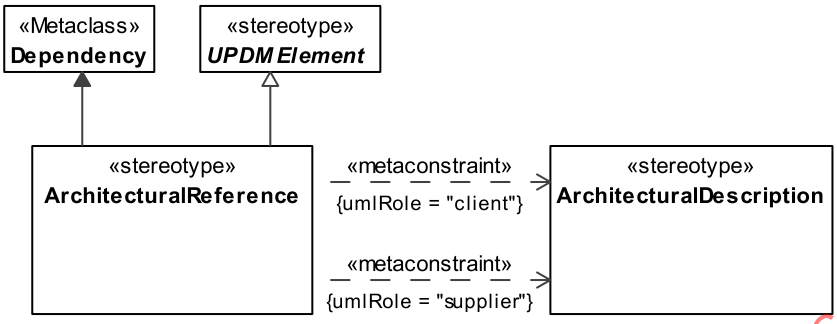

Figure 8.31 - ArchitecturalReference

Constraints

The following are constraints for ArchitecturalReference:

- ArchitecturalReference.client - Value for the client property must be stereotyped “ArchitecturalDescription” or its specializations.
- ArchitecturalReference.supplier - Value for the supplier property must be stereotyped “ArchitecturalDescription” or its specializations.

Extensions

The following metaclasses are extended by ArchitecturalReference:

- Dependency

Specializations

The ArchitecturalReference element is a specialization of:

- UPDMElement

8.3.1.1.2.7.3 ArchitectureFrameworkKind

Enumeration of the possible types of architectural framework that the architecture is being developed for.

Enumeration Literals

The following are enumeration literals for ArchitectureFrameworkKind:

- DoDAF - Department of Defense Architecture Framework
- MODAF - Ministry of Defence Architecture Framework
- NAF - NATO Architecture Framework

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8.3.1.1.2.7.4 ArchitectureMetadata

UPDM: Information on ArchitecturalDescription. It states things like what methodology was used, notation, etc.

MODAF: A Metadata element that applies to the whole architecture.

DoDAF: NA

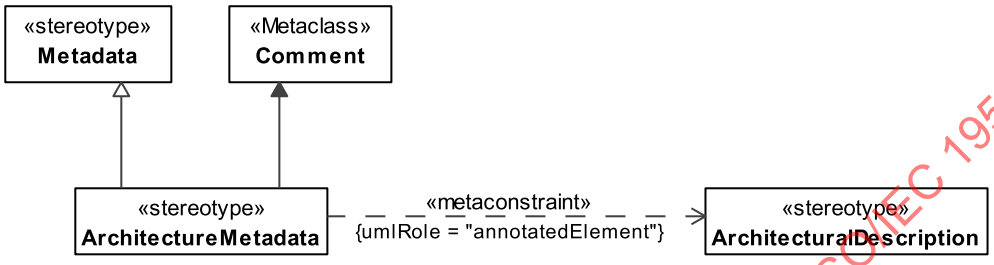

Figure 8.32 - ArchitectureMetadata

Constraints

The following are constraints for ArchitectureMetadata:

- ArchitectureMetadata.annotatedElement - Value for the annotatedElement property must be stereotyped "ArchitecturalDescription" or its specializations.

Extensions

The following metaclasses are extended by ArchitectureMetadata:

- Comment

Specializations

The ArchitectureMetadata element is a specialization of:

- Metadata

8.3.1.1.2.7.5 Metadata

MODAF: Annotation that can be applied to any element in the architecture.

DoDAF: NA

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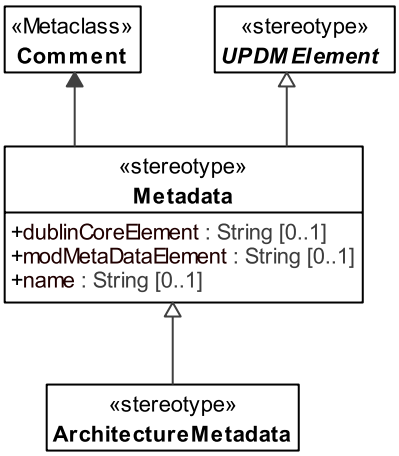

Figure 8.33 - Metadata

Attributes

The following are attributes for Metadata:

- dublinCoreElement : String[0..1] - If the meta data corresponds to the Dublin Core Meta-Data Standard, then the meta-data element name should be listed here.
- modMetaDataElement : String[0..1] - If the meta data corresponds to the MOD Meta-Data Standard, then the meta-data element name should be listed here.
- name : String[0..1] - The name of the Metadata.

Extensions

The following metaclasses are extended by Metadata:

- Comment

Specializations

The Metadata element is a specialization of:

- UPDMElement

8.3.1.1.2.7.6 View

MODAF: A specification of a way to present an aspect of the architecture. Views are defined with one or more purposes in mind (e.g., showing the logical topology of the enterprise, describing a process model, defining a data model, etc.).

DoDAF: NA

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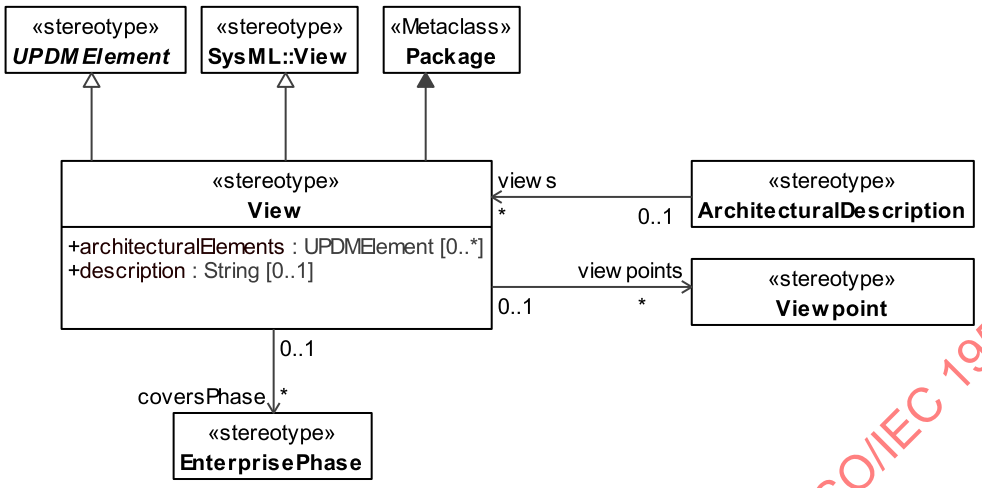

Figure 8.34 - View

Attributes

The following are attributes for View:

- architecturalElements : UPDMElement[0..*] - Architectural elements contained in the view.
- coversPhase : EnterprisePhase[*] - The EnterprisePhase that is covered by a view.
- description : String[0..1] - Description of the view.
- viewpoints : Viewpoint[*] - The Viewpoints associated with a View.

Extensions

The following metaclasses are extended by View:

- Package

Specializations

The View element is a specialization of:

- View
- UPDMElement

8.3.1.1.2.7.7 Viewpoint

MODAF: An instance of the specified View.

DoDAF: NA

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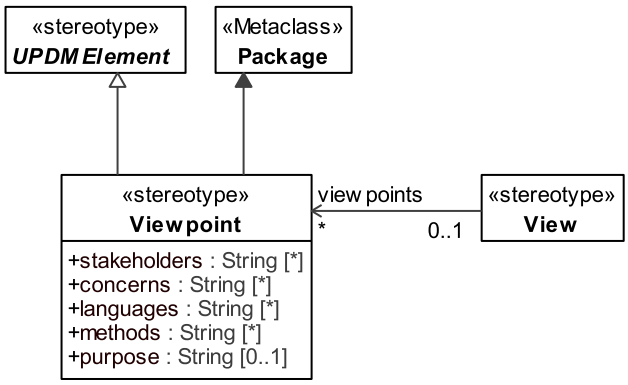

Figure 8.35 - Viewpoint

Attributes

The following are attributes for Viewpoint:

- concerns : String[*] - String, the concerns to be addressed by the viewpoint.
- languages : String[*] - String, the languages used to express the viewpoint.
- methods : String[*] - String, the methods employed in the development of the viewpoint.
- purpose : String[0..1] - String, the purpose of the viewpoint.
- stakeholders : String[*] - String, the stakeholders of the architecture.

Extensions

The following metaclasses are extended by Viewpoint:

- Package

Specializations

The Viewpoint element is a specialization of:

- UPDMElement

8.3.1.1.3 UPDM L1::UPDM L0::Core::ExternalTypes

A type defined by an external ontology. This may be higher-order (i.e., a type of a type).

8.3.1.1.3.1 ISO8601DateTime

MODAF: A date and time specified in the ISO8601 date-time format including timezone designator (TZD): YYYY-MM-DDThh:mm:ssTZD.

DoDAF: NA

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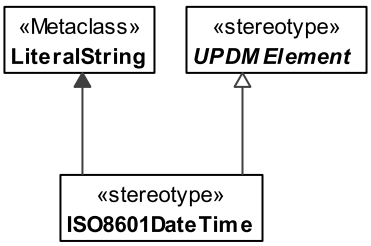

Figure 8.36 - ISO8601DateTime

Extensions

The following metaclasses are extended by ISO8601DateTime:

- LiteralString

Specializations

The ISO8601DateTime element is a specialization of:

- UPDMElement

8.3.1.1.4 UPDM L1::UPDM L0::Core::OperationalElements

OperationalElements group elements used to model product for Operational View. An Operational View (OV) describes the tasks and activities, operational elements, and information exchanges required to conduct operations. A pure OV is materiel independent. However, operations and their relationships may be influenced by new technologies such as collaboration technology, where process improvements are in practice before policy can reflect the new procedures. There may be some cases, as well, in which it is necessary to document the way processes are performed given the restrictions of current systems, in order to examine ways in which new systems could facilitate streamlining the processes. In such cases, an OV may have materiel constraints and requirements that must be addressed. For this reason, it may be necessary to include some high- level Systems View (SV) architecture data as overlays or augmenting information onto the OV products.

8.3.1.1.4.1 UPDM L1::UPDM L0::Core::OperationalElements::Behavior

Behavioral section of the OperationalElements Profile.

8.3.1.1.4.1.1 NodeOperation

UPDM: A partial or full realization of an OperationalActivity.

MODAF: NA

DoDAF: NA

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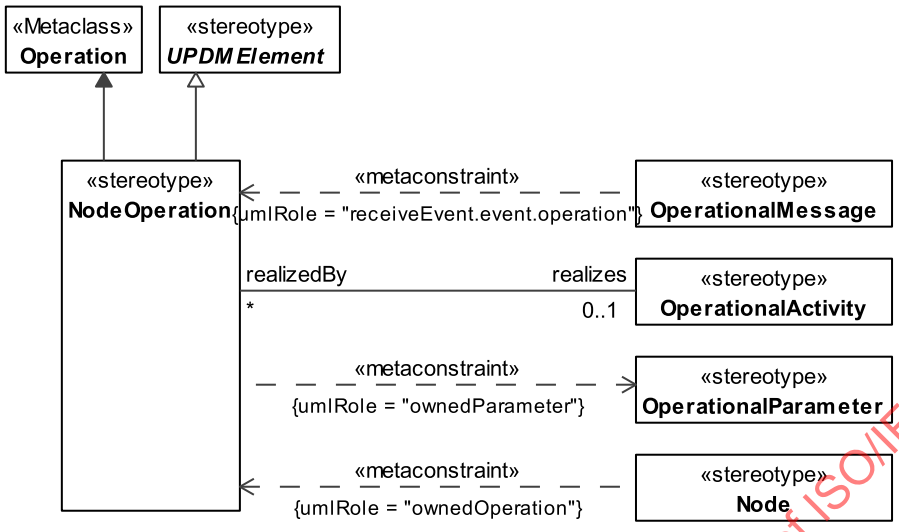

Figure 8.37 - NodeOperation

Constraints

The following are constraints for NodeOperation:

- NodeOperation.ownedParameter - The values for the ownedParameter property must be stereotyped "OperationalParameter" or its specializations.

Attributes

The following are attributes for NodeOperation:

- realizes : OperationalActivity[0..1] - Relationship between a NodeOperation and an OperationalActivity.

Extensions

The following metaclasses are extended by NodeOperation:

- Operation

Specializations

The NodeOperation element is a specialization of:

- UPDMElement

8.3.1.1.4.1.2 OperationalActivity

MODAF: A logical process, specified independently of how the process is carried out. DoDAF: An activity is an action performed in conducting the business of an enterprise. It is a general term that does not imply a placement in a hierarchy (e.g., it could be a process or a task as defined in other documents and it could be at any level of the hierarchy of the OV-5). It is used to portray operational actions not hardware/software system functions.

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NOTE: This is also a specialization of Activity.

DoDAF:NA

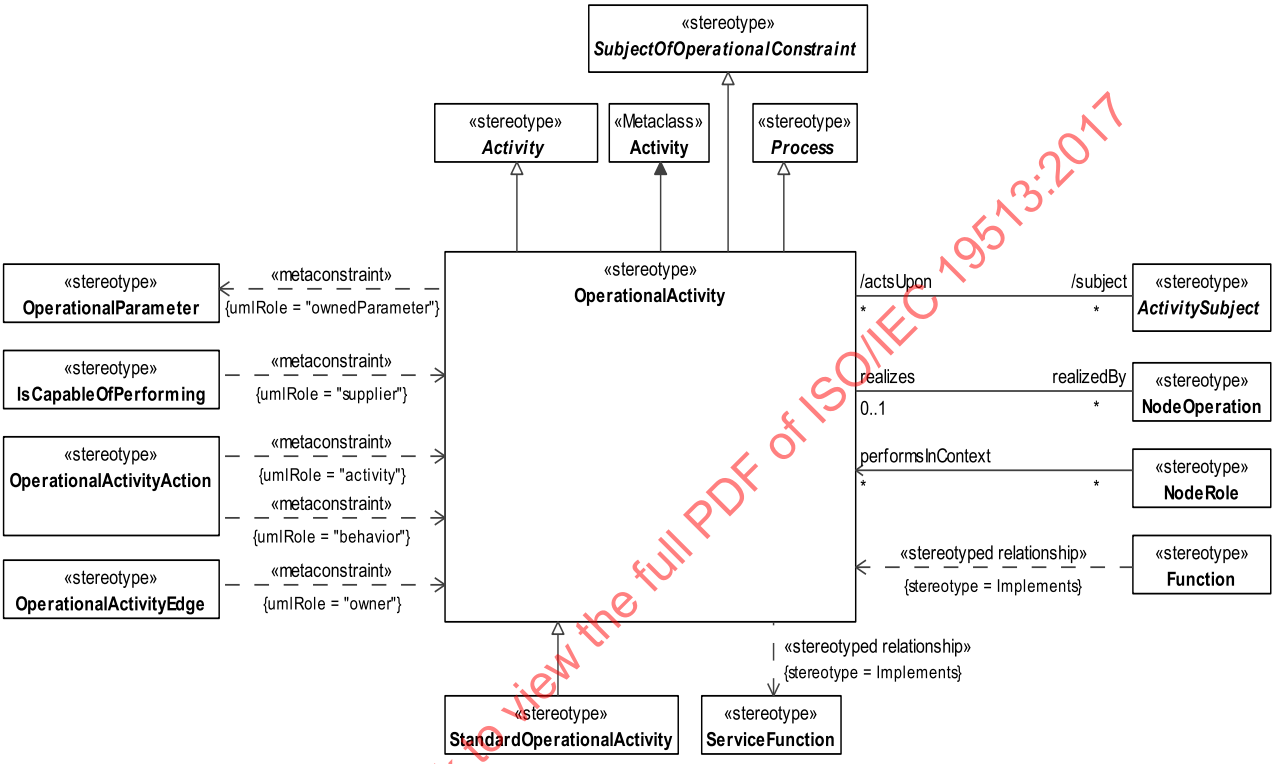

Figure 8.38 - OperationalActivity

Constraints

The following are constraints for OperationalActivity:

- OperationalActivity.ownedParameter - The values for the ownedParameter property must be stereotyped “OperationalParameter” or its specializations.

Attributes

The following are attributes for OperationalActivity:

- realizedBy : NodeOperation[*] - Relationship between an OperationalActivity and a NodeOperation.
- subject : ActivitySubject[*] - Object acting upon this OperationalActivity.

Extensions

The following metaclasses are extended by OperationalActivity:

- Activity

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Specializations

The OperationalActivity element is a specialization of:

- Activity
- SubjectOfOperationalConstraint
- Process

8.3.1.1.4.1.3 OperationalActivityAction

UPDM: The OperationalActivityAction is defined as a call behavior action that invokes the activity that needs to be performed.

MODAF: Used to relate an OperationalActivity to its sub-activities.

DoDAF:NA

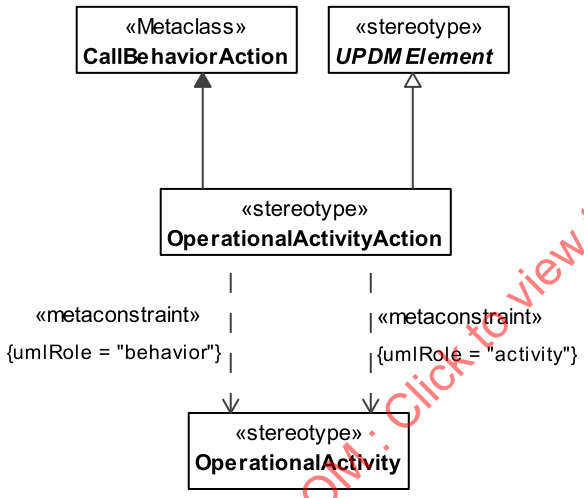

Figure 8.39 - OperationalActivityAction

Constraints

The following are constraints for OperationalActivityAction:

- OperationalActivityAction.activity - Value for behavior property must be stereotyped “OperationalActivity” or its specializations.
- OperationalActivityAction.behavior - Value for activity property must be stereotyped “OperationalActivity” or its specializations.

Extensions

The following metaclasses are extended by OperationalActivityAction:

- CallBehaviorAction

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Specializations

The OperationalActivityAction element is a specialization of:

- UPDMElement

8.3.1.1.4.1.4 OperationalActivityEdge

UPDM: An extension of <<ActivityEdge>> that is used to model the flow of control/objects through an OperationalActivity.

MODAF: An OperationalActivityEdge (MODAF::OperationalActivityFlow) is a flow of information, energy, or material from one activity to another.

DoDAF:NA

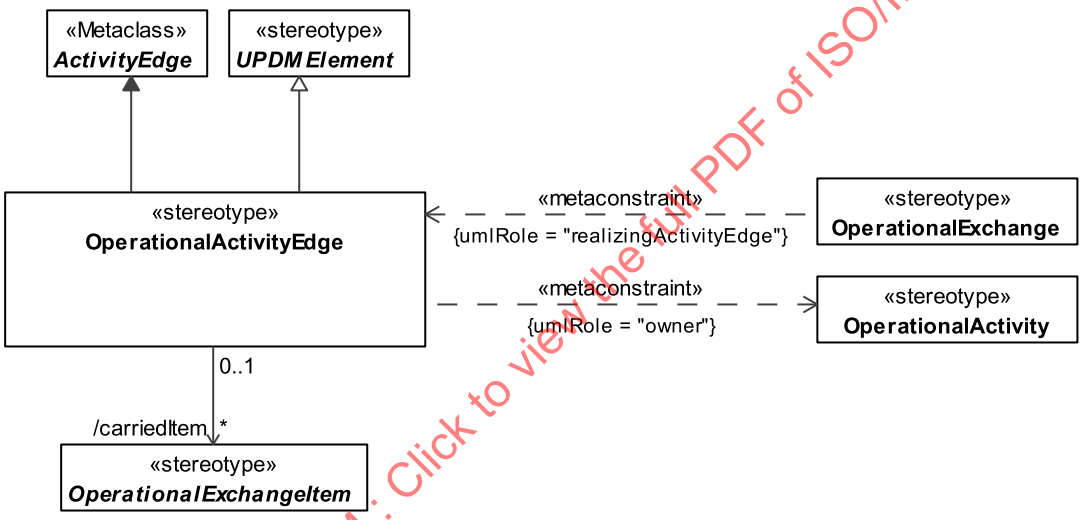

Figure 8.40 - OperationalActivityEdge

Constraints

The following are constraints for OperationalActivityEdge:

- OperationalActivityEdge.owner - “OperationalActivityEdge” must be owned directly or indirectly by “OperationalActivity.”

Attributes

The following are attributes for OperationalActivityEdge:

- carriedItem : OperationalExchangeItem[*] - The item information element carried along an OperationalActivityEdge, associated with the relevant needline.

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Extensions

The following metaclasses are extended by OperationalActivityEdge:

- ActivityEdge

Specializations

The OperationalActivityEdge element is a specialization of:

- UPDMElement

8.3.1.1.4.1.5 OperationalEventTrace

MODAF: An OperationalEventTrace (MODAF::OperationalInteractionSpecification) is a specification of the interactions between nodes in an operational architecture.

DoDAF: The Operational Event-Trace Description (OV-6c) DoDAF-described View provides a time ordered examination of the resource flows as a result of a particular scenario. Each event-trace diagram will have an accompanying description that defines the particular scenario or situation.

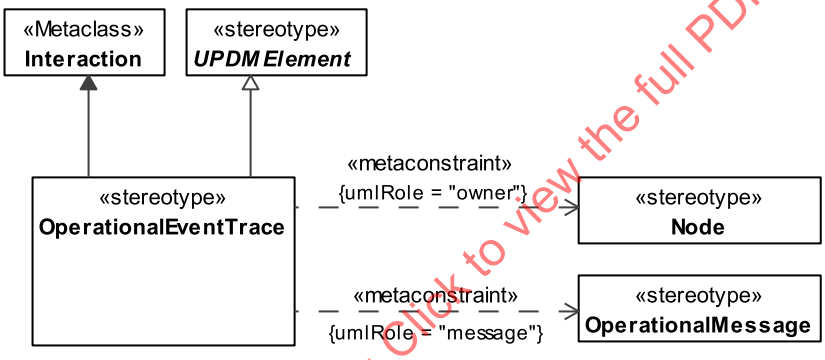

Figure 8.41 - OperationalEventTrace

Constraints

The following are constraints for OperationalEventTrace:

- OperationalEventTrace.message - Values for the message property must be stereotyped with “OperationalMessage” or its specializations.
- OperationalEventTrace.owner - Values for the owner property must be stereotyped with “Node” or its specializations.

Extensions

The following metaclasses are extended by OperationalEventTrace:

- Interaction

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Specializations

The OperationalEventTrace element is a specialization of:

- UPDMElement

8.3.1.1.4.1.6 OperationalMessage

UPDM: Message for use in an Operational Event-Trace which carries any of the subtypes of OperationalExchange. This is used to provide additional information about OperationalMessages for display on an OV-6c.

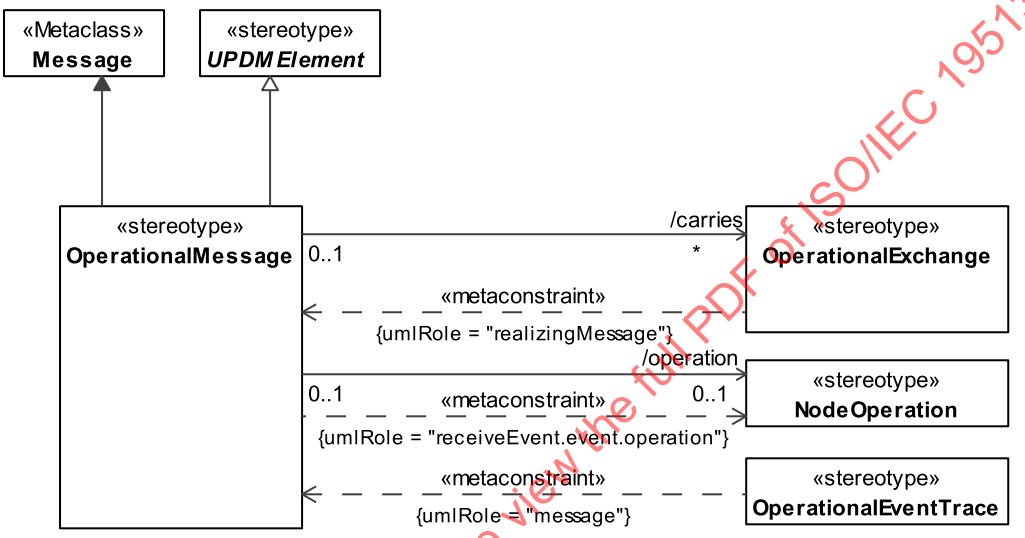

Figure 8.42 - OperationalMessage

Constraints

The following are constraints for OperationalMessage:

- OperationalMessage.receiveEvent.event.operation - Values for the receiveEvent.event.operation property must be stereotyped with "NodeOperation" or its specializations.

Attributes

The following are attributes for OperationalMessage:

- carries : OperationalExchange[*] - Carried OperationalExchange.
- operation : NodeOperation[0..1] - The NodeOperation associated with a OperationalMessage.

Extensions

The following metaclasses are extended by OperationalMessage:

- Message

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Specializations

The OperationalMessage element is a specialization of:

- UPDMElement

8.3.1.1.4.1.7 OperationalParameter

UPDM Represents inputs and outputs of an OperationalActivity. It is typed by OperationalExchangeItem.

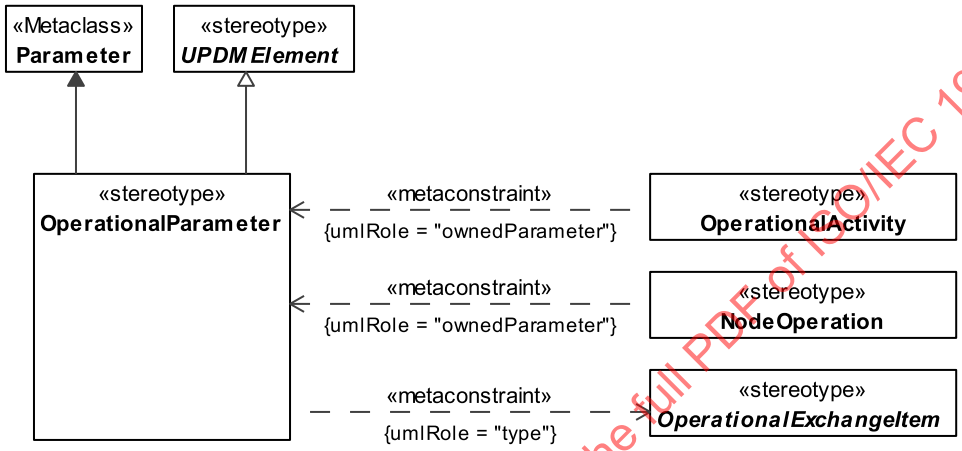

Figure 8.43 - OperationalParameter

Constraints

The following are constraints for OperationalParameter:

- OperationalParameter.type - Value for the type property must be stereotyped by specialization of "OperationalExchangeItem."

Extensions

The following metaclasses are extended by OperationalParameter:

- Parameter

Specializations

The OperationalParameter element is a specialization of:

- UPDMElement

8.3.1.1.4.1.8 OperationalState

UPDM: State identified in the context of an OperationalStateDescription

MODAF:N/A

DoDAF:N/A

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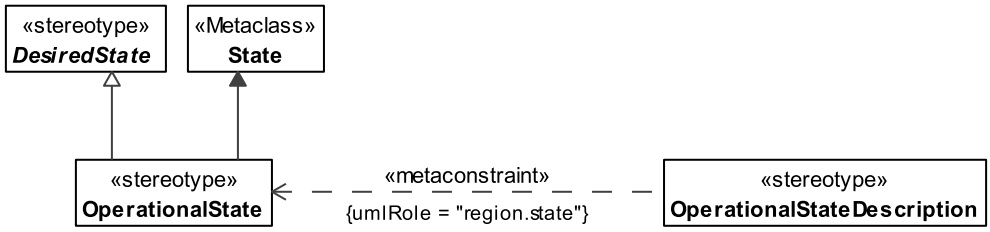

Figure 8.44 - OperationalState

Extensions

The following metaclasses are extended by OperationalState:

- State

Specializations

The OperationalState element is a specialization of:

- DesiredState

8.3.1.1.4.1.9 OperationalStateDescription

UPDM: A state machine describing an operational behavior or property.

MODAF: An OperationalStateMachine (MODAF::OperationalStateDescription) is a rule governing an operational behavior or property.

DoDAF: The Operational State Transition Description (OV-6b) DoDAF-described View is a graphical method of describing how an Operational Activity responds to various events by changing its state. The diagram represents the sets of events to which the Architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

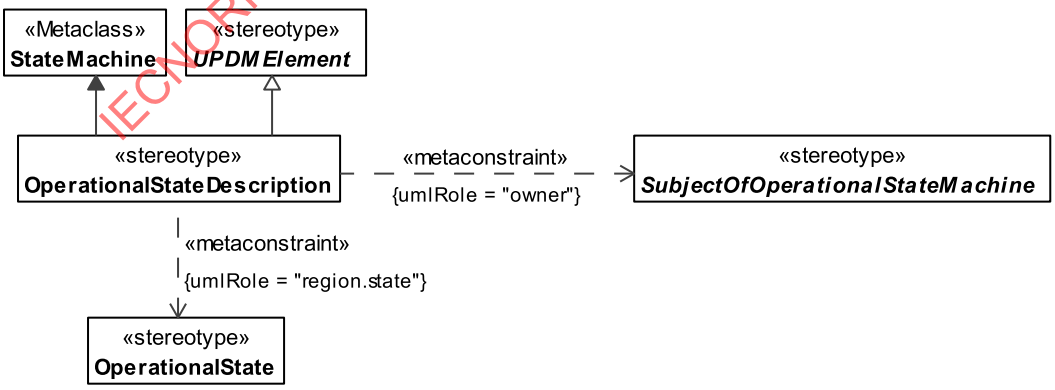

Figure 8.45 - OperationalStateDescription

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Constraints

The following are constraints for OperationalStateDescription:

- OperationalStateDescription.owner - Values for the owner property must be stereotyped with specializations of "SubjectOfOperationalStateMachine."
- OperationalStateDescription.region.state - Values for the region.state property must be stereotyped with "OperationalState" or its specializations.

Extensions

The following metaclasses are extended by OperationalStateDescription:

- StateMachine

Specializations

The OperationalStateDescription element is a specialization of:

- UPDMElement

8.3.1.1.4.1.10 SubjectOfOperationalStateMachine

UPDM Abstract Element: The element being described by the state machine.

Note: SubjectOfOperationalStateMachine is abstract.

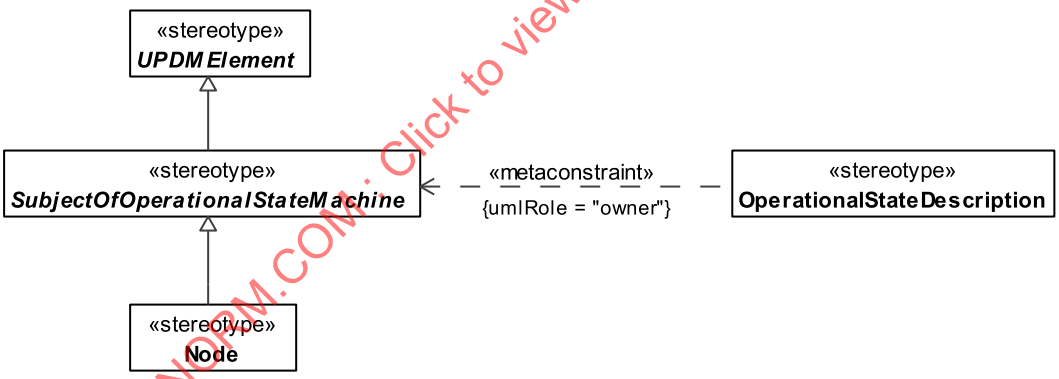

Figure 8.46 - SubjectOfOperationalStateMachine

Constraints

The following are constraints for SubjectOfOperationalStateMachine:

- SubjectOfOperationalStateMachine.ownedBehavior - If elements, that have applied stereotypes that are specializations of "SubjectOfOperationalStateMachine" have StateMachines as owned behaviors, then those behaviors must be stereotyped "OperationalStateMachine" or its specializations.

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Specializations

The SubjectOfOperationalStateMachine element is a specialization of:

- UPDMElement

8.3.1.1.4.2 UPDM L1::UPDM L0::Core::OperationalElements::Data

The Data Profile is used to document the business information requirements and structural business process rules of the architecture. It describes the information that is associated with the information exchanges of the architecture. Included are information items, their attributes or characteristics, and their inter-relationships.

8.3.1.1.4.2.1 LogicalDataModel

MODAF: A LogicalDataModel is a specification of business information requirements as a formal data structure, where relationships and classes (entities) are used to specify the logic which underpins the information.

DoDAF: A Logical Data Model allows analysis of an architecture's data definition aspect, without consideration of implementation specific or product specific issues.

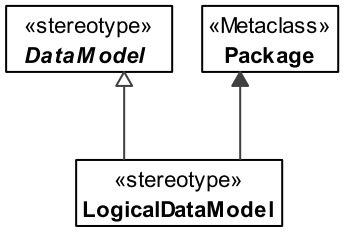

Figure 8.47 - LogicalDataModel

Extensions

The following metaclasses are extended by LogicalDataModel:

- Package

Specializations

The LogicalDataModel element is a specialization of:

- DataModel

8.3.1.1.4.3 UPDM L1::UPDM L0::Core::OperationalElements::Flows

Section of the OperationalElements profile that describes flows exists or are required between Nodes such as flows of information, people, material, or energy.

8.3.1.1.4.3.1 Command

MODAF: Asserts that one OrganizationalResource (source) commands another (target)

DoDAF: NA

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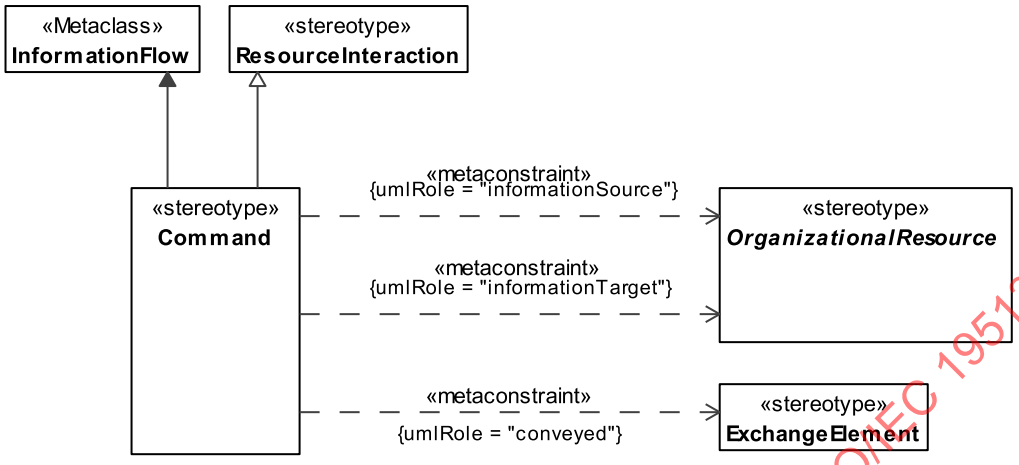

Figure 8.48 - Command

Constraints

The following are constraints for Command:

- Command.conveyed - Value for the conveyed property must be stereotyped “ExchangeElement” or its specializations.
- Command.informationSource - Value for the informationSource property must be stereotyped “OrganizationalResource” or its specializations.
- Command.informationTarget - Value for the informationTarget property must be stereotyped “OrganizationalResource” or its specializations.

Extensions

The following metaclasses are extended by Command:

- InformationFlow

Specializations

The Command element is a specialization of:

- ResourceInteraction

8.3.1.1.4.3.2 OperationalExchange

UPDM: An utility element used as common flow for:

- InformationExchange
- OrganizationalExchange
- EnergyExchange
- MaterielExchange

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- ConfigurationExchange
- GeoPoliticalExtent

An operational exchange is formed when an activity of one operational node consumes items produced by another activity of a different operational node.

An operational exchange describes the characteristics of the exchanged item, such as the content, format (voice, imagery, text and message format, etc.), throughput requirements, security or classification level, timeliness requirement, and the degree of interoperability.

MODAF: An OperationalExchange (MODAF::LogicalFlow) asserts that a flow exists or is required between Nodes (e.g., flows of information, people, material, or energy).

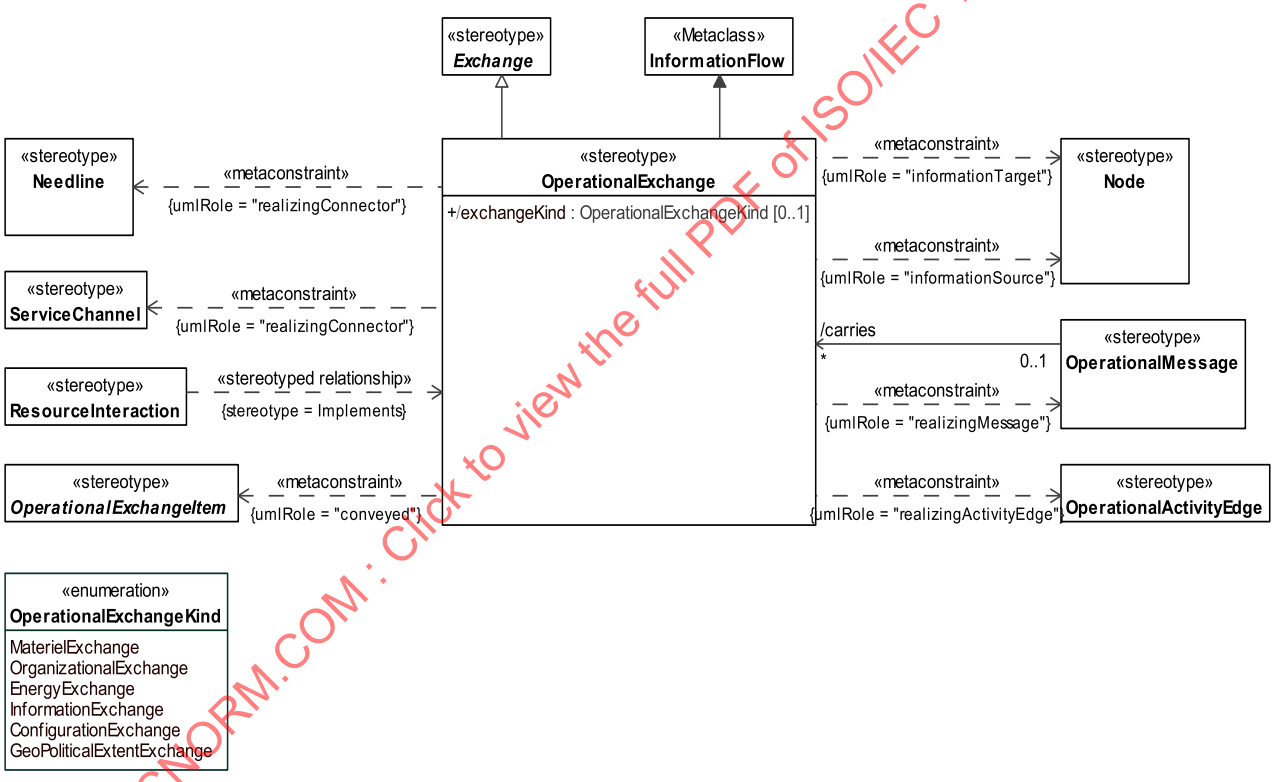

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Figure 8.49 - OperationalExchange

Constraints

The following are constraints for OperationalExchange:

- **OperationalExchange.conveyed - In case of OperationalExchange.operationalExchangeKind:**
  = InformationExchange, the conveyed element must be stereotyped «ExchangeElement» or its specializations,
  = MaterielExchange, the conveyed element must be stereotyped «ResourceArtifact» or its specializations,

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= EnergyExchange, the conveyed element must be stereotyped «Energy» or its specializations,
= OrganizationalExchange, the conveyed element must be stereotyped «OrganizationalResource» or its specializations,
= ConfigurationExchange, the conveyed element must be stereotyped «CapabilityConfiguration» or its specializations, or
= GeoPoliticalExtentExchange, the conveyed element must be stereotyped «GeoPoliticalExtent» or its specializations.

OperationalExchange.informationSource - Value for informationSource property has to be stereotyped «Node» or its specializations.

- OperationalExchange.informationTarget - Value for informationTarget property has to be stereotyped «Node» or its specializations.
- OperationalExchange.realization/realizingConnector - Value for realization or realizingConnector property has to be stereotyped «Needline», «ServiceChannel», or their specializations.
- OperationalExchange.realizingActivityEdge - Value for realizingActivityEdge property has to be stereotyped «OperationalActivityEdge» or its specializations.
- OperationalExchange.realizingMessage - Value for realizingMessage property has to be stereotyped «OperationalMessage» or its specializations.

Attributes

The following are attributes for OperationalExchange:

- exchangeKind : OperationalExchangeKind[0..1] - Enumeration of operational exchange kinds.

Extensions

The following metaclasses are extended by OperationalExchange:

- InformationFlow

Specializations

The OperationalExchange element is a specialization of:

- Exchange
- SubjectOfOperationalConstraint

8.3.1.1.4.3.3 OperationalExchangeItem

UPDM: An abstract utility element used as common ancestor for:

- InformationElement
- ResourceArtifact
- Energy
- OrganizationalResource

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- CapabilityConfiguration
- GeoPoliticalExtent

Note: OperationalExchangeItem is abstract.

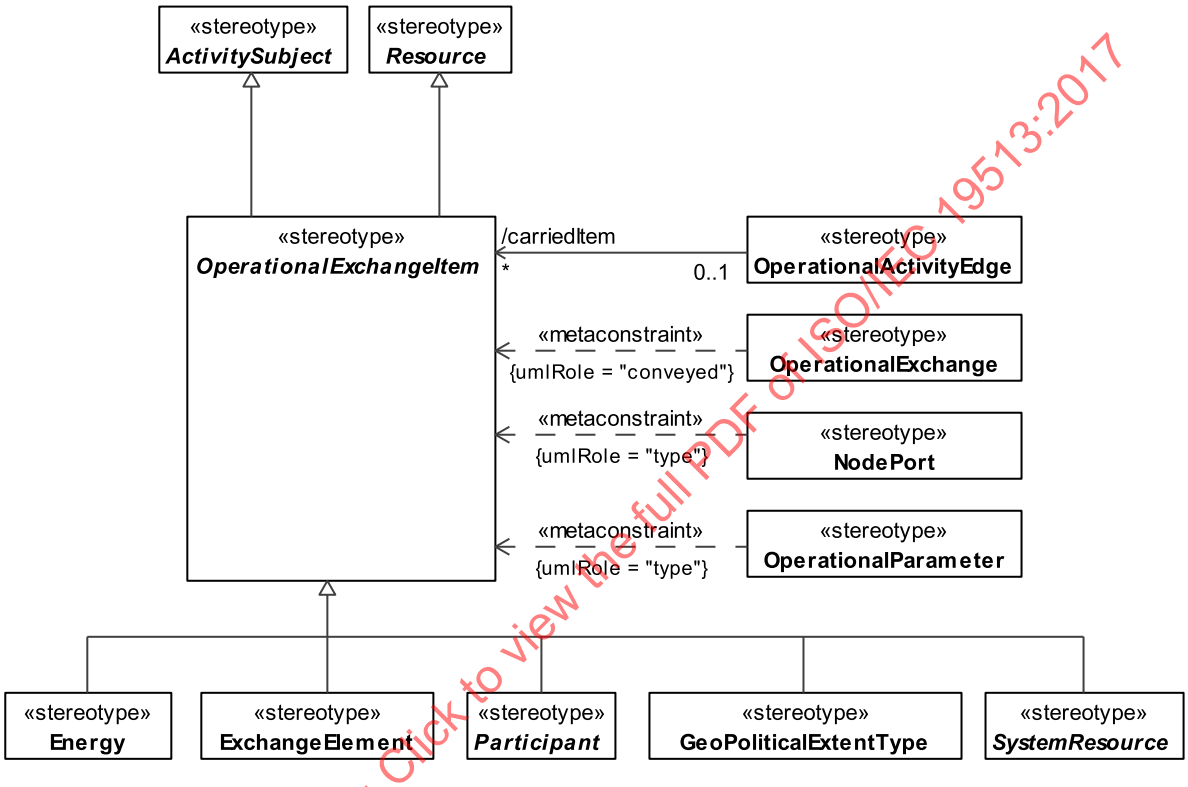

Figure 8.50 - OperationalExchangeItem

Specializations

The OperationalExchangeItem element is a specialization of:

- ActivitySubject
- Resource

8.3.1.1.4.3.4 OperationalExchangeKind

Enumeration of operational exchange kinds, used to support the exchangeKind tag of the OperationalExchange stereotype.

Enumeration Literals

The following are enumeration literals for OperationalExchangeKind:

- ConfigurationExchange - A LogicalFlow where CapabilityConfigurations flow from one node to another.

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- EnergyExchange - A LogicalFlow where energy is flowed from one node to another.
- GeoPoliticalExtentExchange - A LogicalFlow where GeoPoliticalExtents (i.e., Borders) flow from one place to another.
- InformationExchange - A LogicalFlow where energy is flowed from one node to another.
- MaterielExchange - A flow of material (artifacts) between Functions.
- OrganizationalExchange - A LogicalFlow where human resources (PostTypes, RoleTypes) flow between Nodes.

8.3.1.1.4.4 UPDM L1::UPDM L0::Core::OperationalElements::Structure

Section of the OperationalElements profile that describes stuctural concepts.

8.3.1.1.4.4.1 ArbitraryConnector

UPDM: Represents a visual indication of a connection used in high level operational concept diagrams. The connections are purely visual and cannot be related to any architectural semantics.

MODAF: NA

DoDAF:NA

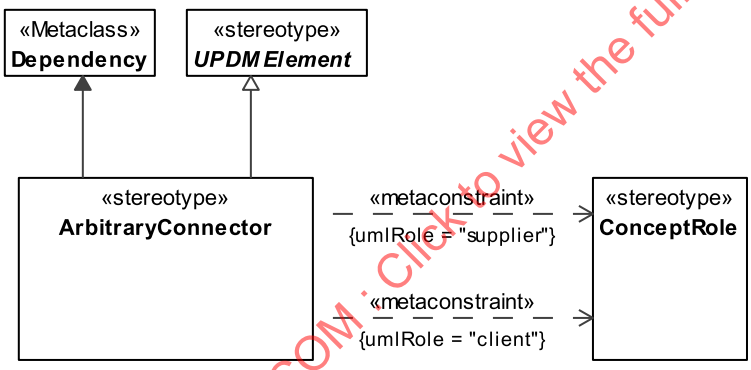

Figure 8.51 - ArbitraryConnector

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Constraints

The following are constraints for ArbitraryConnector:

- ArbitraryConnector.client - The value for client property has to be stereotyped “ConceptRole” or its specializations.
- ArbitraryConnector.supplier - The value for supplier property has to be stereotyped “ConceptRole” or its specializations.

Extensions

The following metaclasses are extended by ArbitraryConnector:

- Dependency

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Specializations

The ArbitraryConnector element is a specialization of:

- UPDMElement

8.3.1.1.4.4.2 Competence

MODAF: A specific set of abilities defined by knowledge, skills, and attitude.

DoDAF: (DoDAF::Skill): The ability, coming from one's knowledge, practice, aptitude, etc., to do something well.

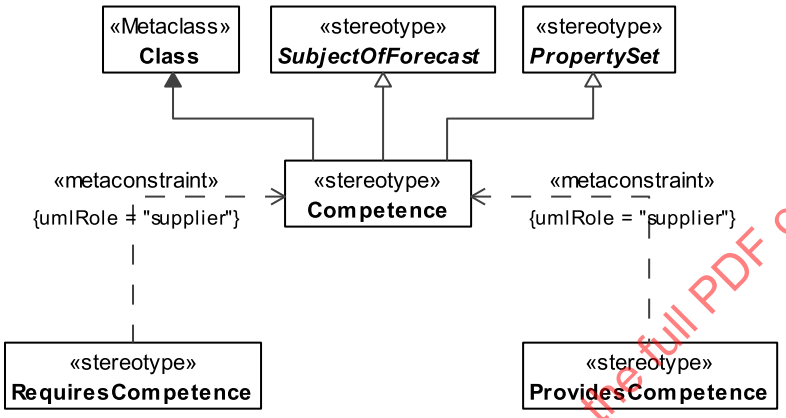

Figure 8.52 - Competence

Extensions

The following metaclasses are extended by Competence:

- Class

Specializations

The Competence element is a specialization of:

- SubjectOfForecast
- PropertySet

8.3.1.1.4.4.3 ConceptItem

UPDM: Abstract, an item which may feature in a high level operational concept.

DoDAF:NA

Note: ConceptItem is abstract.

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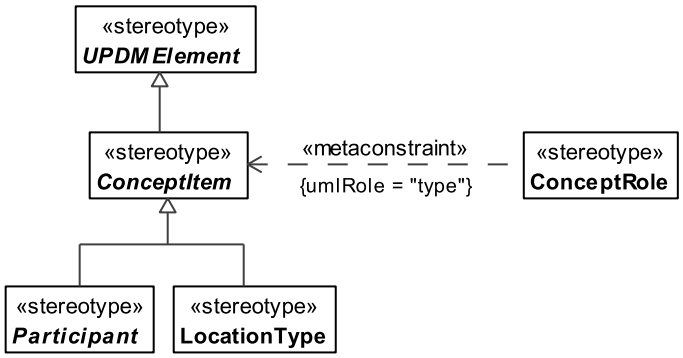

Figure 8.53 - ConceptItem

Specializations

The ConceptItem element is a specialization of:

- UPDMElement

8.3.1.1.4.4.4 ConceptRole

UPDM: Usage of a ConcepItem in the context of a HighLevelOperationalConcept.

MODAF: ItemInConcept, a relationship which asserts that a ConceptItem forms part of the high level operational concept.

DoDAF: N/A

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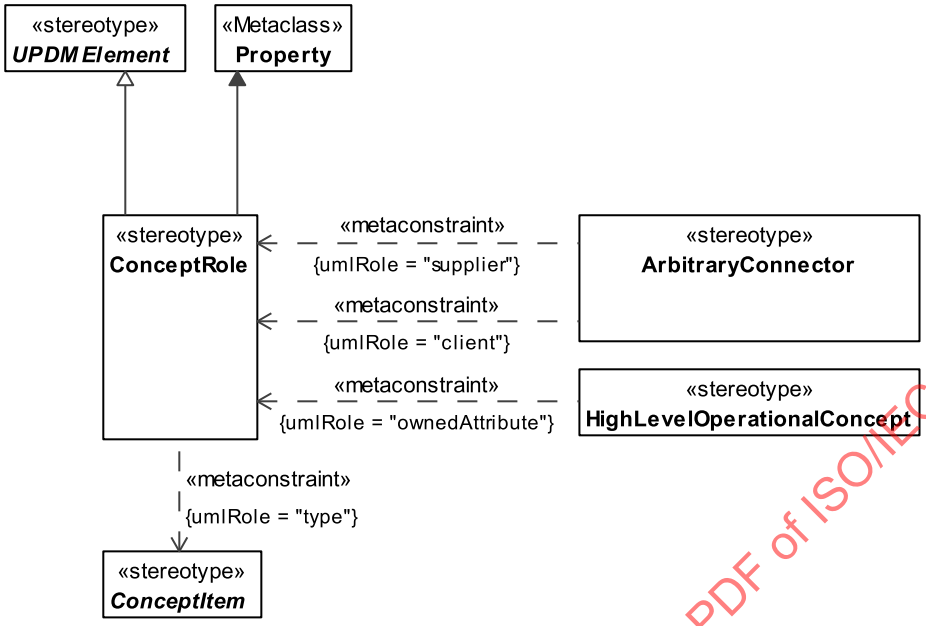

Figure 8.54 - ConceptRole

Constraints

The following are constraints for ConceptRole:

- ConceptRole.type - Value for the type property must be stereotyped a specialization of "ConceptItem."

Extensions

The following metaclasses are extended by ConceptRole:

- Property

Specializations

The ConceptRole element is a specialization of:

- UPDMElement

8.3.1.1.4.4.5 HighLevelOperationalConcept

MODAF: A generalized model for operations.

DoDAF: NA

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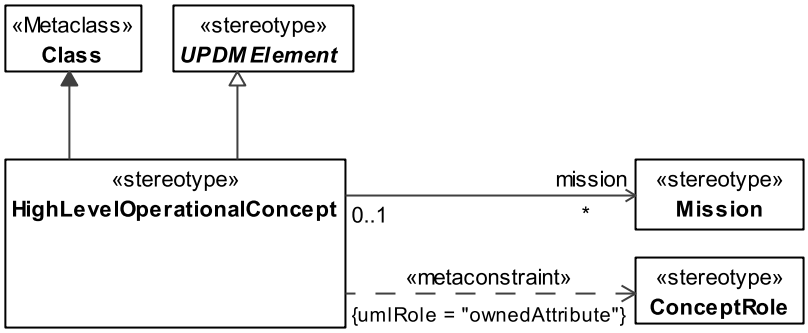

Figure 8.55 - HighLevelOperationalConcept

Constraints

The following are constraints for HighLevelOperationalConcept:

- HighLevelOperationalConcept.ownedAttribute - The values for the ownedAttribute properties must be stereotyped with specializations of the “ConceptRole.”

Attributes

The following are attributes for HighLevelOperationalConcept:

- mission : Mission[*] - Mission that is described by this HighLevelOperationalConcept.

Extensions

The following metaclasses are extended by HighLevelOperationalConcept:

- Class

Specializations

The HighLevelOperationalConcept element is a specialization of:

- UPDMElement

8.3.1.1.4.4.6 KnownResource

MODAF: Asserts that a known Resource plays a part in the architecture.

DoDAF: NA - covered by the more general temporalWholePart element.

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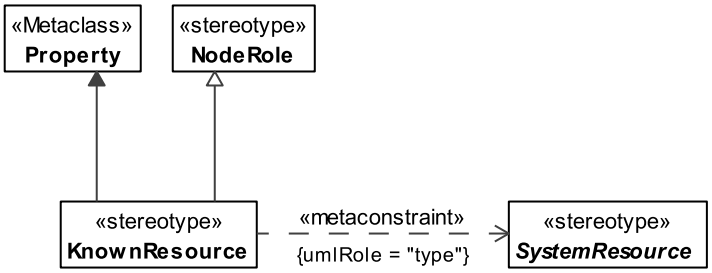

Figure 8.56 - KnownResource

Constraints

The following are constraints for KnownResource:

- KnownResource.type - Values for type property have to be stereotyped "SystemResource" or its specializations.

Extensions

The following metaclasses are extended by KnownResource:

- Property

Specializations

The KnownResource element is a specialization of:

- NodeRole

8.3.1.1.4.4.7 LogicalArchitecture

MODAF: A CompositeStructureModel whose parts are either NodeRoles (MODAF::Node), ProblemDomains, or KnownResources.

DoDAF: NA

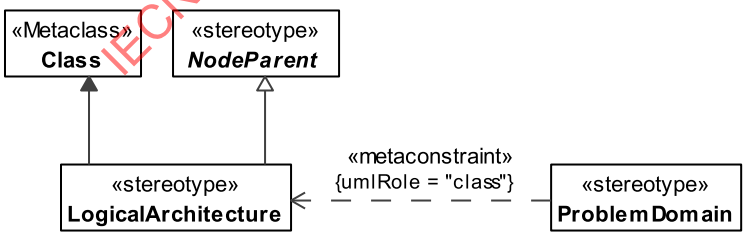

Figure 8.57 - LogicalArchitecture

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Extensions

The following metaclasses are extended by LogicalArchitecture:

- Class

8.3.1.1.4.4.8 Specializations

The LogicalArchitecture element is a specialization of:

- NodeParent

8.3.1.1.4.4.9 Mission

MODAF: A purpose to which a person, organization, or autonomous system is tasked.

DoDAF: The task, together with the purpose, that clearly indicates the action to be taken.

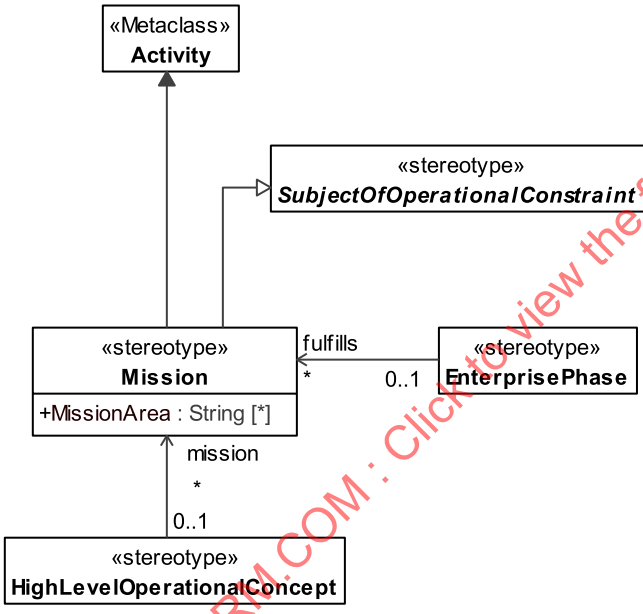

Figure 8.58 - Mission

Attributes

The following are attributes for Mission:

- MissionArea : String[*] - The area in which the Mission will take place.

Extensions

The following metaclasses are extended by Mission:

- Activity

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Specializations

The Mission element is a specialization of:

- SubjectOfOperationalConstraint

8.3.1.1.4.4.10 Needline

MODAF: A relationship between Nodes representing a bundle of InformationExchanges.

DoDAF: A needline documents the requirement to exchange information between nodes. The needline does not indicate how the information transfer is implemented.

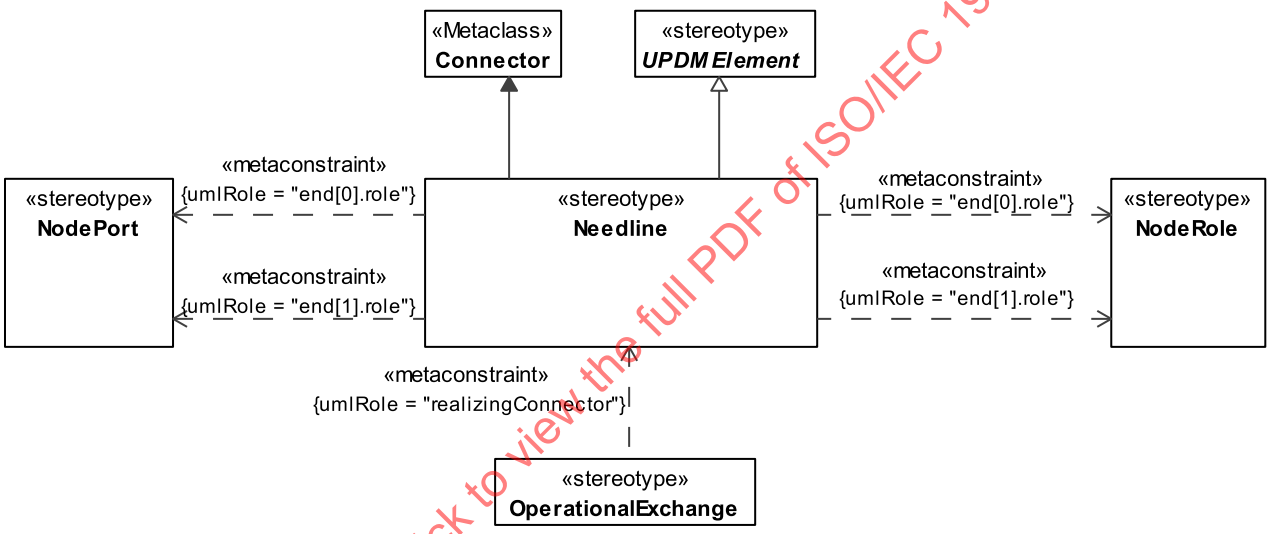

Figure 8.59 - Needline

Constraints

The following are constraints for Needline:

- Needline.end - The value for the role property for the owned ConnectorEnd must be stereotype “NodeRole”/ “NodePort” or its specializations.

Extensions

The following metaclasses are extended by Needline:

- Connector

Specializations

The Needline element is a specialization of:

- UPDMElement

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8.3.1.1.4.4.11 Node

MODAF: A Node (MODAF::NodeType) is a logical entity that performs operational activities.
Note: nodes are specified independently of any physical realization.

DoDAF: A Node (DoDAF::OperationalNode) is an element of the operational architecture that produces, consumes, or processes information.
Note: This is also a specialization of Performer.

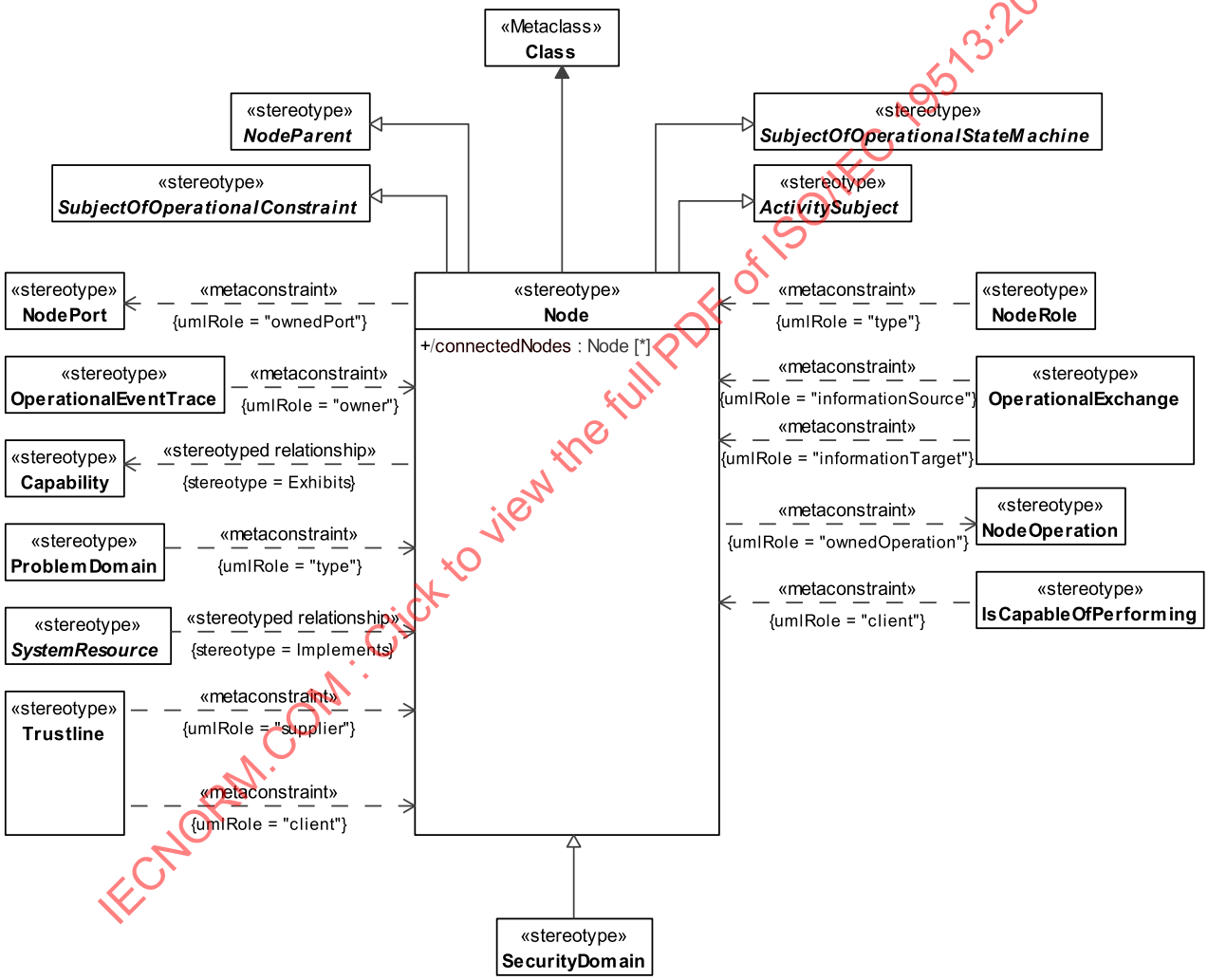

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Figure 8.60 - Node

Constraints

The following are constraints for Node:

- Node.isCapableOfPerforming - Is capable of performing only “OperationalActivity” elements or its specializations.

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- Node.ownedOperation - Values for the ownedOperation property must be stereotyped “NodeOperation” or its specializations.
- Node.ownedPort - Values for the ownedPort property must be stereotyped “NodePort,” “ServicePort,” or their specializations.

Attributes

The following are attributes for Node:

- connectedNodes : Node[*] -

Extensions

The following metaclasses are extended by Node:

- Class

Specializations

The Node element is a specialization of:

- ActivitySubject
- SubjectOfOperationalConstraint
- NodeParent
- SubjectOfOperationalStateMachine

8.3.1.1.4.4.12 NodeParent

UPDM: An abstract element representing the owners/context of composite structure at the operational level.

MODAF: The abstract supertype of all elements that can have child Nodes (LogicalArchitecture, ProblemDomain, and NodeType).

DoDAF:NA

Note: NodeParent is abstract.

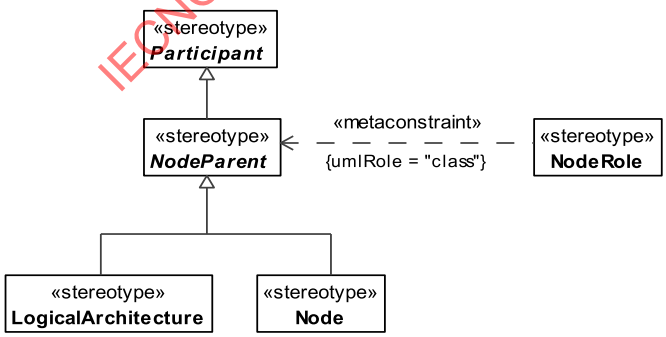

Figure 8.61 - NodeParent

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Specializations

The NodeParent element is a specialization of:

- Participant

8.3.1.1.4.4.13 NodePort

UPDM: A port is a property of a Node that specifies a distinct interaction point between the node and its environment or between the (behavior of the) node and its internal parts. It is the "entry/exit" point where resources (e.g., energy, information/data and people, etc.) flow in and out of a node.

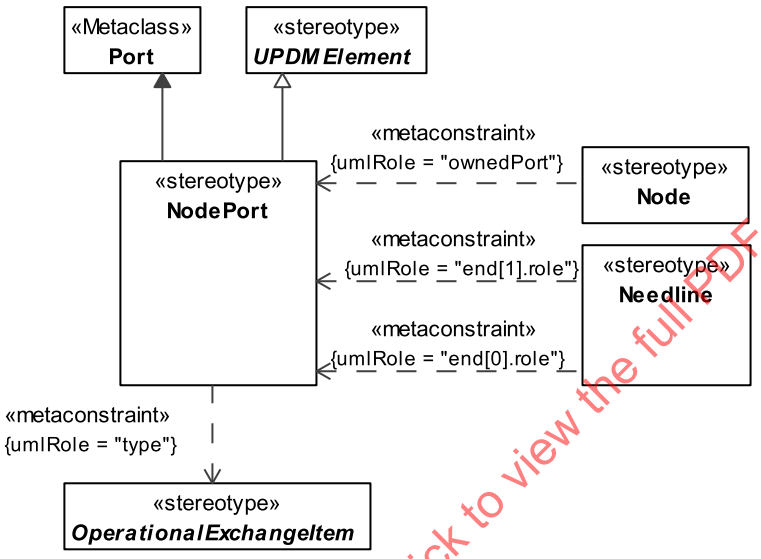

Figure 8.62 - NodePort

Constraints

The following are constraints for NodePort:

- NodePort.type - Value for the type property must be stereotyped specialization of "OperationalExchangeItem."

Extensions

The following metaclasses are extended by NodePort:

- Port

Specializations

The NodePort element is a specialization of:

- UPDMElement

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8.3.1.1.4.4.14 NodeRole

MODAF: A NodeRole (MODAF::Node) is used to link a parent Node to its sub-nodes.

DoDAF: NA

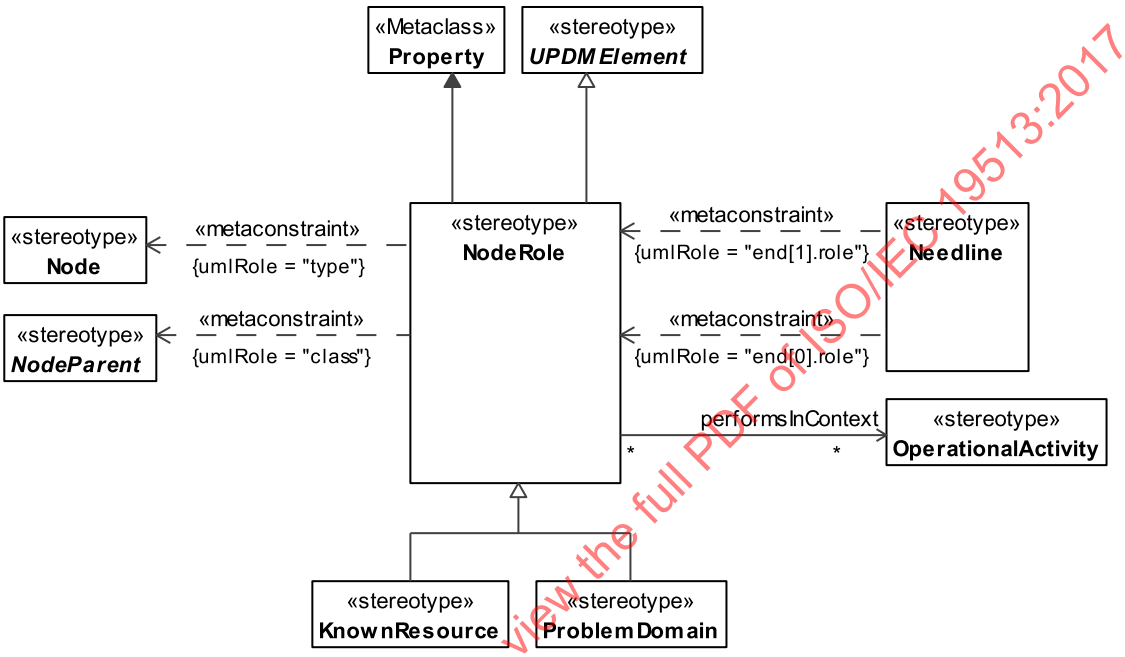

Figure 8.63 - NodeRole

Constraints

The following are constraints for NodeRole:

- NodeRole.class - Value for class meta property must be stereotyped a specialization of "NodeParent."
- NodeRole.type - Value for type meta property must be stereotyped "Node" or its specializations.

Attributes

The following are attributes for NodeRole:

- performsInContext : OperationalActivity[*] - OperationalActivity Performed in the context of a specific role.

Extensions

The following metaclasses are extended by NodeRole:

- Property

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Specializations

The NodeRole element is a specialization of:

- UPDMElement

8.3.1.1.4.4.15 OperationalConstraint

UPDM: An abstract Class that is extended by OperationalConstraint (a rule governing an operational behavior or property) and ResourceConstraint.

MODAF: A rule governing an operational behavior or property.

DoDAF: A principle or condition that governs behavior; a prescribed guide for conduct or action (Rule).

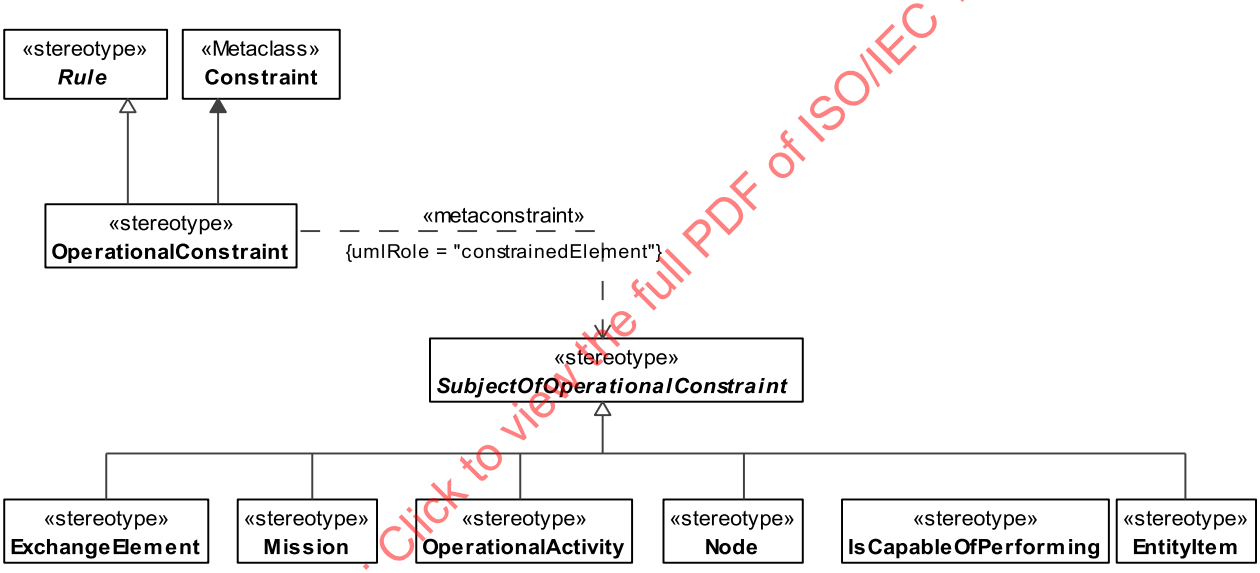

Figure 8.64 - OperationalConstraint

Constraints

The following are constraints for OperationalConstraint:

- OperationalConstraint.constrainedElement - Value for the constrainedElement property must be stereotyped by any specialization of “SubjectOfOperationalConstraint.”

Extensions

The following metaclasses are extended by OperationalConstraint:

- Constraint

Specializations

The OperationalConstraint element is a specialization of:

- UPDMElement

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- Rule

8.3.1.1.4.4.16 SecurityDomain

MODAF:NA

DoDAF: A NodeType whose members (other Nodes, KnownResources) all share a common security policy.

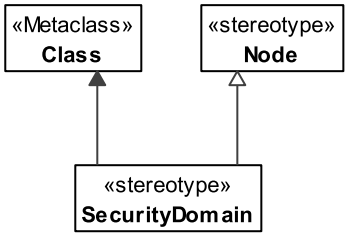

Figure 8.65 - SecurityDomain

Extensions

The following metaclasses are extended by SecurityDomain:

- Class

Specializations

The SecurityDomain element is a specialization of:

- Node

8.3.1.1.4.4.17 SubjectOfOperationalConstraint

MODAF: Abstract. An element of the architecture that may be subject to an OperationalConstraint or OperationalStateDescription.

Note: SubjectOfOperationalConstraint is abstract.

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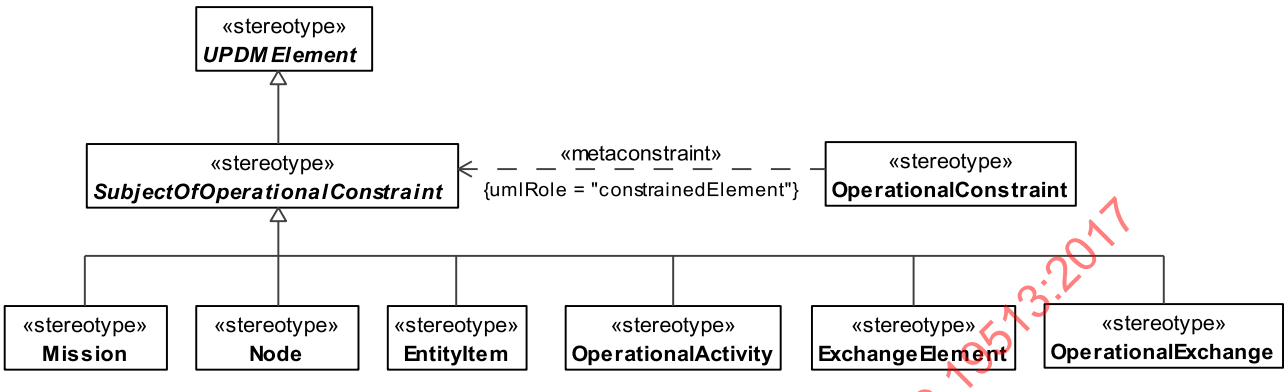

Figure 8.66 - SubjectOfOperationalConstraint

Specializations

The SubjectOfOperationalConstraint element is a specialization of:

- UPDMElement

8.3.1.1.4.4.18 UPDM L1::UPDM L0::Core::OperationalElements::Structure::Organizational

The organizational elements of the operational structure.

8.2.1.1.4.4.18.1 UPDM L1::UPDM L0::Core::OperationalElements::Structure::Organizational::Actual

Actual elements in the organizational part of the structural part of the Operational profile.

8.2.1.1.4.4.18.1.1 ActualOrganization

MODAF: An actual specific organization, an instance of an organization class (e.g., “The US Department of Defense”).

DoDAF: [DoDAF::Organization]: A specific real-world assemblage of people and other resources organized for an on-going purpose.

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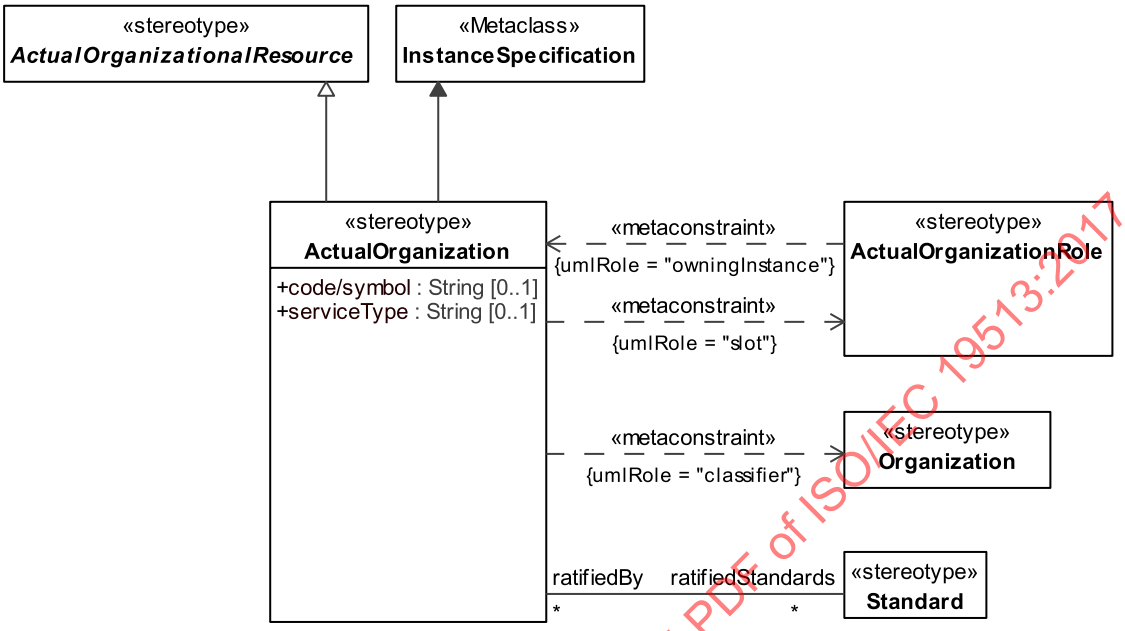

Figure 8.67 - ActualOrganization

Constraints

The following are constraints for ActualOrganization:

- ActualOrganization.classifier - Classifier property value must be stereotyped “Organization” or its specializations.
- ActualOrganization.slot - Slot property value must be stereotyped “ActualOrganizationRole” or its specializations.

Attributes

The following are attributes for ActualOrganization:

- code/symbol : String[0..1] - Army, Navy, Air Force, Marine Corps, Joint
- ratifiedStandards : Standard[*] - Standards that were ratified by this ActualOrganization.
- serviceType : String[0..1] - Service office code or symbol

Extensions

The following metaclasses are extended by ActualOrganization:

- InstanceSpecification

Specializations

The ActualOrganization element is a specialization of:

- ActualOrganizationalResource

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8.2.1.1.4.4.18.1.2 ActualOrganizationalResource

UPDM: An ActualOrganization or an ActualPost.

MODAF: An instance of either an actual organization or an actual post.

DoDAF: A specific real-world assemblage of people and other resources organized for an on-going purpose.

Note: ActualOrganizationalResource is abstract.

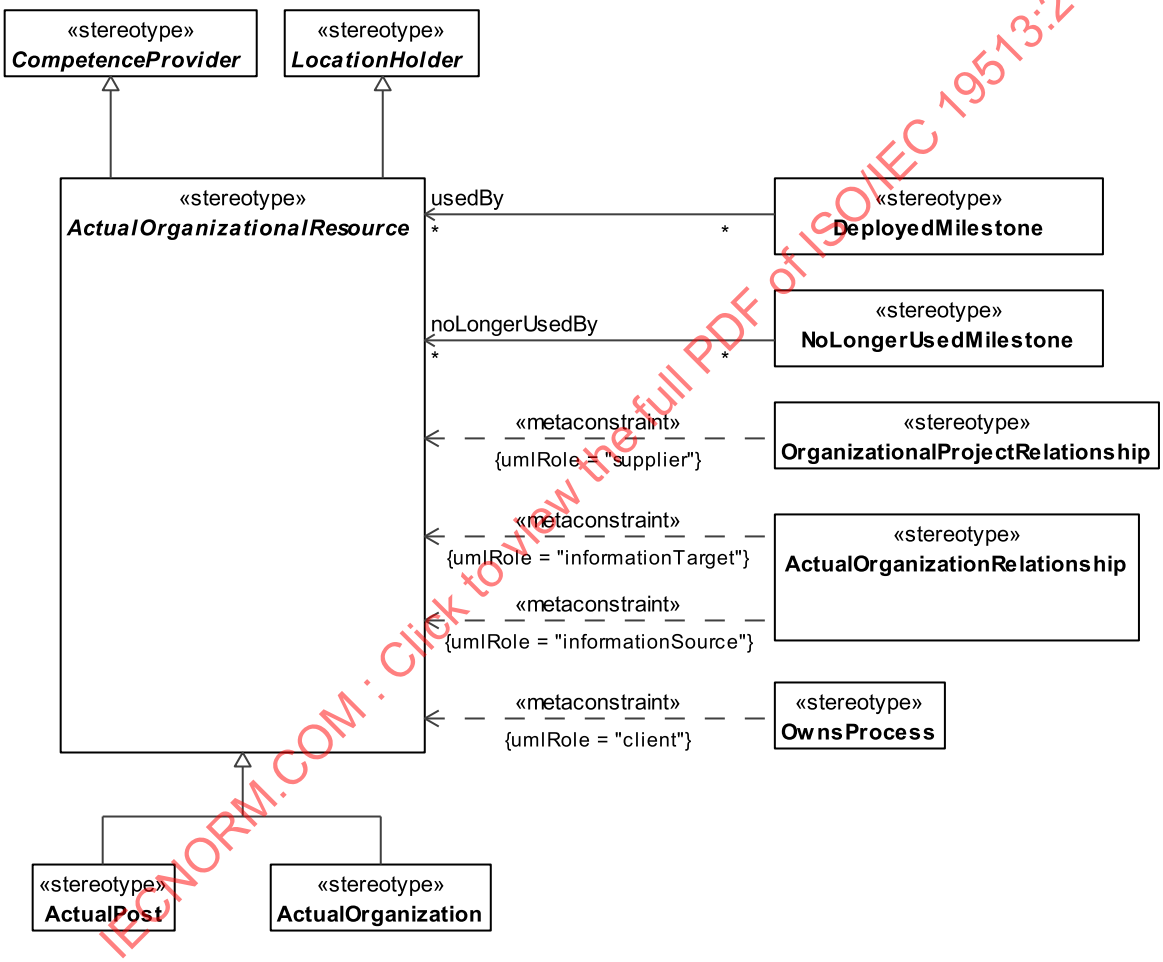

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Figure 8.68 - ActualOrganizationalResource

Specializations

The ActualOrganizationalResource element is a specialization of:

- LocationHolder
- CompetenceProvider

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8.2.1.1.4.4.18.1.3 ActualOrganizationRelationship

UPDM: A relationship between two ActualOrganizationResources.

MODAF: A relationship between two actual specific organizations or parts of an organization.

DoDAF: NA

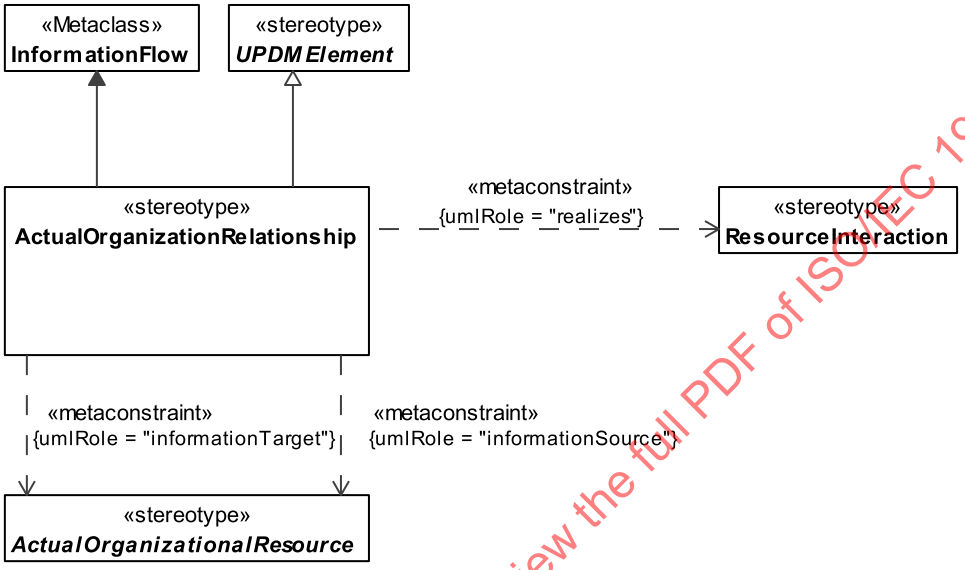

Figure 8.69 - ActualOrganizationRelationship

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Constraints

The following are constraints for ActualOrganizationRelationship:

- ActualOrganizationRelationship.conveyed - Value for conveyed metaproperty must be stereotyped “ExchangeElement” or its specializations.
- ActualOrganizationRelationship.source - Value for source metaproperty must be stereotyped “ActualOrganizationalResource” or its specializations.
- ActualOrganizationRelationship.target - Value for realizes metaproperty must be stereotyped “ResourceInteraction” or its specializations.

Extensions

The following metaclasses are extended by ActualOrganizationRelationship:

- InformationFlow

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Specializations

The ActualOrganizationRelationship element is a specialization of:

- UPDMElement

8.2.1.1.4.4.18.1.4 ActualOrganizationRole

UPDM: Relates an actual specific organization to an actual specific organizational resource that fulfills a role in that organization.

MODAF: NA

DoDAF: NA

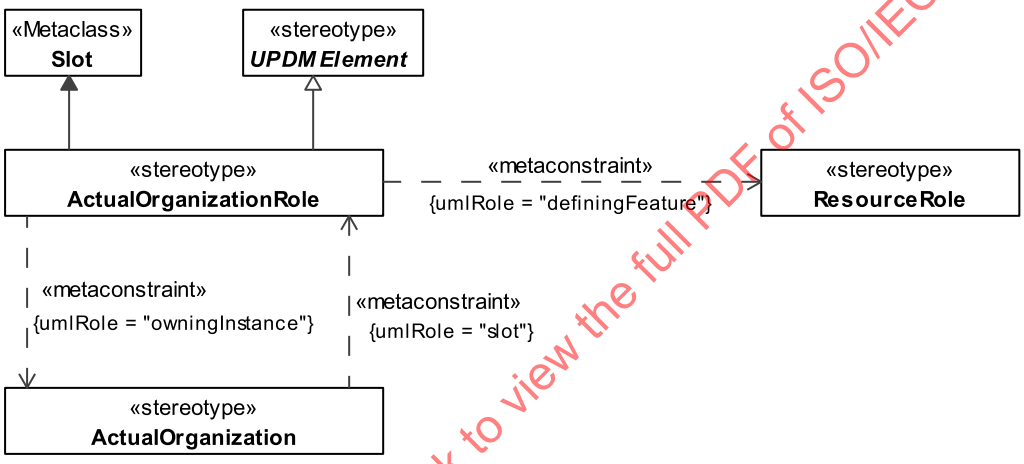

Figure 8.70 - ActualOrganizationRole

Constraints

The following are constraints for ActualOrganizationRole:

- ActualOrganizationPart.definingFeature - Value for definingFeature property has to be stereotyped “ResourceRole” or its specializations.
- ActualOrganizationPart.owningInstance - Value for owningInstance property has to be stereotyped “ActualOrganization” or its specializations.

Extensions

The following metaclasses are extended by ActualOrganizationRole:

- Slot

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Specializations

The ActualOrganizationRole element is a specialization of:

- UPDMElement

8.2.1.1.4.4.18.1.5 ActualPerson

UPDM: Named individual that fulfills an ActualPost. An individual human being (vs. Person, which is a type) that is recognized by law as the subject of rights and duties.

MODAF: NA

DoDAF: An individual person

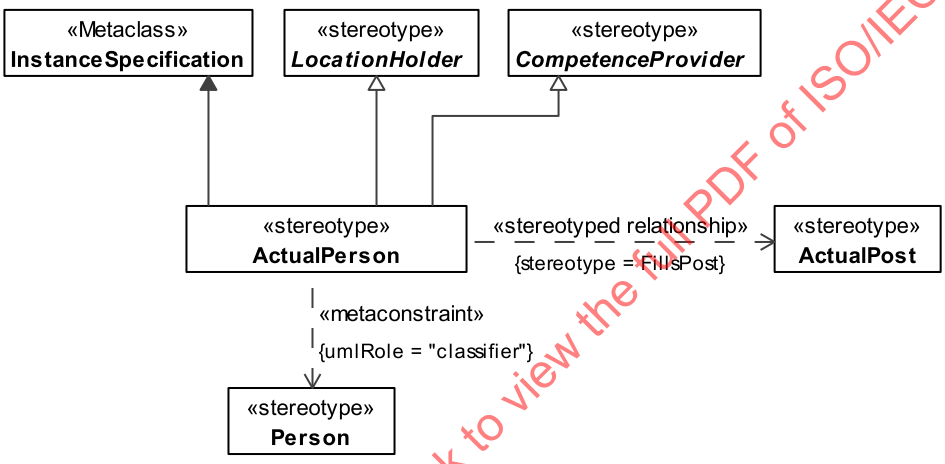

Figure 8.71 - ActualPerson

Constraints

The following are constraints for ActualPerson:

- ActualPerson.classifier - Value for the classifier property has to be stereotyped “Person” or its specializations.

Extensions

The following metaclasses are extended by ActualPerson:

- InstanceSpecification

Specializations

The ActualPerson element is a specialization of:

- LocationHolder
- CompetenceProvider

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8.2.1.1.4.4.18.1.6 ActualPost

UPDM: An actual, specific post, an instance of a PostType class (e.g., “President of the United States of America”).

MODAF: NA

DoDAF: NA

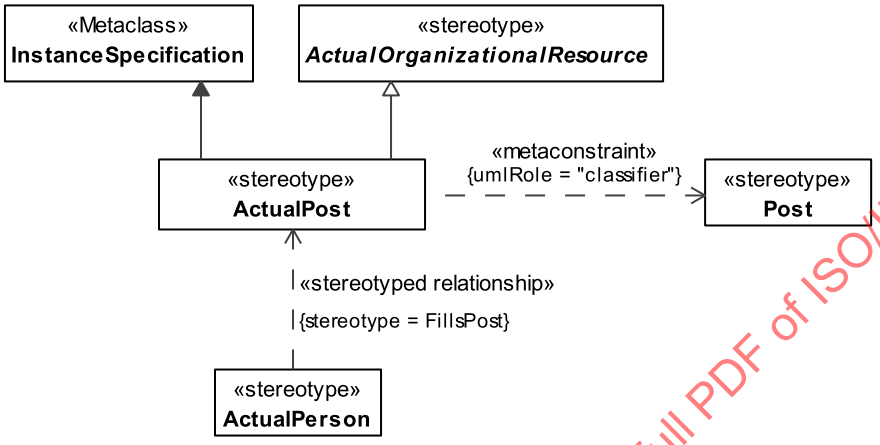

Figure 8.72 - ActualPost

Constraints

The following are constraints for ActualPost:

- ActualPost.classifier - Classifier property value must be stereotyped “Post” or its specializations.

Extensions

The following metaclasses are extended by ActualPost:

- InstanceSpecification

Specializations

The ActualPost element is a specialization of:

- ActualOrganizationalResource

8.2.1.1.4.4.18.1.7 CompetenceProvider

UPDM:Abstract element used to group ActualPersons and ActualOrganizationalResources.

MODAF:NA

DoDAF:NA

Note: CompetenceProvider is abstract.

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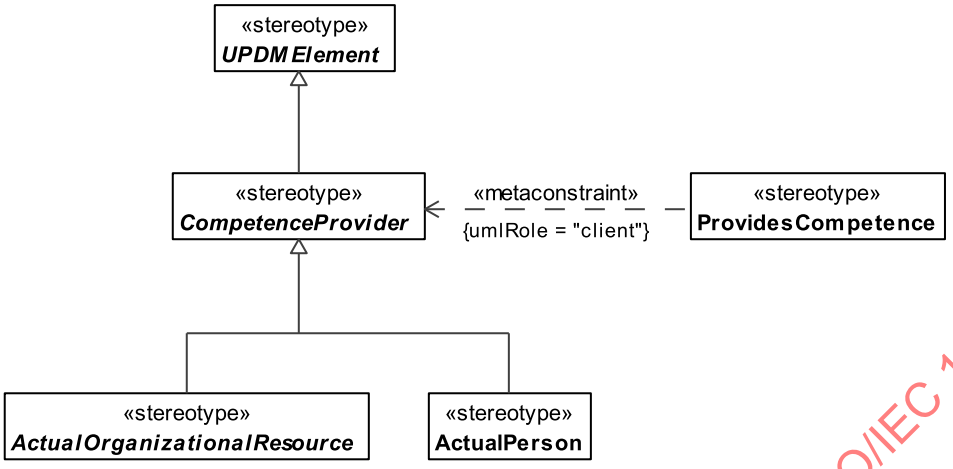

Figure 8.73 - CompetenceProvider

Specializations

The CompetenceProvider element is a specialization of:

- UPDMElement

8.2.1.1.4.4.18.1.8 FillsPost

UPDM: Asserts that ActualPerson fills an ActualPost.

MODAF: NA

DoDAF: NA

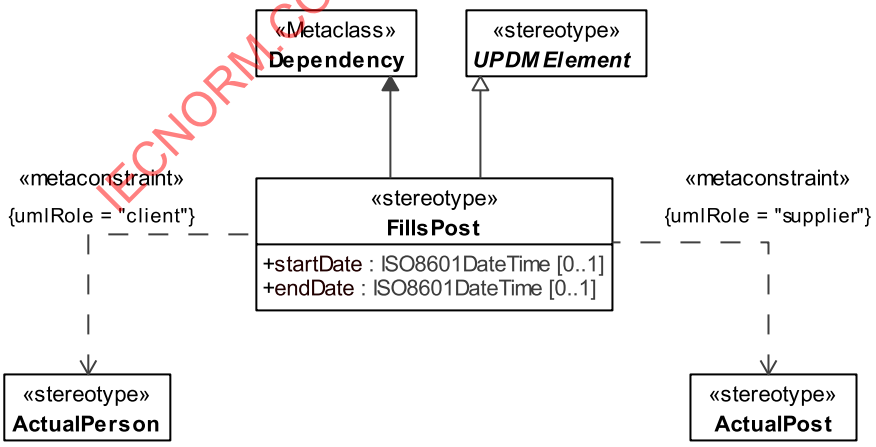

Figure 8.74 - FillsPost

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Constraints

The following are constraints for FillsPost:

- FillsPost.client - Value for the client property must be stereotyped by “ActualPerson” or its specializations.
- FillsPost.supplier - Value for the supplier property must be stereotyped by “ActualPost” or its specializations.

Attributes

The following are attributes for FillsPost:

- endDate : ISO8601DateTime[0..1] - End date
- startDate : ISO8601DateTime[0..1] - Start date

Extensions

The following metaclasses are extended by FillsPost:

- Dependency

Specializations

The FillsPost element is a specialization of:

- UPDMElement

8.2.1.1.4.4.18.2 UPDM L1::UPDM L0::Core::OperationalElements::Structure::Organizational::Typical

Typical elements in the organizational part of the structural part of the Operational profile.

8.2.1.1.4.4.18.2.1 CompetenceRequirer

UPDM:Abstract element used to group Organizations, Post, and Responsibilities.

MODAF:NA

DoDAF:NA

Note: CompetenceRequirer is abstract.

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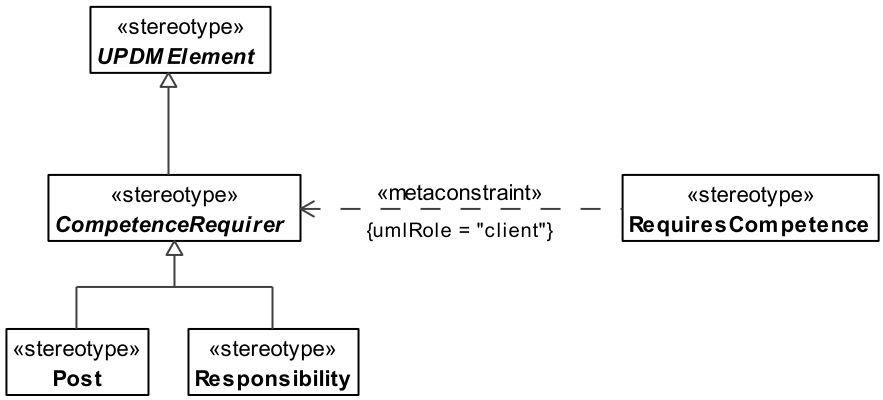

Figure 8.75 - CompetenceRequirer

Specializations

The CompetenceRequirer element is a specialization of:

- UPDMElement

8.2.1.1.4.4.18.2.2 Organization

MODAF: A group of persons, associated for a particular purpose.

DoDAF: A type of Organization.

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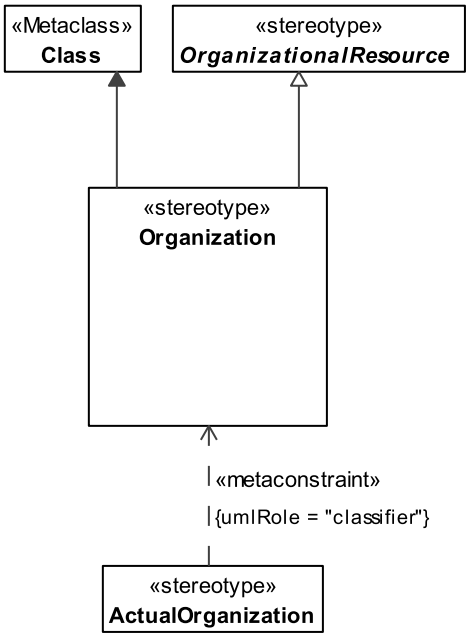

Figure 8.76 - Organization

Extensions

The following metaclasses are extended by Organization:

- Class

Specializations

The Organization element is a specialization of:

- OrganizationalResource

8.2.1.1.4.4.18.2.3 OrganizationalResource

UPDM An abstract element that represents Organizations and Posts.

MODAF: Either an organization, or a post.

Note: OrganizationalResource is abstract.

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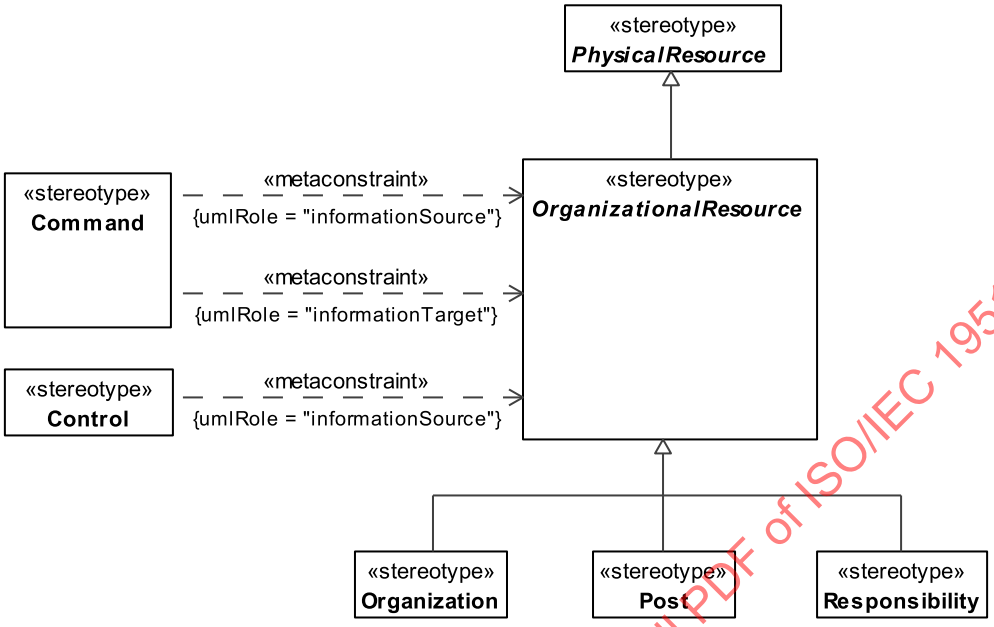

Figure 8.77 - OrganizationalResource

Specializations

The OrganizationalResource element is a specialization of:

- PhysicalResource

8.2.1.1.4.4.18.2.4 Person

UPDM: A type of a human being that is recognized by law as the subject of rights and duties. This is used to define the characteristics that require capturing for ActualPersons (e.g., properties such as address, rank, telephone number, etc.).

MODAF: NA

DoDAF: NA

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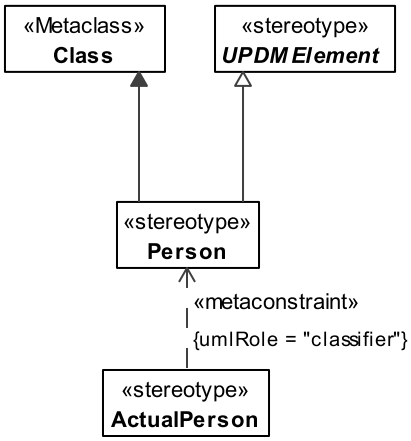

Figure 8.78 - Person

Extensions

The following metaclasses are extended by Person:

- Class

Specializations

The Person element is a specialization of:

- UPDMElement

8.2.1.1.4.4.18.2.5 Post

MODAF: A Post (MODAF::PostType) is a type of point of contact or responsible person. Note that this is the type of post (e.g., Desk Officer, Commander Land Component, etc.).

DoDAF: A Post (DoDAF:: PersonType) is a category of persons defined by the role or roles they share that are relevant to an architecture.

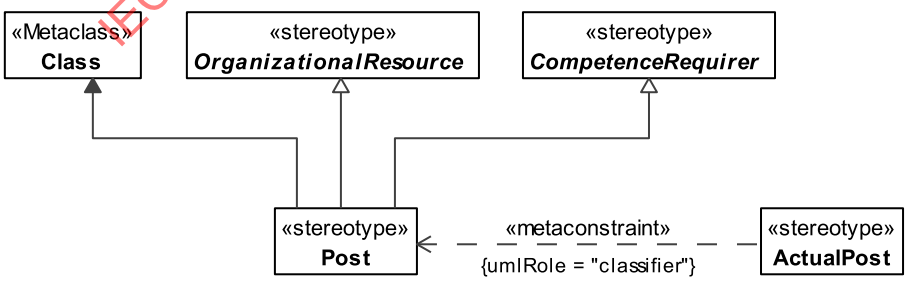

Figure 8.79 - Post

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Extensions

The following metaclasses are extended by Post:

- Class

Specializations

The Post element is a specialization of:

- OrganizationalResource
- CompetenceRequirer

8.2.1.1.4.4.18.2.6 ProvidesCompetence

UPDM: Asserts that a Resource type provides a competence.

MODAF: Asserts that a Role requires a Competence (MODAF::CompetenceForRole).

DoDAF: An overlap between a Personnel Type and the Skills it entails (DoDAF:: skillPartOfPersonType).

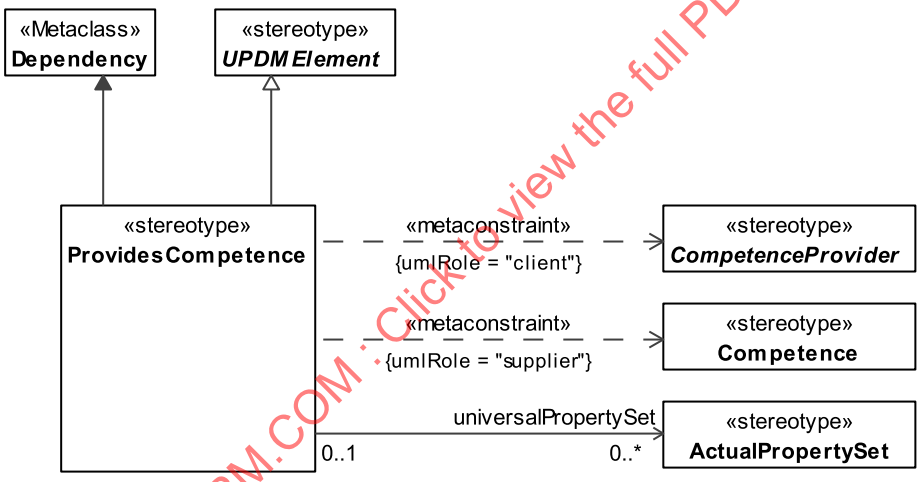

Figure 8.80 - ProvidesCompetence

Constraints

The following are constraints for ProvidesCompetence:

- ProvidesCompetence.client - Value for the client property must be stereotyped by a specialization of "CompetenceProvider."
- ProvidesCompetence.supplier - Value for the client property must be stereotyped "Competence" or its specializations.

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Attributes

The following are attributes for ProvidesCompetence:

- universalPropertySet : ActualPropertySet[0..*] - The measurements associated with a Competence.

Extensions

The following metaclasses are extended by ProvidesCompetence:

- Dependency

Specializations

The ProvidesCompetence element is a specialization of:

- UPDMElement

8.2.1.1.4.4.18.2.7 RequiresCompetence

MODAF:: Asserts that a Role requires a Competence (MODAF::CompetenceForRole).

DoDAF: An overlap between a Personnel Type and the Skills it entails (DoDAF:: SkillPartOfPersonType).

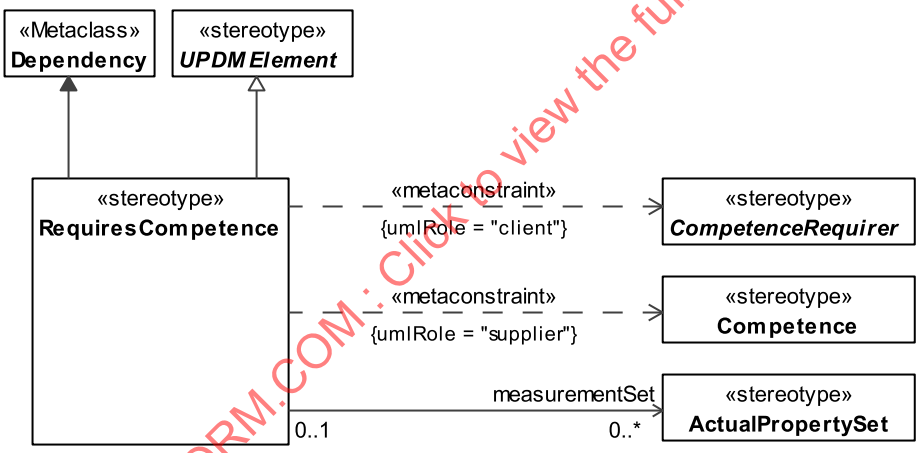

Figure 8.81 - RequiresCompetence

Constraints

The following are constraints for RequiresCompetence:

- RequiresCompetence.client - Value for the client property must be stereotyped a specialization of "CompetenceRequirer."
- RequiresCompetence.supplier - Value for the client property must be stereotyped "Competence" or its specializations.

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Attributes

The following are attributes for RequiresCompetence:

- measurementSet : ActualPropertySet[0..*] - The measurements associated with a Competence.

Extensions

The following metaclasses are extended by RequiresCompetence:

- Dependency

Specializations

The RequiresCompetence element is a specialization of:

- UPDMElement

8.2.1.1.4.4.18.2.8 Responsibility

UPDM:Asserts that a Post or Organization has specific responsibilities.

MODAF:NA

DoDAF:NA

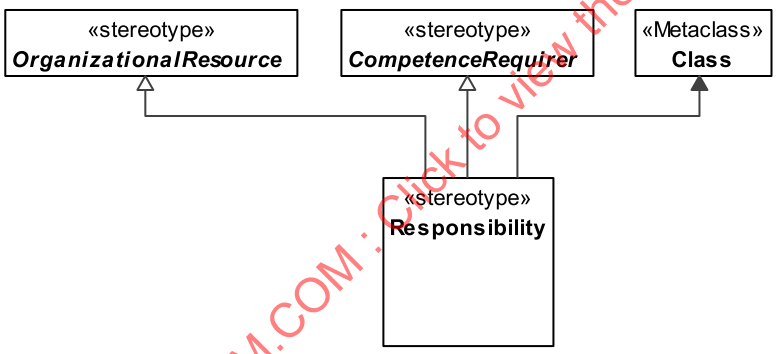

Figure 8.82 - Responsibility

Extensions

The following metaclasses are extended by Responsibility:

- Class

Specializations

The Responsibility element is a specialization of:

- CompetenceRequirer
- OrganizationalResource

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8.3.1.1.5 UPDM L1::UPDM L0::Core::ServiceElements

The Service-Orientated View (SOV) is a description of services needed to directly support the operational domain as described in the Operational View. A service should be understood in its broadest sense, as a unit of work through which a provider provides a useful result to a consumer. This could be anything from web-based services to delivering an effect to transporting troops.

8.3.1.1.5.1 UPDM L1::UPDM L0::Core::ServiceElements::Behavior

Behavior elements of the service oriented view.

8.3.1.1.5.1.1 ServiceFeature

UPDM: Abstract grouping used to ServiceFunctions to Serviceoperations and ServiceMessageHandlers.

Note: ServiceFeature is abstract.

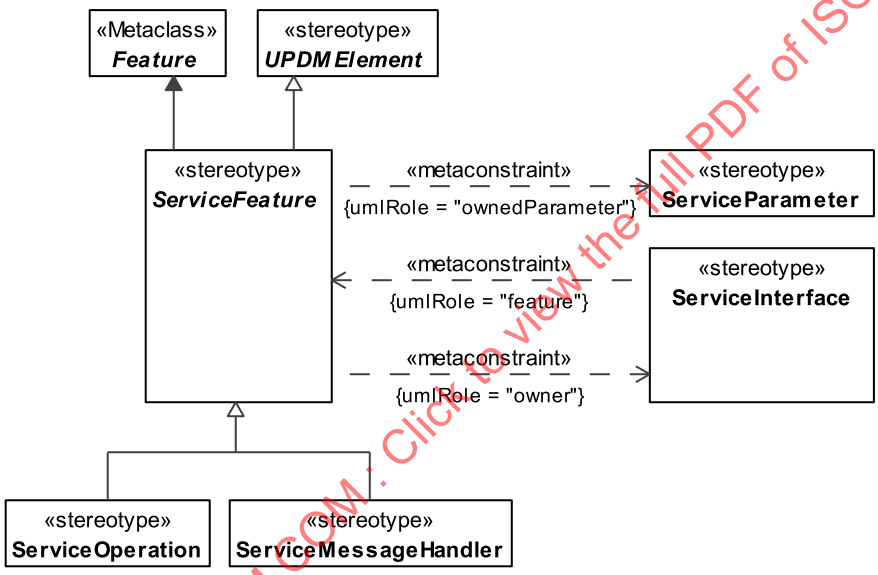

Figure 8.83 - ServiceFeature

Constraints

The following are constraints for ServiceFeature:

- ServiceFeature.ownedParameter - The values for the ownedParameter property must be stereotyped “ServiceParameter.”
- ServiceFeature.owner - The values for the owner property must be stereotyped “ServiceInterface.”

Extensions

The following metaclasses are extended by ServiceFeature:

- Feature

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Specializations

The ServiceFeature element is a specialization of:

- UPDMElement

8.3.1.1.5.1.2 ServiceFunction

UPDM: A ServiceFunction describes the abstract behavior of ServiceOperations, regardless of the actual implementation.

MODAF: A type of activity describing the functionality of a service.

DoDAF: Information necessary to interact with the service in such terms as the service inputs, outputs, and associated semantics. The service description also conveys what is accomplished when the service is invoked and the conditions for using the service.

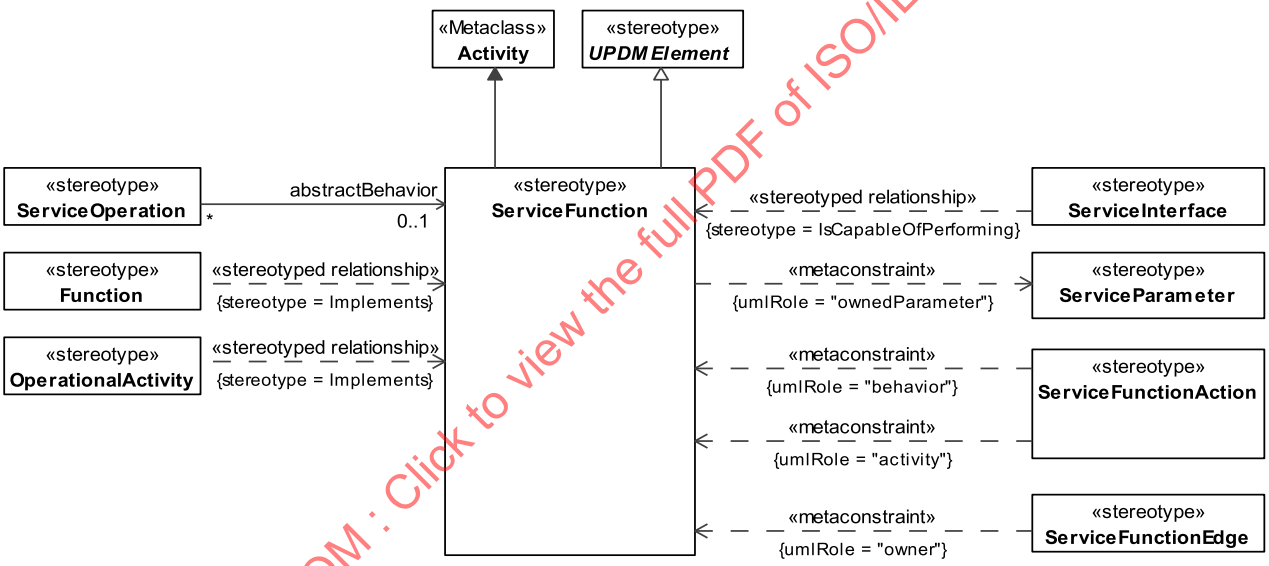

Figure 8.84 - ServiceFunction

Constraints

The following are constraints for ServiceFunction:

- ServiceFunction.ownedParameter - The values for the ownedParameter property must be stereotyped "ServiceParameter."

Extensions

The following metaclasses are extended by ServiceFunction:

- Activity

Specializations

The ServiceFunction element is a specialization of:

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- UPDMElement

8.3.1.1.5.1.3 ServiceFunctionAction

UPDM: A call behavior action that invokes the ServiceFunction that needs to be performed. This concept is required for mapping the architecture with UML and does not have a DoDAF or MoDAF equivalent.

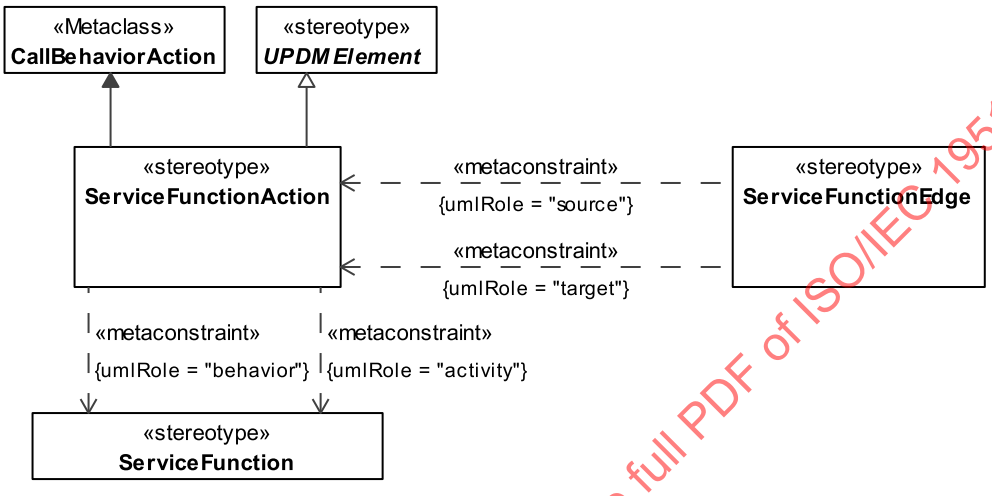

Figure 8.85 - ServiceFunctionAction

Constraints

The following are constraints for ServiceFunctionAction:

- ServiceFunctionAction.activity - Value for the behavior property must be stereotyped “ServiceFunction” or its specializations.
- ServiceFunctionAction.behavior - Value for the activity property must be stereotyped “ServiceFunction” or its specializations.

Extensions

The following metaclasses are extended by ServiceFunctionAction:

- CallBehaviorAction

Specializations

The ServiceFunctionAction element is a specialization of:

- UPDMElement

8.3.1.1.5.1.4 ServiceFunctionEdge

UPDM: An extension of <<ActivityEdge>> that is used to model the flow of control/objects through a ServiceFunction.

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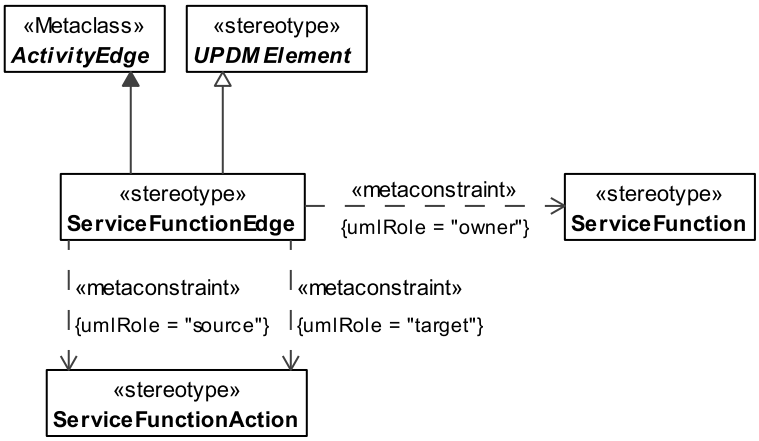

Figure 8.86 - ServiceFunctionEdge

Constraints

The following are constraints for ServiceFunctionEdge:

- ServiceFunctionEdge.owner - Value for the target property must be stereotyped “ServiceFunction” or its specializations.

Extensions

The following metaclasses are extended by ServiceFunctionEdge:

- ActivityEdge

Specializations

The ServiceFunctionEdge element is a specialization of:

- UPDMElement

8.3.1.1.5.1.5 ServiceInteraction

UPDM: Interaction for a service interface

MODAF: A model representing how a set of Service classes interacts with one another (MODAF::ServiceInteractionSpecification).

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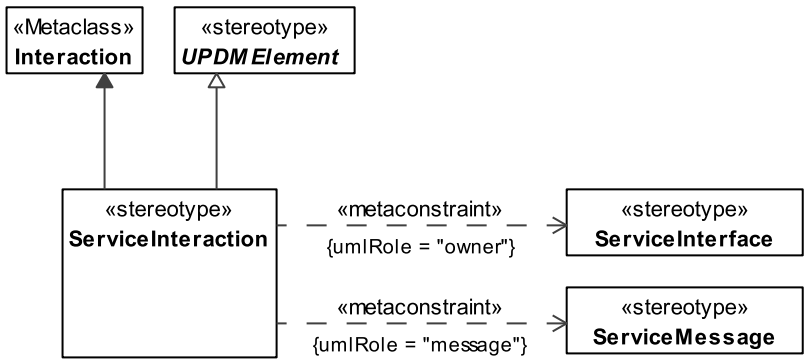

Figure 8.87 - ServiceInteraction

Constraints

The following are constraints for ServiceInteraction:

- ServiceInteraction.message - Values for the message property must be stereotyped with “ServiceMessage” or its specializations.
- ServiceInteraction.owner - Value for the target property must be stereotyped “ServiceInterface” or its specializations.

Extensions

The following metaclasses are extended by ServiceInteraction:

- Interaction

Specializations

The ServiceInteraction element is a specialization of:

- UPDMElement

8.3.1.1.5.1.6 ServiceMessage

UPDM: Message for use in a Service Interaction Specification, implements a resourceInteraction or any of the subtypes.

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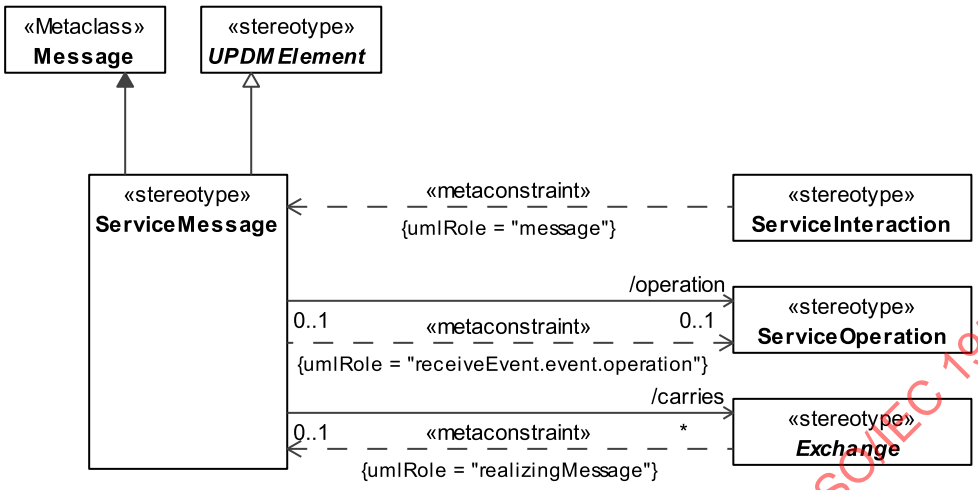

Figure 8.88 - ServiceMessage

Constraints

The following are constraints for ServiceMessage:

- ServiceMessage.receiveEvent.event.operation - Values for the receiveEvent.event.operation property must be stereotyped with “ServiceOperation” or its specializations.

Attributes

The following are attributes for ServiceMessage:

- carries : Exchange[*] - Carried ResourceInteraction.
- operation : ServiceOperation[0..1] -

Extensions

The following metaclasses are extended by ServiceMessage:

- Message

Specializations

The ServiceMessage element is a specialization of:

- UPDMElement

8.3.1.1.5.1.7 ServiceMessageHandler

UPDM: An instance of an AsynchronousMessage, applied in the service domain.

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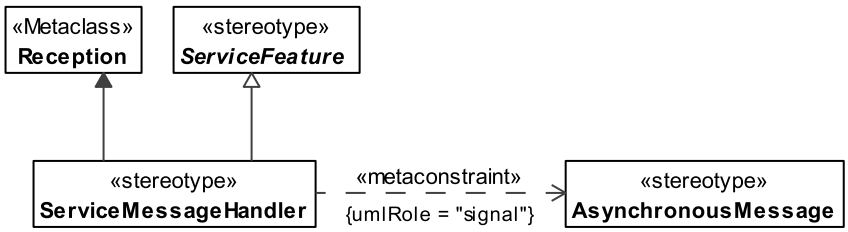

Figure 8.89 - ServiceMessageHandler

Constraints

The following are constraints for ServiceMessageHandler:

- ServiceMessageHandler.signal - Values for the signal property must be stereotyped with “AsynchronousMessage” or its specializations.

Extensions

The following metaclasses are extended by ServiceMessageHandler:

- Reception

Specializations

The ServiceMessageHandler element is a specialization of:

- ServiceFeature

8.3.1.1.5.1.8 ServiceOperation

UPDM: A ServiceOperation provides the access point for invoking the behavior of a provided service. The ServiceOperations are defined on ServiceInterfaces and mirrored on the providing Resource to handle calls forwarded on by the interface.

MODAF: a function or procedure which enables programmatic communication with a Service via a ServiceInterface (MODAF:: ServiceInterfaceOperation).

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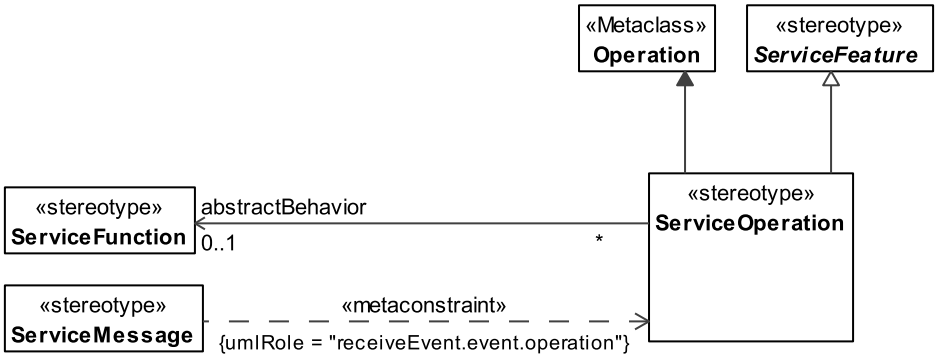

Figure 8.90 - ServiceOperation

Constraints

The following are constraints for ServiceOperation:

- ServiceOperation.ownedParameter - The values for the ownedParameter property must be stereotyped "ServiceParameter" or its specializations.

Attributes

The following are attributes for ServiceOperation:

- abstractBehavior : ServiceFunction[0..1] - Links a ServiceOperation to the abstract description of its behavior, as provided by a ServiceFunction.

Extensions

The following metaclasses are extended by ServiceOperation:

- Operation

Specializations

The ServiceOperation element is a specialization of:

- ServiceFeature

8.3.1.1.5.1.9 ServiceParameter

UPDM: Represents inputs and outputs of Service. It is typed by ResourceInteractionItem.

MODAF: A constant or variable passed into or out of a ServiceInterface as part of the execution of a ServiceInterfaceOperation (MODAF:: ServiceInterfaceParameter).

DoDAF: NA

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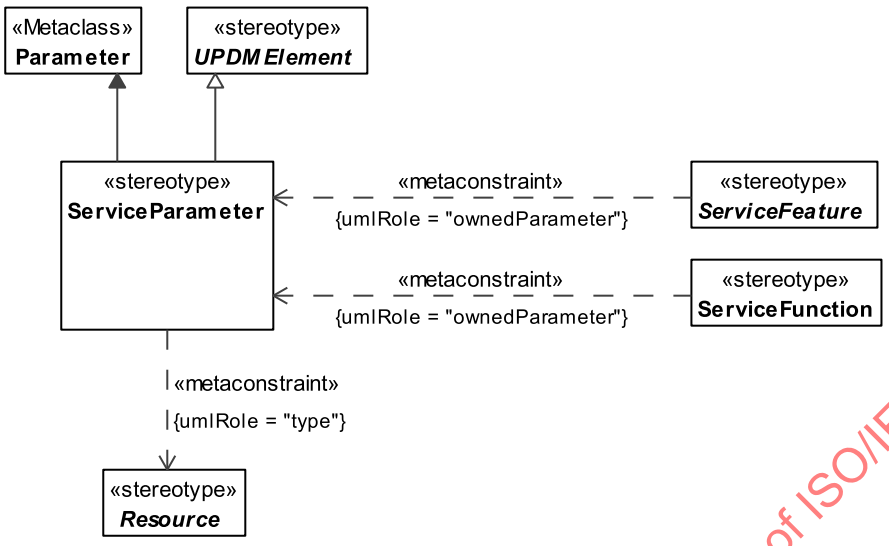

Figure 8.91 - ServiceParameter

Constraints

The following are constraints for ServiceParameter:

- ServiceParameter.type - The values for the type property must be stereotyped a specialization of “Resource.”

Extensions

The following metaclasses are extended by ServiceParameter:

- Parameter

Specializations

The ServiceParameter element is a specialization of:

- UPDMElement

8.3.1.1.5.1.10 ServiceStateMachine

UPDM Artifact that extends a UML StateMachine.

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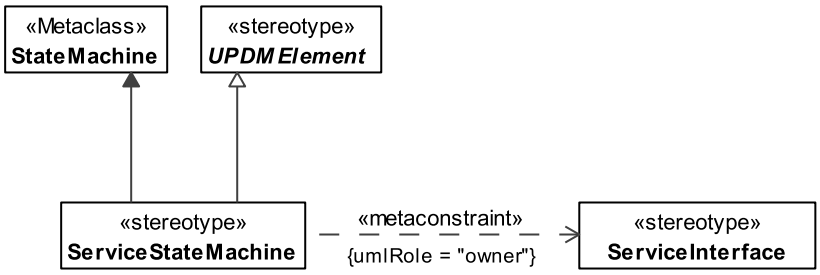

Figure 8.92 - ServiceStateMachine

Constraints

The following are constraints for ServiceStateMachine:

- ServiceStateMachine.owner - Values for the owner property must be stereotyped “ServiceInterface” or its specializations.

Extensions

The following metaclasses are extended by ServiceStateMachine:

- StateMachine

Specializations

The ServiceStateMachine element is a specialization of:

- UPDMElement

8.3.1.1.5.2 UPDM L1::UPDM L0::Core::ServiceElements::Structure

Structure elements of the service oriented view.

8.3.1.1.5.2.1 AsynchronousMessage

MODAF: A signal which is transmitted irregularly with respect to time.

DoDAF: NA

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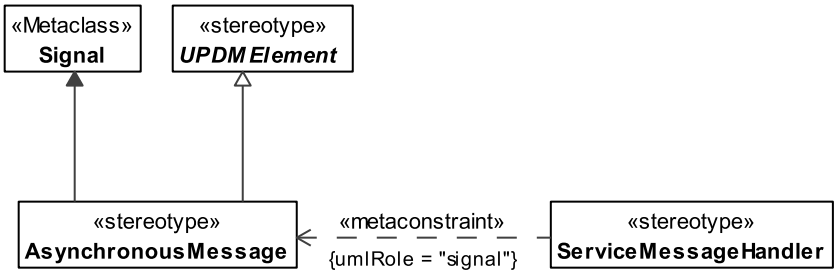

Figure 8.93 - AsynchronousMessage

Extensions

The following metaclasses are extended by AsynchronousMessage:

- Signal

Specializations

The AsynchronousMessage element is a specialization of:

- UPDMElement

8.3.1.1.5.2.2 Request

UPDM: From SoaML - A Request represents a feature of a Participant that is the consumption of a service by one participant provided by others using well-defined terms, conditions, and interfaces. A Request designates ports that define the connection point through which a Participant meets its needs through the consumption of services provided by others.

MODAF: Similar to requires, Asserts that a Resource requires a Service to be provided in order to function correctly.

DoDAF: Similar to ServicePort, A part of a Performer that specifics a distinct interaction point through which the Performer interacts with other Performers. This isolates dependencies between performers to particular interaction points rather than to the performer as a whole.

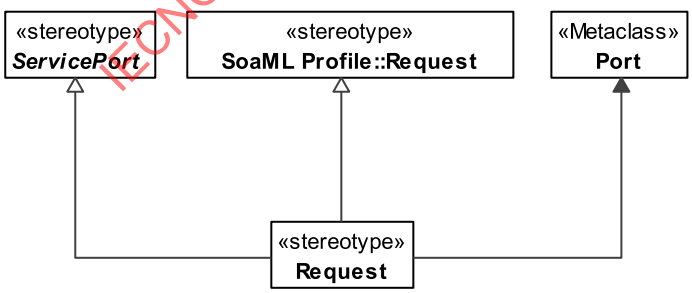

Figure 8.94 - Request

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Extensions

The following metaclasses are extended by Request:

- Port

Specializations

The Request element is a specialization of:

- Request
- ServicePort

8.3.1.1.5.2.3 Service

MODAF: A type of delivered functionality, specified independently of the resources that provide it.

DoDAF: Mechanism to enable access to a set of one or more capabilities, where the access is provided using a prescribed interface and is exercised consistent with constraints and policies as specified by the service description. The mechanism is a Performer. The "capabilities" accessed are Resources -- Information, Data, Material, Performers, and Geo-political Extents.

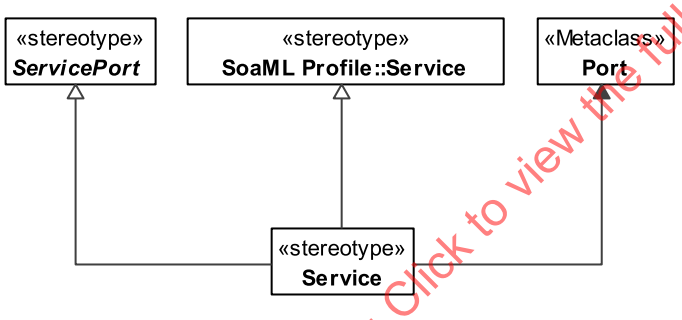

Figure 8.95 - Service

Extensions

The following metaclasses are extended by Service:

- Port

Specializations

The Service element is a specialization of:

- Service
- ServicePort

8.3.1.1.5.2.4 ServiceAttribute

MODAF: A property of Service

DoDAF: NA

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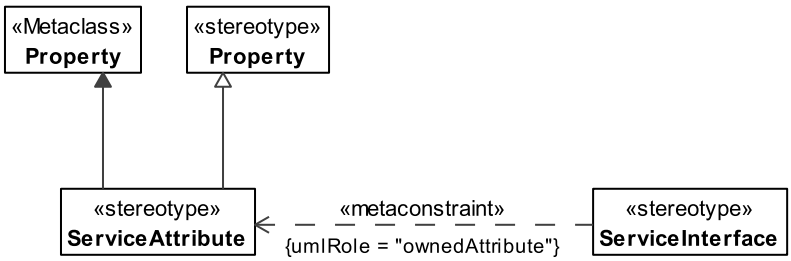

Figure 8.96 - ServiceAttribute

Extensions

The following metaclasses are extended by ServiceAttribute:

- Property

Specializations

The ServiceAttribute element is a specialization of:

- Property

8.3.1.1.5.2.5 ServiceInterface

UPDM: A contractual agreement between two resources that implement protocols through which the source service interacts to the destination resource. A physical connection between two resources that implements protocols through which the source resource can transmit items to the destination resource.

MODAF: The mechanism by which a Service communicates.

DoDAF: An overlap between Performers for the purpose of producing a Resource that is consumed by the other. (DoDAF::Interface)

SOAML: Defines the interface to a Service Point or Request Point and is the type of a role in a service contract.

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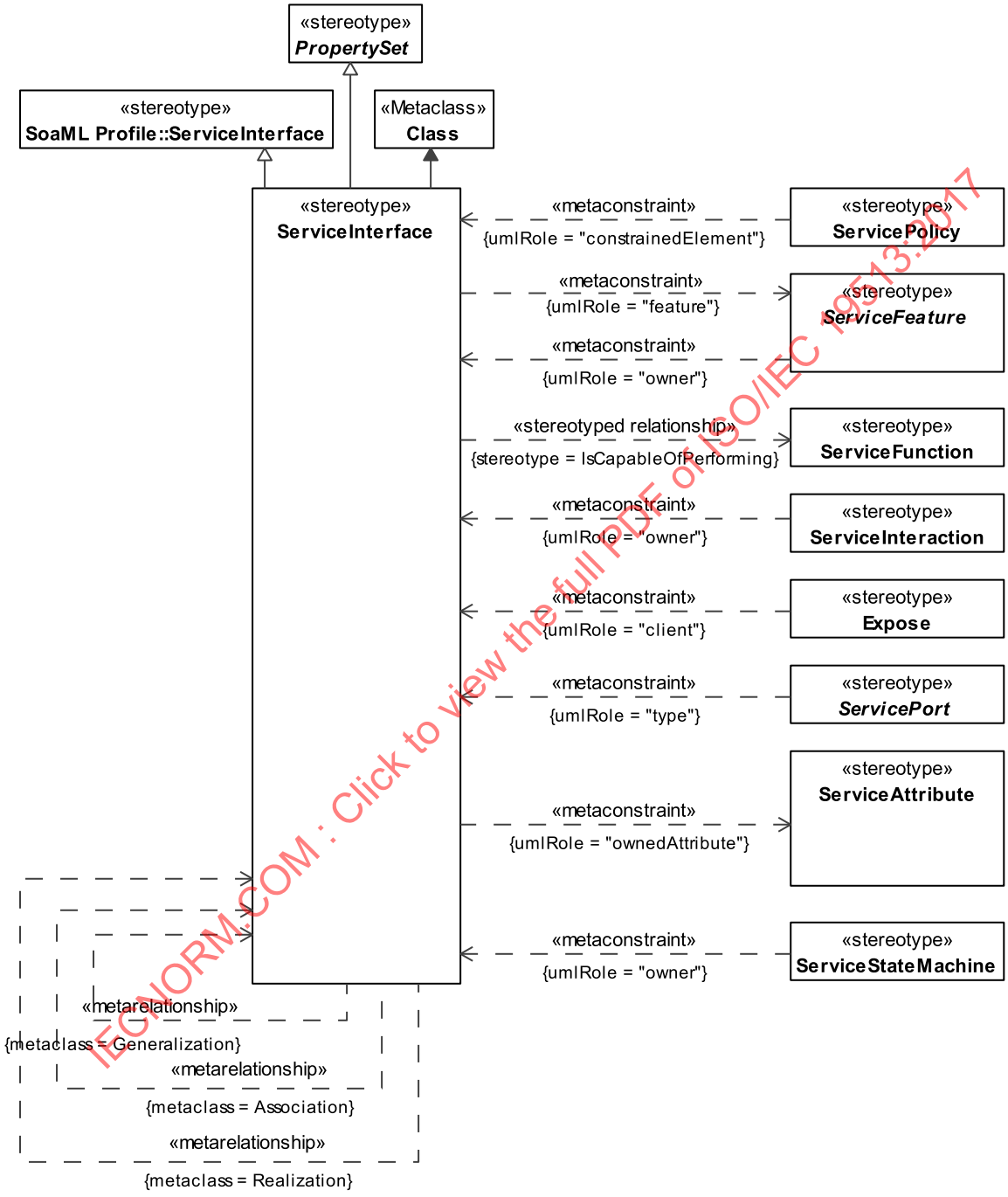

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Figure 8.97 - ServiceInterface

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Constraints

The following are constraints for ServiceInterface:

- ServiceInterface.feature - Value for the feature property must be stereotyped “ServiceFeature” or its specializations.
- ServiceInterface.ownedAttribute - Values for ownedAttribute property must be stereotyped “ServiceAttribute” or its specializations.

Extensions

The following metaclasses are extended by ServiceInterface:

- Class

Specializations

The ServiceInterface element is a specialization of:

- ServiceInterface
- PropertySet

8.3.1.1.5.2.6 ServiceLevelValue

MODAF:A ServiceAttributes indicating the level to which a Resource delivers a Service, in a particular environment.

DoDAF:NA

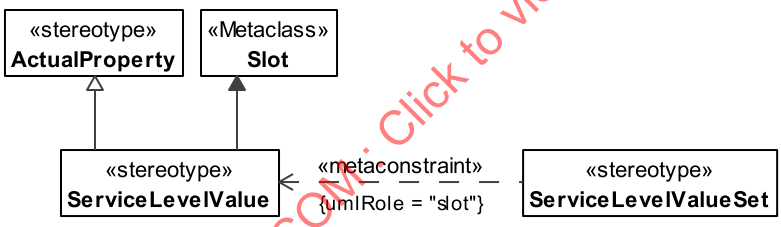

Figure 8.98 - ServiceLevelValue

Extensions

The following metaclasses are extended by ServiceLevelValue:

- Slot

Specializations

The ServiceLevelValue element is a specialization of:

- ActualProperty

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8.3.1.1.5.2.7 ServiceLevelValueSet

MODAF:A value specification for a set of ServiceAttributes indicating the level to which a Resource delivers a Service, in a particular environment.

DoDAF:NA

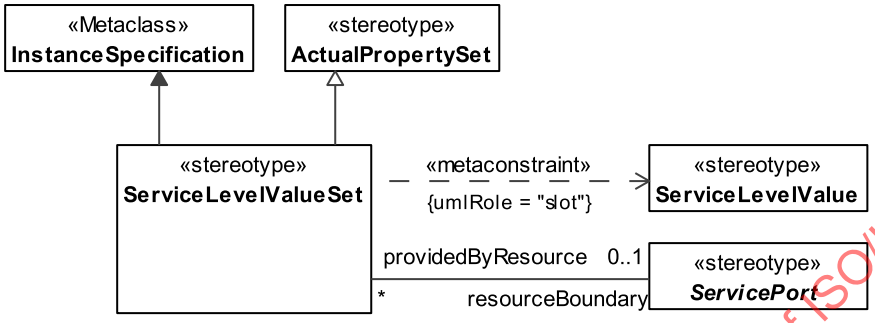

Figure 8.99 - ServiceLevelValueSet

Constraints

The following are constraints for ServiceLevelValueSet:

- ServiceLevelValueSet.slot - Slot property value must be stereotyped “ServiceLevelValue” or its specializations.

Attributes

The following are attributes for ServiceLevelValueSet:

- resourceBoundary : ServicePort[0..1] - Service level associated with a port.

Extensions

The following metaclasses are extended by ServiceLevelValueSet:

- InstanceSpecification

Specializations

The ServiceLevelValueSet element is a specialization of:

- ActualPropertySet

8.3.1.1.5.2.8 ServicePolicy

UPDM: A constraint governing the consumers and providers of services.

MODAF: A constraint governing one or more Services.

DoDAF: Agreement: A consent among parties regarding the terms and conditions of activities that said parties participate in.

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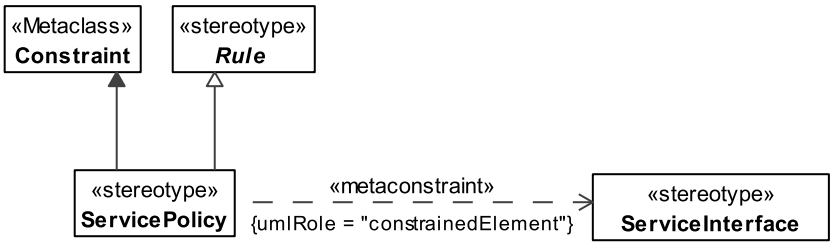

Figure 8.100 - ServicePolicy

Constraints

The following are constraints for ServicePolicy:

- ServicePolicy.constrainedElement - Values for constrainedElement property must be stereotyped “ServiceInterface” or its specializations.

Extensions

The following metaclasses are extended by ServicePolicy:

- Constraint

Specializations

The ServicePolicy element is a specialization of:

- UPDMElement
- Rule

8.3.1.1.5.2.9 ServicePort

MODAF:ServiceInterface, the mechanism by which a Service communicates.

DoDAF:A part of a Performer that specifics a distinct interaction point through which the Performer interacts with other Performers. This isolates dependencies between performers to particular interaction points rather than to the performer as a whole.

Note: ServicePort is abstract.

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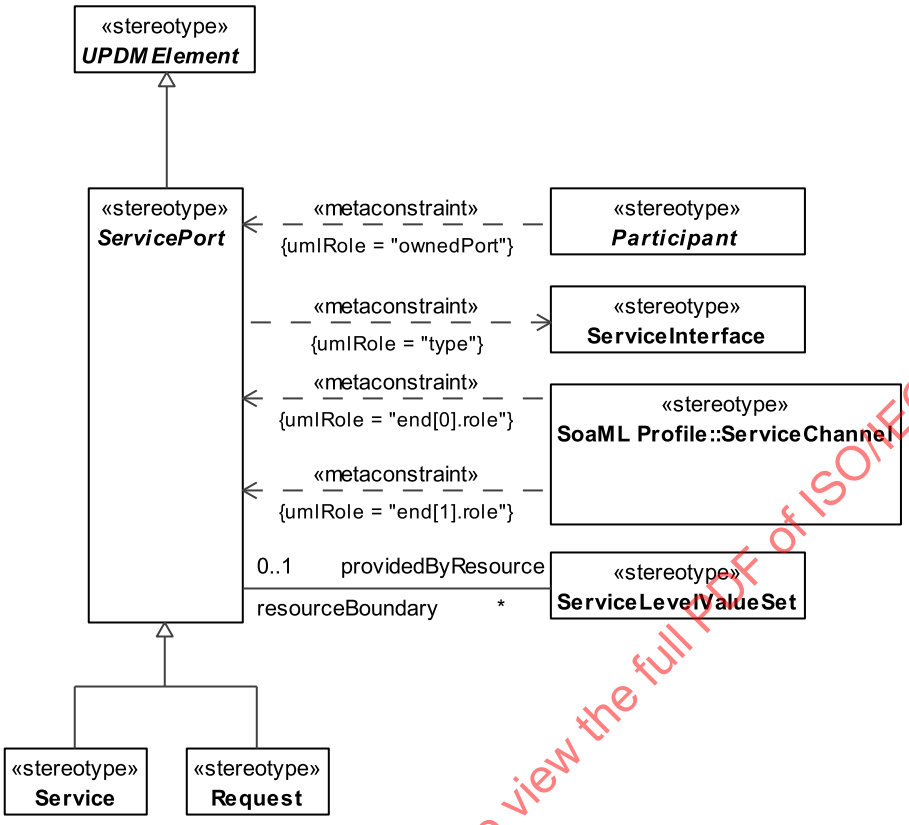

Figure 8.101 - ServicePort

Constraints

The following are constraints for ServicePort:

- ServicePort.actualPropertySets - Values for actualPropertySet property must be stereotyped “ServiceLevelValueSet” or its specializations.
- ServicePort.type - Values for type property must be stereotyped “ServiceInterface” or its specializations.

Attributes

The following are attributes for ServicePort:

- providedByResource : ServiceLevelValueSet[*] - Port associated with a service level.

Specializations

The ServicePort element is a specialization of:

- UPDMElement

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8.3.1.1.6 UPDM L1::UPDM L0::Core::StrategicElements

The Strategic Elements are used in the Strategic View that provides an overall Enterprise Architecture assessment of the Capabilities and their relationships facilitating Capability Management (e.g., capability introduction, integration, re-alignment, and removal). While an Enterprise will have a number of UPDM Architecture Descriptions that have the Operational, System, Technical Standards, and All Views, only one Strategic View will exist across a number of Architecture Descriptions.

8.3.1.1.6.1 UPDM L1::UPDM L0::Core::StrategicElements::Structure

Structural section of the StrategicElements profile.

8.3.1.1.6.1.1 Capability

MODAF: A high level specification of the enterprise's ability.

DoDAF: The ability to achieve a desired effect under specified [performance] standards and conditions through combinations of ways and means [activities and resources] to perform a set of activities.

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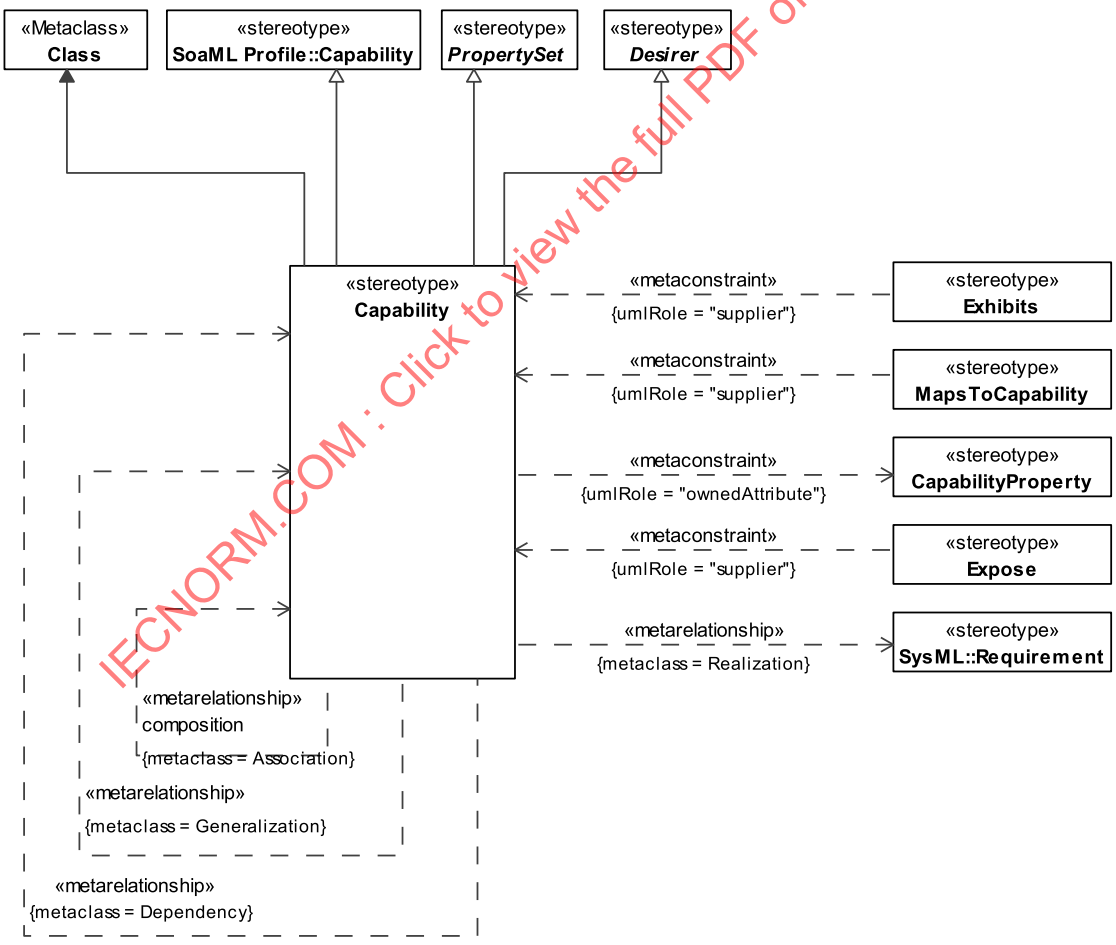

Figure 8.102 - Capability

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Constraints

The following are constraints for Capability:

- Capability.ownedAttribute - Values for ownedAttribute property must be stereotyped “CapabilityProperty” or its specializations.

Extensions

The following metaclasses are extended by Capability:

- Class

Specializations

The Capability element is a specialization of:

- Capability
- PropertySet
- Desirer

8.3.1.1.6.1.2 CapabilityProperty

UPDM: A property of a capability.

MODAF: NA

DoDAF: NA

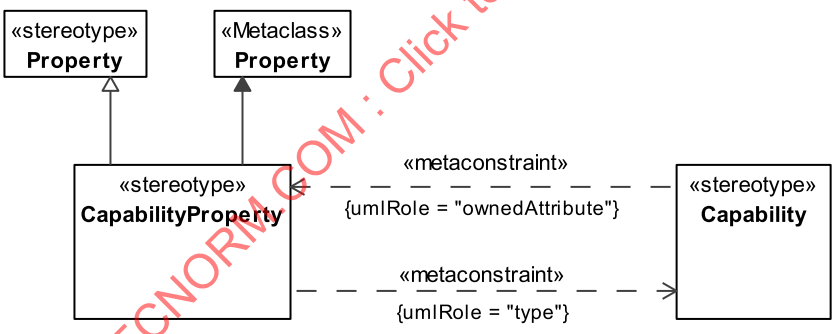

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Figure 8.103 - CapabilityProperty

Constraints

The following are constraints for CapabilityProperty:

- CapabilityProperty.type - Value for type meta property must be stereotyped “Capability” or its specializations.

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Extensions

The following metaclasses are extended by CapabilityProperty:

- Property

Specializations

The CapabilityProperty element is a specialization of:

- Property

8.3.1.1.6.1.3 DesiredState

UPDM:Abstract element used to group Operational and Resource states.

Note: DesiredState is abstract.

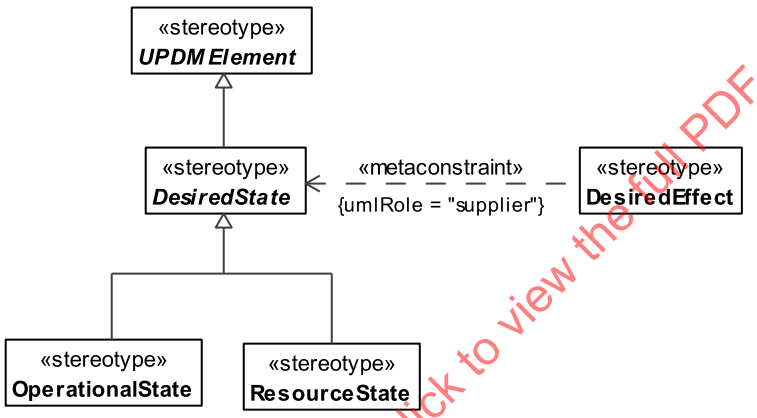

Figure 8.104 - DesiredState

Specializations

The DesiredState element is a specialization of:

- UPDMElement

8.3.1.1.6.1.4 Desirer

UPDM:Abstract element used to group UPDM elements that might desire a particular effect.

Note: Desirer is abstract.

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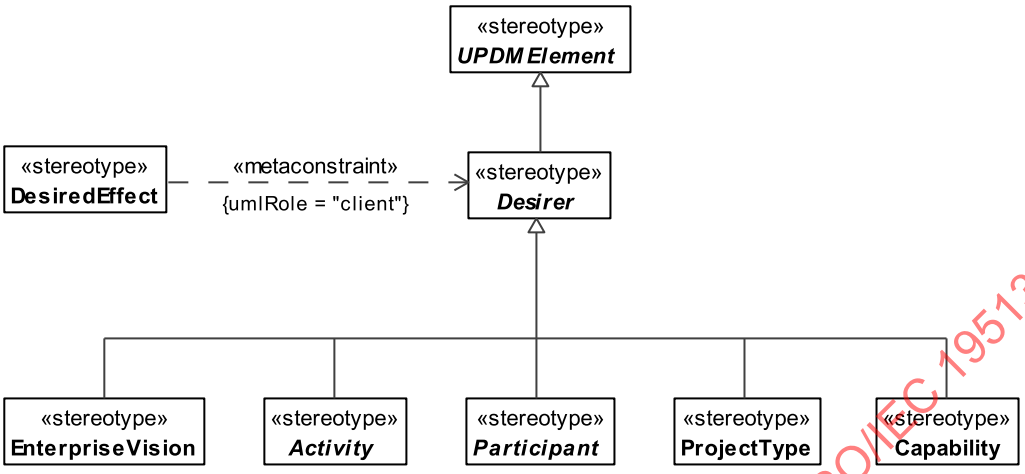

Figure 8.105 - Desirer

Specializations

The Desirer element is a specialization of:

- UPDMElement

8.3.1.1.6.1.5 EnterpriseGoal

MODAF: A specific, required objective of the enterprise that the architecture represents.

DoDAF: NA

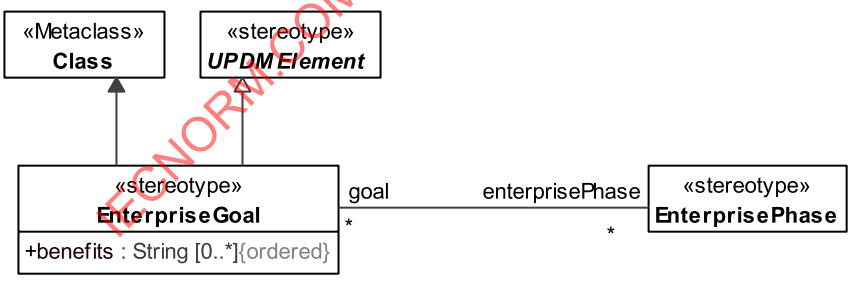

Figure 8.106 - EnterpriseGoal

Attributes

The following are attributes for EnterpriseGoal:

- benefits : String[0..*] - A description of the usefulness of the Goal in terms of why the state or condition of the Enterprise is worth attaining.

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- enterprisePhase : EnterprisePhase[*] - Phase of the goal.

Extensions

The following metaclasses are extended by EnterpriseGoal:

- Class

Specializations

The EnterpriseGoal element is a specialization of:

- UPDMElement

8.3.1.1.6.1.6 EnterprisePhase

MODAF: A specific, required objective of the enterprise that the architecture represents.

DoDAF: NA

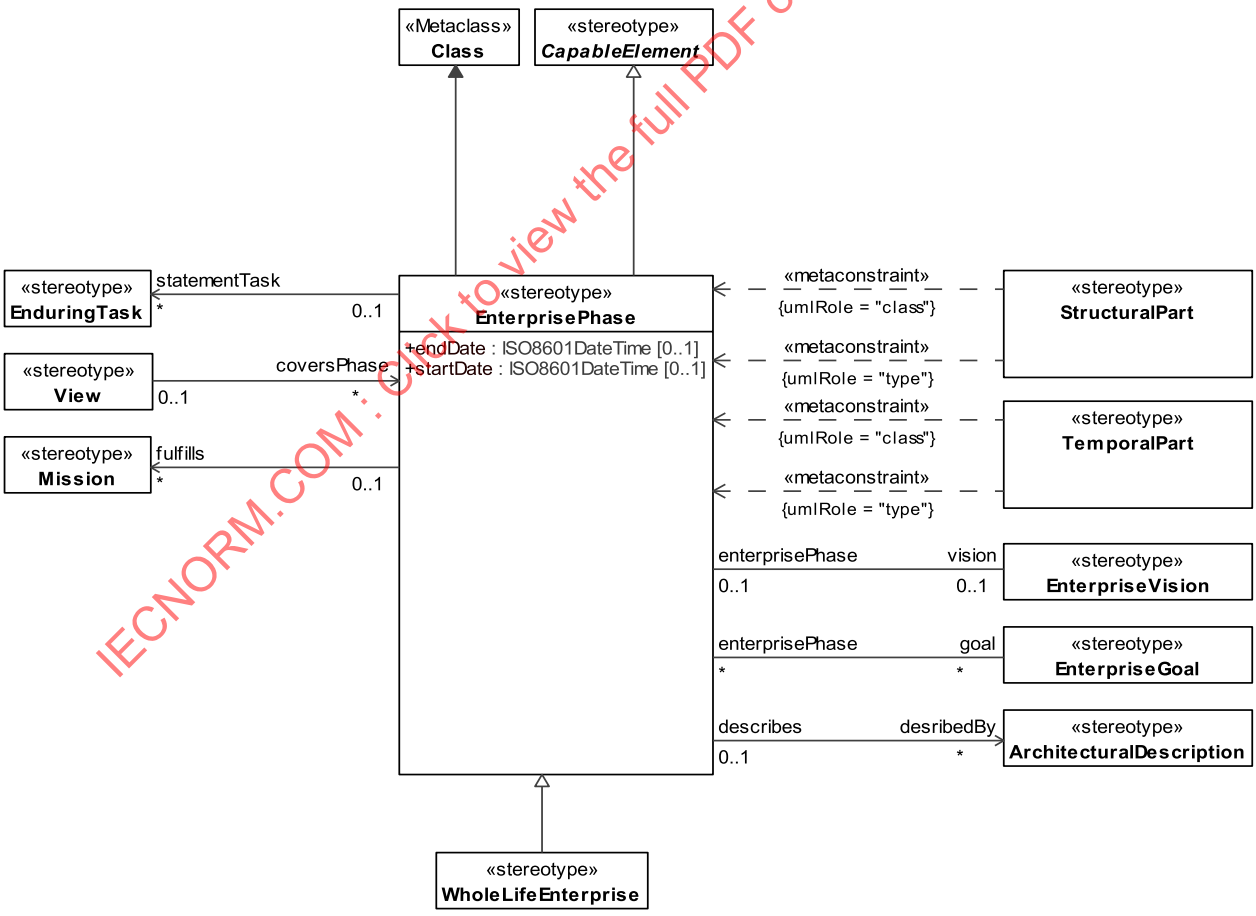

Figure 8.107 - EnterprisePhase

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Constraints

The following are constraints for EnterprisePhase:

- Enterprise from/to - Must fall within the Enterprise to and from time, the complete lifecycle.

Attributes

The following are attributes for EnterprisePhase:

- describedBy : ArchitecturalDescription[*] - The EnterprisePhase described by an ArchitecturalDescription.
- endDate : ISO8601DateTime[0..1] - The time and date at which the Phase ends.
- fulfills : Mission[*] - EnterprisePhases associated with a Mission.
- goal : EnterpriseGoal[*] - The Goal towards which this Phase is directed and is in support of.
- startDate : ISO8601DateTime[0..1] - The time and date at which the Phase starts.
- statementTask : EnduringTask[*] - Collection of statement tasks.
- vision : EnterpriseVision[0..1] - The Vision towards which this Phase is directed and is in support of.

Extensions

The following metaclasses are extended by EnterprisePhase:

- Class

Specializations

The EnterprisePhase element is a specialization of:

- CapableElement

8.3.1.1.6.1.7 EnterpriseVision

MODAF: The overall aims of an enterprise over a given period of time.

DoDAF: (DoDAF::Vision): An end that describes the future state of the enterprise, without regard to how it is to be achieved; a mental image of what the future will or could be like.

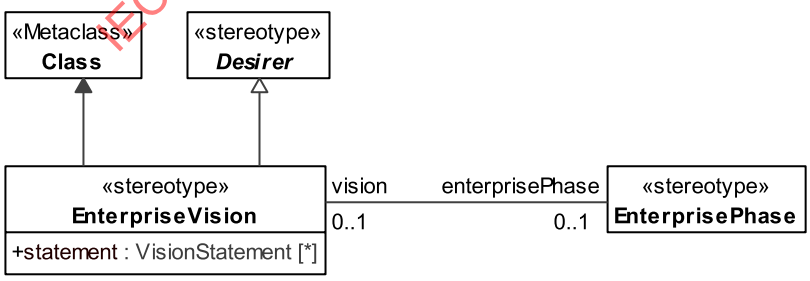

Figure 8.108 - EnterpriseVision

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Attributes

The following are attributes for EnterpriseVision:

- enterprisePhase : EnterprisePhase[0..1] - The phase which temporally locates the Vision.
- statement : VisionStatement[*] - A description of the Vision.

Extensions

The following metaclasses are extended by EnterpriseVision:

- Class

Specializations

The EnterpriseVision element is a specialization of:

- Desirer

8.3.1.1.6.1.8 Exhibits

UPDM: Relationship between a Node and a capability the node provides.

MODAF: (MODAF::CapabilityForNode): An assertion that a Node is required to have a Capability.

DoDAF: A couple that represents the capability that a performer manifests.

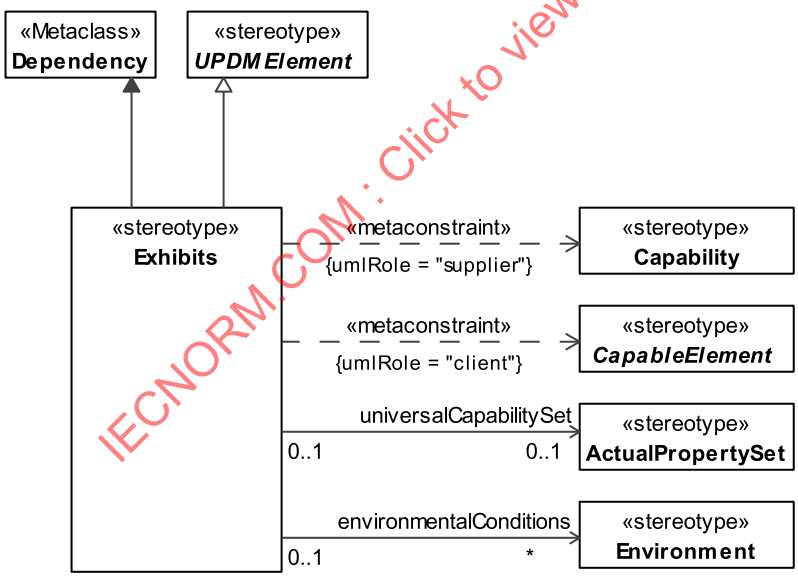

Figure 8.109 - Exhibits

Constraints

The following are constraints for Exhibits:

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- Exhibits.client - Value for the client property must be stereotyped a specialization of “CapableElement.”
- Exhibits.supplier - Value for the supplier property must be stereotyped “Capability.”

Attributes

The following are attributes for Exhibits:

- environmentalConditions : Environment[*] - Asserts that a Capability’s capabilityMetric (MeasureableProperty) is valid for a particular environment.
- universalCapabilitySet : ActualPropertySet[0..1] - The ActualPropertySet that exists between a Capability and a Capable Element.

Extensions

The following metaclasses are extended by Exhibits:

- Dependency

Specializations

The Exhibits element is a specialization of:

- UPDMElement

8.3.1.1.6.1.9 MapsToCapability

MODAF: Asserts that a StandardOperationalActivity is in some way part of a capability.

DoDAF: MapsToCapability (DoDAF::ActivityPartOfCapability) is a disposition to manifest an Activity. An Activity to be performed to achieve a desired effect under specified [performance] standards and conditions through combinations of ways and means.

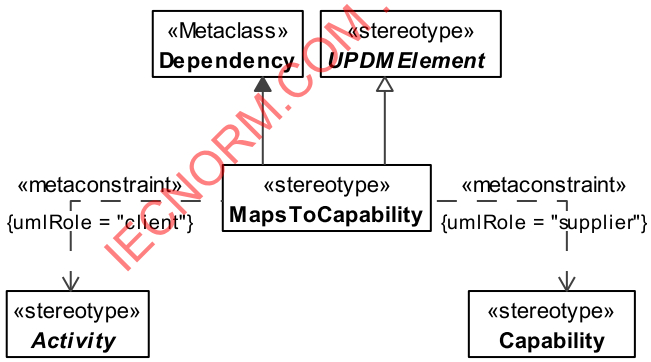

Figure 8.110 - MapsToCapability

Constraints

The following are constraints for MapsToCapability:

- MapsToCapability.client - Value for the client property must be stereotyped a specialization of “Activity.”

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- MapsToCapability.supplier - Value for the supplier property must be stereotyped “Capability.”

Extensions

The following metaclasses are extended by MapsToCapability:

- Dependency

Specializations

The MapsToCapability element is a specialization of:

- UPDMElement

8.3.1.1.6.1.10 StructuralPart

UPDM: An EnterprisePhase can be sub-divided into structural and temporal parts. StructuralPart describes the EnterprisePhase elements that describe the structure.

MODAF: Asserts that one EnterprisePhase is a spatial part of another, (MODAF::EnterpriseStructure).

Note: This is a topological structuring relationship, hence the EnterprisePhase may be physically disjoint.

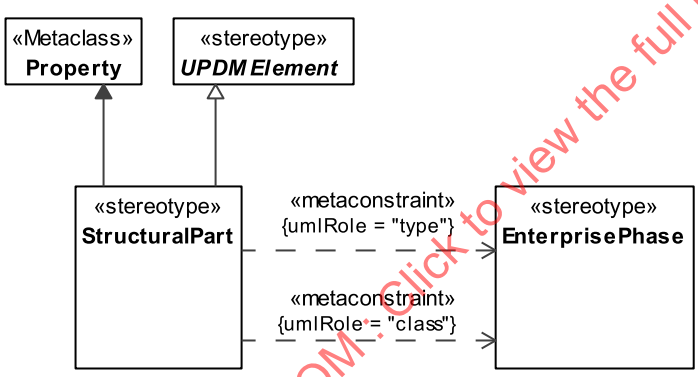

Figure 8.111 - StructuralPart

Constraints

The following are constraints for StructuralPart:

- StructuralPart.class - Value for class metaproperty must be stereotyped “EnterprisePhase” or its specializations.
- StructuralPart.type - Value for type metaproperty must be stereotyped “EnterprisePhase” or its specializations.

Extensions

The following metaclasses are extended by StructuralPart:

- Property

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Specializations

The StructuralPart element is a specialization of:

- UPDMElement

8.3.1.1.6.1.11 TemporalPart

UPDM Artifact: An EnterprisePhase can be sub-divided into structural and temporal parts. TemporalPart describes the EnterprisePhase elements that have a time based nature.

MODAF: Asserts that one EnterprisePhase is a temporal part of another.
Note: This means that both EnterprisePhases have the same spatial extent - i.e., this is only a temporal structure (MODAF:: EnterpriseTemporalPart).

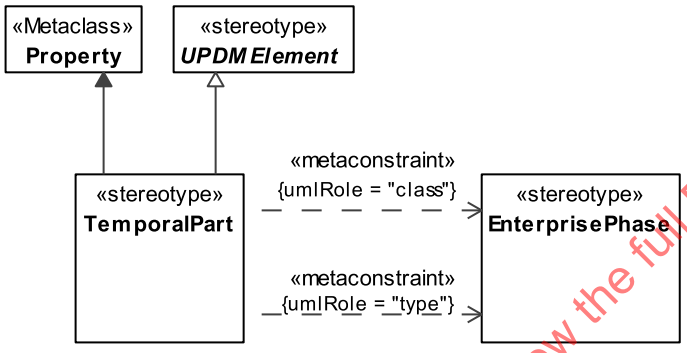

Figure 8.112 - TemporalPart

Constraints

The following are constraints for TemporalPart:

- TemporalPart.class - Value for class metaproperty must be stereotyped “EnterprisePhase” or its specializations.
- TemporalPart.type - Value for type metaproperty must be stereotyped “EnterprisePhase” or its specializations.

Extensions

The following metaclasses are extended by TemporalPart:

- Property

Specializations

The TemporalPart element is a specialization of:

- UPDMElement

8.3.1.1.6.1.12 VisionStatement

MODAF: A high-level textual description of an EnterpriseVision.

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DoDAF: An end that describes the future state of the enterprise, without regard to how it is to be achieved; a mental image of what the future will or could be like (DODAF::Vision).

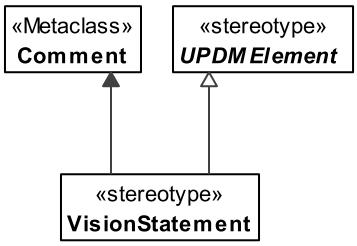

Figure 8.113 - VisionStatement

Extensions

The following metaclasses are extended by VisionStatement:

- Comment

Specializations

The VisionStatement element is a specialization of:

- UPDMElement

Expose.client

- Value for the client property must be stereotyped “ServiceInterface” or its specializations.

Expose.supplier

- Value for the supplier property must be stereotyped “Capability.”

8.3.1.1.7 UPDM L1::UPDM L0::Core::SystemsElements

Models in the System Viewpoint represent alternate realizations in terms of equipment capability of the operational capabilities expressed through models in the Operational Viewpoint and in the User Requirements. The System Viewpoint primarily addresses the specification of the system capability needed (rather than implementation details). Significant changes originally made in MODAF improved the ability for modelers to represent configuration of capability that include people as well as systems and platforms.

8.3.1.1.7.1 UPDM L1::UPDM L0::Core::SystemsElements::Behavior

The Behavior sub clause of the SystemsElements profile.

8.3.1.1.7.1.1 Function

MODAF: An activity which is specified in context of the resource (human or machine) that performs it.

DoDAF: Activity: Work, not specific to a single organization, weapon system, or individual that transforms inputs (Resources) into outputs (Resources) or changes their state.

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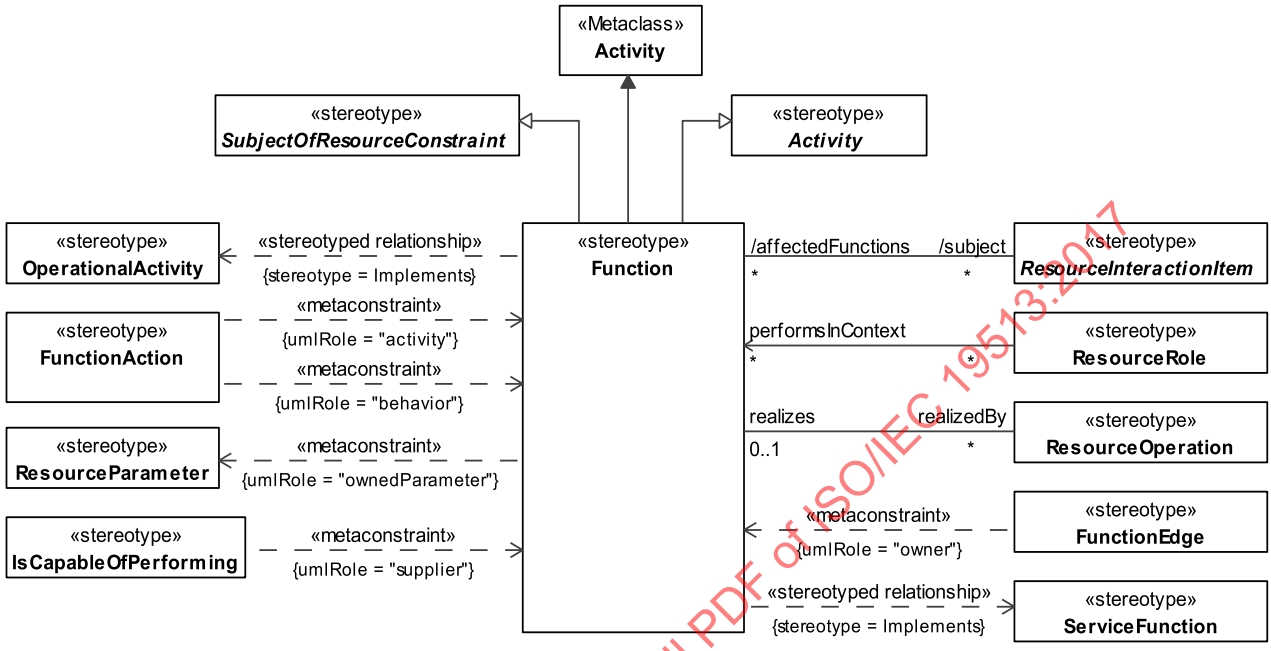

Figure 8.114 - Function

Constraints

The following are constraints for Function:

- Function.ownedParameter - The values for the ownedParameter property must be stereotyped “ResourceParameter.”

Attributes

The following are attributes for Function:

- realizedBy : ResourceOperation[*] - Relationship between a Function and a ResourceOperation.
- subject : ResourceInteractionItem[*] - The ResourceInteractionItem that is the subject of the Function.

Extensions

The following metaclasses are extended by Function:

- Activity

Specializations

The Function element is a specialization of:

- Activity
- SubjectOfResourceConstraint

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8.3.1.1.7.1.2 FunctionAction

UPDM Artifact: The FunctionAction is defined as a call behavior action that invokes the function that needs to be performed. This concept is required for mapping the architecture with UML and does not have a DoDAF or MoDAF equivalent.

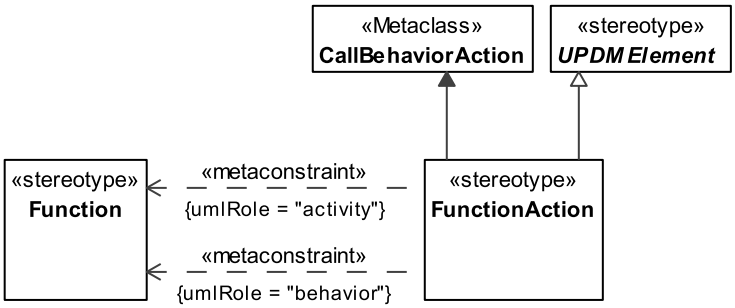

Figure 8.115 - FunctionAction

Constraints

The following are constraints for FunctionAction:

- FunctionAction.activity - Value for the activity property must be stereotyped “Function.”
- FunctionAction.behavior - Value for the behavior property must be stereotyped “Function.”

Extensions

The following metaclasses are extended by FunctionAction:

- CallBehaviorAction

Specializations

The FunctionAction element is a specialization of:

- UPDMElement

8.3.1.1.7.1.3 FunctionEdge

UPDM: An extension of <<ActivityEdge>> that is used to model the flow of control/objects through a Function.

MODAF: A FunctionEdge (MODAF::FunctionFlow) is a UML::ObjectFlow between Functions.

Note: This has been extended in UPDM to additionally include UML::ControlFlows.

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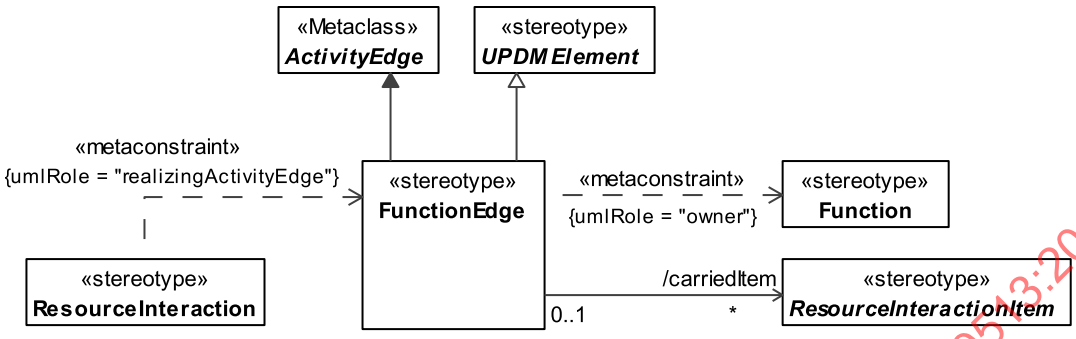

Figure 8.116 - FunctionEdge

Constraints

The following are constraints for FunctionEdge:

- FunctionEdge.owner - “FunctionEdge” must be owned directly or indirectly by “Function.”

Attributes

The following are attributes for FunctionEdge:

- carriedItem : ResourceInteractionItem[*] - The ResourceInteractionItem that is conveyed.

Extensions

The following metaclasses are extended by FunctionEdge:

- ActivityEdge

Specializations

The FunctionEdge element is a specialization of:

- UPDMElement

8.3.1.1.7.1.4 ResourceEventTrace

UPDM: A UPDM artifact that extends a UML Interaction.

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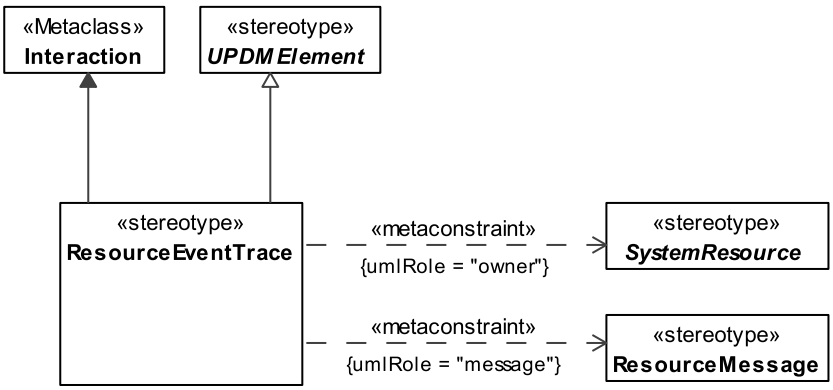

Figure 8.117 - ResourceEventTrace

Constraints

The following are constraints for ResourceEventTrace:

- ResourceEventTrace.message - Values for the message property must be stereotyped with “ResourceMessage” or its specializations.
- ResourceEventTrace.owner - Values for the owner property must be stereotyped with “Resource” or its specializations.

Extensions

The following metaclasses are extended by ResourceEventTrace:

- Interaction

Specializations

The ResourceEventTrace element is a specialization of:

- UPDMElement

8.3.1.1.7.1.5 ResourceMessage

UPDM: Message for use in a Resource EventTrace implements a ResourceInteraction.

MODAF: A specification of the interactions between aspects of a Resources architecture (MODAF::ResourceInteractionSpecification).

DoDAF: An overlap of an Activity with a Resource, in particular a consuming or producing Activity that expresses an input, output, consumption, or production Activity of the Resource (DoDAF::activityResourceOverlap).

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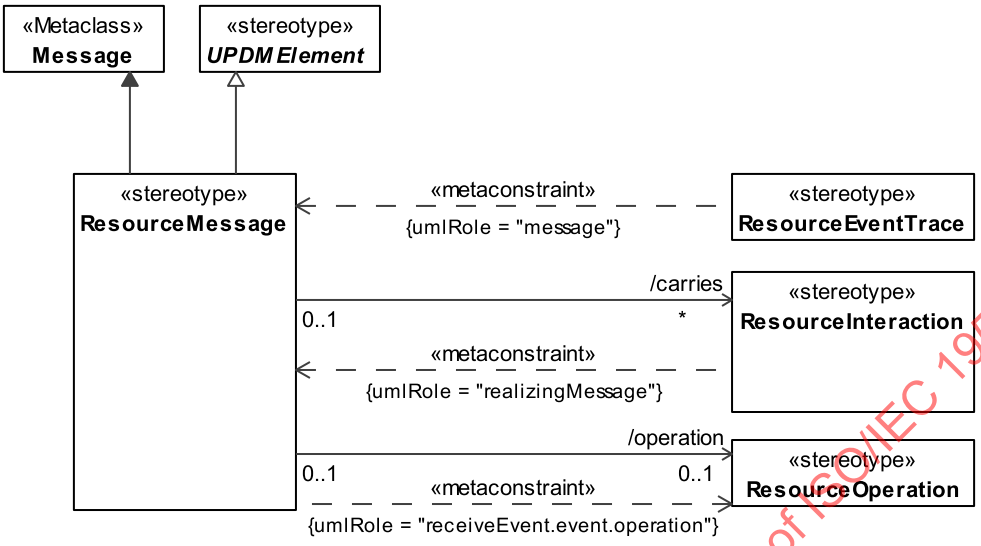

Figure 8.118 - ResourceMessage

Constraints

The following are constraints for ResourceMessage:

- ResourceMessage.receiveEvent.event.operation - Values for the receiveEvent.event.operation property must be stereotyped with “ResourceOperation” or its specializations.

Attributes

The following are attributes for ResourceMessage:

- carries : ResourceInteraction[*] - Carried ResourceInteraction
- operation : ResourceOperation[0..1] - The ResourceOperation associated with a ResourceMessage.

Extensions

The following metaclasses are extended by ResourceMessage:

- Message

Specializations

The ResourceMessage element is a specialization of:

- UPDMElement

8.3.1.1.7.1.6 ResourceOperation

UPDM:A partial or full realization of Function.

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MODAF:NA

DoDAF:NA

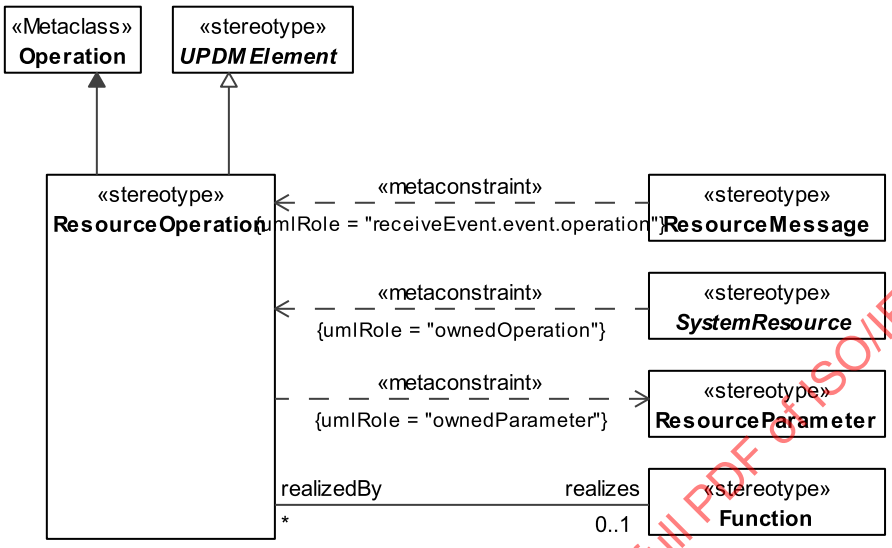

Figure 8.119 - ResourceOperation

Constraints

The following are constraints for ResourceOperation:

- ResourceOperation.ownedParameter - The values for the ownedParameter property must be stereotyped "ResourceParameter."

Attributes

The following are attributes for ResourceOperation:

- realizes : Function[0..1] - Relationship between a ResourceOperation and a Function.

Extensions

The following metaclasses are extended by ResourceOperation:

- Operation

Specializations

The ResourceOperation element is a specialization of:

- UPDMElement

8.3.1.1.7.1.7 ResourceParameter

UPDM: Represents inputs and outputs of Function. It is typed by ResourceInteractionItem.

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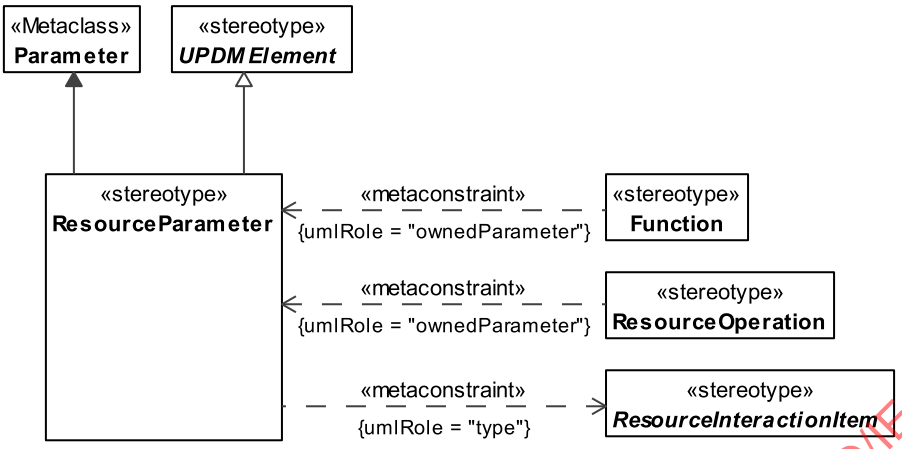

Figure 8.120 - ResourceParameter

Constraints

The following are constraints for ResourceParameter:

- ResourceParameter.type - Value for the type property must be stereotyped with specialization of "ResourceInteractionItem."

Extensions

The following metaclasses are extended by ResourceParameter:

- Parameter

Specializations

The ResourceParameter element is a specialization of:

- UPDMElement

8.3.1.1.7.1.8 ResourceState

UPDM: State identified in the context of an ResourceStateDescription.

MODAF:N/A

DoDAF:N/A

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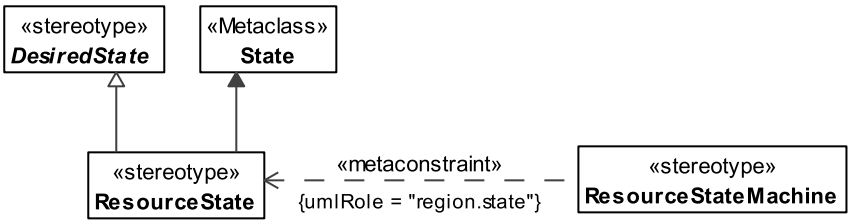

Figure 8.121 - ResourceState

Extensions

The following metaclasses are extended by ResourceState:

- State

Specializations

The ResourceState element is a specialization of:

- DesiredState

8.3.1.1.7.1.9 ResourceStateMachine

UPDM Artifact that extends a UML StateMachine allied to Resources.

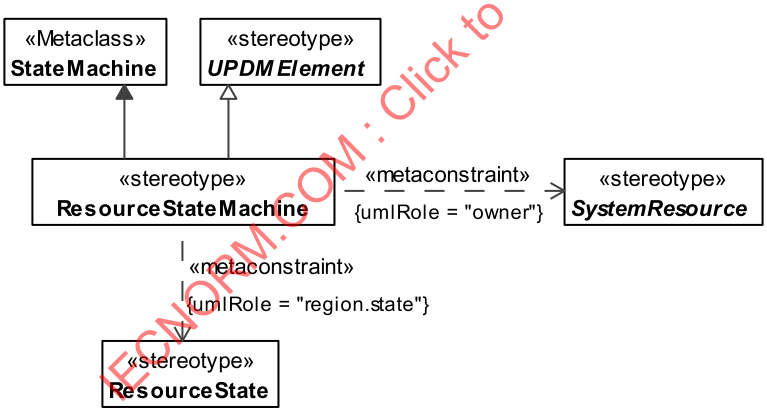

Figure 8.122 - ResourceStateMachine

Constraints

The following are constraints for ResourceStateMachine:

- ResourceStateMachine.owner - Values for the owner property must be stereotyped with “SystemResource” or its specializations.

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- ResourceStateMachine.region.state - Values for the region.state property must be stereotyped with “ResourceState” or its specializations.

Extensions

The following metaclasses are extended by ResourceStateMachine:

- StateMachine

Specializations

The ResourceStateMachine element is a specialization of:

- UPDMElement

8.3.1.1.7.2 UPDM L1::UPDM L0::Core::SystemsElements::Data

The Data sub clause of the SystemsElements profile.

8.3.1.1.7.2.1 DataModel

MODAF: A structural specification of data, showing classifications of data elements and relationships between them.

DoDAF: NA

Note: DataModel is abstract.

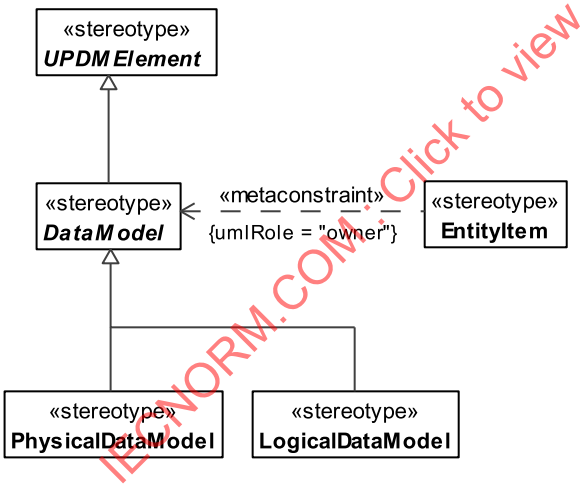

Figure 8.123 - DataModel

Constraints

The following are constraints for DataModel:

- DataModel.ownedElement - All classifiers owned by DataModel must be stereotyped “EntityItem.”

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Specializations

The DataModel element is a specialization of:

- UPDMElement

8.3.1.1.7.2.2 PhysicalDataModel

MODAF: A PhysicalDataModel is an implementable specification of a data structure. A PhysicalDataModel realizes a LogicalDataModel, taking into account implementation restrictions and performance issues while still enforcing the constraints, relationships, and typing of the logical model.

DoDAF: A Physical Data Model defines the structure of the various kinds of system or service data that are utilized by the systems or services in the Architecture.

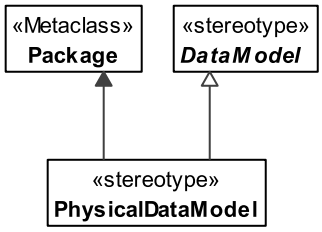

Figure 8.124 - PhysicalDataModel

Extensions

The following metaclasses are extended by PhysicalDataModel:

- Package

Specializations

The PhysicalDataModel element is a specialization of:

- DataModel

8.3.1.1.7.3 UPDM L1::UPDM L0::Core::SystemsElements::Flows

The Flows section of the SystemsElements profile.

8.3.1.1.7.3.1 ResourceInteraction

UPDM: ResourceInteraction represents data that is exchanged between the resources.

MODAF: An assertion that two FunctionalResources interact. Examples : data exchange between systems, conversations between people, people using systems.

DoDAF: NA

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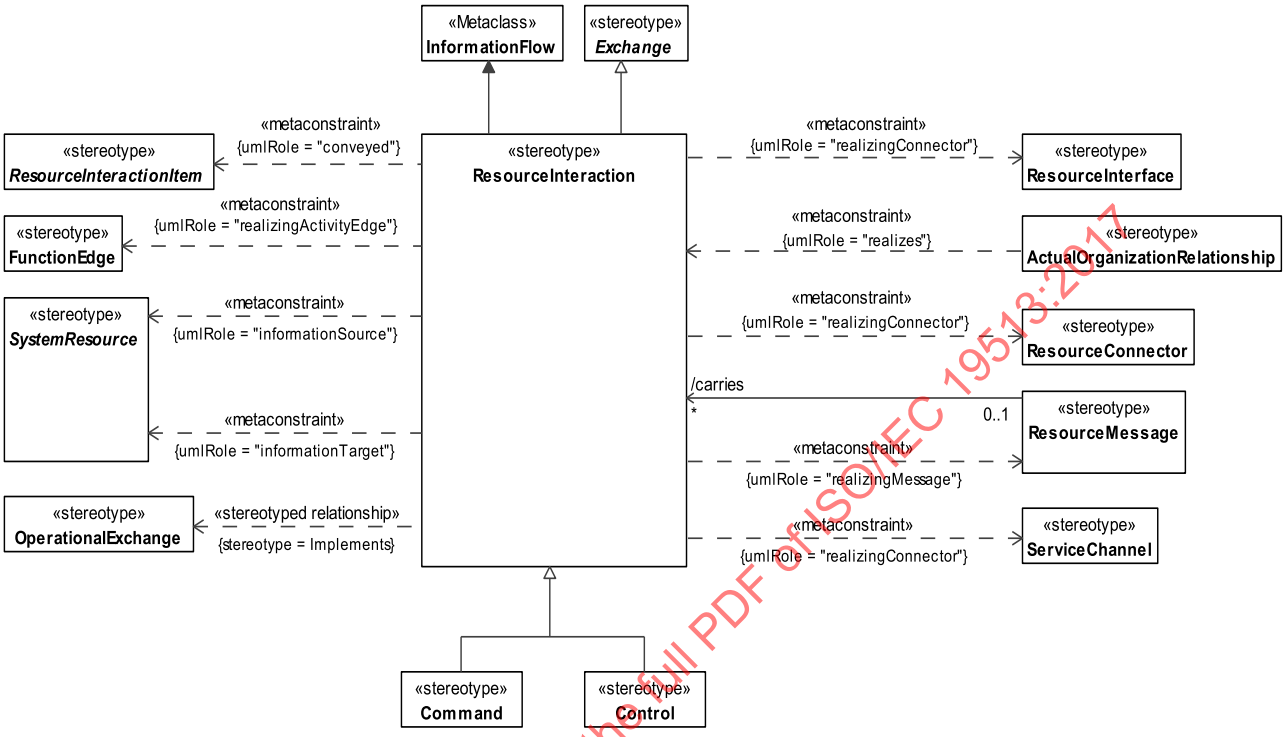

Figure 8.125 - ResourceInteraction

Constraints

The following are constraints for ResourceInteraction:

- ResourceInteraction.conveyedElement - Value for the conveyedElement property must be stereotyped “ResourceInteractionItem” or its specializations.
- ResourceInteraction.informationSource - Value for the informationSource property must be stereotyped “SystemResource” or its specializations.
- ResourceInteraction.informationTarget - Value for the informationTarget property must be stereotyped “SystemResource” or its specializations.
- ResourceInteraction.realization - Value for the realization property must be stereotyped “ResourceInterface,” “ActualOrganizationRelationship,” or their specializations.
- ResourceInteraction.realizingActivityEdge - Value for the realizingActivityEdge property must be stereotyped “FunctionEdge” or its specializations.
- ResourceInteraction.realizingConnector - Value for the realizingConnector property must be stereotyped “ResourceInterface,” “ResourceConnector,” “ServiceChannel” or their specializations.

Extensions

The following metaclasses are extended by ResourceInteraction:

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- InformationFlow

Specializations

The ResourceInteraction element is a specialization of:

- Exchange
- SubjectOfResourceConstraint

8.3.1.1.7.3.2 ResourceInteractionItem

UPDM Abstract: Represents the item(s) exchanged between the resources through a ResourceInteraction.

MODAF: Formalized representation of data that is managed by or exchanged between systems (MODAF::DataElement).

DoDAF: Representation of information in a formalized manner suitable for communication, interpretation, or processing by humans or by automatic means (DoDAF::Data).

Note: ResourceInteractionItem is abstract.

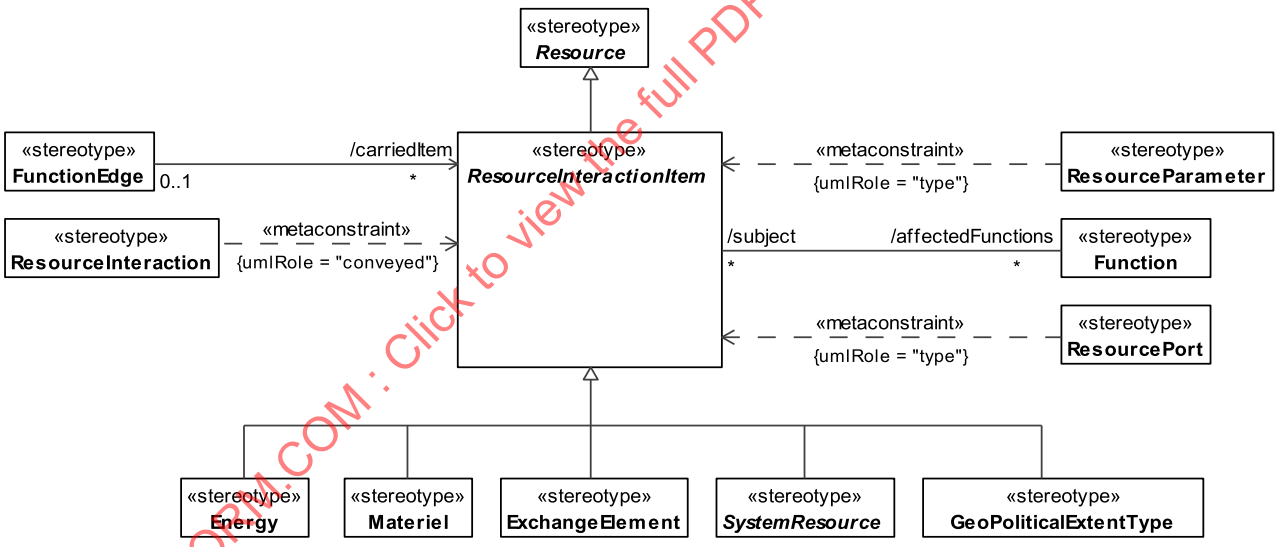

Figure 8.126 - ResourceInteractionItem

Attributes

The following are attributes for ResourceInteractionItem:

- affectedFunctions : Function[*] - The Functions affected by the ResourceInteractionItem.

Specializations

The ResourceInteractionItem element is a specialization of:

- Resource

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8.3.1.1.7.4 UPDM L1::UPDM L0::Core::SystemsElements::Structure

The Structure sub clause of the SystemsElements profile.

8.3.1.1.7.4.1 CapabilityConfiguration

MODAF: A composite structure representing the physical and human resources (and their interactions) in an enterprise. A CapabilityConfiguration is a set of artifacts or an organization configured to provide a capability, and should be guided by [doctrine] which may take the form of Standard or OperationalConstraint stereotypes.

DoDAF: Any entity - human, automated, or any aggregation of human and/or automated - that performs an activity and provides a capability (Performer).

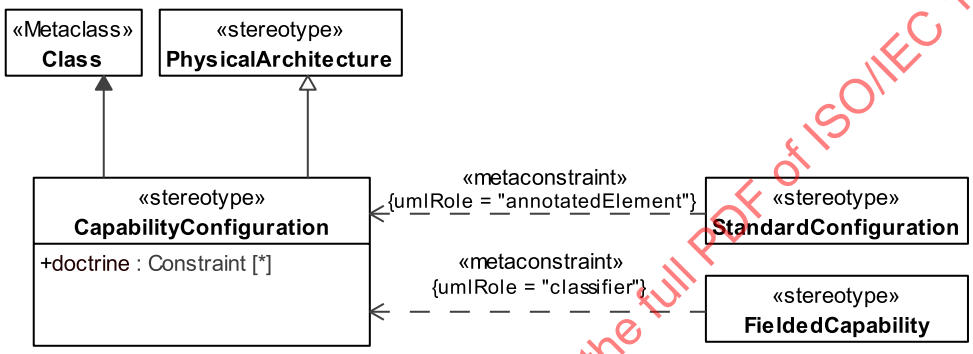

Figure 8.127 - CapabilityConfiguration

Attributes

The following are attributes for CapabilityConfiguration:

- doctrine : Constraint[*] - Represents the doctrinal line of development of the capability.

Extensions

The following metaclasses are extended by CapabilityConfiguration:

- Class

Specializations

The CapabilityConfiguration element is a specialization of:

- PhysicalArchitecture

8.3.1.1.7.4.2 FieldedCapability

MODAF: An actual, fully-realized capability. A FieldedCapability must indicate its configuration CapabilityConfiguration.

DoDAF: NA

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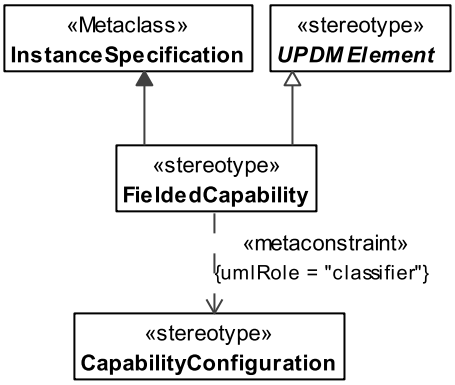

Figure 8.128 - FieldedCapability

Constraints

The following are constraints for FieldedCapability:

- FieldedCapability.classifier - Value for the classifier property must be stereotyped “CapabilityConfiguration” or its specializations.

Extensions

The following metaclasses are extended by FieldedCapability:

- InstanceSpecification

Specializations

The FieldedCapability element is a specialization of:

- UPDMElement

8.3.1.1.7.4.3 Forecast

MODAF: A statement about the future state of one or more types of system or standard.

DoDAF: NA

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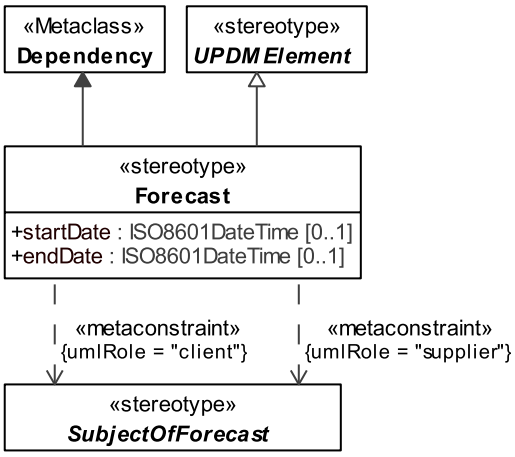

Figure 8.129 - Forecast

Constraints

The following are constraints for Forecast:

- Forecast.client - Value for the client property must be stereotyped “SubjectOfForecast” or its specializations.
- Forecast.pair - The client and supplier must be stereotyped by the same specialization of “SubjectOfForecast” (e.g., “Software” to “Software,” “Standard” to “Standard,” etc).
- Forecast.supplier - Value for the supplier property must be stereotyped “SubjectOfForecast” or its specializations.

Attributes

The following are attributes for Forecast:

- endDate : ISO8601DateTime[0..1] - End date of the forecast
- startDate : ISO8601DateTime[0..1] - Start date of the forecast.

Extensions

The following metaclasses are extended by Forecast:

- Dependency

Specializations

The Forecast element is a specialization of:

- UPDMElement

8.3.1.1.7.4.4 Materiel

MODAF: Artifact, A type of man-made object. Examples are “car,” “radio,” “diesel,” etc.

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DoDAF: Equipment, apparatus, or supplies that are of interest, without distinction as to its application for administrative or combat purposes.

Extensions

The following metaclasses are extended by Materiel:

- Class

Specializations

The Materiel element is a specialization of:

- ResourceInteractionItem

8.3.1.1.7.4.5 PhysicalArchitecture

MODAF:A configuration of Resources for a purpose.

DoDAF:NA

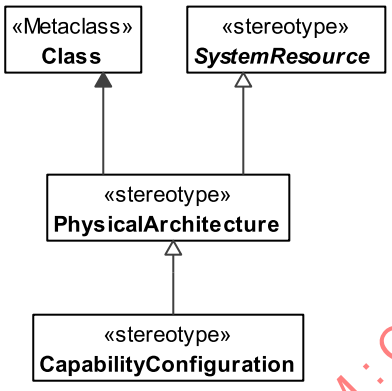

Figure 8.130 - PhysicalArchitecture

Extensions

The following metaclasses are extended by PhysicalArchitecture:

- Class

Specializations

The PhysicalArchitecture element is a specialization of:

- SystemResource

8.3.1.1.7.4.6 PhysicalResource

UPDM: Abstract supertype for physical resources such as OrganizationalResource.

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MODAF: A PhysicalAsset, OrganizationalResource, or FunctionalResource that can contribute towards fulfilling a capability (MODAF::ResourceType).

Note: PhysicalResource is abstract.

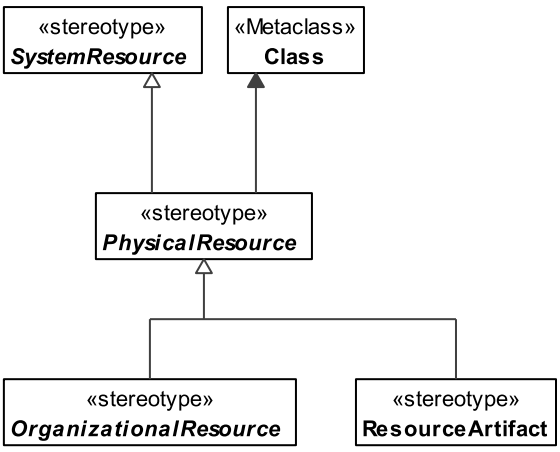

Figure 8.131 - PhysicalResource

Extensions

The following metaclasses are extended by PhysicalResource:

- Class

Specializations

The PhysicalResource element is a specialization of:

- SystemResource

8.3.1.1.7.4.7 ResourceArtifact

UPDM: A combination of physical element, energy, and data that are combined used to accomplish a task or function.

MODAF: A type of man-made object. Examples are “car,” “radio,” “fuel,” etc. (MODAF:: Artifact).

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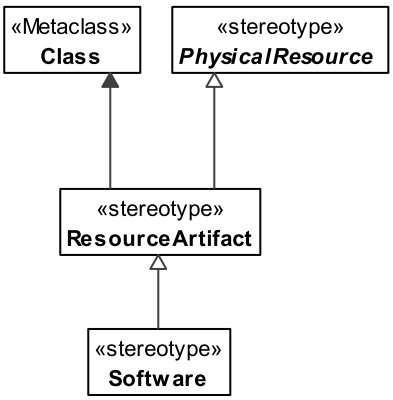

Figure 8.132 - ResourceArtifact

Extensions

The following metaclasses are extended by ResourceArtifact:

- Class

Specializations

The ResourceArtifact element is a specialization of:

- PhysicalResource

8.3.1.1.7.4.8 ResourceConnector

UPDM: A physical connection between two resources that implements protocols through which the source resource can transmit items to the destination resource.

MODAF: Asserts that a connection exists between two ports belonging to parts in a system composite structure model (MODAF::SystemPortConnector).

DoDAF: NA

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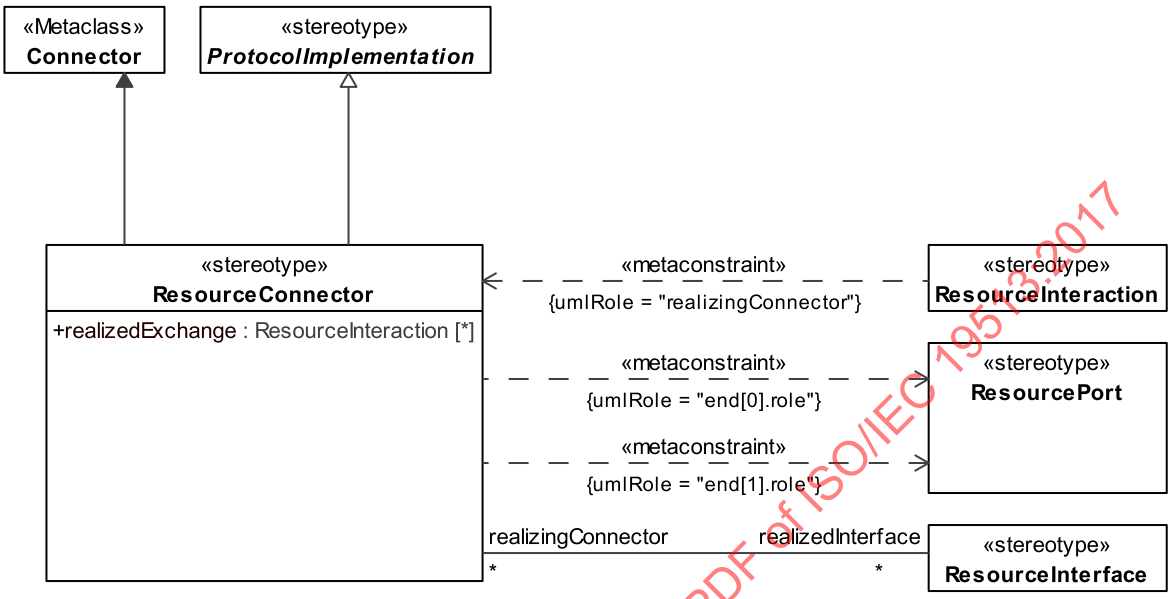

Figure 8.133 - ResourceConnector

Constraints

The following are constraints for ResourceConnector:

- ResourceConnector.end - The value for the role property for the owned ConnectorEnd must be stereotype "ResourcePort" or its specializations.

Attributes

The following are attributes for ResourceConnector:

- realizedExchange : ResourceInteraction[*] - A list of ResourceInteractions (or specializations) that realized by the ResourceInterface/ResourceConnector. This is derived by navigating from the ResourceInteraction to the ResourceInterfaces/ResourceConnectors using the inverse of the realization/realizingConnector roles.
- realizedInterface : ResourceInterface[*] - Realized ResourceInterfaces.

Extensions

The following metaclasses are extended by ResourceConnector:

- Connector

Specializations

The ResourceConnector element is a specialization of:

- ProtocolImplementation

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8.3.1.1.7.4.9 ResourceConstraint

MODAF: A rule governing the structural or functional aspects of an implementation; this may also include constraints on OrganizationalResources that are part of an implementation.

DoDAF: The range of permissible states for an object (DoDAF::Constraint).

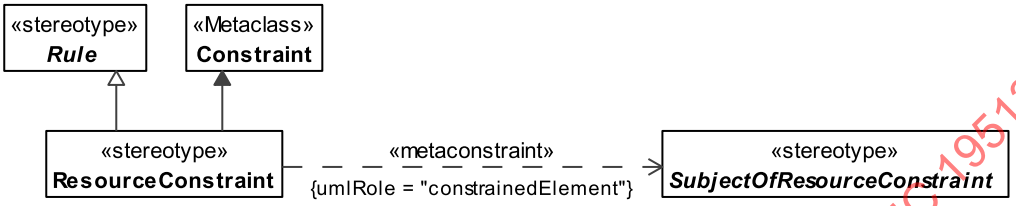

Figure 8.134 - ResourceConstraint

Constraints

The following are constraints for ResourceConstraint:

- ResourceConstraint.constrainedElement - Value for the constrainedElement property must be stereotyped “SubjectOfResourceConstraint” or its specializations.

Extensions

The following metaclasses are extended by ResourceConstraint:

- Constraint

Specializations

The ResourceConstraint element is a specialization of:

- Rule

8.3.1.1.7.4.10 ResourceInterface

UPDM: ResourceInterface is a contractual agreement between two resources that implement protocols through which the source resource to the destination resource.

MODAF: NA

DoDAF: An overlap between Performers for the purpose of producing a Resource that is consumed by the other (DoDAF:: Interface).

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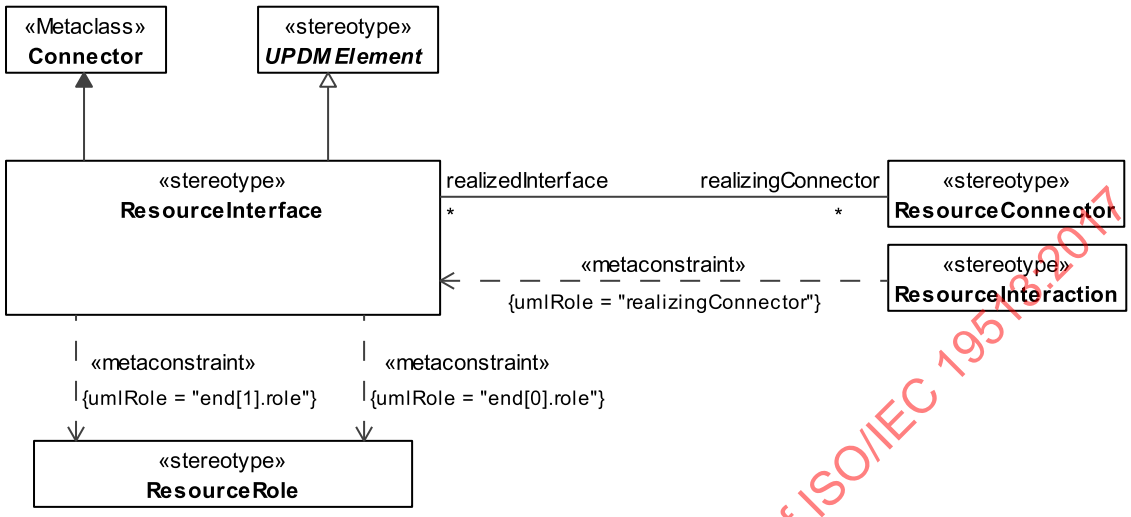

Figure 8.135 - ResourceInterface

Constraints

The following are constraints for ResourceInterface:

- ResourceInterface.end - the value for the role property for the owned ConnectorEnd must be stereotype “ResourceRole” or its specializations.

Attributes

The following are attributes for ResourceInterface:

- realizingConnector : ResourceConnector[*] - Realizing ResourceConnectors.

Extensions

The following metaclasses are extended by ResourceInterface:

- Connector

Specializations

The ResourceInterface element is a specialization of:

- UPDMElement

8.3.1.1.7.4.11 ResourcePort

UPDM: Port is an interaction point for a resource through which it can interact with the outside environment.

MODAF: An interface (logical or physical) provided by a System. A SystemPort may implement a PortType though there is no requirement for SystemPorts to be typed (MODAF:: SystemPort).

DoDAF: An interface (logical or physical) provided by a System (DoDAF::Port).

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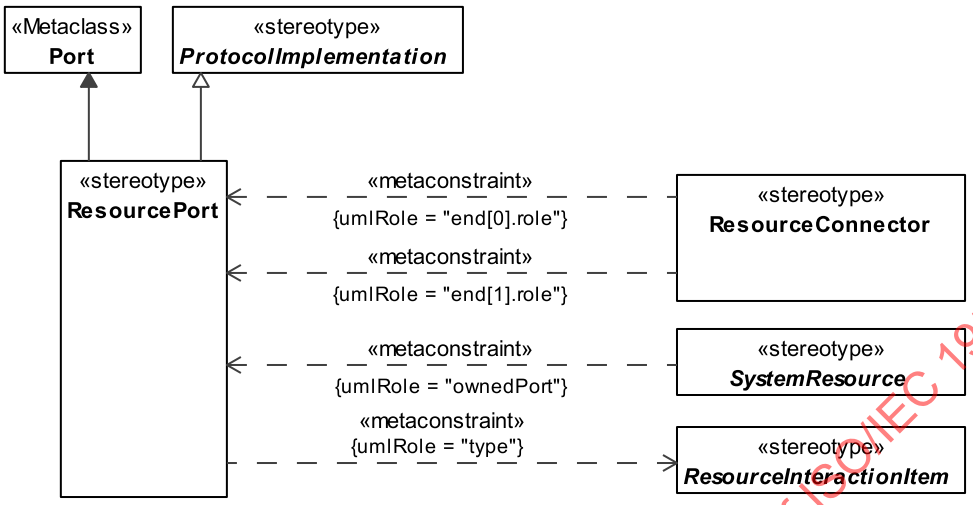

Figure 8.136 - ResourcePort

Constraints

The following are constraints for ResourcePort:

- ResourcePort.type - Value for the type property must be stereotyped “ResourceInteractionItem” or its specializations.

Extensions

The following metaclasses are extended by ResourcePort:

- Port

Specializations

The ResourcePort element is a specialization of:

- ProtocolImplementation

8.3.1.1.7.4.12 ResourceRole

UPDM: abstract element.

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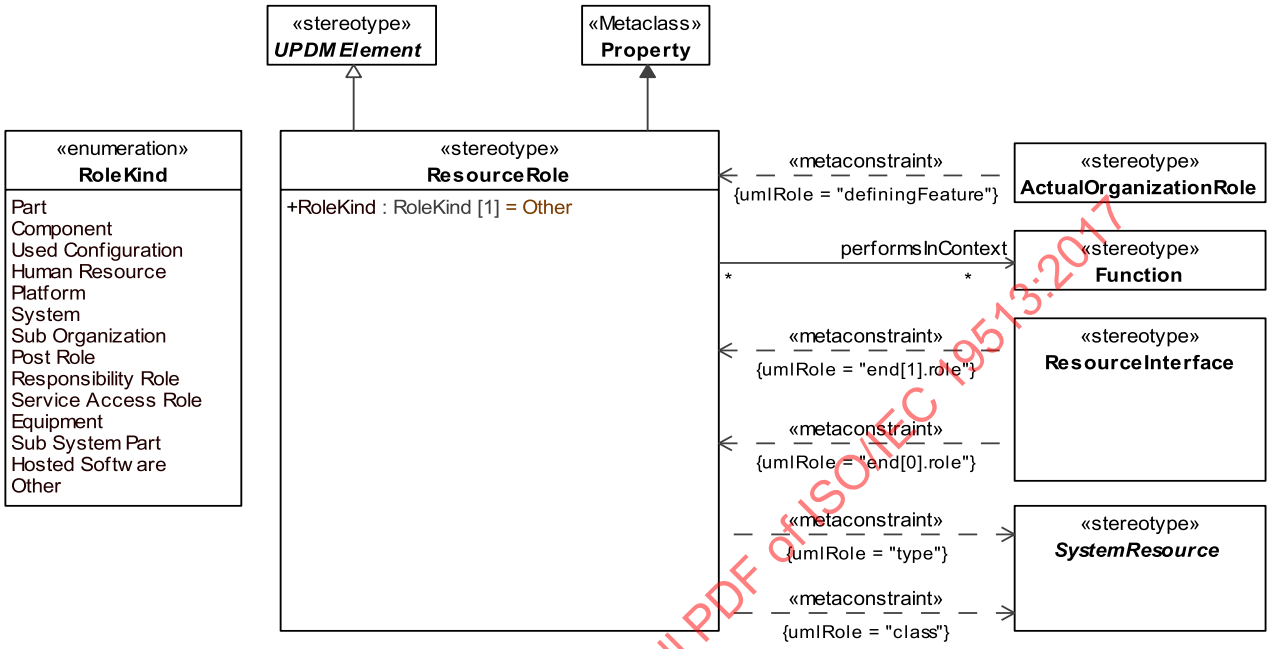

Figure 8.137 - ResourceRole

Constraints

The following are constraints for ResourceRole:

- ResouceRole.type - An element with the stereotype “ResourceRole” applied must have the “SystemResource” stereotype (or its specializations) applied to the targets of its extended metaclass property “type.”
- ResourceRole.class - Value for the class property must be stereotyped “SystemResource” or its specializations.

Attributes

The following are attributes for ResourceRole:

- performsInContext : Function[*] - Functions used by the ResourceRole.
- RoleKind : RoleKind[1] - Enumeration of the kinds of role a resource can play.

Extensions

The following metaclasses are extended by ResourceRole:

- Property

Specializations

The ResourceRole element is a specialization of:

- UPDMElement

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8.3.1.1.7.4.13 RoleKind

Enumeration of the roles that a ResourceRole may play in the context of a CapabilityConfiguration or System, used to support the RoleKind tag of a ResourceRole.

Enumeration Literals

The following are enumeration literals for RoleKind:

- Component - (MODAF SoftwareComponent) Asserts that Software is a component of another Software.
- Equipment - UPDM: Equipment is a physical resource that is used to accomplish a task or function in a system or an environment.

MODAF: (MODAF::PhysicalAsset): Usage of a ResourceArtifact (MODAF::Artifact) as a component of a ResourceConfiguration.

DoDAF: NA

- Hosted Software - Asserts that Software is hosted on a ResourceArtifact (which means the artifact is some kind of computer system).
- Human Resource - The role of an OrganizationalResource in a PhysicalArchitecture.
- Other - Other MODAF Role kind that is not on the enumerated list.
- Part - Usage of a ResourceArtifact as a part of another ResourceArtifact.
- Platform - Usage of a ResourceArtifact as a platform (e.g., vessel, aircraft, etc.) in a particular PhysicalArchitecture.
- Post Role - (MODAF Post) Asserts that a Post exists in an OrganizationType of the type specified by the related PostType.
- Responsibility Role - (MODAF Role) A ResourceUsage that asserts a given PostType has a RoleType.
- Service Access Role - A ResourceUsage that asserts a given ServiceAccess is used in the context of a particular service usage.
- Sub Organization - Asserts that one OrganizationType is typically the parent of another (e.g., a squadron may be part of a battalion).
- Sub System Part - UPDM: Indicates that a (sub)system is part of another system.

MODAF: Usage of an Artifact (UPDM::ResourceArtifact) as a part of another Artifact (UPDM::ResourceArtifact), equates to a MODAF::Part.

DoDAF: NA

- System - The usage of a ResourceArtifact as a System in a PhysicalArchitecture.
- Used Configuration - The usage of a PhysicalArchitecture in another PhysicalArchitecture.

8.3.1.1.7.4.14 Software

MODAF: An executable computer program.

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DoDAF: Material: Equipment, apparatus or supplies that are of interest, without distinction as to its application for administrative or combat purposes.

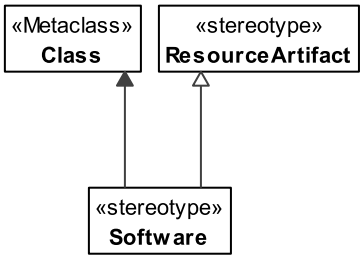

Figure 8.138 - Software

Extensions

The following metaclasses are extended by Software:

- Class

Specializations

The Software element is a specialization of:

- ResourceArtifact

8.3.1.1.7.4.15 SubjectOfForecast

MODAF: Abstract Any element that may be subject to a Forecast.

Note: SubjectOfForecast is abstract.

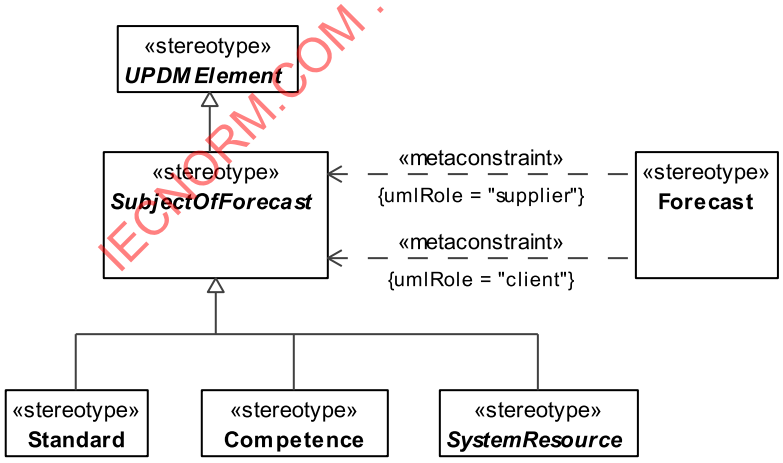

Figure 8.139 - SubjectOfForecast

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Specializations

The SubjectOfForecast element is a specialization of:

- UPDMElement

8.3.1.1.7.4.16 SubjectOfResourceConstraint

MODAF: Abstract. Anything that may be constrained by a ResourceConstraint.

Note: SubjectOfResourceConstraint is abstract.

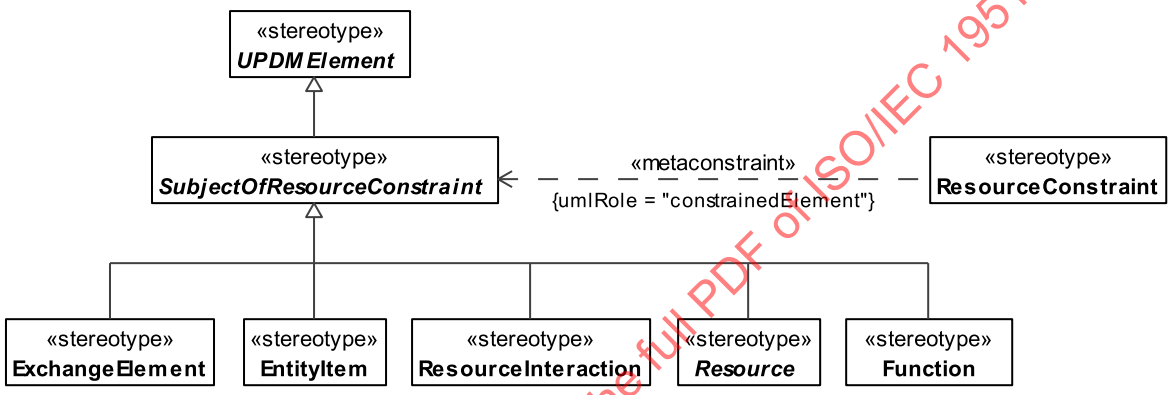

Figure 8.140 - SubjectOfResourceConstraint

Specializations

The SubjectOfResourceConstraint element is a specialization of:

- UPDMElement

8.3.1.1.7.4.17 SystemResource

UPDM: Abstract element used as placeholder for resource properties.

Note: SystemResource is abstract.

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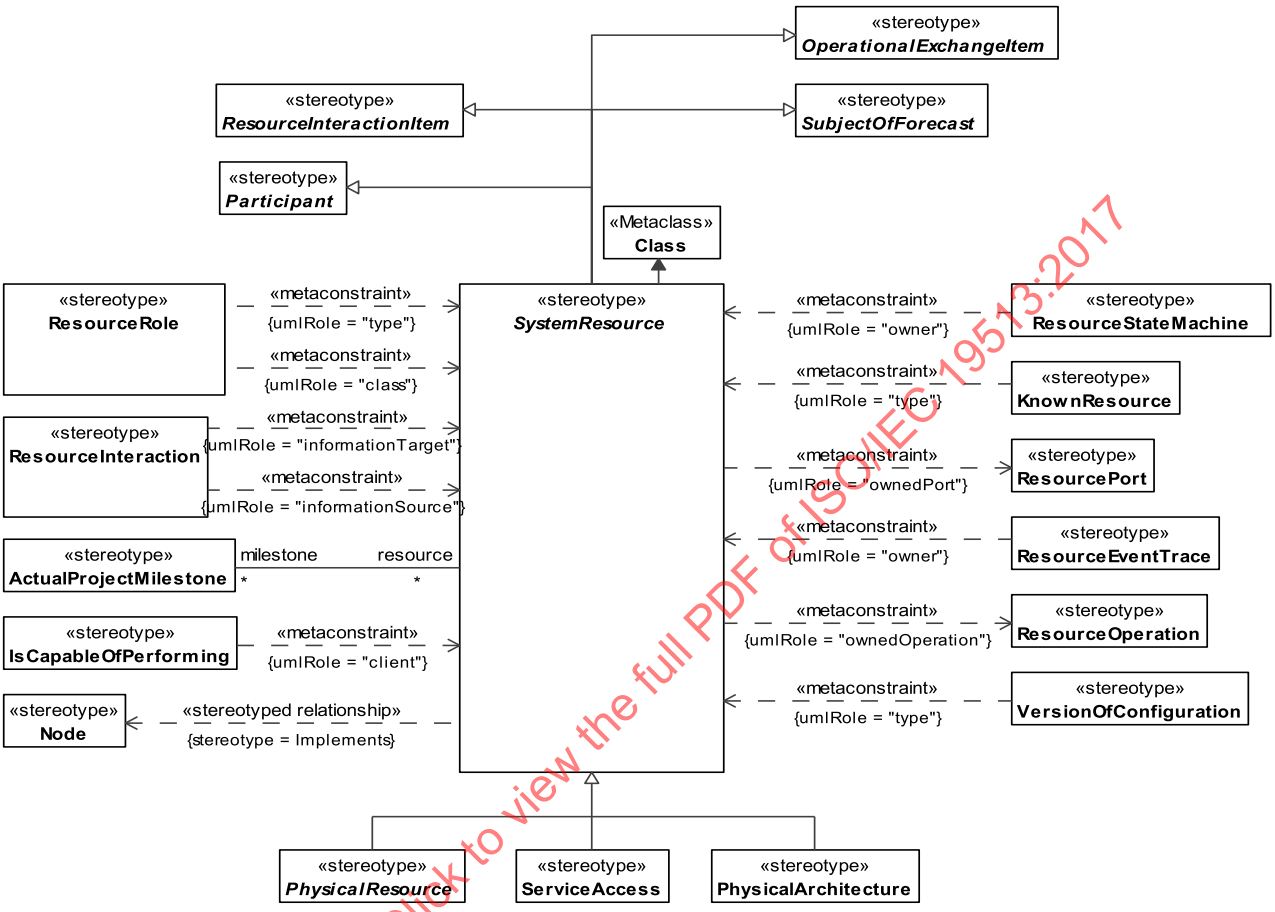

Figure 8.141 - SystemResource

Constraints

The following are constraints for SystemResource:

- Resource.ownedOperation - Values for the ownedOperation property must be stereotyped with “ResourceOperation” or its specializations.
- Resource.ownedPort - Values for the ownedPort property must be stereotyped with “ServicePort” or its specializations.
- Resource.performs - Can perform only “Functions.”

Attributes

The following are attributes for SystemResource:

- milestone : ActualProjectMilestone[*] - A Linked milestone.

Extensions

The following metaclasses are extended by SystemResource:

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- Class

Specializations

The SystemResource element is a specialization of:

- Participant
- ResourceInteractionItem
- SubjectOfForecast
- OperationalExchangeItem

8.3.1.1.7.4.18 VersionOfConfiguration

MODAF: Asserts that a CapabilityConfiguration is a version of a WholeLifeConfiguration.

DoDAF: NA

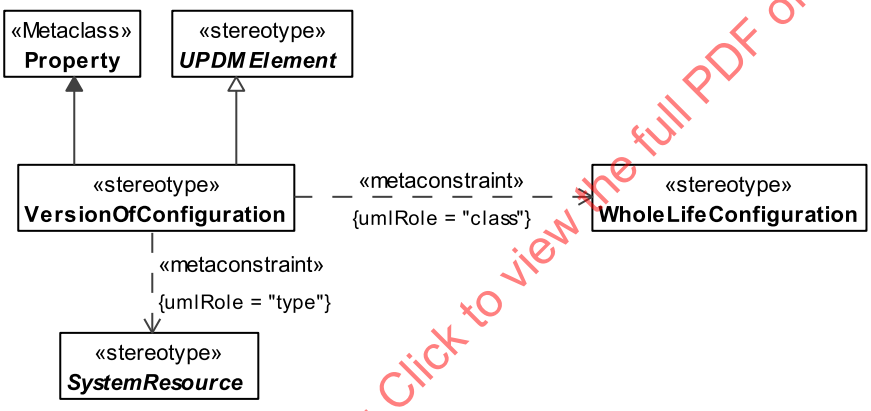

Figure 8.142 - VersionOfConfiguration

Constraints

The following are constraints for VersionOfConfiguration:

- VersionOfConfiguration.class - Value for the class property must be stereotyped “WholeLifeConfiguration” or its specializations.
- VersionOfConfiguration.type - Value for the type property must be stereotyped “SystemResource” or its specializations.

Extensions

The following metaclasses are extended by VersionOfConfiguration:

- Property

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Specializations

The VersionOfConfiguration element is a specialization of:

- UPDMElement

8.3.1.1.7.4.19 WholeLifeConfiguration

MODAF:A set of versions of a CapabilityConfiguration over time.

DoDAF:NA

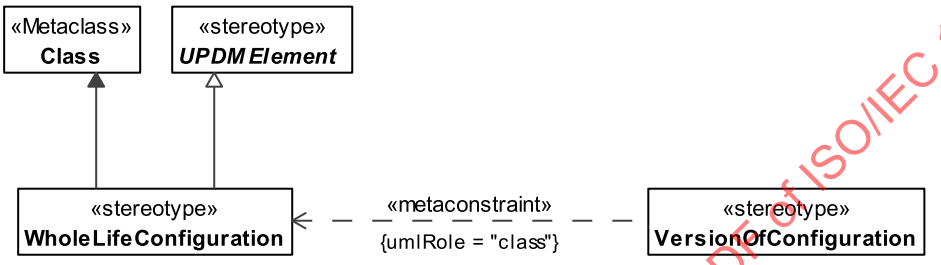

Figure 8.143 - WholeLifeConfiguration

Extensions

The following metaclasses are extended by WholeLifeConfiguration:

- Class

Specializations

The WholeLifeConfiguration element is a specialization of:

- UPDMElement

8.3.1.1.8 UPDM L1::UPDM L0::Core::TechnicalStandardsElements

UPDM 2.0 retains the TV Viewpoint that maps to the new DoDAF 2.02 StdV Standards Viewpoint. DoDAF Version 2.02, "DoDAF Viewpoints and Models: Standards Viewpoint" defines the purpose of the Standards Views. StdV-1 is a wider definition of the concept of "technical standard" than used in previous DoDAF versions. Such standards were restricted, for example, to ISO, OMG, OASIS, and similar standards) and could be found in the DoD IT Standards Registry (DISR). It now includes not only such software (information technology) standards but wider standards including hardware and other technologies. It includes protocols and data standards. It now is expanded to include technical, operational, and business standards defined liberally as well as guidance, policy, regulations, and laws applicable to the architecture being described. The StdV-1 is a set of such standards that applies to one (current) time-period. If emerging standards are addressed for a future period of time, a StdV-2 Standards Forecast should be completed as well. The purpose of StdV is both to specify the standards with which a project must comply as well as to planning for additional or future application of standards. The StdV collates the various systems, services, etc. with the rules (standards) that govern the implementation of the architecture. A typical StdV should reference elements used in the various other System Views

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(SV) (SV-1, 2, 4, 6), Service Views (SvcV-1, 2, 4, 6) and layers DIV (DIV-2 and DIV-3). Protocols often are Resource Flow descriptions defined in SV-2 and SvcV-2. The degree of compliance to standards may also be addressed in risk assessments.

8.3.1.1.8.1 Protocol

MODAF: A Standard for communication. Protocols may be composite (i.e., a stack).

DoDAF: NA, See TechnicalStandard.

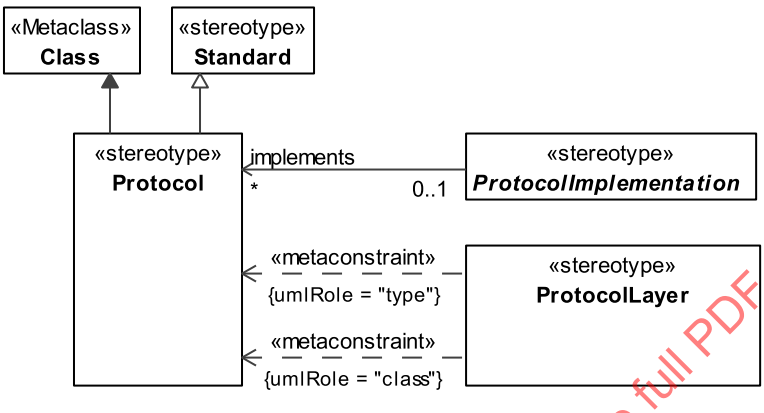

Figure 8.144 - Protocol

Extensions

The following metaclasses are extended by Protocol:

- Class

Specializations

The Protocol element is a specialization of:

- Standard

8.3.1.1.8.2 ProtocolImplementation

UPDM: Abstract element: A connector that implements a specific Protocol.

MODAF: An element that can implement a Protocol.

Note: ProtocolImplementation is abstract.

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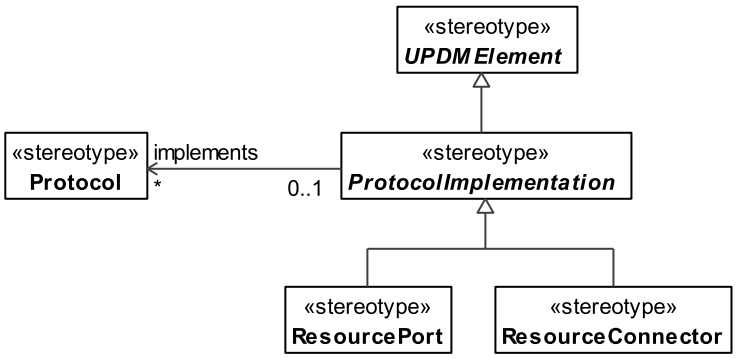

Figure 8.145 - ProtocolImplementation

Attributes

The following are attributes for ProtocolImplementation:

- implements : Protocol[*] - The <<Protocol>> which can be implemented by the Connector targets.

Specializations

The ProtocolImplementation element is a specialization of:

- UPDMElement

8.3.1.1.8.3 Standard

MODAF: A ratified and peer-reviewed specification that is used to guide or constrain the architecture. A Standard may be applied to any element in the architecture via the [constrainedItem] property of UML::Constraint.

DoDAF: A formal agreement documenting generally accepted specifications or criteria for products, processes, procedures, policies, systems, and/or personnel.

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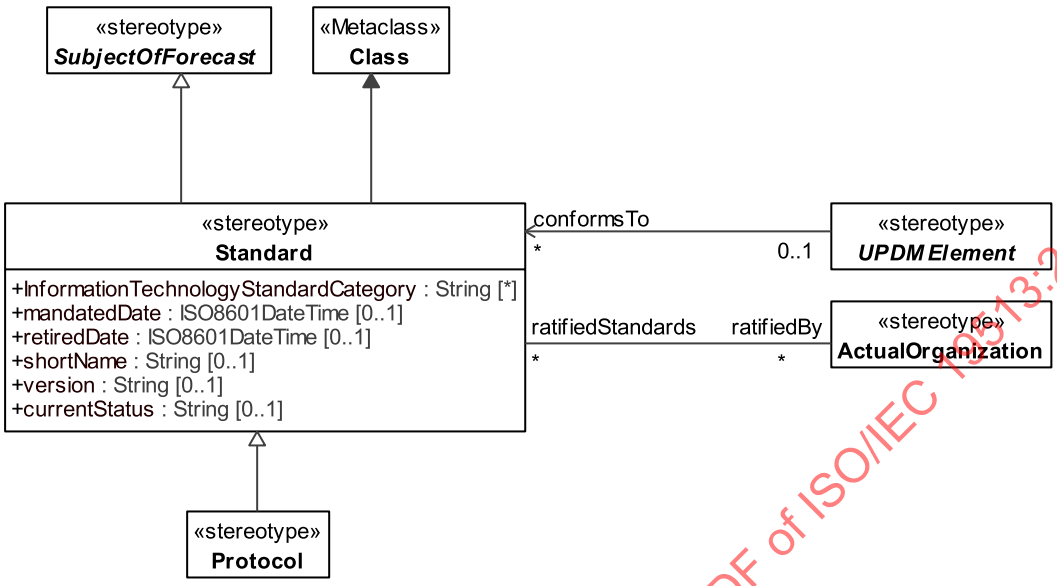

Figure 8.146 - Standard

Attributes

The following are attributes for Standard:

- currentStatus : String[0..1] - Current status of the Standard.
- InformationTechnologyStandardCategory : String[*] - The information technology standard category which the <<Standard>> belongs to.
- mandatedDate : ISO8601DateTime[0..1] - The date when this version of the Standard was published.
- ratifiedBy : ActualOrganization[*] - Organization that ratified this Standard.
- retiredDate : ISO8601DateTime[0..1] - The date when this version of the Standard was retired.
- shortName : String[0..1] - Short name of the Standard.
- version : String[0..1] - Represents the revision number of the Standard (e.g., “1.2.1,” “v2,” “:2004,” etc.

Extensions

The following metaclasses are extended by Standard:

- Class

Specializations

The Standard element is a specialization of:

- SubjectOfForecast

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8.3.1.1.8.4 StandardConfiguration

MODAF: A UML::Comment that when attached to a CapabilityConfiguration indicates that it is a standard pattern for re-use in the architecture.

DoDAF: NA

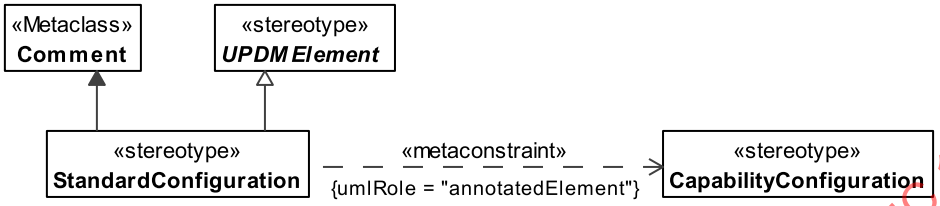

Figure 8.147 - StandardConfiguration

Constraints

The following are constraints for StandardConfiguration:

- StandardConfiguration.annotatedElement - Value for the annotatedElement property must be stereotyped "CapabilityConfiguration."

Extensions

The following metaclasses are extended by StandardConfiguration:

- Comment

Specializations

The StandardConfiguration element is a specialization of:

- UPDMElement

8.3.1.1.8.5 UPDM L1::UPDM L0::Core::TechnicalStandardsElements::Data

The data portion of the AllElements profile.

8.3.1.1.8.5.1 Details

UPDM: A tuple used to provide the relationship between an entityItem and an ExchangeElement.

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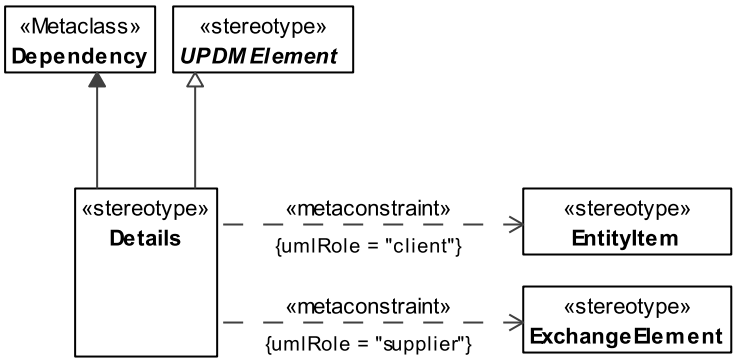

Figure 8.148 - Details

Constraints

The following are constraints for Details:

- Details.client - Value for the client property must be stereotyped a specialization of “EntityItem.”
- Details.supplier - Value for the supplier property must be stereotyped “ExchangeElement.”

Extensions

The following metaclasses are extended by Details:

- Dependency

Specializations

The Details element is a specialization of:

- UPDMElement

8.3.1.1.8.5.2 EntityAttribute

MODAF: A defined property of an EntityItem.

DoDAF: NA

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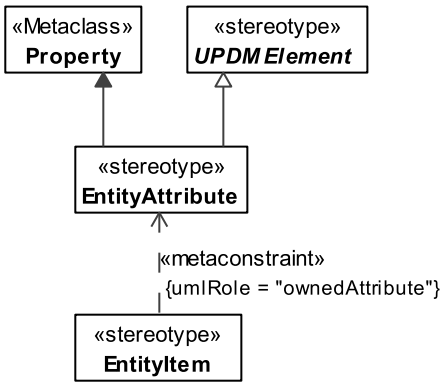

Figure 8.149 - EntityAttribute

Constraints

The following are constraints for EntityAttribute:

- EntityAttribute.canBeAppliedTo - "EntityAttribute" stereotype can be applied to Properties that are owned only by "EntityItem."

Extensions

The following metaclasses are extended by EntityAttribute:

- Property

Specializations

The EntityAttribute element is a specialization of:

- UPDMElement

8.3.1.1.8.5.3 EntityItem

MODAF: (MODAF::Entity): A definition (type) of an item of interest.

DoDAF: NA

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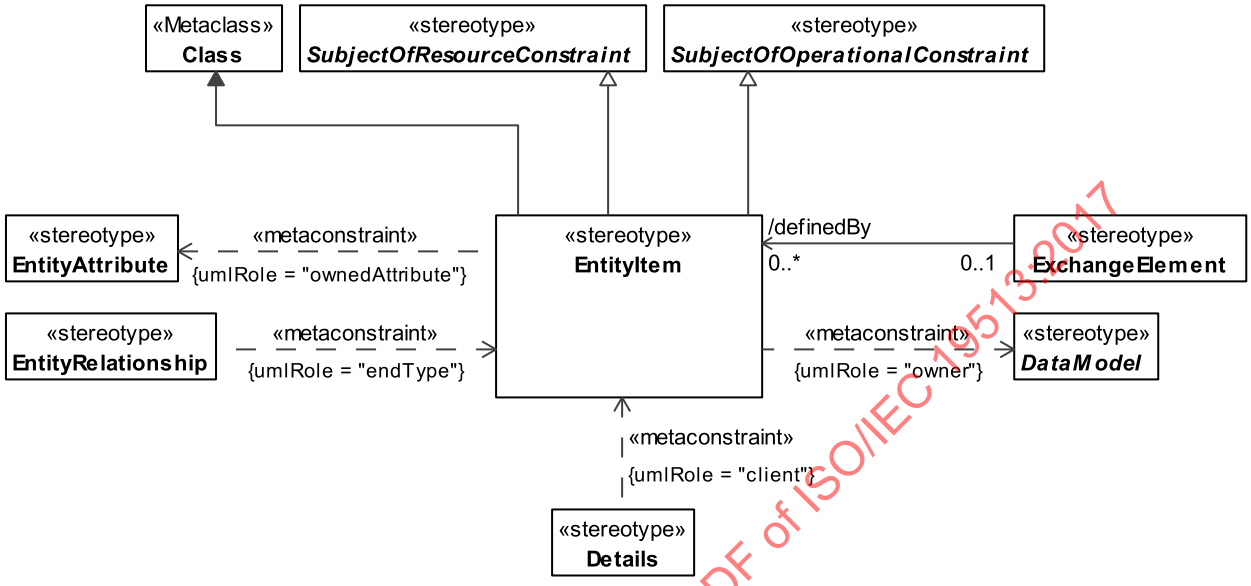

Figure 8.150 - EntityItem

Constraints

The following are constraints for EntityItem:

- EntityItem.ownedAttribute - Value for the ownedAttribute property must be stereotyped “EntityAttribute” or its specializations.

Extensions

The following metaclasses are extended by EntityItem:

- Class

Specializations

The EntityItem element is a specialization of:

- SubjectOfOperationalConstraint
- SubjectOfResourceConstraint

8.3.1.1.8.5.4 EntityRelationship

MODAF: Asserts that there is a relationship between two EntityItems.

DoDAF: (DoDAF::DataAssociation): A relationship or association between two elements of proceduralized information.

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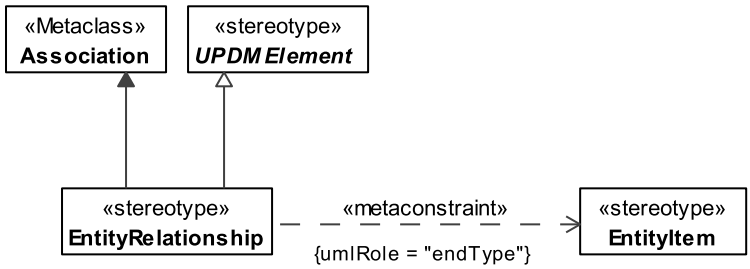

Figure 8.151 - EntityRelationship

Constraints

The following are constraints for EntityRelationship:

- EntityRelationship.endType - Values for the endType property must be stereotyped “EntityItem” or its specializations.

Extensions

The following metaclasses are extended by EntityRelationship:

- Association

Specializations

The EntityRelationship element is a specialization of:

- UPDMElement

8.3.1.2 UPDM L1::UPDM L0::DoDAF

Elements that are not considered part of the Core architectural model, but necessary for DoDAF.

8.3.1.2.1 UPDM L1::UPDM L0::DoDAF::AcquisitionElements

This sub clause contains the Acquisition elements of the DoDAF.

8.3.1.2.1.1 ActivityPartOfProject

UPDM: As in DoDAF

DoDAF: A wholePart relationship between a Project and an Activity (Task) that is part of the Project.

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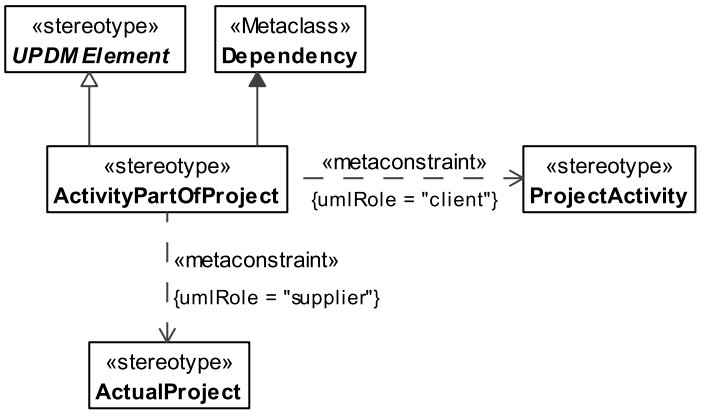

Figure 8.152 - ActivityPartOfProject

Constraints

The following are constraints for ActivityPartOfProject:

- ActivityPartOfProject.client - Value for the client property must be stereotyped a specialization of "ProjectActivity."
- ActivityPartOfProject.supplier - Value for the supplier property must be stereotyped "ActualProject."

Extensions

The following metaclasses are extended by ActivityPartOfProject:

- Dependency

Specializations

The ActivityPartOfProject element is a specialization of:

- UPDMElement

8.3.1.2.1.2 Project

DoDAF:A temporary endeavor undertaken to create Resources or Desired Effects.

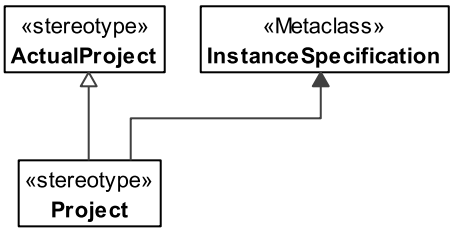

Figure 8.153 - Project

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Extensions

The following metaclasses are extended by Project:

- InstanceSpecification

Specializations

The Project element is a specialization of:

- ActualProject

8.3.1.2.1.3 ProjectActivity

MOAF: NA

DoDAF: An activity carried out during a project.

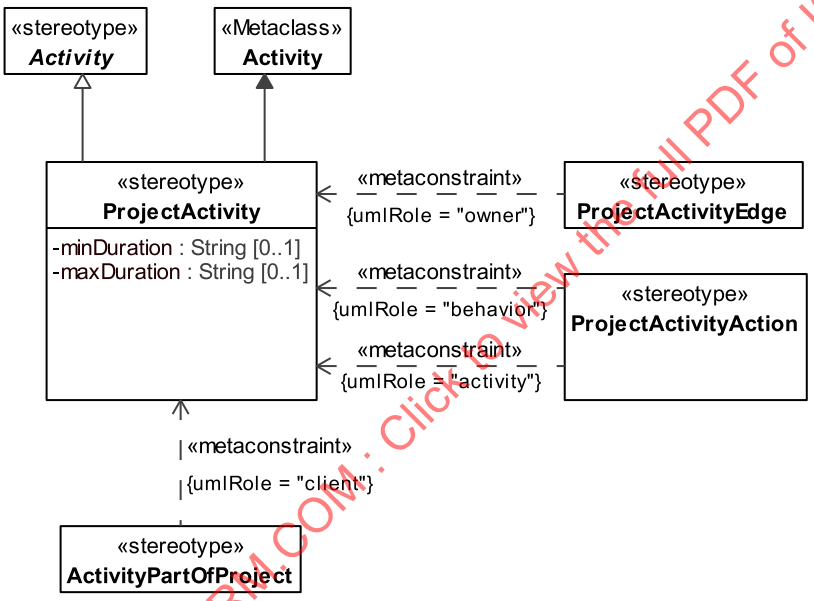

Figure 8.154 - ProjectActivity

Attributes

The following are attributes for ProjectActivity:

- maxDuration : String[0..1] -
- minDuration : String[0..1] -

Extensions

The following metaclasses are extended by ProjectActivity:

- Activity

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Specializations

The ProjectActivity element is a specialization of:

- Activity

8.3.1.2.1.4 ProjectActivityAction

UPDM: The ProjectActivityAction is defined as a call behavior action that invokes the activity that needs to be performed.

MODAF: NA

DoDAF:NA

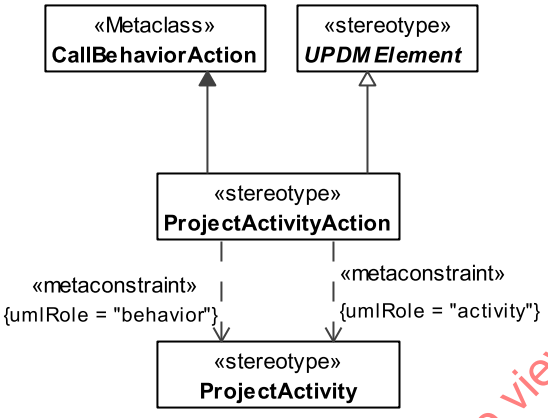

Figure 8.155 - ProjectActivityAction

Extensions

The following metaclasses are extended by ProjectActivityAction:

- CallBehaviorAction

Specializations

The ProjectActivityAction element is a specialization of:

- UPDMElement

8.3.1.2.1.5 ProjectActivityEdge

UPDM An extension of <<ActivityEdge>> that is used to model the flow of control/objects through a ProjectActivity.

MODAF: NA

DoDAF: NA

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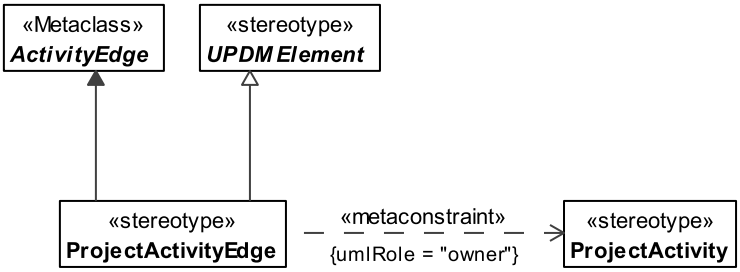

Figure 8.156 - ProjectActivityEdge

Extensions

The following metaclasses are extended by ProjectActivityEdge:

- ActivityEdge

Specializations

The ProjectActivityEdge element is a specialization of:

- UPDMElement

8.3.1.2.2 UPDM L1::UPDM L0::DoDAF::AllElements

The All View elements for DoDAF specific models. The All View elements provide information about the entire Architecture. They are used for support rather than architectural models.

8.3.1.2.2.1 Information

UPDM: As DoDAF

MODAF: N/A

DoDAF: Information is the state of a something of interest that is materialized (in any medium or form) and communicated or received.

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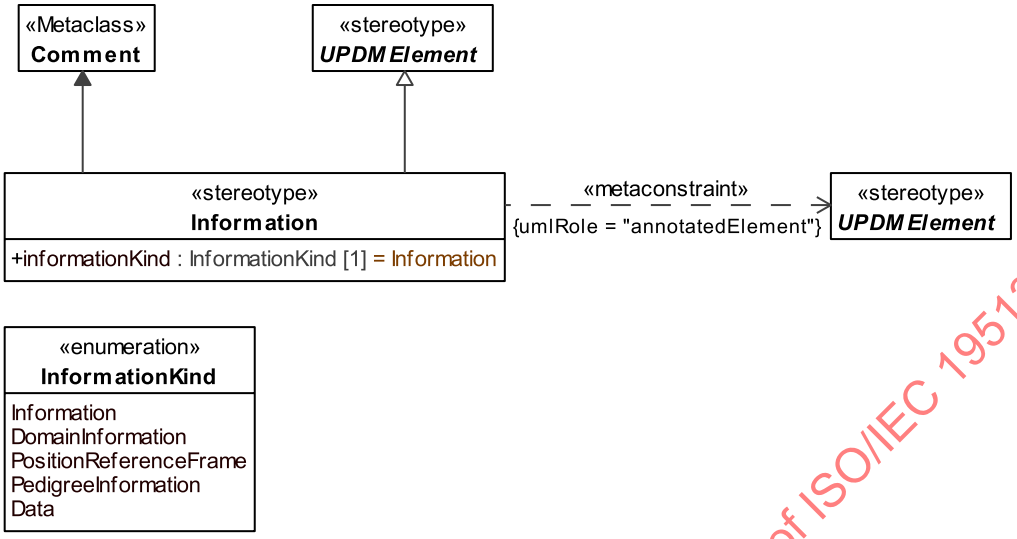

Figure 8.157 - Information

Constraints

The following are constraints for Information:

- Information.annotatedElement - Value for the annotatedElement property must be stereotyped “UPDMElement” or its specializations.

Attributes

The following are attributes for Information:

- informationKind : InformationKind[1] - Enumeration of the kinds of information being passed.

Extensions

The following metaclasses are extended by Information:

- Comment

Specializations

The Information element is a specialization of:

- UPDMElement

8.3.1.2.2.2 InformationKind

Enumeration of kinds of information, derived from MODAF and DoDAF, used to support the InformationKind tag of the Information stereotype.

Enumeration Literals

The following are enumeration literals for InformationKind:

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- Data - Representation of information in a formalized manner suitable for communication, interpretation, or processing by humans or by automatic means. Examples could be whole models, packages, entities, attributes, classes, domain values, enumeration values, records, tables, rows, columns, and fields.
- DomainInformation - Types of information within the scope or domain of the architecture.
- Information - Information is the state of a something of interest that is materialized (in any medium or form) and communicated or received.
- PedigreeInformation - Information describing pedigree.
- PositionReferenceFrame - An arbitrary set of axes with reference to which the position or motion of something is described or physical laws are formulated.

8.3.1.2.2.3 UPDM L1::UPDM L0::DoDAF::AllElements::Behavior

This sub clause contains the Behavior Elements of the DoDAF, All Elements.

8.3.1.2.2.3.1 ActivityPerformedByPerformer

UPDM: Links a Performer to the behavior that it can perform.

MODAF: NA

DoDAF: An overlap of an Activity with a Resource, in particular a consuming or producing Activity that expresses an input, output, consumption, or production Activity of the Resource.

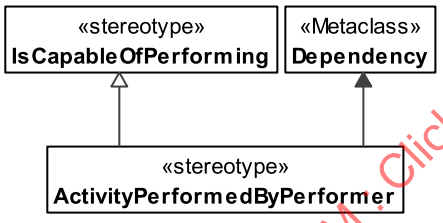

Figure 8.158 - ActivityPerformedByPerformer

Extensions

The following metaclasses are extended by ActivityPerformedByPerformer:

- Dependency

Specializations

The ActivityPerformedByPerformer element is a specialization of:

- IsCapableOfPerforming

8.3.1.2.2.4 UPDM L1::UPDM L0::DoDAF::AllElements::Environment

This sub clause contains the Environmental Elements of the DoDAF, All Elements.

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8.3.1.2.2.4.1 Condition

MODAF: A definition of the conditions in which something exists or functions. An Environment may be specified in terms of LocationType (e.g., terrain), Climate (e.g., tropical), and LightCondition (e.g., dark, light, dusk, etc.).

DoDAF: An object that encompasses meteorological, geographic, and control features mission significance.

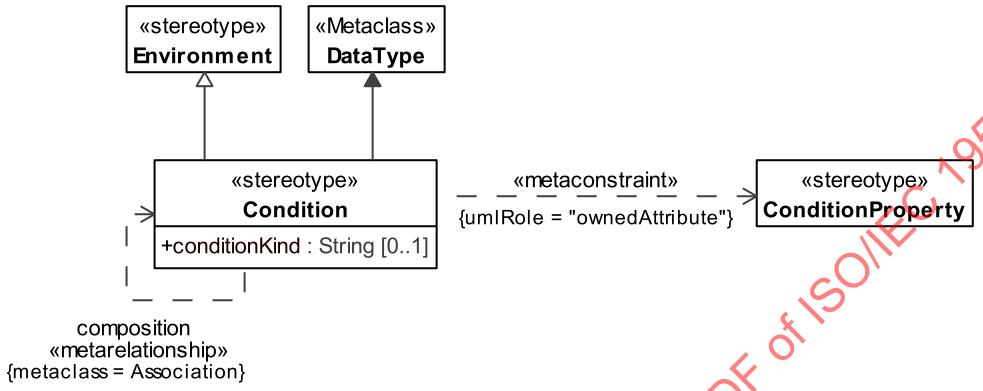

Figure 8.159 Condition

Constraints

The following are constraints for Condition:

- Condition.ownedAttribute - Values for the ownedAttribute property must be stereotyped “ConditionProperty” or its specializations.

Attributes

The following are attributes for Condition:

- conditionKind : String[0..1] - String defining the type of condition being set.

Extensions

The following metaclasses are extended by Condition:

- DataType

Specializations

The Condition element is a specialization of:

- Environment

8.3.1.2.2.4.2 ConditionProperty

MODAF: EnvironmentalProperty: Asserts that an Environment has one or more properties. These may be Climate, LocationType, or LightCondition.

DoDAF: NA

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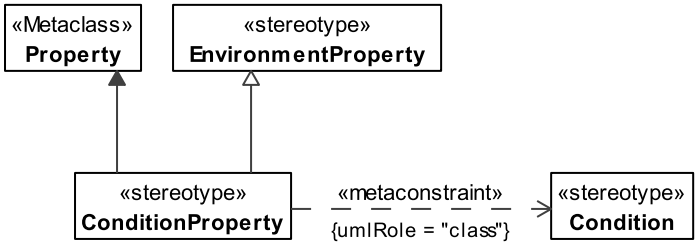

Figure 8.160 - ConditionProperty

Constraints

The following are constraints for ConditionProperty:

- ConditionProperty.class - Value for the class property must be stereotyped "Condition" or its specializations.

Extensions

The following metaclasses are extended by ConditionProperty:

- Property

Specializations

The ConditionProperty element is a specialization of:

- EnvironmentProperty

8.3.1.2.2.4.3 GeoPoliticalExtent

UPDM: An instance of a GeoPoliticalExtentType

MODAF:N/A

DoDAF: N/A

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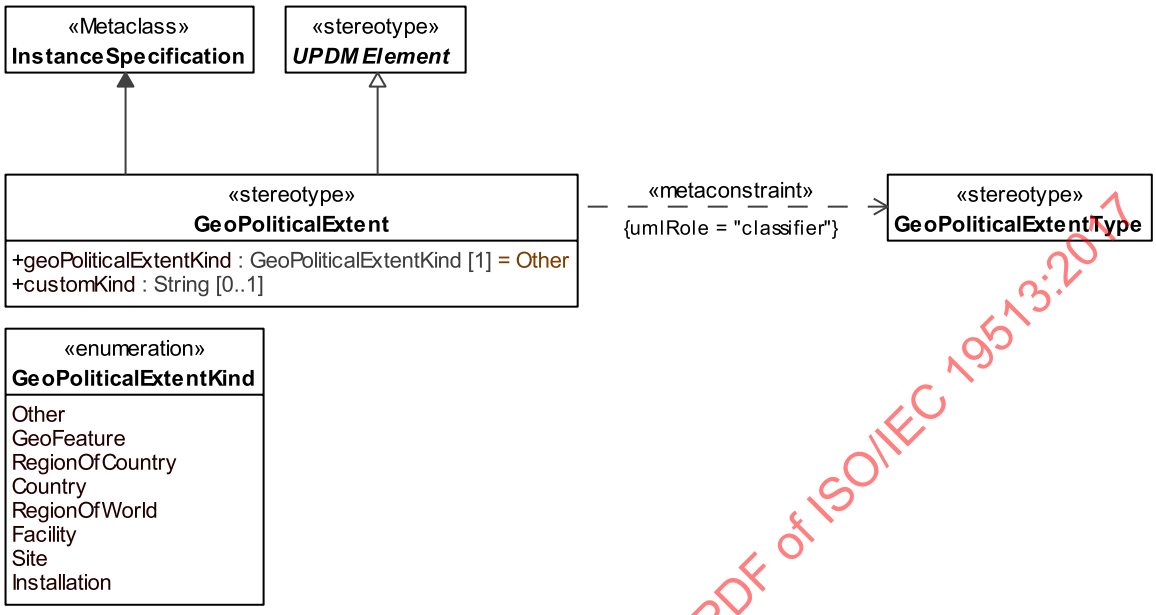

Figure 8.161 - GeoPoliticalExtent

Constraints

The following are constraints for GeoPoliticalExtent:

- GeoPoliticalExtent.classifier - Classifier property value must be stereotyped “GeoPoliticalExtentType” or its specializations.

Attributes

The following are attributes for GeoPoliticalExtent:

- customKind : String[0..1] - String defining custom kinds of geopolitical extent.
- geoPoliticalExtentKind : GeoPoliticalExtentKind[1] - Enumeration of kinds of GeopoliticalExtent.

Extensions

The following metaclasses are extended by GeoPoliticalExtent:

- InstanceSpecification

Specializations

The GeoPoliticalExtent element is a specialization of:

- UPDMElement

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8.3.1.2.2.4.4 GeoPoliticalExtentKind

Enumeration of geopolitical extent kinds, used to support the geoPoliticalExtentKind tag of the geoPoliticalExtent stereotype, derived from DoDAF.

Enumeration Literals

The following are enumeration literals for GeoPoliticalExtentKind:

- Country - A political state or nation or its territory.
- Facility - A real property entity consisting of underlying land and one or more of the following: a building, a structure (including linear structures), a utility system, or pavement.
- GeoFeature - An object that encompasses meteorological, geographic, and control features mission significance.
- Installation - A base, camp, post, station, yard, center, or other activity, including leased facilities, without regard to the duration of operational control. An installation may include one or more sites.
- Other - Other GeoPoliticalExtent kind that is not on the enumerated list.
- RegionOfCountry - A large, usually continuous segment of a political state or nation or its territory.
- RegionOfWorld - A large, usually continuous segment of a surface or space; area.
- Site - Physical (geographic) location that is or was owned by, leased to, or otherwise possessed. Each site is assigned to a single installation. A site may exist in one of three forms: (1) Land only, where there are no facilities present and where the land consists of either a single land parcel or two or more contiguous land parcels. (2) Facility or facilities only, where the underlying land is neither owned nor controlled by the government. A stand-alone facility can be a site. If a facility is not a stand-alone facility, it must be assigned to a site. (3). Land and all the facilities thereon, where the land consists of either a single land parcel or two or more contiguous land parcels.

8.3.1.2.2.4.5 GeoPoliticalExtentType

MODAF:NA

DoDAF:A geospatial extent whose boundaries are by declaration or agreement by political parties.

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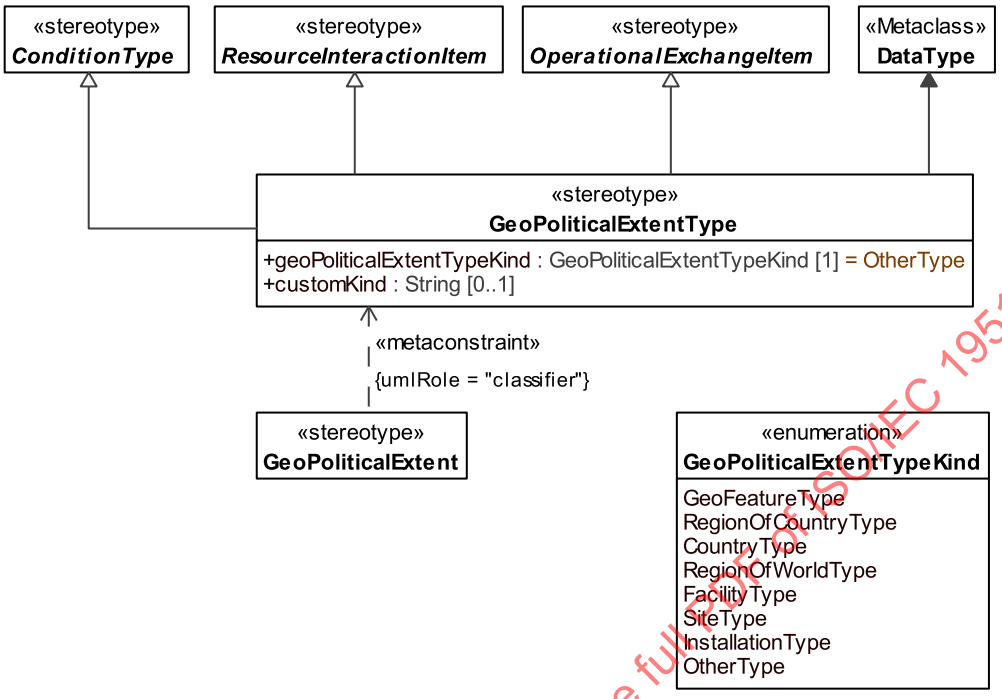

Figure 8.162 - GeoPoliticalExtentType

Attributes

The following are attributes for GeoPoliticalExtentType:

- customKind : String[0..1] - String defining custom kinds of GeopoliticalExtentTypes.
- geoPoliticalExtentTypeKind : GeoPoliticalExtentTypeKind[1] - Enumeration of kinds GeopoliticalExtentTypes.

Extensions

The following metaclasses are extended by GeoPoliticalExtentType:

- DataType

Specializations

The GeoPoliticalExtentType element is a specialization of:

- ResourceInteractionItem
- OperationalExchangeItem
- ConditionType

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8.3.1.2.2.4.6 GeoPoliticalExtentTypeKind

Enumeration of kinds of geopolitical extent type, derived from DoDAF, used to support the geoPoliticalExtentTypeKind tag of the GeopoliticalExtentType stereotype.

Enumeration Literals

The following are enumeration literals for GeoPoliticalExtentTypeKind:

- CountryType - Powertype Of Country.
- FacilityType - Powertype Of Facility.
- GeoFeatureType - Powertype Of GeoFeature.
- InstallationType - Powertype Of Installation.
- OtherType - Other GeoPoliticalExtentType kind that is not on the enumerated list.
- RegionOfCountryType - Powertype Of RegionOfCountry.
- RegionOfWorldType - Powertype Of RegionOfWorld.
- SiteType - Powertype Of Site.

8.3.1.2.2.4.7 Location

DoDAF: All subtypes of << IndividualType>> Location, such as Facility, Site, etc.

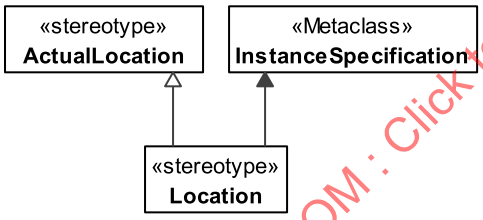

Figure 8.163 - Location

Extensions

The following metaclasses are extended by Location:

- InstanceSpecification

Specializations

The Location element is a specialization of:

- ActualLocation

8.3.1.2.2.5 UPDM L1::UPDM L0::DoDAF::AllElements::Measurements

This sub clause contains the Measurement Elements of the DoDAF, All Elements.

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8.3.1.2.2.5.1 Measure

MODAF: NA

DoDAF: The magnitude of some attribute of an individual.

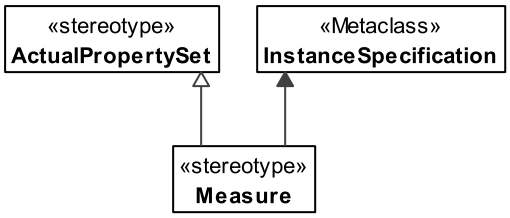

Figure 8.164 - Measure

Extensions

The following metaclasses are extended by Measure:

- InstanceSpecification

Specializations

The Measure element is a specialization of:

- ActualPropertySet

8.3.1.2.2.5.2 MeasureType

MODAF:NA

DoDAF: A category of Measures.

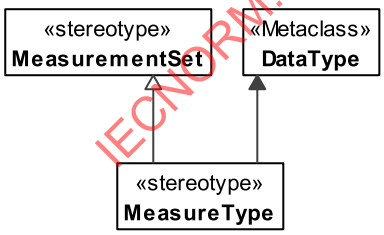

Figure 8.165 - MeasureType

Extensions

The following metaclasses are extended by MeasureType:

- DataType

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Specializations

The MeasureType element is a specialization of:

- MeasurementSet

8.3.1.2.3 UPDM L1::UPDM L0::DoDAF::OperationalElements

The Operaional View elements for DoDAF specific models.

8.3.1.2.3.1 UPDM L1::UPDM L0::DoDAF::OperationalElements::Structure

Section of the OperationalElements profile that describes structural concepts for DoDAF.

8.3.1.2.3.1.1 Performer

MODAF: NA

DoDAF: Any entity (human, automated, or any aggregation of human and/or automated) that performs an activity and provides a capability.

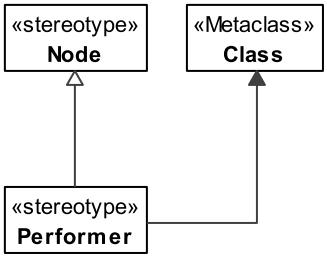

Figure 8.166 - Performer

Extensions

The following metaclasses are extended by Performer:

- Class

Specializations

The Performer element is a specialization of:

- Node

8.3.1.2.3.1.2 UPDM L1::UPDM L0::DoDAF::OperationalElements::Structure::Organizational

This sub clause contains the organizational Elements of the DoDAF, Operational Elements.

8.3.1.2.3.1.2.1 IndividualPersonRole

UPDM: An individual person.

MODAF:NA

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DoDAF: An Individual person.

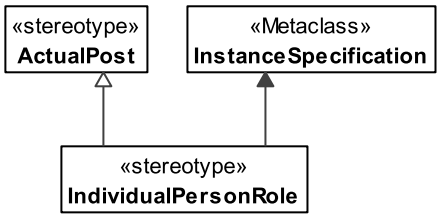

Figure 8.167 - IndividualPersonRole

Extensions

The following metaclasses are extended by IndividualPersonRole:

- InstanceSpecification

Specializations

The IndividualPersonRole element is a specialization of:

- ActualPost

8.3.1.2.3.1.2.2 OrganizationType

DoDAF:A type of Organization.

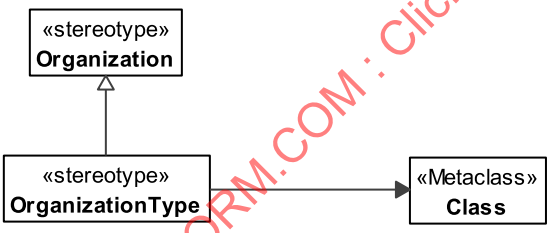

Figure 8.168 - OrganizationType

Extensions

The following metaclasses are extended by OrganizationType:

- Class

Specializations

The OrganizationType element is a specialization of:

- Organization

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8.3.1.2.3.1.2.3 PersonType

DoDAF: A category of persons defined by the role or roles they share that are relevant to an architecture (includes assigned material).

MODAF:NA

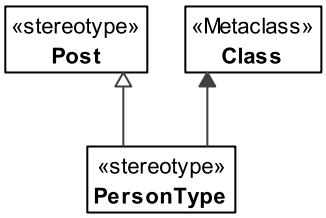

Figure 8.169 - PersonType

Extensions

The following metaclasses are extended by PersonType:

- Class

Specializations

The PersonType element is a specialization of:

- Post

8.3.1.2.3.1.2.4 Skill

MODAF: A specific set of abilities defined by knowledge, skills, and attitude (Competence).

DoDAF: The ability, coming from one's knowledge, practice, aptitude, etc., to do something well.

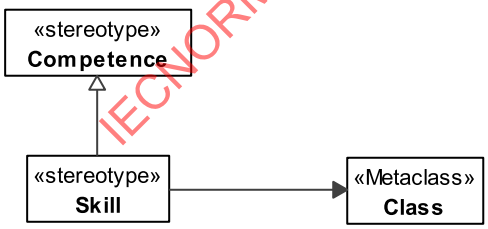

Figure 8.170 - Skill

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Extensions

The following metaclasses are extended by Skill:

- Class

Specializations

The Skill element is a specialization of:

- Competence

8.3.1.2.3.1.2.5 SkillOfPersonType

UPDM: Alias for ProvidesCompetence, the tuple showing the skills and competencies required from a particular role or organization.

DoDAF: A type property between a PersonRoleType and the Skills it entails.

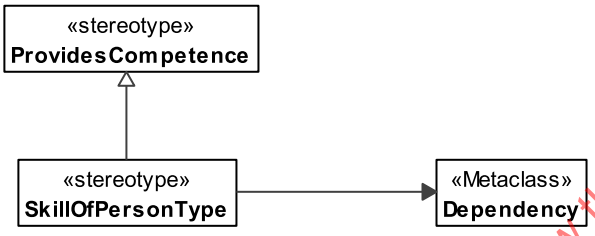

Figure 8.171 - SkillOfPersonType

Extensions

The following metaclasses are extended by SkillOfPersonType:

- Dependency

Specializations

The SkillOfPersonType element is a specialization of:

- ProvidesCompetence

8.3.1.2.4 UPDM L1::UPDM L0::DoDAF::ServiceElements

This sub clause contains the Service Elements of the DoDAF.

8.3.1.2.4.1 ServiceAccess

UPDM: The mechanism by which a service is accessed.

MODAF: NA

DoDAF: NA

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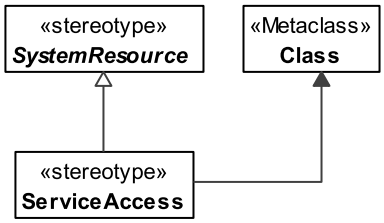

Figure 8.172 - ServiceAccess

Extensions

The following metaclasses are extended by ServiceAccess:

- Class

Specializations

The ServiceAccess element is a specialization of:

- SystemResource

8.3.1.2.4.2 ServiceDescription

UPDM: Package containing the elements that describe a service, from DoDAF 2.

DoDAF: Information necessary to interact with the service in such terms as the service inputs, outputs, and associated semantics. The service description also conveys what is accomplished when the service is invoked and the conditions for using the service.

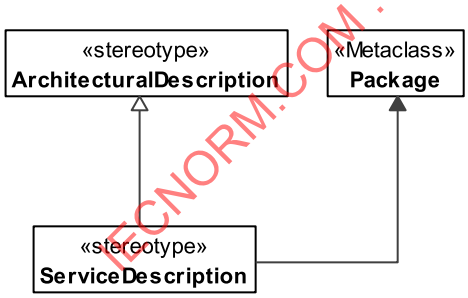

Figure 8.173 - ServiceDescription

Extensions

The following metaclasses are extended by ServiceDescription:

- Package

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Specializations

The ServiceDescription element is a specialization of:

- ArchitecturalDescription

8.3.1.2.5 UPDM L1::UPDM L0::DoDAF::StrategicElements

This sub clause contains the Strategic Elements of the DoDAF.

8.3.1.2.5.1 ActivityPartOfCapability

UPDM: As in DoDAF

DoDAF: A disposition to manifest an Activity. An Activity to be performed to achieve a desired effect under specified [performance] standards and conditions through combinations of ways and means.

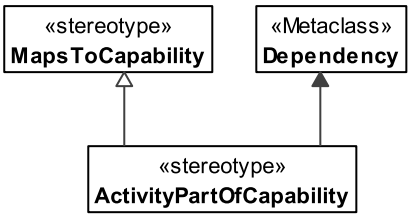

Figure 8.174 - ActivityPartOfCapability

Extensions

The following metaclasses are extended by ActivityPartOfCapability:

- Dependency

Specializations

The ActivityPartOfCapability element is a specialization of:

- MapsToCapability

8.3.1.2.5.2 CapabilityOfPerformer

UPDM: A couple that represents the capability that a resource, node, or enterprise phase exhibits (Exhibits).

MODAF: An assertion that a Node is required to have a Capability (Capability for node).

DoDAF: A couple that represents the capability that a performer has.

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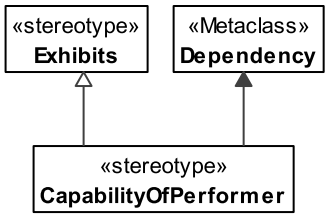

Figure 8.175 - CapabilityOfPerformer

Extensions

The following metaclasses are extended by CapabilityOfPerformer:

- Dependency

Specializations

The CapabilityOfPerformer element is a specialization of:

- Exhibits

8.3.1.2.5.3 DesiredEffect

MODAF: NA

DoDAF: A desired state of a Resource.

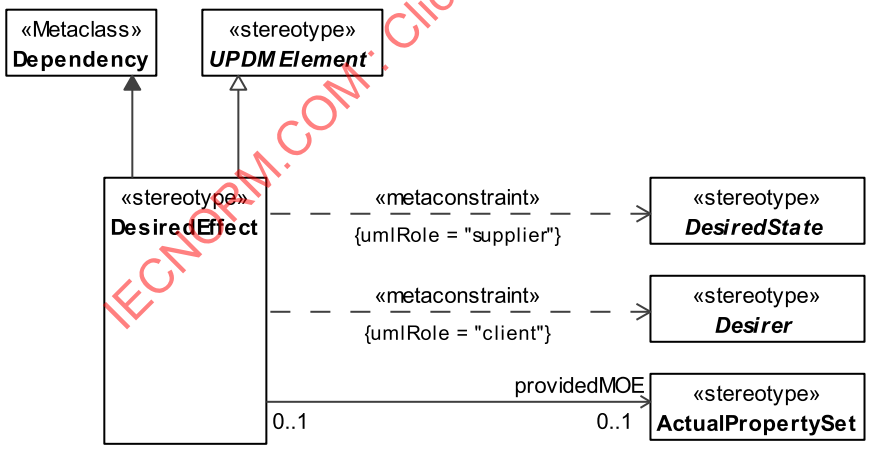

Figure 8.176 - DesiredEffect

Constraints

The following are constraints for DesiredEffect:

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- DesiredEffect.client - Value for the client property must be stereotyped a specialization of “Desirer.”
- DesiredEffect.supplier - Value for the supplier property must be stereotyped a specialization of “DesiredState.”

Attributes

The following are attributes for DesiredEffect:

- providedMOE : ActualPropertySet[0..1] - Measures of the DesiredEffect.

Extensions

The following metaclasses are extended by DesiredEffect:

- Dependency

Specializations

The DesiredEffect element is a specialization of:

- UPDMElement

8.3.1.2.5.4 Vision

MODAF: The overall aims of an enterprise over a given period of time. (EnterpriseVision)

DoDAF: An end that describes the future state of the enterprise, without regard to how it is to be achieved; a mental image of what the future will or could be like.

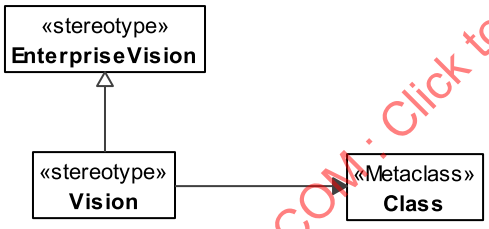

Figure 8.177 - Vision

Extensions

The following metaclasses are extended by Vision:

- Class

Specializations

The Vision element is a specialization of:

- EnterpriseVision

8.3.1.2.6 UPDM L1::UPDM L0::DoDAF::SystemElements

The System View elements for DoDAF specific models.

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8.3.1.2.6.1 UPDM L1::UPDM L0::DoDAF::SystemElements::Structure

Defines the structure parts of the system elements.

8.3.1.2.6.1.1 System

A DoDAF alias for ResourceArtifact.

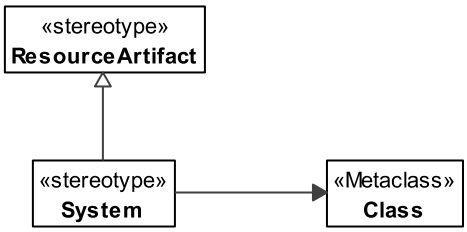

Figure 8.178 - System

Extensions

The following metaclasses are extended by System:

- Class

Specializations

The System element is a specialization of:

- ResourceArtifact

8.3.1.2.7 UPDM L1::UPDM L0::DoDAF::TechnicalStandardsElements

This sub clause contains the Technical Standard Elements of the DoDAF.

8.3.1.2.7.1 FunctionalStandard

MODAF: NA

DoDAF: Functional standards set forth rules, conditions, guidelines, and characteristics.

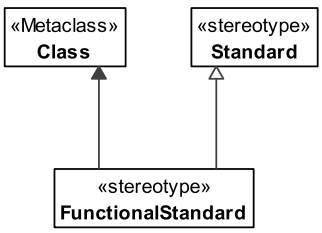

Figure 8.179 - FunctionalStandard

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Extensions

The following metaclasses are extended by FunctionalStandard:

- Class

Specializations

The FunctionalStandard element is a specialization of:

- Standard

8.3.1.2.7.2 TechnicalStandard

MODAF: A ratified and peer-reviewed specification that is used to guide or constrain the architecture. A Standard may be applied to any element in the architecture via the [constrainedItem] property of UML::Constraint (Standard).

DoDAF: Technical standards document specific technical methodologies and practices to design and implement.

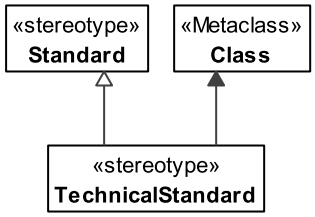

Figure 8.180 - TechnicalStandard

Extensions

The following metaclasses are extended by TechnicalStandard:

- Class

Specializations

The TechnicalStandard element is a specialization of:

- Standard

8.3.1.2.7.3 UPDM L1::UPDM L0::DoDAF::TechnicalStandardsElements::Data

This sub clause contains the Data elements of the DoDAF, Technical Standard Elements.

8.3.1.2.7.3.1 AssociationOfInformation

MODAF: Asserts that there is a relationship between two entities (Entity Relationship).

DoDAF: A relationship or association between two elements of information.

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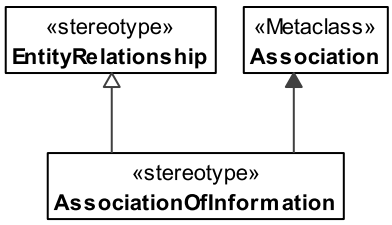

Figure 8.181 - AssociationOfInformation

Extensions

The following metaclasses are extended by AssociationOfInformation:

- Association

Specializations

The AssociationOfInformation element is a specialization of:

- EntityRelationship

8.3.1.2.7.3.2 SecurityAttributesGroup

MODAF: NA

DoDAF: The group of Information Security Marking attributes in which the use of attributes ‘classification’ and ‘ownerProducer’ is required. This group is to be contrasted with group ‘SecurityAttributesOptionGroup’ in which use of those attributes is optional.

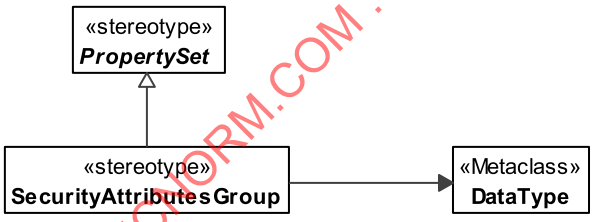

Figure 8.182 - SecurityAttributesGroup

Extensions

The following metaclasses are extended by SecurityAttributesGroup:

- DataType

Specializations

The SecurityAttributesGroup element is a specialization of:

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- PropertySet

8.3.1.3 UPDM L1::UPDM L0::MODAF

Elements that are not considered part of the Core architectural model, but necessary for MoDAF.

8.3.1.3.1 UPDM L1::UPDM L0::MODAF::AcquisitionElements

The Acquisition View elements for MoDAF specific models.

8.3.1.3.1.1 UPDM L1::UPDM L0::MODAF::AcquisitionElements::Milestones

Milestones are an event in a Project by which progress is measured.

####### 8.3.1.3.1.1.1 ActualProjectMilestone

MODAF: (ProjectMilestone): An event in an ActualProject (MODAF::Project) by which progress is measured.

Note: In the case of an acquisition project there are two key types of milestones that shall be represented using subtypes: IncrementMilestone (MODAF::CapabilityIncrement) and OutOfServiceMilestone (MODAF::OutOfService).

DoDAF: NA

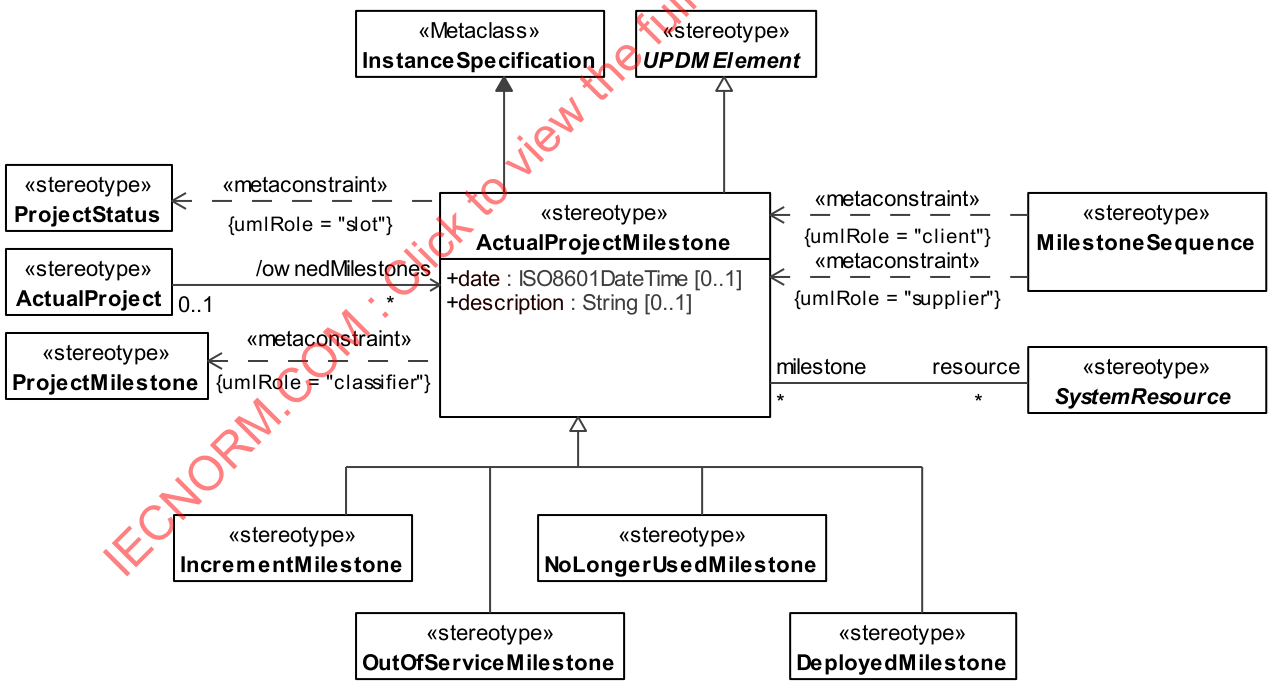

Figure 8.183 - ActualProjectMilestone

Constraints

The following are constraints for ActualProjectMilestone:

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- ActualProjectMilestone.classifier - Value for the classifier property must be stereotyped “ProjectMilestone” or its specializations.
- ActualProjectMilestone.slot - Slot values have to be stereotyped “ProjectStatus” or its specializations.

Attributes

The following are attributes for ActualProjectMilestone:

- date : ISO8601DateTime[0..1] - Defines time for this ProjectMilestone.
- description : String[0..1] - Description of the ActualProjectMilestone.
- resource : SystemResource[*] - Affected resource.

Extensions

The following metaclasses are extended by ActualProjectMilestone:

- InstanceSpecification

Specializations

The ActualProjectMilestone element is a specialization of:

- UPDMElement

8.3.1.3.1.1.2 IncrementMilestone

MODAF: (MODAF::CapabilityIncrement): An ActualProjectMilestone (MODAF::ProjectMilestone) that indicates the point in time at which a project is predicted to deliver or has delivered a Capability.

DoDAF: NA

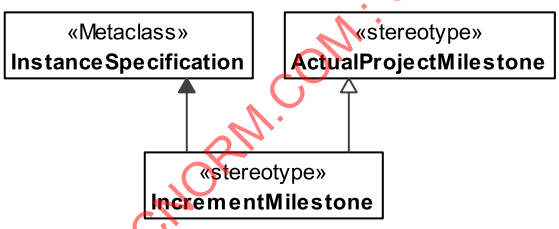

Figure 8.184 - IncrementMilestone

Extensions

The following metaclasses are extended by IncrementMilestone:

- InstanceSpecification

Specializations

The IncrementMilestone element is a specialization of:

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- ActualProjectMilestone

8.3.1.3.1.1.3 MilestoneSequence

MODAF: A MilestoneSequence (MODAF::MilestoneRelationship) is a relationship between two milestones.

DoDAF: NA

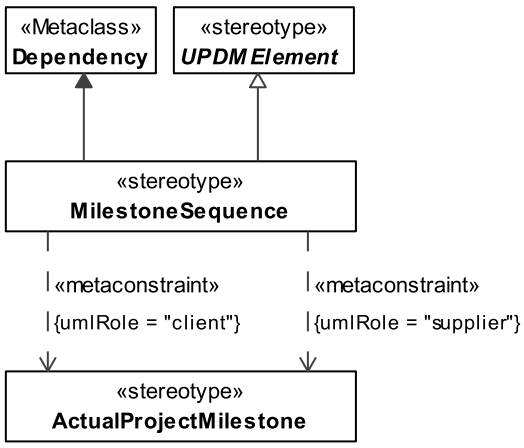

Figure 8.185 - MilestoneSequence

Constraints

The following are constraints for MilestoneSequence:

- MilestoneSequence.client - Client must be “ProjectMilestone.”
- MilestoneSequence.supplier - Supplier must be “ProjectMilestone.”

Extensions

The following metaclasses are extended by MilestoneSequence:

- Dependency

Specializations

The MilestoneSequence element is a specialization of:

- UPDMElement

8.3.1.3.1.1.4 OutOfServiceMilestone

MODAF: An OutOfServiceMilestone (MODAF::OutOfService) is a ProjectMilestone that indicates a project’s deliverable is to go out of service.

DoDAF: NA

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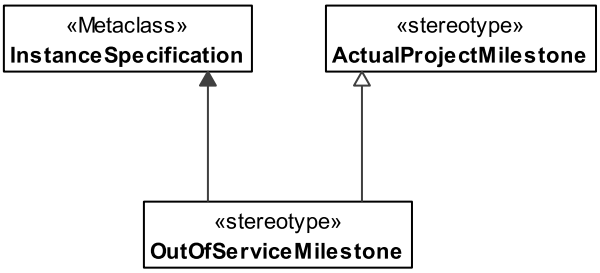

Figure 8.186 - OutOfServiceMilestone

Extensions

The following metaclasses are extended by OutOfServiceMilestone:

- InstanceSpecification

Specializations

The OutOfServiceMilestone element is a specialization of:

- ActualProjectMilestone

8.3.1.3.1.1.5 ProjectMilestone

UPDM: An element representing a collection of themes (e.g., DLOD or DOTMLPF) that is connected to a Project as part of a Project's definition. This is used as a template for ActualProjectMilestones.

MODAF: An event in a Project by which progress is measured.

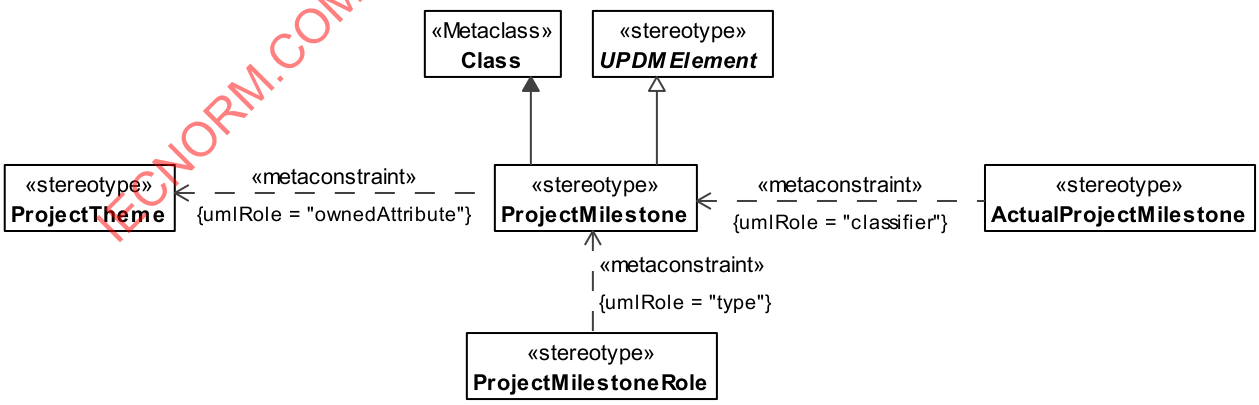

Figure 8.187 - ProjectMilestone

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Constraints

The following are constraints for ProjectMilestone:

- ProjectMilestone.ownedAttributes - Owned attributes have to be stereotyped <<ProjectTheme>>.
- ProjectMilestone.ownedThemes - All of the ProjectThemes, owned by a ProjectMilestone, must be typed by the same StatusIndicators.

Extensions

The following metaclasses are extended by ProjectMilestone:

- Class

Specializations

The ProjectMilestone element is a specialization of:

- UPDMElement

8.3.1.3.1.1.6 ProjectOwnership

MODAF:A type of OrganizationProjectRelationship where the organization is the party responsible for the project.

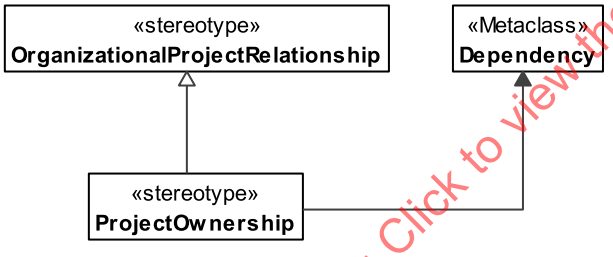

Figure 8.188 - ProjectOwnership

Extensions

The following metaclasses are extended by ProjectOwnership:

- Dependency

Specializations

The ProjectOwnership element is a specialization of:

- OrganizationalProjectRelationship

8.3.1.3.1.1.7 ProjectSequence

MODAF: Asserts that one ActualProject (MODAF::Project) follows from another (i.e., the target ActualProject cannot start until the source ActualProject has ended).

DoDAF: NA

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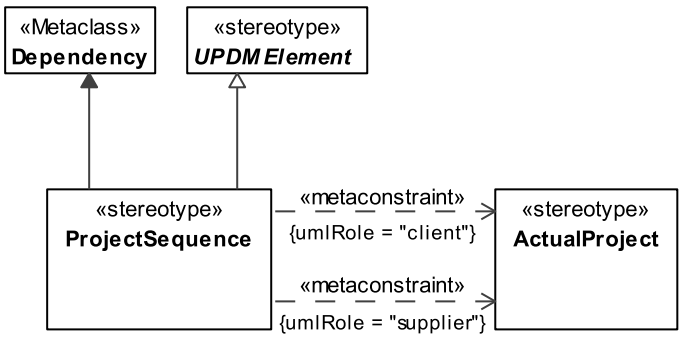

Figure 8.189 - ProjectSequence

Constraints

The following are constraints for ProjectSequence:

- ProjectSequence.client - Client property value must be stereotyped “ActualProject” or its specializations.
- ProjectSequence.supplier - Supplier property value must be stereotyped “ActualProject” or its specializations.

Extensions

The following metaclasses are extended by ProjectSequence:

- Dependency

Specializations

The ProjectSequence element is a specialization of:

- UPDMElement

8.3.1.3.1.2 UPDM L1::UPDM L0::MODAF::AcquisitionElements::Structure

Structure for Acquisition View elements for MoDAF specific models.

8.3.1.3.1.2.1 ProjectStatus

MODAF: A ProjectStatus (MODAF::StatusAtMilestone) is a relationship between a Status and a milestone that asserts the status (i.e., level of progress) of a ProjectTheme for the project at the time of the ActualProjectMilestone (MODAF::Milestone).

DoDAF: NA

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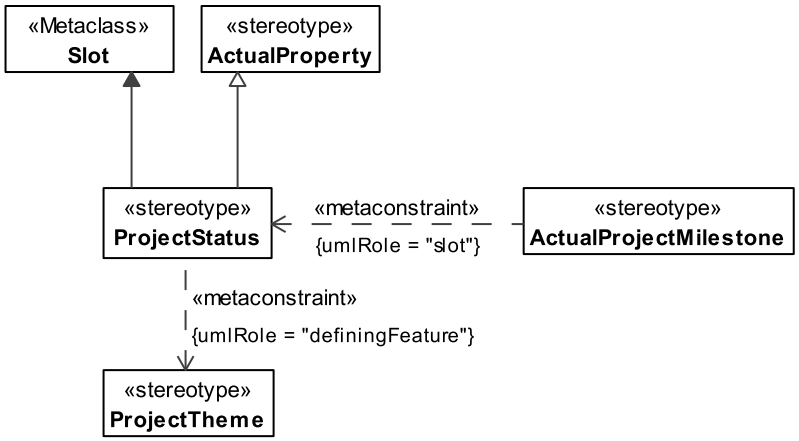

Figure 8.190 - ProjectStatus

Constraints

The following are constraints for ProjectStatus:

- ProjectStatus.definingFeature - DefiningFeature value must be stereotyped “ProjectTheme” or its specializations.

Extensions

The following metaclasses are extended by ProjectStatus:

- Slot

Specializations

The ProjectStatus element is a specialization of:

- ActualProperty

8.3.1.3.1.2.2 ProjectTheme

MODAF: An aspect by which the progress of various Projects may be measured. In UK MOD, this could be one of the defense lines of development (DLOD), or DOTMLPF in the US.

DoDAF: NA

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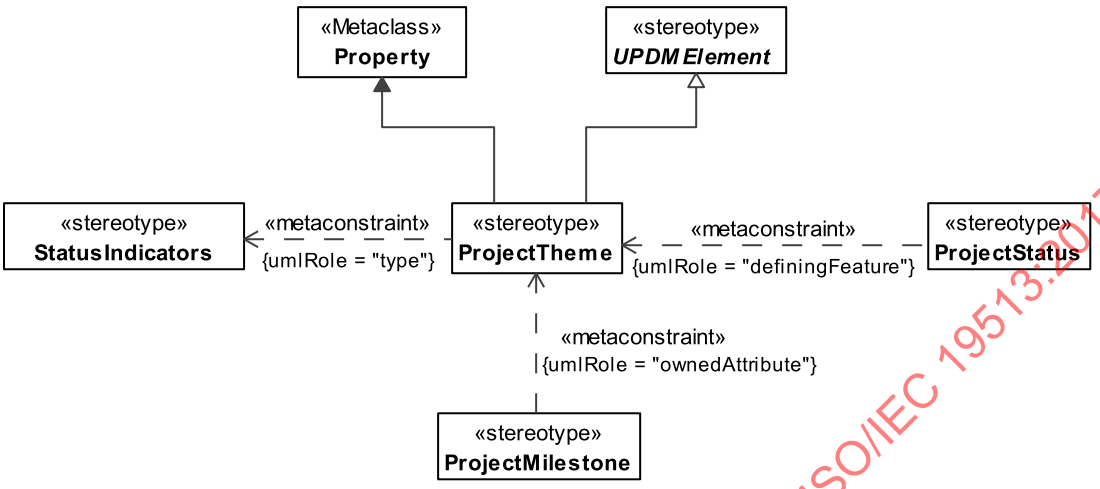

Figure 8.191 - ProjectTheme

Constraints

The following are constraints for ProjectTheme:

- ProjecTheme.type - Value for the type property must be stereotyped “StatusIndicators” or its specializations.

Extensions

The following metaclasses are extended by ProjectTheme:

- Property

Specializations

The ProjectTheme element is a specialization of:

- UPDMElement

8.3.1.3.1.2.3 StatusIndicators

UPDM: Specifies a status for a ProjectTheme (such as training status).

MODAF: An enumeration of the possible statuses (MODAF::StatusIndicator) for one of more ProjectThemes.

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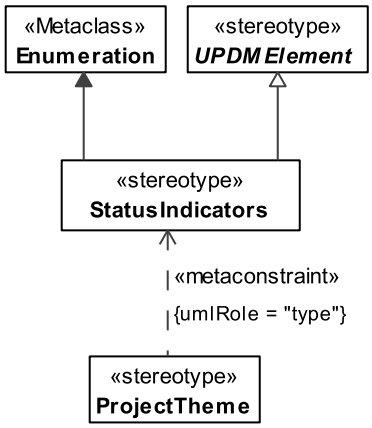

Figure 8.192 - StatusIndicators

Extensions

The following metaclasses are extended by StatusIndicators:

- Enumeration

Specializations

The StatusIndicators element is a specialization of:

- UPDMElement

8.3.1.3.2 UPDM L1::UPDM L0::MODAF::AllElements

The All View elements for MoDAF specific models.

8.3.1.3.2.1 UPDM L1::UPDM L0::MODAF::AllElements::Environment

This sub clause contains the Environment elements of the MODAF, All Elements.

8.3.1.3.2.1.1 Climate

MODAF: A type of weather condition, or combination of weather conditions (e.g., high temperature and dry).

DoDAF: NA

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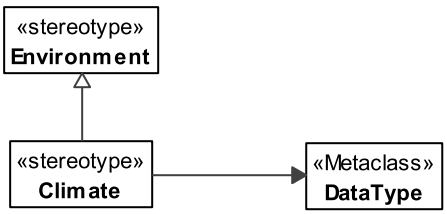

Figure 8.193 - Climate

Extensions

The following metaclasses are extended by Climate:

- DataType

Specializations

The Climate element is a specialization of:

- Environment

8.3.1.3.2.1.2 LightCondition

MODAF: a specification of environmental lighting conditions.

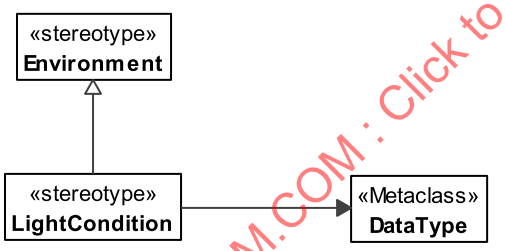

Figure 8.194 - LightCondition

Extensions

The following metaclasses are extended by LightCondition:

- DataType

Specializations

The LightCondition element is a specialization of:

- Environment

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8.3.1.3.2.2 UPDM L1::UPDM L0::MODAF::AllElements::Ontology

Ontology elements from All Elements.

8.3.1.3.2.2.1 Alias

A UPDM Artifact used to define an alternative name for an element as used by DoDAF or MODAF.

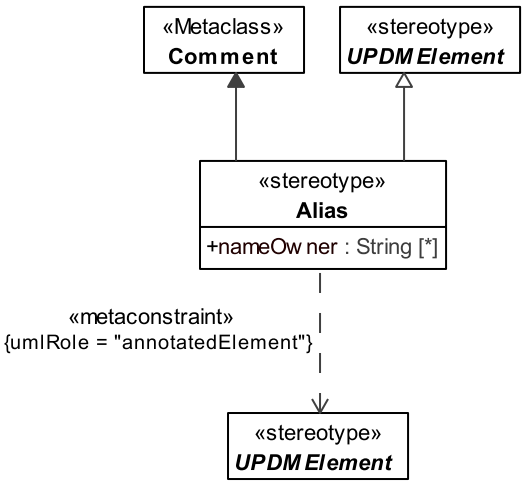

Figure 8.195 - Alias

Constraints

The following are constraints for Alias:

- Allias.annotatedElement - Value for the annotatedElement property must be stereotyped “UPDMElement” or its specializations.

Attributes

The following are attributes for Alias:

- nameOwner : String[*] - The person or organization that uses this alternative name.

Extensions

The following metaclasses are extended by Alias:

- Comment

Specializations

The Alias element is a specialization of:

- UPDMElement

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8.3.1.3.2.2.2 Definition

MODAF: A definition of an element in the architecture.

DoDAF:NA

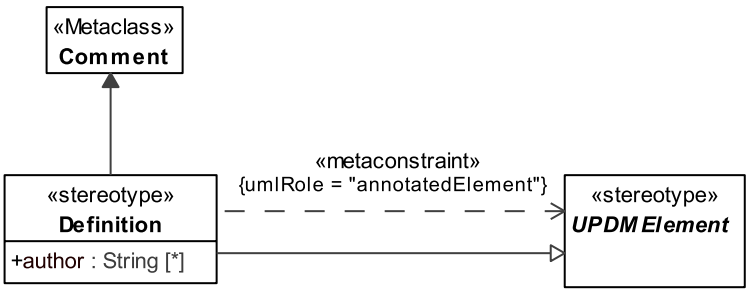

Figure 8.196 - Definition

Constraints

The following are constraints for Definition:

- Definition.annotatedElement - Value for the annotatedElement property must be stereotyped “UPDMElement” or its specializations.

Attributes

The following are attributes for Definition:

- author : String[*] - The original or current person (architect) responsible for the element.

Extensions

The following metaclasses are extended by Definition:

- Comment

Specializations

The Definition element is a specialization of:

- UPDMElement

8.3.1.3.2.2.3 ExternalIndividual

MODAF: An individual (i.e., something which has spatial and temporal extent) defined by an external ontology.

DoDAF: NA

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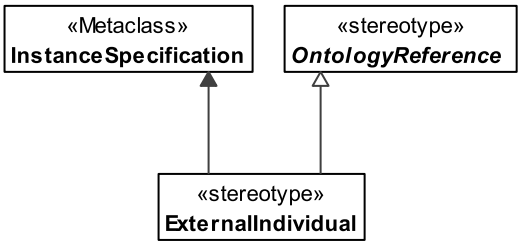

Figure 8.197 - ExternalIndividual

Extensions

The following metaclasses are extended by ExternalIndividual:

- InstanceSpecification

Specializations

The ExternalIndividual element is a specialization of:

- OntologyReference

8.3.1.3.2.2.4 ExternalTuple

UPDM: An instance of ExternalTupleType defined in an external Ontology.

MODAF:NA

DoDAF:NA

Extensions

The following metaclasses are extended by ExternalTuple:

- Class

Specializations

The ExternalTuple element is a specialization of:

- OntologyReference

8.3.1.3.2.2.5 ExternalTupleType

UPDM: A TupleType defined in an external Ontology.

MODAF:NA

DoDAF:NA

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Extensions

The following metaclasses are extended by ExternalTupleType:

- Class

Specializations

The ExternalTupleType element is a specialization of:

- ExternalType

8.3.1.3.2.2.6 ExternalType

MODAF: A type defined by an external ontology.

DoDAF: NA

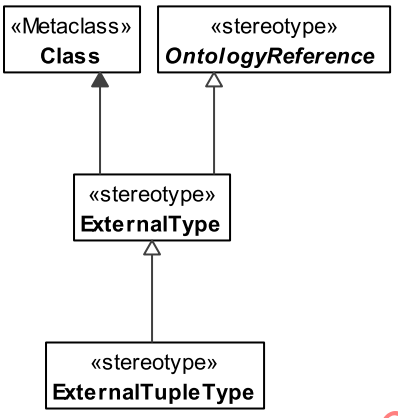

Figure 8.198 - ExternalType

Extensions

The following metaclasses are extended by ExternalType:

- Class

Specializations

The ExternalType element is a specialization of:

- OntologyReference

8.3.1.3.2.2.7 OntologyReference

MODAF: A reference to an element in a recognized external ontology or taxonomy.

DoDAF:NA

Note: OntologyReference is abstract.

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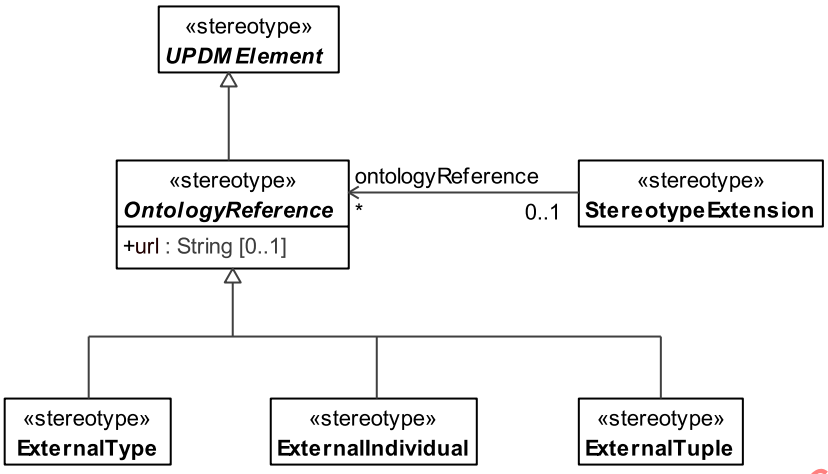

Figure 8.199 - OntologyReference

Attributes

The following are attributes for OntologyReference:

- url : String[0..1] - Unique identifier for the element.

Specializations

The OntologyReference element is a specialization of:

- UPDMElement

8.3.1.3.2.2.8 Overlap

IDEAS: A couple of wholePart couples where the part in each couple is the same.

Constraints

The following are constraints for Overlap:

- Overlap.client - Values for the client property must be stereotyped “UPDMElement” or its specializations.
- Overlap.supplier - Values for the supplier property must be stereotyped “Element” or its specializations.

Extensions

The following metaclasses are extended by Overlap:

- Dependency

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Specializations

The Overlap element is a specialization of:

- UPDMElement

8.3.1.3.2.2.9 SameAs

MODAF: Asserts that two elements refer to the same real-world thing.

DoDAF: NA

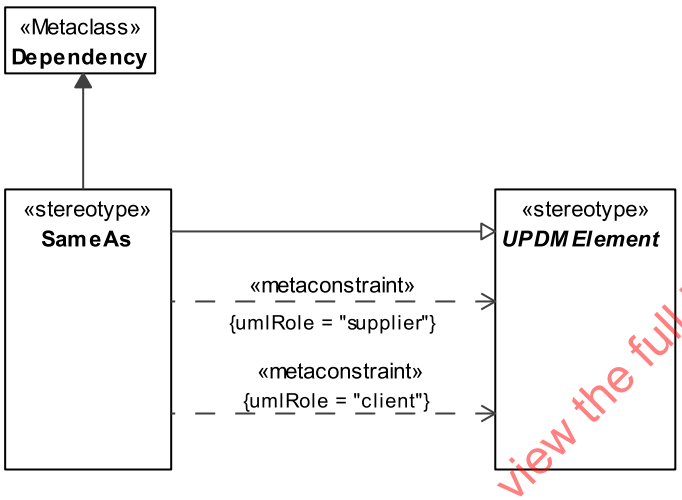

Figure 8.200 - SameAs

Constraints

The following are constraints for SameAs:

- SameAs.client - Values for the client property must be stereotyped “UPDMElement” or its specializations.
- SameAs.supplier - Values for the supplier property must be stereotyped “Element” or its specializations.

Extensions

The following metaclasses are extended by SameAs:

- Dependency

Specializations

The SameAs element is a specialization of:

- UPDMElement

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8.3.1.3.2.2.10 StereotypeExtension

MODAF: Defines an additional stereotype used in the architecture that is not defined in this meta-model. The body attribute contains the name of the new stereotype. The extendedStereotype tagged value shall contain the name of the meta-model stereotype that is extended. The ontologyReference tagged value shall be populated with a reference to the external ontology element represented by the new stereotype.

DoDAF: NA

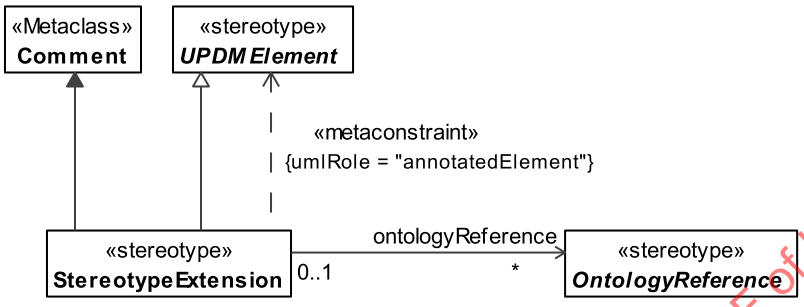

Figure 8.201 - StereotypeExtension

Constraints

The following are constraints for StereotypeExtension:

- StereotypeExtension.annotatedElement - Values for the annotatedElement property must be stereotyped "UPDMElement" or its specializations.

Attributes

The following are attributes for StereotypeExtension:

- ontologyReference : OntologyReference[*] - Ontological reference associated with a Stereotype extension.

Extensions

The following metaclasses are extended by StereotypeExtension:

- Comment

Specializations

The StereotypeExtension element is a specialization of:

- UPDMElement

8.3.1.3.3 UPDM L1::UPDM L0::MODAF::OperationalElements

The Operational View elements for MoDAF specific models.

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8.3.1.3.3.1 UPDM L1::UPDM L0::MODAF::OperationalElements::Behavior

Behavior for Operational View elements for MoDAF specific models.

8.3.1.3.3.1.1 ActivitySubject

MODAF: Anything that is acted upon by an OperationalActivity.

DoDAF: NA

Note: ActivitySubject is abstract.

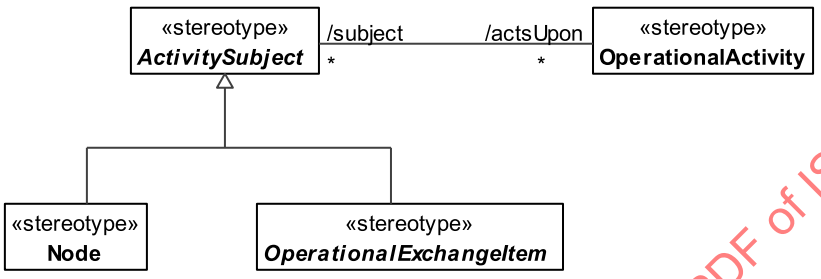

Figure 8.202 - ActivitySubject

Attributes

The following are attributes for ActivitySubject:

- actsUpon : OperationalActivity[*] - OperationalActivities that this ActivitySubject is acting upon.

Specializations

The ActivitySubject element is a specialization of:

- UPDMElement

8.3.1.3.3.1.2 OwnsProcess

UPDM:Asserts that an ActualOrganizationalResource owns a Process.

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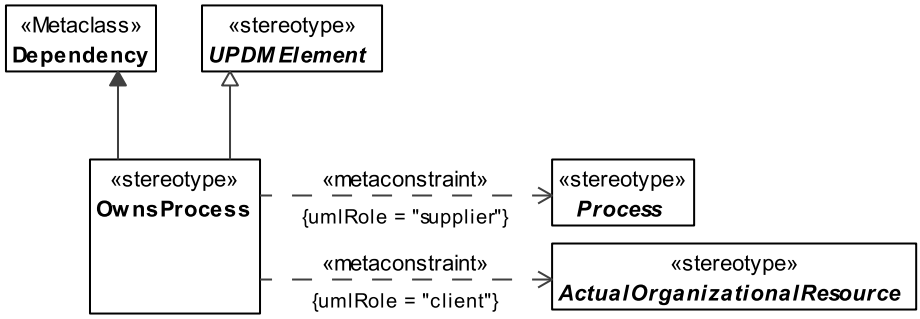

Figure 8.203 - OwnsProcess

Constraints

The following are constraints for OwnsProcess:

- OwnsProcess.client - Value for the client property must be stereotyped "ActualOrganizationalResource" or its specializations.
- OwnsProcess.supplier - Value for the supplier property must be stereotyped a specialization of "Process."

Extensions

The following metaclasses are extended by OwnsProcess:

- Dependency

Specializations

The OwnsProcess element is a specialization of:

- UPDMElement

8.3.1.3.3.1.3 Process

MODAF: The abstract supertype of OperationalActivity and EnduringTask.

DoDAF: NA

Note: Process is abstract.

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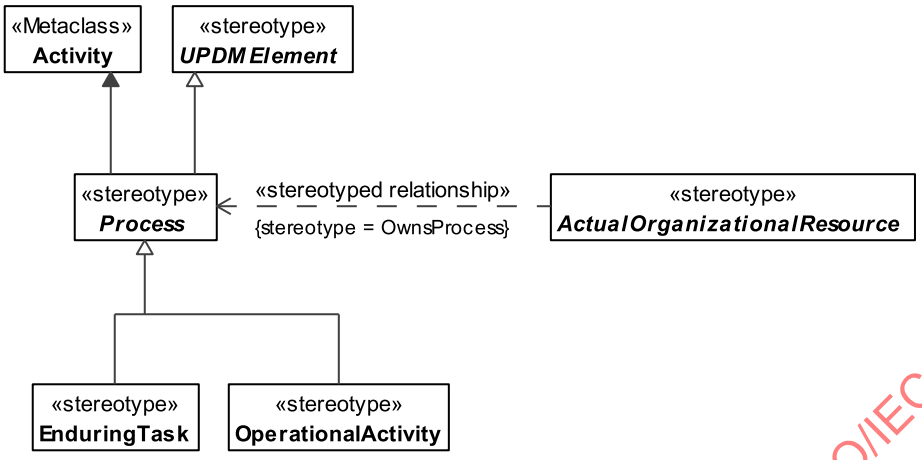

Figure 8.204 - Process

Extensions

The following metaclasses are extended by Process:

- Activity

Specializations

The Process element is a specialization of:

- UPDMElement

8.3.1.3.3.1.4 StandardOperationalActivity

MODAF: An OperationalActivity that is a standard procedure that is doctrinal.
Note: This is equivalent to what some defense organizations call JETLs.

DoDAF: Work, not specific to a single organization, weapon system, or individual that transforms inputs into outputs or changes their state (DoDAF:: Activity).

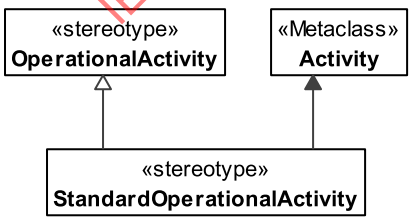

Figure 8.205 - StandardOperationalActivity

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Extensions

The following metaclasses are extended by StandardOperationalActivity:

- Activity

Specializations

The StandardOperationalActivity element is a specialization of:

- OperationalActivity

8.3.1.3.3.2 UPDM L1::UPDM L0::MODAF::OperationalElements::Flows

Flows for Operational View elements for MoDAF specific models.

8.3.1.3.3.2.1 Control

MODAF: A type of ResourceInteraction where one Resource (source) controls another (target).
Examples: the driver of a tank, one organization having operational control of another, a fire control system controlling a weapons system.

DoDAF: NA

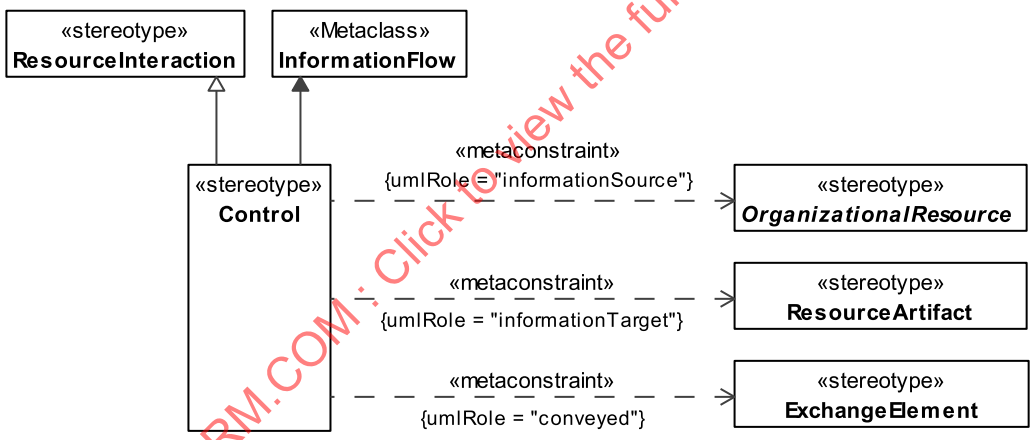

Figure 8.206 - Control

Constraints

The following are constraints for Control:

- Control.conveyed - Value for the conveyed property must be stereotyped “ExchangeElement” or its specializations.
- Control.informationSource - Value for the informationSource property must be stereotyped “OrganizationalResource” or its specializations.
- Control.informationTarget - Value for the informationTarget property must be stereotyped “ResourceArtifact” or its specializations.

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Extensions

The following metaclasses are extended by Control:

- InformationFlow

Specializations

The Control element is a specialization of:

- ResourceInteraction

8.3.1.3.3.3 UPDM L1::UPDM L0::MODAF::OperationalElements::Structure

Structure for Operational View elements for MoDAF specific models.

8.3.1.3.3.3.1 Energy

UPDM: Energy to be exchanged between Nodes.

MODAF: A unit of energy that flows along an EnergyFLow or OperationalActivityEnergyFlow.

DoDAF: NA

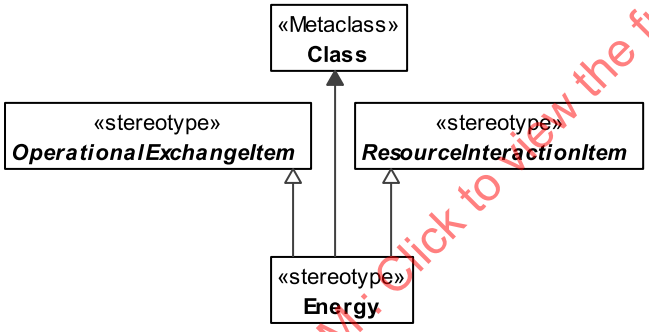

Figure 8.207 - Energy

Extensions

The following metaclasses are extended by Energy:

- Class

Specializations

The Energy element is a specialization of:

- ResourceInteractionItem
- OperationalExchangeItem

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8.3.1.3.3.3.2 ProblemDomain

MODAF: The boundary containing those Nodes which may be realized by functional resources specified in SV-1. There may be more than one alternative solution for a given ProblemDomain specified as a set of SV suites. There may be only one ProblemDomain in a LogicalArchitecture.

DoDAF: NA - covered by the more general temporalWholePart element.

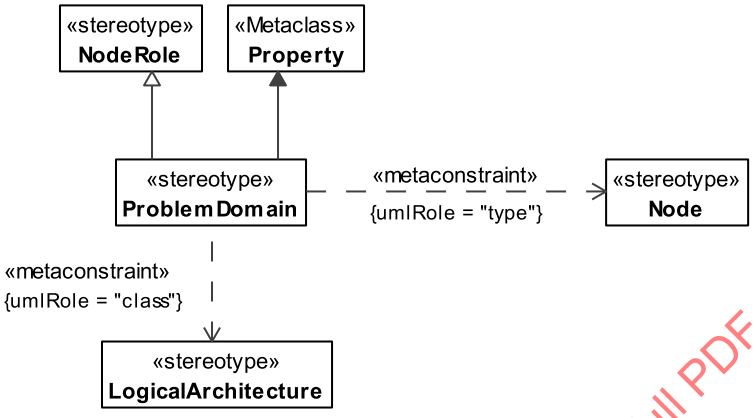

Figure 8.208 - ProblemDomain

Constraints

The following are constraints for ProblemDomain:

- ProblemDomain.class - Value for the class property must be stereotyped “LogicalArchitecture” or its specializations.
- ProblemDomain.type - Value for the type property must be stereotyped “Node” or its specializations.

Extensions

The following metaclasses are extended by ProblemDomain:

- Property

Specializations

The ProblemDomain element is a specialization of:

- NodeRole

8.3.1.3.3.3.3 Trustline

MODAF: Asserts that the trustingParty (either a Node or a KnownResource) trusts the trustedParty to a given level (indicated by the level attribute).
Note: No unit of measure is associated with the level - security architects must define their own scale of trust levels for a given architecture or set of architectures.

DoDAF: NA

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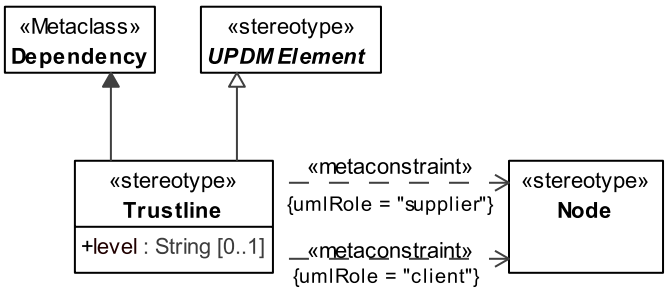

Figure 8.209 - Trustline

Constraints

The following are constraints for Trustline:

- Trustline.client - Values for the client property must be stereotyped “Node” or its specializations.
- Trustline.supplier - Values for the supplier property must be stereotyped “Node” or its specializations.

Attributes

The following are attributes for Trustline:

- level : String[0..1] - String denoting the level of Trust in the information source.

Extensions

The following metaclasses are extended by Trustline:

- Dependency

Specializations

The Trustline element is a specialization of:

- UPDMElement

8.3.1.3.3.3.4 UPDM L1::UPDM L0::MODAF::OperationalElements::Structure::Organizational

This sub clause contains the organizational Elements of the MODAF, Operational Elements.

8.3.1.3.3.3.4.1 RoleType

MODAF: An aspect of a person or organization that enables them to fulfill a particular function.

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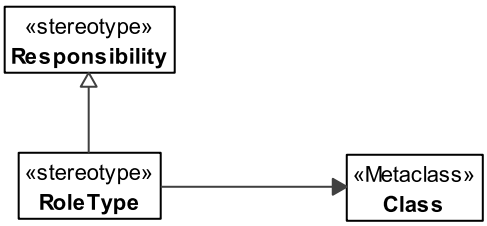

Figure 8.210 - RoleType

Extensions

The following metaclasses are extended by RoleType:

- Class

Specializations

The RoleType element is a specialization of:

- Responsibility

8.3.1.3.4 UPDM L1::UPDM L0::MODAF::StrategicElements

The Strategic View elements for MoDAF specific models.

8.3.1.3.4.1 UPDM L1::UPDM L0::MODAF::StrategicElements::Milestones

Milestone elements for Strategic View elements for MoDAF specific models.

8.3.1.3.4.1.1 DeployedMilestone

MODAF: Asserts that an ActualOrganizationResource started to use, or is slated to start using a CapabilityConfiguration from a specific point in time. This is used to describe capabilities going into service with specific organizations or posts.

DoDAF: NA

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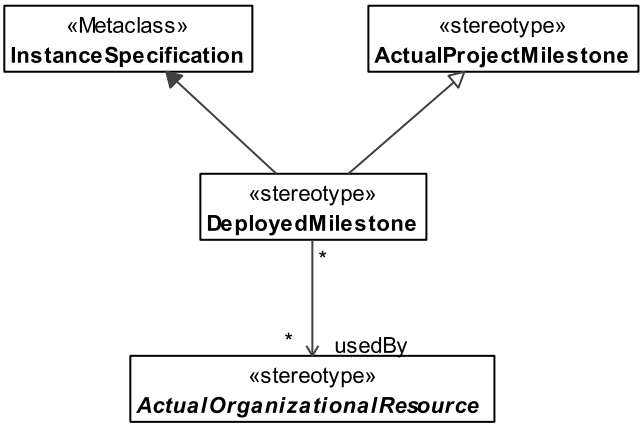

Figure 8.211 - DeployedMilestone

Attributes

The following are attributes for DeployedMilestone:

- usedBy : ActualOrganizationalResource[*] - ActualOrganizationalResources using CapabilityConfiguration deployed at this Milestone.

Extensions

The following metaclasses are extended by DeployedMilestone:

- InstanceSpecification

Specializations

The DeployedMilestone element is a specialization of:

- ActualProjectMilestone

8.3.1.3.4.1.2 NoLongerUsedMilestone

MODAF: Asserts that an ActualOrganizationResource ceased to use or is slated to cease using a CapabilityConfiguration from a specific point in time. This is used to describe capabilities going out of service with specific organizations or posts.

DoDAF:NA

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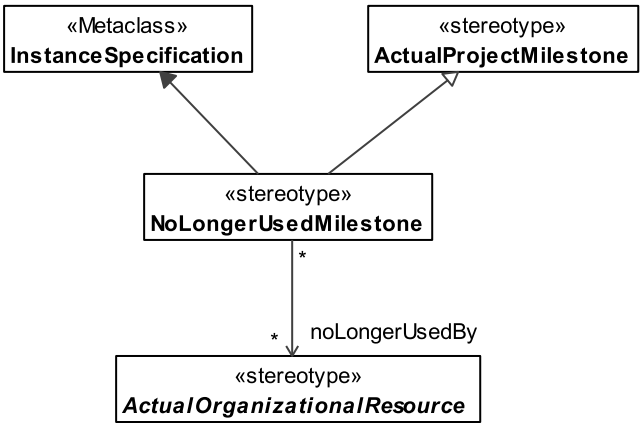

Figure 8.212 - NoLongerUsedMilestone

Attributes

The following are attributes for NoLongerUsedMilestone:

- noLongerUsedBy : ActualOrganizationalResource[*] - ActualOrganizationalResources that are no longer using CapabilityConfiguration that went out of service at this Milestone.

Extensions

The following metaclasses are extended by NoLongerUsedMilestone:

- InstanceSpecification

Specializations

The NoLongerUsedMilestone element is a specialization of:

- ActualProjectMilestone

8.3.1.3.4.2 UPDM L1::UPDM L0::MODAF::StrategicElements::Structure

Structure elements for Strategic View elements for MoDAF specific models.

8.3.1.3.4.2.1 EnduringTask

MODAF: A type of behavior recognized by an enterprise as being essential to achieving its goals (i.e., a strategic specification of what the enterprise does).

DoDAF: NA

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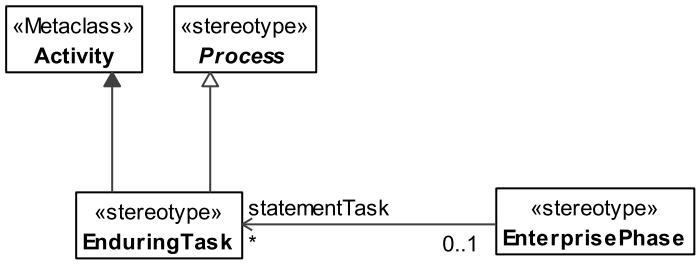

Figure 8.213 - EnduringTask

Extensions

The following metaclasses are extended by EnduringTask:

- Activity

Specializations

The EnduringTask element is a specialization of:

- Process

8.3.1.3.4.2.2 WholeLifeEnterprise

UPDM: A WholeLifeEnterprise is a purposeful endeavor of any size involving people, organizations, and supporting systems (including physical systems and/or processes).

MODAF: An EnterprisePhase that represents the whole existence of an enterprise.

DoDAF: NA

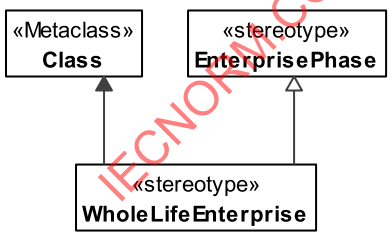

Figure 8.214 - WholeLifeEnterprise

Extensions

The following metaclasses are extended by WholeLifeEnterprise:

- Class

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Specializations

The WholeLifeEnterprise element is a specialization of:

- EnterprisePhase

8.3.1.3.5 UPDM L1::UPDM L0::MODAF::TechnicalStandardsElements

This sub clause contains the Technical Standard Elements of the MODAF.

8.3.1.3.5.1 ProtocolLayer

MODAF: Asserts that a Protocol (upperLayer) uses another Protocol (lowerLayer).

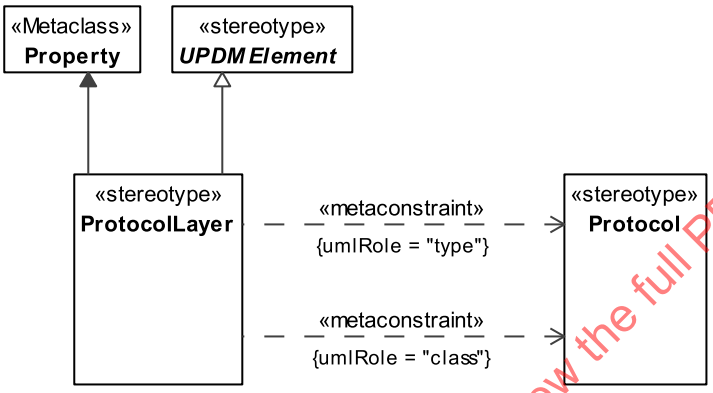

Figure 8.215 - ProtocolLayer

Constraints

The following are constraints for ProtocolLayer:

- ProtocolLayer.class - Value for the class property must be stereotyped “Protocol” or its specializations.
- ProtocolLayer.type - Value for the type property must be stereotyped “Protocol” or its specializations.

Extensions

The following metaclasses are extended by ProtocolLayer:

- Property

Specializations

The ProtocolLayer element is a specialization of:

- UPDMElement

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8.3.1.4 UPDM L1::UPDM L0::SOPES

The SOPES profile comprises the core elements of the Shared Operational Picture Exchange Services (SOPES) Information Exchange Data Model (IEDM) modeling profile described in Annex A of the OMG SOPES IEDM standard. The modeling profile seeks to use UML to expressing the policies, rules, and constraints governing the release and exchange of information between information systems. The UML models provide a means to express these exchange policies in a manner that can be encoded as a set of human and machine readable policies that can be enforced by software applications and services.

The goal for adding SOPES to the UPDM is to provide greater fidelity for architecture modeling of information exchange requirements within the DoDAF, MODAF, and NAF.

Additional elements in the SOPES modeling profiles can be accomplished using standard UML Class diagram constructs and not specifically integrated into the UPDM International Standard.

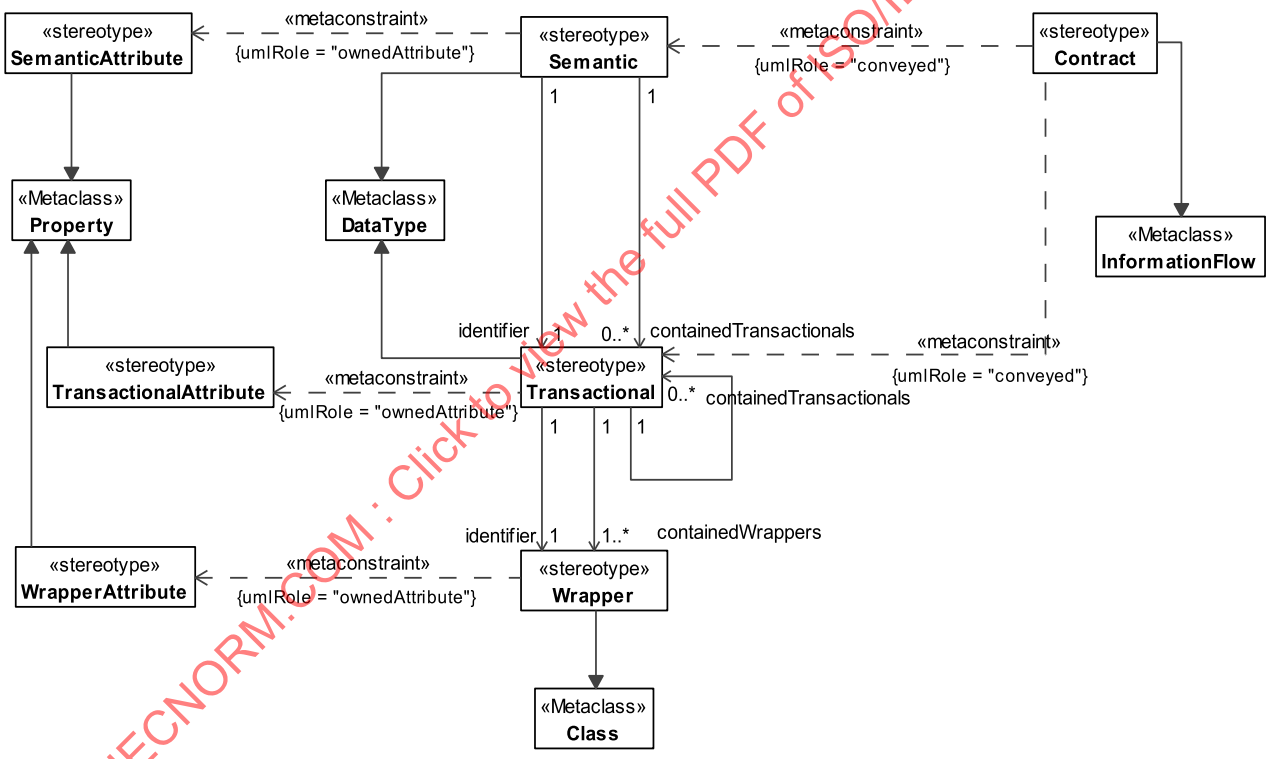

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Figure 8.216 - SOPES Elements

The SOPES Elements diagram shows the UPDM elements and the relationships that map to the concepts of the SOPES Metamodel.

8.3.1.4.1 Contract

A specialization of an "OperationalExchange" a "Contract" specifies an agreement between two or more parties to exchange information. The Contract forms an ontological commitment between parties in a community of interest (CoI) or Community of Practice (CoP). The contract is also used to realize the information exchange requirements of either a needline or a community of interest.

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Constraints

The following are constraints for Contract:

- Contract.conveyed - conveyed property value must be stereotyped “Semantic,” “Transactional,” or their specializations.

Extensions

The following metaclasses are extended by Contract:

- InformationFlow

8.3.1.4.2 Semantic

A specialization of “InformationElement” enables the specification of a complete dataset, which is considered meaningful to a community, organization, system, or application; meeting one or more of the information flow requirements specification for a needline. The semantic is defined by the community, needline, or application interface.

Constraints

The following are constraints for Semantic:

- Semantic.ownedAttribute - ownedAttribute property value must be stereotyped “SemanticAttribute” or its specializations.

Attributes

The following are attributes for Semantic:

- containedTransactionals : Transactional[0..*] - Represents the relationship between a “Transactional” and its containing “Semantic.” Meaning that during aggregation process of data represented by the “Transactional” is gathered into the containing “Semantic.” When all the data represented by the “Transactionals” is gathered, the data set is complete and ready for formatting and exchange.
- identifier : Transactional[1] - The “identifier” identifies the subtended Class that holds Unique Identifier or Key needed for the construction of the data set. This subtended class would contain, as a minimum, the base Global Unique Identifier (e.g., Database Key, foreign keys, or unique identifier) that would differentiate which transactional or wrappers (information element instances) are included in the construction of the composite (e.g., foreign key relationships). There exists one, and only one, “identifier” on each semantic or transactional diagram.

Extensions

The following metaclasses are extended by Semantic:

- DataType

8.3.1.4.3 SemanticAttribute

Specialization of Entity Attribute that enables the relationship between logical/Interim-Processing and Operational/ Business naming conventions.

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Extensions

The following metaclasses are extended by SemanticAttribute:

- Property

8.3.1.4.4 Transactional

A specialization of "InformationElement" enables the specification of reusable information building blocks, upon which multiple community semantics can be built. Transactionals describe the construction plans for data sets realizable from the underlying information/data store. The transactional links the community semantics to the structures and business rules information/data store.

Constraints

The following are constraints for Transactional:

- Transactional.ownedAttribute - ownedAttribute property value must be stereotyped "TransactionalAttribute" or its specializations.

Attributes

The following are attributes for Transactional:

- containedTransactionals : Transactional[0..*] - Represents the relationship between a "Transactional" and its containing "Transactional." Meaning that during the data aggregation process of data represented by the "Transactional" is gathered into the containing "Transactional."
- containedWrappers : Wrapper[1..*] - Represents the relationship between a "Wrapper" and its containing "Transactional." Meaning that during the data aggregation process of data represented by the "Wrapper" is gathered into the containing "Transactional."
- identifier : Wrapper[1] - The "identifier" identifies the subtended Class that holds Unique Identifier or Key needed for the construction of the data set. This subtended class would contain, as a minimum, the base Global Unique Identifier (e.g., Database Key, foreign keys or unique identifier) that would differentiate which transactional or wrappers (information element instances) are included in the construction of the composite (e.g., foreign key relationships). There exists one and only one "identifier" on each semantic or transactional diagram.

Extensions

The following metaclasses are extended by Transactional:

- DataType

8.3.1.4.5 TransactionalAttribute

Specialization of Entity Attribute that enables the relationship between logical and Interim processing Attribute naming conventions.

Extensions

The following metaclasses are extended by TransactionalAttribute:

- Property

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8.3.1.4.6 Wrapper

A specialization of “EntityItem” that links a Transactional to the logical information/data model Elements (e.g., DB Table). Wrappers represent a single instance of “EntityItem” data.

Constraints

The following are constraints for Wrapper:

- Wrapper.ownedAttribute - ownedAttribute property value must be stereotyped “WrapperAttribute” or its specializations.

Extensions

The following metaclasses are extended by Wrapper:

- Class

8.3.1.4.7 WrapperAttribute

Specialization of Entity Attribute that enables the relationship between physical and logical attribute naming conventions.

Extensions

The following metaclasses are extended by WrapperAttribute:

- Property

8.3.1.5 UPDM L1::UPDM L0::SwAF

The SWAF sub clause defines the design rules being used by the Swedish Armed Forces and NATO that aid in the development and implementation of information Integration.

The design rule describes how military organizations can develop and implement the ability to exchange information with each other to support interoperability issues. Much of this design rule can also be applied when exchanging information with other actors than military organizations.

Definition of interoperability in this context: The ability of technical systems and/or organizations using technical systems to operate together by making (necessary) data & information and/or services produced by one system or organization available to the others, in an agreed format.

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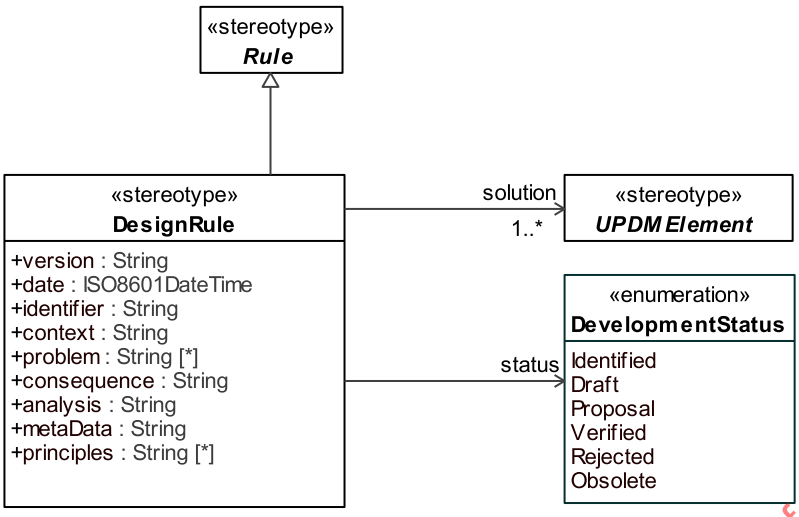

Figure 8.217 - Design Rule Elements

The Design Rule Elements diagram shows the UPDM elements and the relationships that map to the concepts of the Design Rules metamodel from NISP as submitted by Swedish Armed Forces (SWAF).

8.3.1.5.1 DesignRule

A design rule is a solution to a problem in a specific context with the following characteristics:

- belongs to a problem domain,
- packages knowledge in a reusable form,
- standardize solutions to design problems within NBD,
- gives value to the re-user.

Constraints

The following are constraints for DesignRule:

- DesignRule.ruleKind - Guidance

Attributes

The following are attributes for DesignRule:

- analysis : String[] -
- consequence : String[] -
- context : String[] -
- date : ISO8601DateTime[] -
- identifier : String[] -

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- metaData : String[] -
- principles : String[*] -
- problem : String[*] -
- solution : UPDMElement[1..*] -
- status : DevelopmentStatus[] -
- version : String[] -

Extensions

The following metaclasses are extended by DesignRule:

- Constraint

Specializations

The DesignRule element is a specialization of:

- Rule

8.3.1.5.2 DevelopmentStatus

Enumeration of development statuses, used to support the status tag of the DesignRule stereotype.

Enumeration Literals

The following are enumeration literals for DevelopmentStatus:

- Draft - Indicates that the development of the design rule is in Draft state.
- Identified - Indicates that the development of the design rule is in Identified state.
- Obsolete - Indicates that the development of the design rule is in Obsolete state.
- Proposal - Indicates that the development of the design rule is in Proposal state.
- Rejected - Indicates that the development of the design rule is in Rejected state.
- Verified - Indicates that the development of the design rule is in Verified state.

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Subpart III - Annexes

This sub part includes the following annexes:

- Annex A - Domain Metamodel
- Annex B - UPDM Views (Profile)
- Annex C- UPDM Elements Traceability
- Annex D - Sample Problem
- Annex E - Bibliography
- Annex F - Legal Information

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Annex A: Domain Metamodel (DMM)

(non-normative)

A.1 Introduction

This Annex comprises various diagrams which document the Domain Metamodel (DMM) that document the MoDAF 1.5 and MoDAF 1.2 integrated model. This model was used as a basis for creating the UPDM profile.

Note that the diagrams rely on color to aid the reader in understanding the model. Please refer to the legend below to understand the diagrams.

The following is the legend of element colors used in the DMM and what they denote.

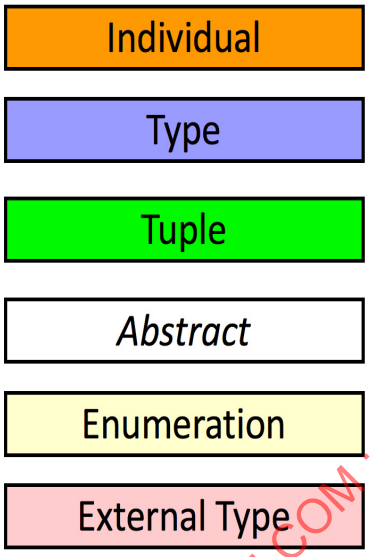

Figure A.1 - Legend of color codes for element types defined in UPDM

The meaning of the element types in the UAF are based upon concepts put forth in the International Defence Enterprise Architecture Specification (IDEAS).

- An Individual denotes a single instance of an element.
- A Type denotes a set of Individuals.
- A Tuple denotes a relationship that exists between elements.
- An Abstract denotes that the element has no direct use but is a means of construction.
- An Enumeration is a complete, ordered listing of all the items in a collection.
- An External Type is an element that exists outside of the core DMM but is referencable by elements in the DMM.

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A.2 Products

This sub clause documents each of the products of the DMM.

A.2.1 AcV/PV

The AcquisitionElements describe project details, including dependencies between projects and capability integration. These Views guide the acquisition and fielding processes.

A.2.1.1 AcV-1/PV-1 - DMM

MODAF: AcV-1 view products represent an organizational perspective on projects.

DoDAF: AcV-1 view [DoDAF::Project Portfolio Relationships (PV-1) DoDAF-described View] represents an organizational perspective on programs, projects, or a portfolio of projects.

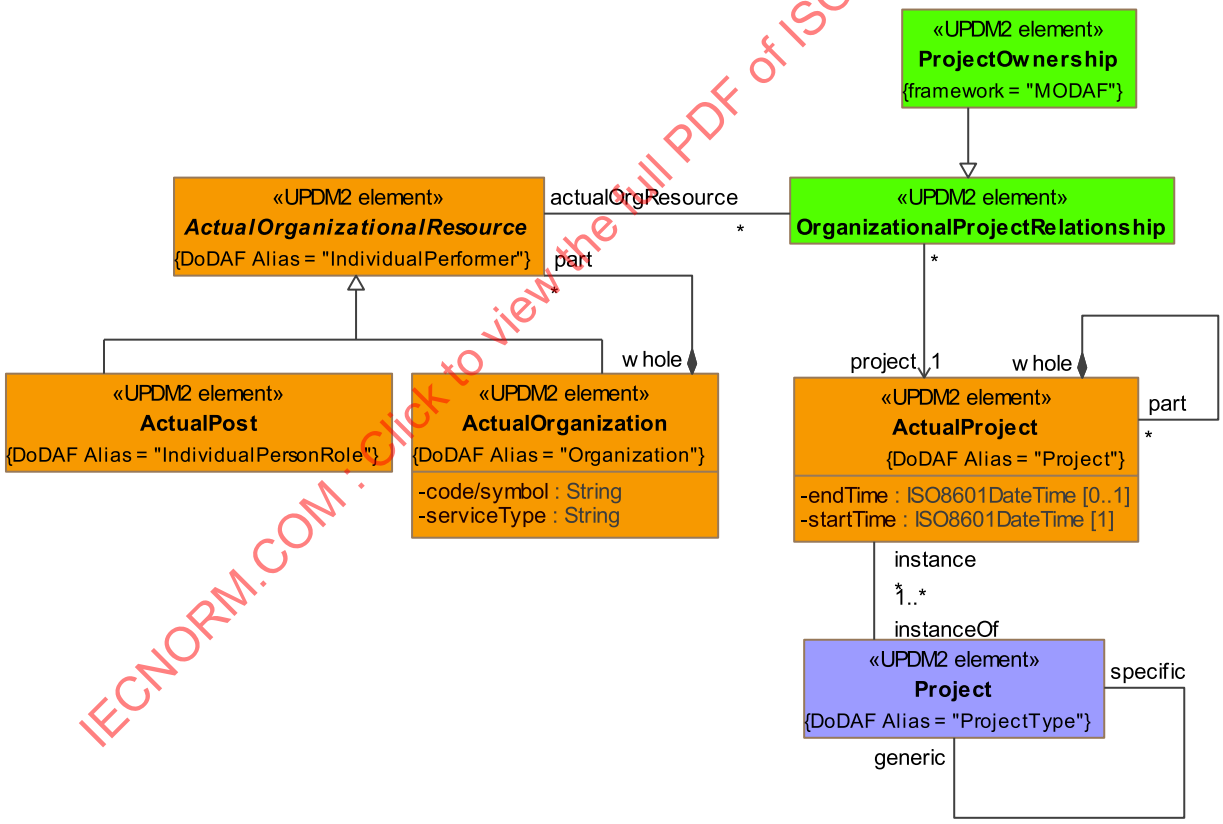

Figure A.2 - AcV-1/PV-1 - DMM

A.2.1.2 AcV-2/PV-2 - DMM

MODAF: AcV-2 view products provide a timeline perspective on projects.

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DoDAF: AcV-2 (DoDAF::PV-2: Project Timelines DoDAF-described View) provides a timeline perspective on programs or projects.

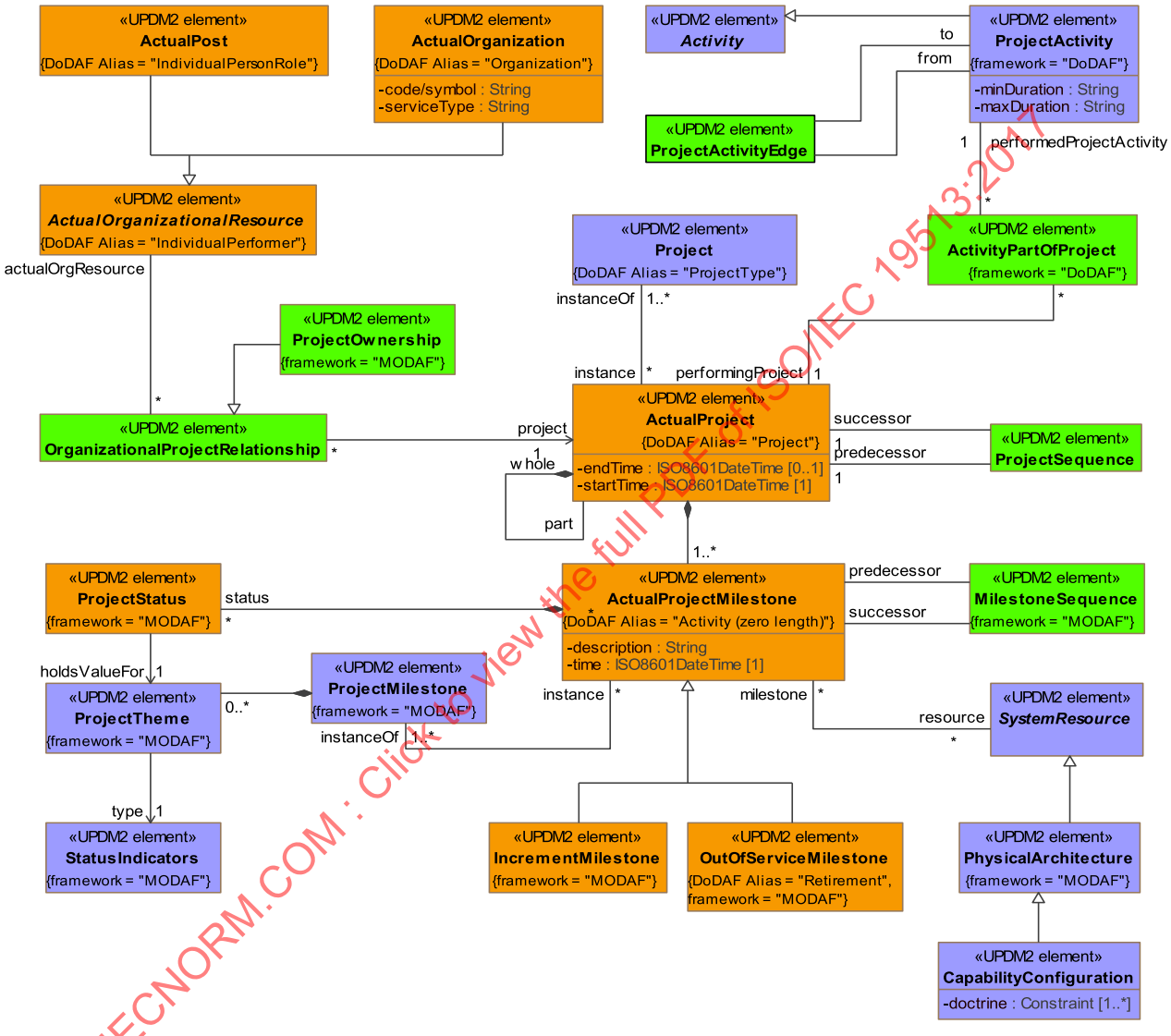

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Figure A.3 - AcV-2/PV-2 - DMM

A.2.1.3 PV-3 Derived from Project Activity - DMM

MODAF: NA

DoDAF: PV-3 diagram indicates the Capabilities that are realized by a particular project.

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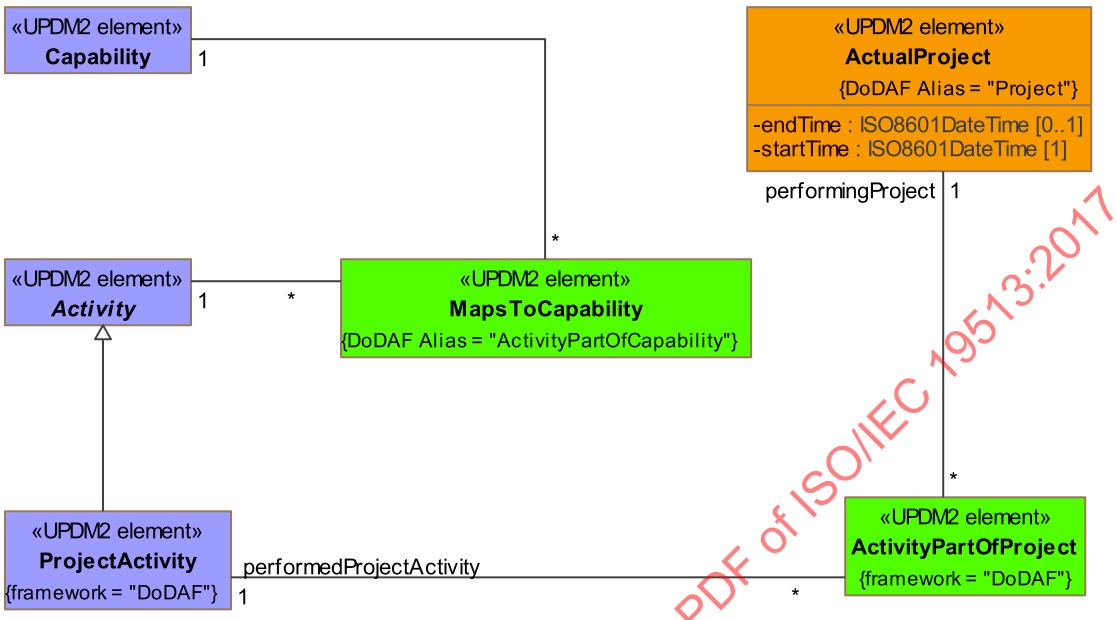

Figure A.4 - PV-3 Derived from Project Activity - DMM

A.2.1.4 PV-3 Derived from Project Milestones - DMM

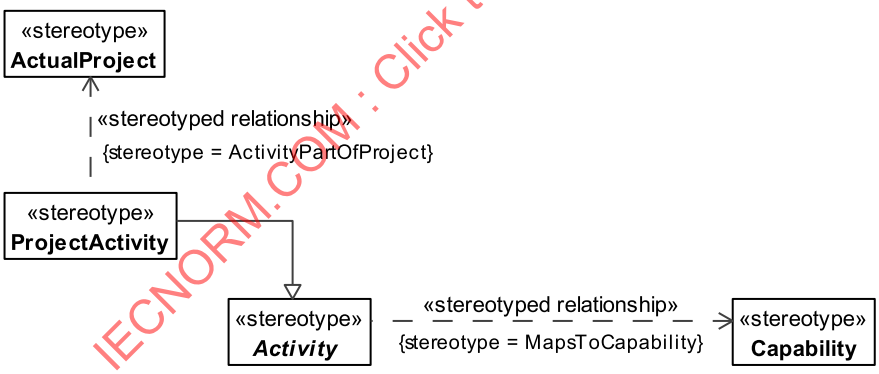

Figure A.5 - PV-3 Derived from Project Activity - DMM

A.2.2 AV

Elements that are part of the All View. The All-Views (AVs) provide an overarching description of the architecture, its scope, ownership, timeframe and all of the other meta data that is required in order to effectively search and query architectural models. They also provide a place to record any findings arising from the architecting process. The AVs include a dictionary of the terms used in the construction of the architecture - which helps others fully understand its

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meaning at a later date. Since the AVs provide critical information for the future access and exploitation of an architectural model their population is essential whenever an architecture is created or modified. The AVs provide a critical input into the processes that provide architectural governance.

A.2.2.1 AV-1 - DMM

MODAF: The overview and summary information contained within the AV-1 product provides executive-level summary information in a consistent form that allows quick reference and comparison between architectural descriptions. AV-1 includes assumptions, constraints, and limitations that may affect high-level decisions relating to an architecture-based work program.

DoDAF: The overview and summary information contained within the AV-1 DoDAF-described View provides executive-level summary information in a consistent form that allows quick reference and comparison between architectural descriptions. The AV-1 includes assumptions, constraints, and limitations that may affect high-level decisions relating to an architecture-based work program.

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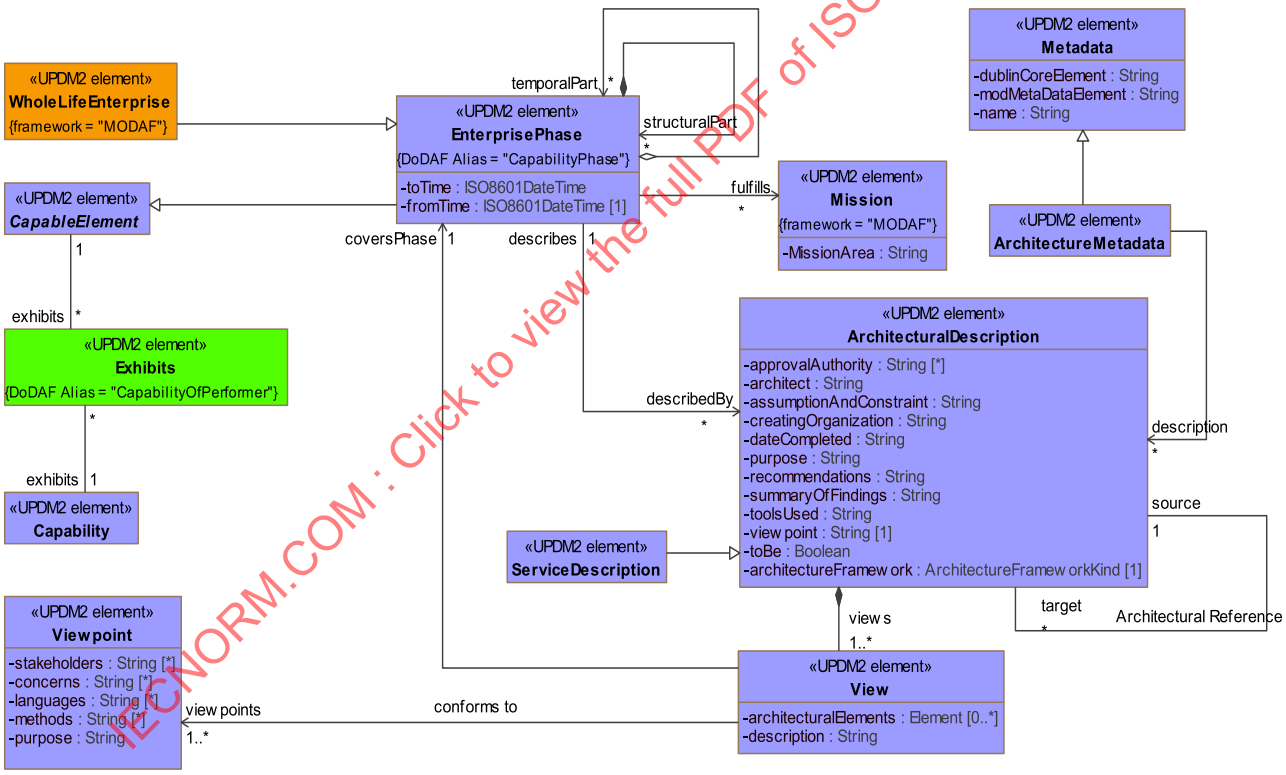

Figure A.6 - AV-1 - DMM

A.2.2.2 AV-2 - DMM

MODAF: AV-2 presents all the Elements used in an architecture as a stand alone structure. An AV-2 presents all the Elements as a specialization hierarchy, provides a text definition for each one and references the source of the element (e.g., MODAF Ontology, IDEAS Model, local, etc.). An AV-2 shows elements from the MODAF Ontology that have been used in the architecture and new elements (i.e., not in the MODAF Ontology) that have been introduced by the architecture.

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DoDAF: The AV-2 presents all the metadata used in an architecture as a standalone structure. An AV-2 presents all the metadata as a specialization hierarchy, provides a text definition for each one and references the source of the element (e.g., DoDAF Meta-model, IDEAS, a published document or policy). An AV-2 shows elements from the DoDAF Meta-model that have been used in the architecture and new elements (i.e., not in the DoDAF Meta-model) that have been introduced by the architecture.

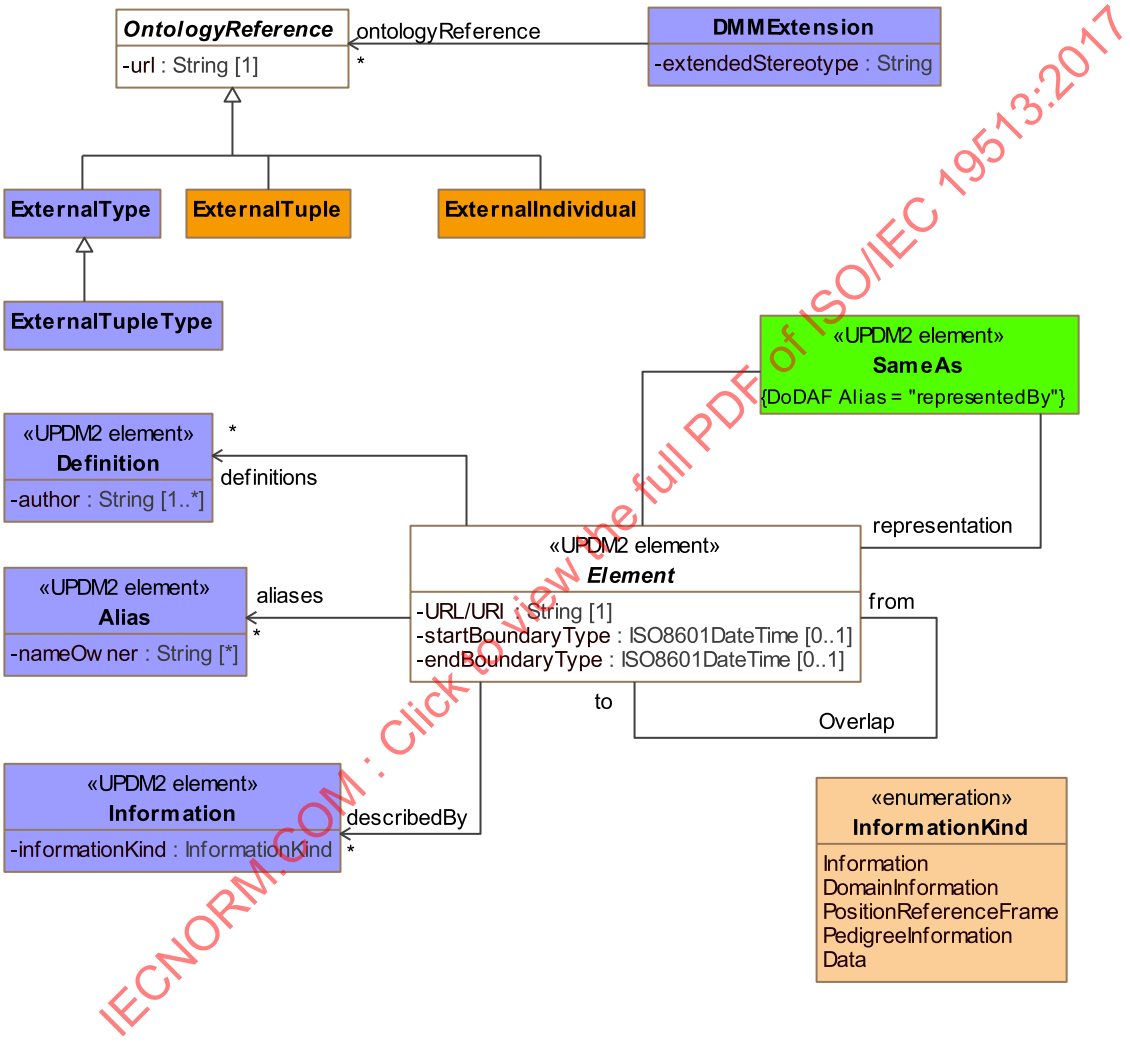

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Figure A.7 - AV-2 - DMM

A.2.3 OV

The Operational View is about real-world activities, the people and machinery that perform them, and the means by which they are performed. The Operational View is divided into nine products intended to answer the "who," "what," "when," "where," "why," and "how" of a mission. They are summarized in the table below.

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A.2.3.1 OV-1 - DMM

MODAF: OV-1 addresses the high level operational concepts related to one or more missions. An OV-1 describes a mission, class of mission, or scenario; and highlights the main operational elements and interesting or unique aspects of operations.

The OV-1 has two purposes. First, it provides a means of organizing the operational architecture models into distinct groups based on scenario context. Second, it communicates the essence of the scenario context in an essentially graphical form.

DoDAF: The OV-1 DoDAF-described View describes a mission, class of mission, or scenario. It shows the main operational concepts and interesting or unique aspects of operations. It describes the interactions between the subject architecture and its environment, and between the architecture and external systems. A textual description accompanying the graphic is crucial. Graphics alone are not sufficient for capturing the necessary architecture data.

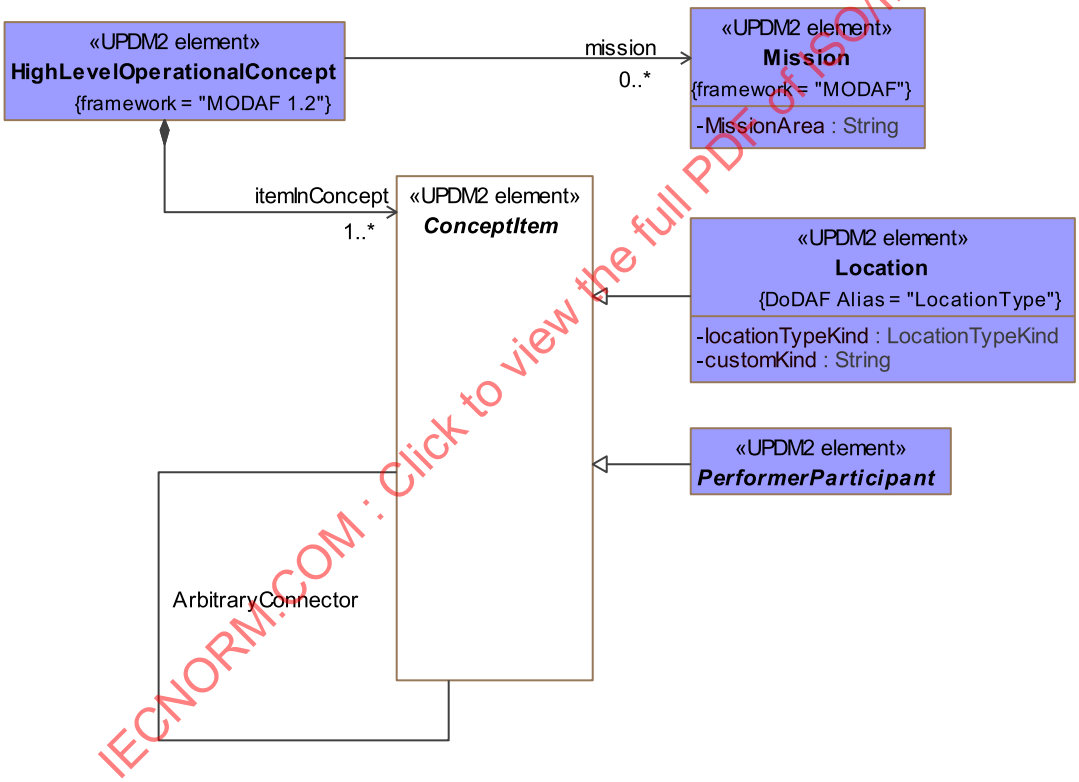

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Figure A.8 - OV - 1 - DMM

A.2.3.2 OV-2 - DMM

MODAF: The Operational Node Relationships Description (OV-2) addresses localization of operational capability.

DoDAF: The Operational Resource Description (OV-2) DoDAF-described View applies the context of the operational capability to a community of anticipated users.

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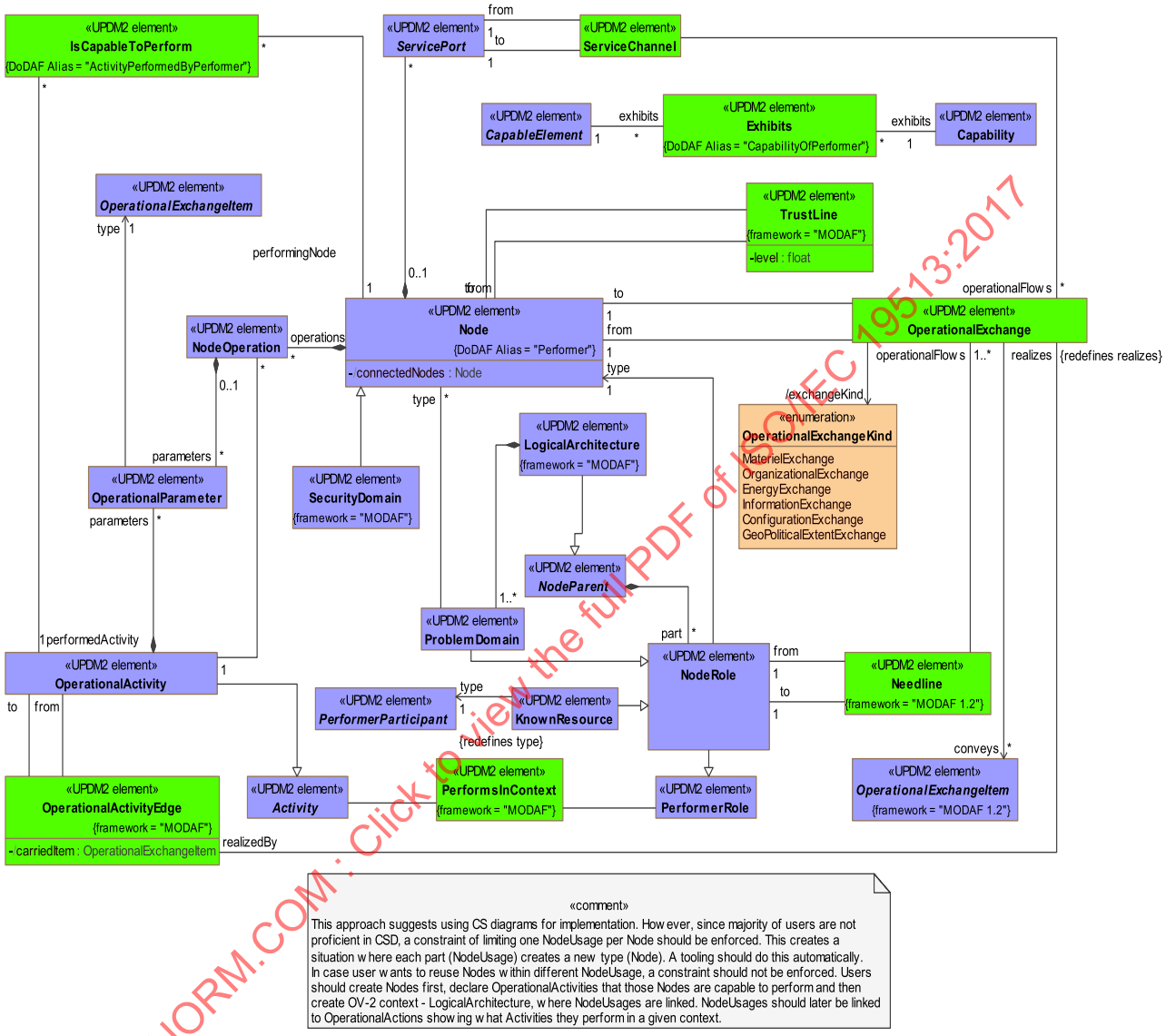

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Figure A.9 - OV-2 - DMM

A.2.3.3 OV-3 - DMM

MODAF: The Operational Information Exchange Matrix (OV-3) addresses operational information exchanges between nodes.

DoDAF: The Operational Resource Flow Matrix (OV-3) DoDAF-described addresses operational resource flows exchanged between Operational Activities and locations.

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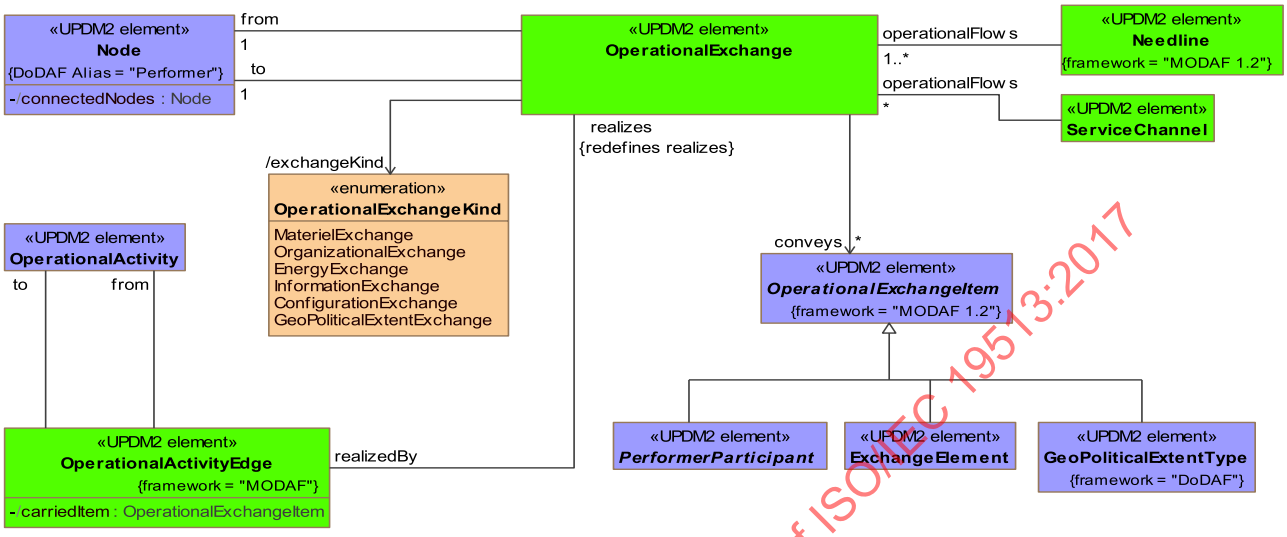

Figure A.10 - OV-3 - DMM

A.2.3.4 OV-4 Actual - DMM

This is the OV-4 Actual View. The Organizational Relationships Chart illustrates the command structure or relationships (as opposed to relationships with respect to a business process flow) among human roles, organizations, or organization types that are the key players in architecture. MODAF divides the OV-4 two views, an OV-4 Typical and an OV-4 Actual. The former is exactly as the DoDAF OV-4, while the latter is a special form of the SV-1; where the resources are restricted to being organizational.

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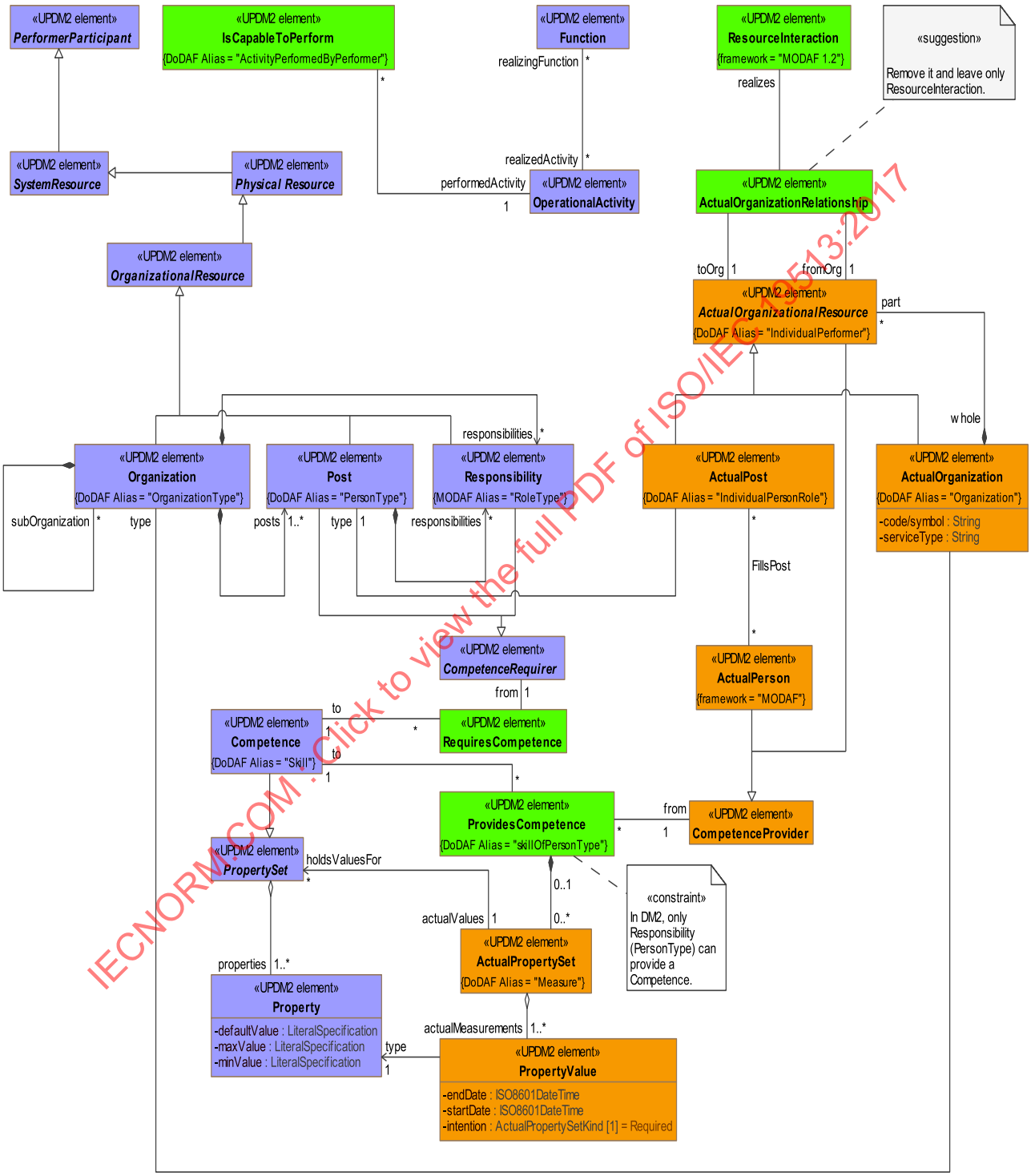

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Figure A.11 - OV-4-Actual - DMM

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A.2.3.5 OV-4 Typical - DMM

MODAF: The OV-4 shows organizational structures and interactions. The organizations shown may be civil or military. A typical OV-4 shows the possible relationships between organizational resources (organizations and posts).

DoDAF: DoDAF: The OV-4 DoDAF-described View shows organizational structures and interactions. The organizations shown may be civil or military. A typical OV-4 shows the possible relationships between organizational resources.

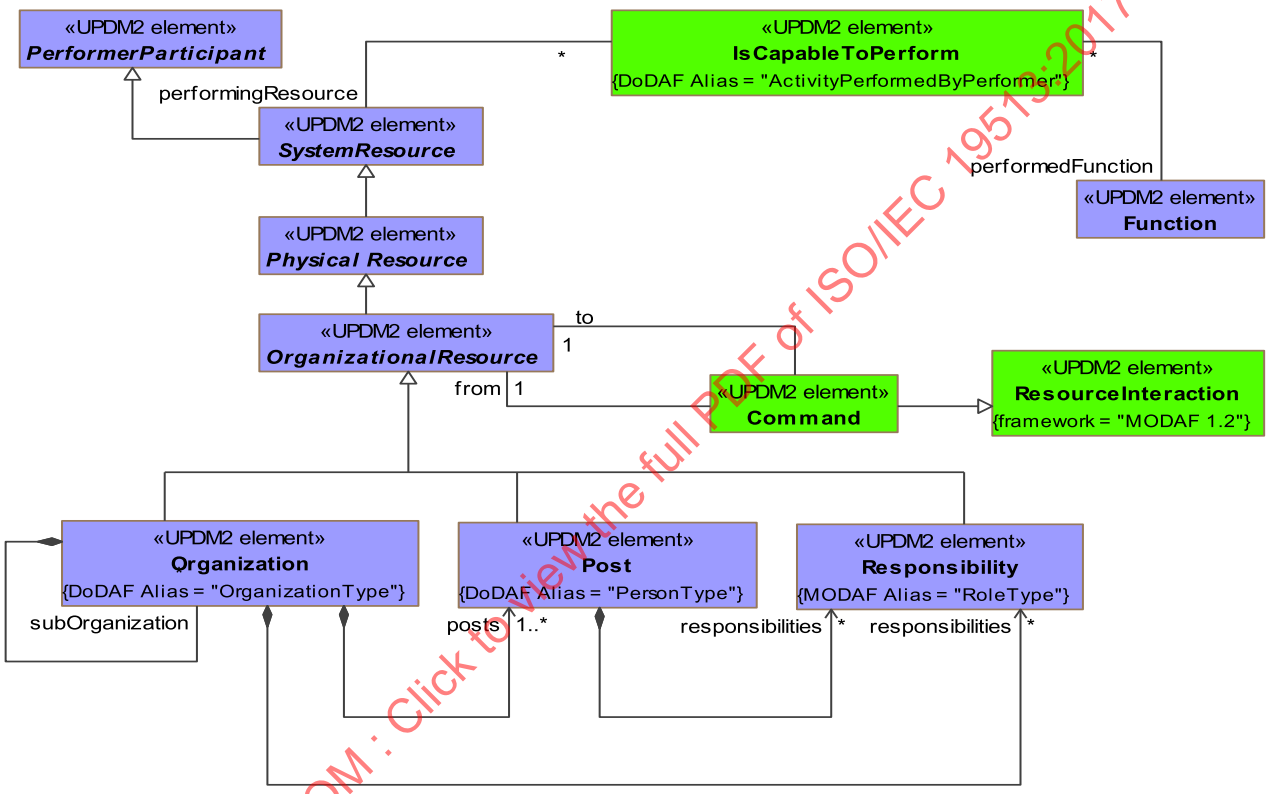

Figure A.12 - OV-4 Typical - DMM

A.2.3.6 OV-5 - DMM

MODAF: The Operational Activity Model (OV-5) describes the operations that are normally conducted in the course of achieving a mission or a business goal. It describes operational activities (or tasks), Input/Output flows between activities and to/from activities that are outside the scope of the Architecture.

DoDAF: The Operational Activity Model DoDAF-described View describes the operations that are normally conducted in the course of achieving a mission or a business goal. It describes operational activities (or tasks); Input/Output flows between activities, and to/from activities that are outside the scope of the Architecture.

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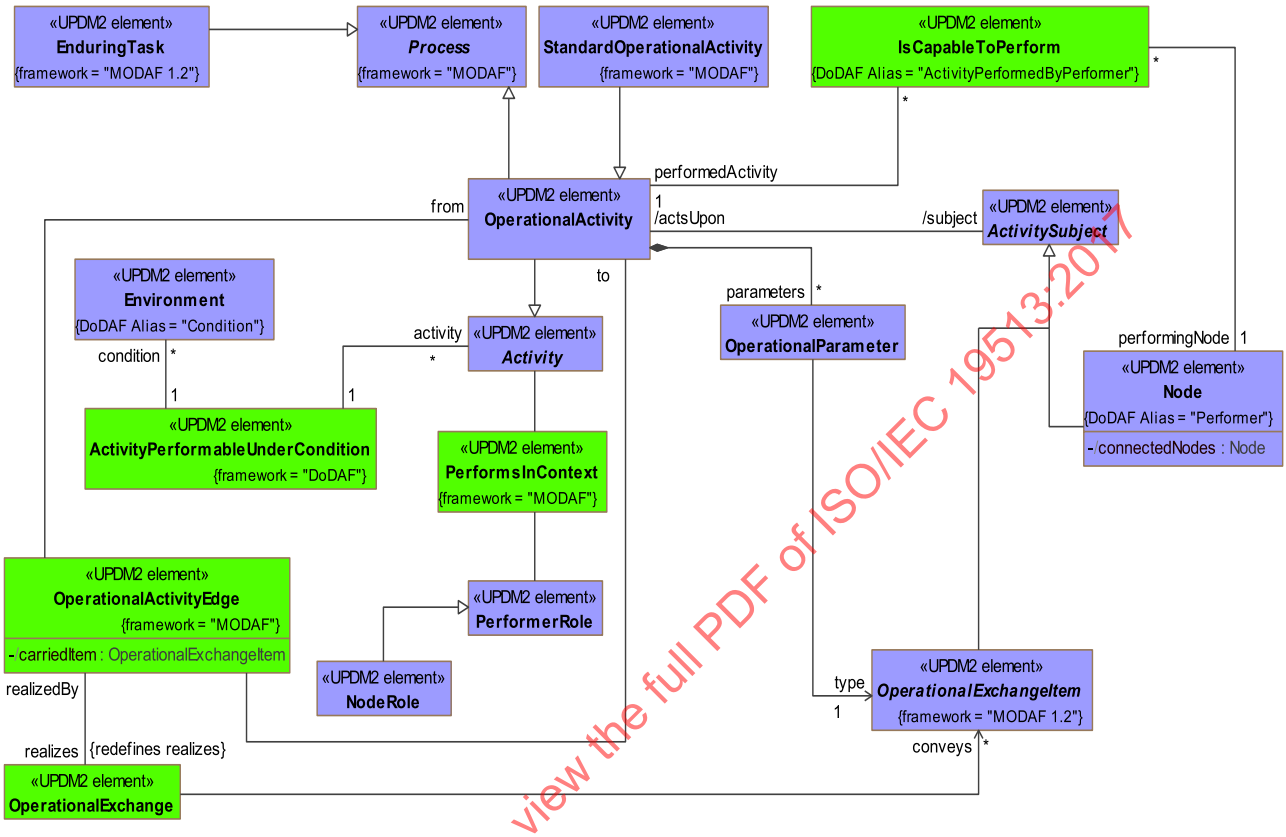

Figure A.13 - OV-5 - DMM

A.2.3.7 OV-6a - DMM

MODAF: An Operational Rules Model (OV-6a) specifies operational or business rules that are constraints on the way that business is done in the enterprise.

DoDAF: An Operational Rules Model (OV-6a) DoDAF-described View specifies operational or business rules that are constraints on the way that business is done in the enterprise.

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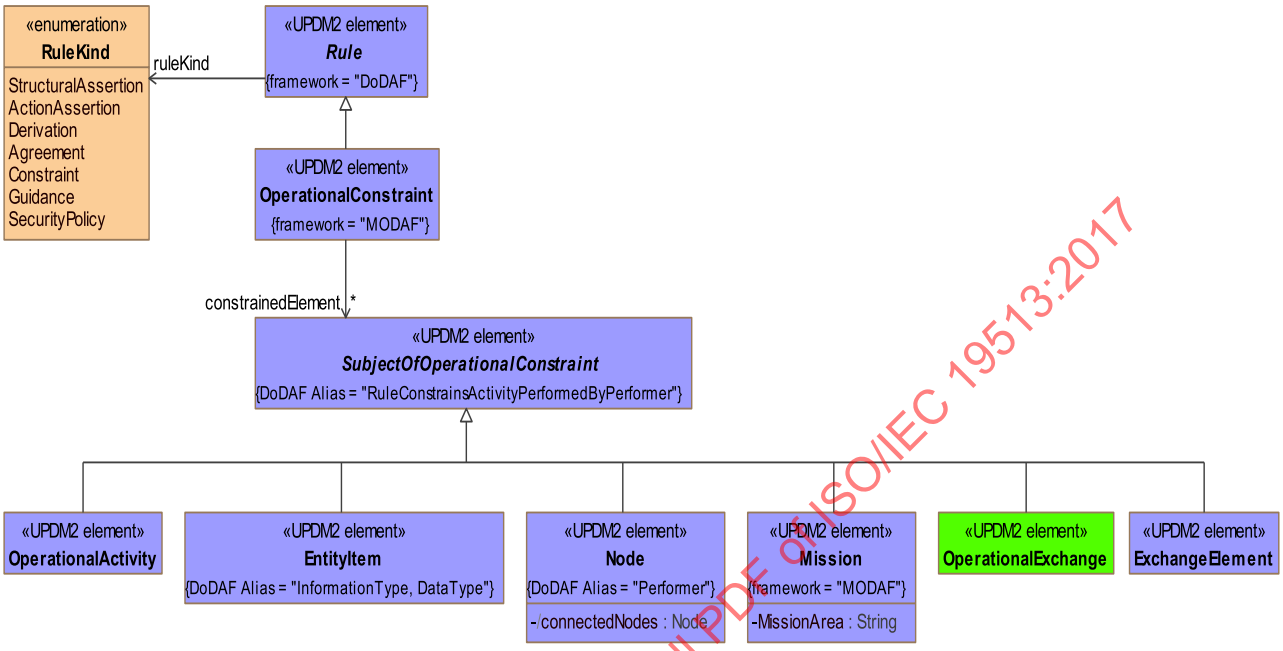

Figure A.14 - OV-6a - DMM

A.2.3.8 OV-6b - DMM

MODAF: OV-6b: The Operational State Transition Description is a graphical method of describing how an Operational Node or activity responds to various events by changing its state. The diagram represents the sets of events to which the Architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

DoDAF: The Operational State Transition Description (OV-6b) DoDAF-described View is a graphical method of describing how an Operational Activity responds to various events by changing its state. The diagram represents the sets of events to which the Architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

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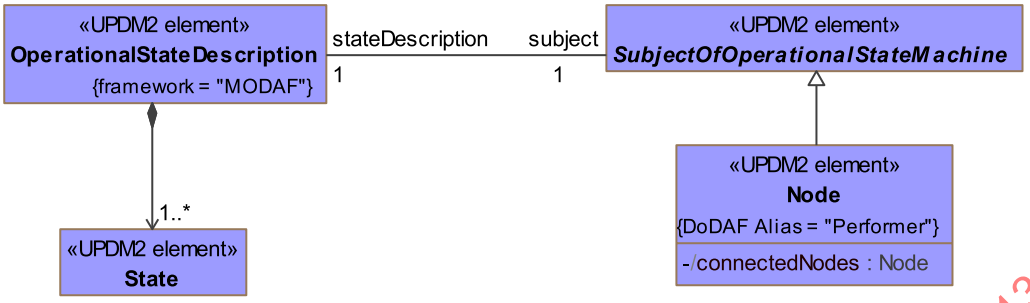

Figure A.15 - OV-6b - DMM

A.2.3.9 OV-6c - DMM

MODAF: OV-6c: The Operational Event-Trace Description provides a time-ordered examination of the information exchanges between participating Operational Nodes as a result of a particular scenario. Each event-trace diagram will have an accompanying description that defines the particular scenario or situation.

DoDAF: The Operational Event-Trace Description (OV-6c) DoDAF-described View provides a time ordered examination of the resource flows as a result of a particular scenario. Each event-trace diagram will have an accompanying description that defines the particular scenario or situation.

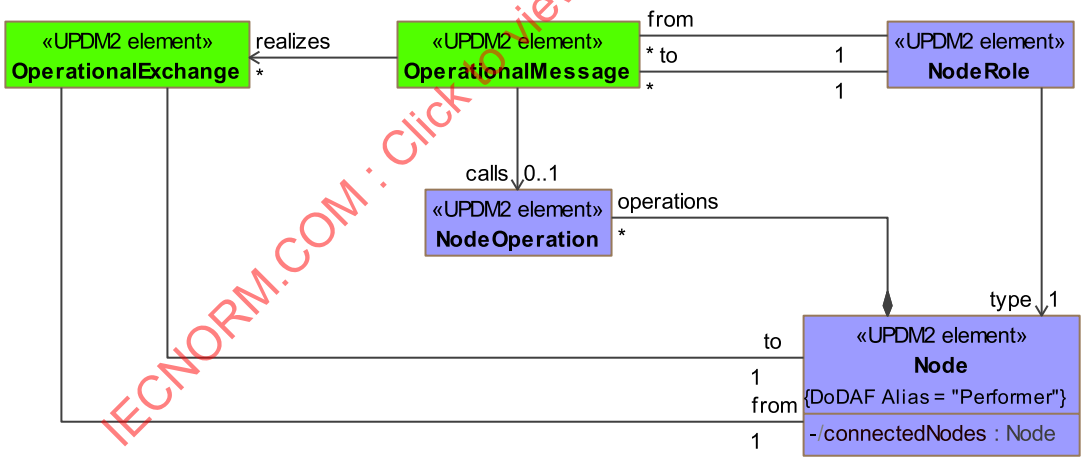

Figure A.16 - OV-6c - DMM

A.2.3.10 OV-7/DIV-1/DIV-2/ - DMM

MODAF: Information Models (OV-7) address the information perspective on an operational architecture.

DoDAF: The Conceptual Data Model (DIV-1), a new DoDAF-described View in DoDAF V2.0, addresses the information concepts at a high-level on an operational architecture.

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The Logical Data Model (DIV-2) DoDAF-described View allows analysis of an architecture's data definition aspect, without consideration of implementation specific or product specific issues.

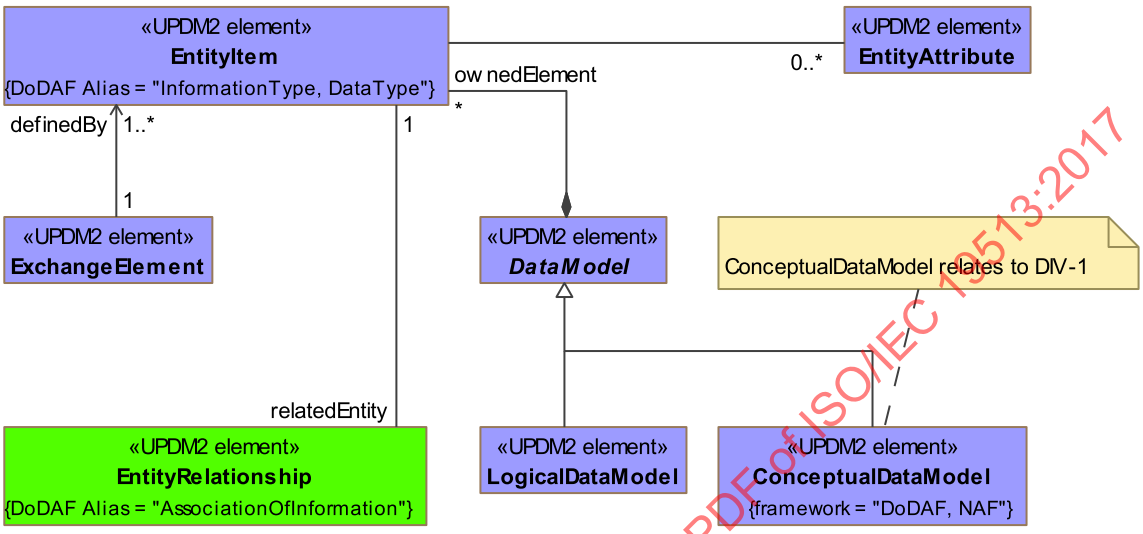

Figure A.17 OV-7/DIV-1/DIV-2 - DMM

A.2.4 SOV

The Service-Orientated View (SOV) is a description of services needed to directly support the operational domain as described in the OperationalView. A service is described as a unit of work through which a particular Resource provides a useful result to a consuming Resource.

The direction taken by UPDM in modeling services is heavily based on a simplified version of the UPMS profile. Only those elements that are compatible with existing DoDAF/MODAF concepts have been used. A full integration with UPMS will be assessed at a later date.

A.2.4.1 SOV-1 - DMM

The Service Taxonomy View (SOV-1) specifies a hierarchy of services. The elements in the hierarchy are service specifications (i.e., service interfaces), and the relationships between the elements are specializations (i.e., one Service is a special type of another). Along with SOV-2, it specifies a standard library of Service specifications for an enterprise, which Service implementers are expected to conform to.

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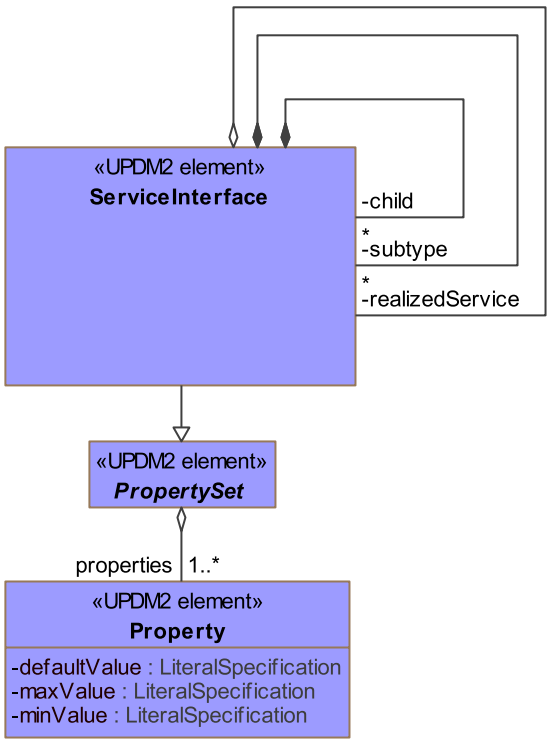

Figure A.18 - SOV-1 - DMM

A.2.4.2 SOV-2 - DMM

MODAF: The Service Taxonomy View (SOV-1) specifies a hierarchy of services. The elements in the hierarchy are service specifications (rather than service implementations), and the relationships between the elements are specializations (i.e., one Service is a special type of another).

DoDAF: NA

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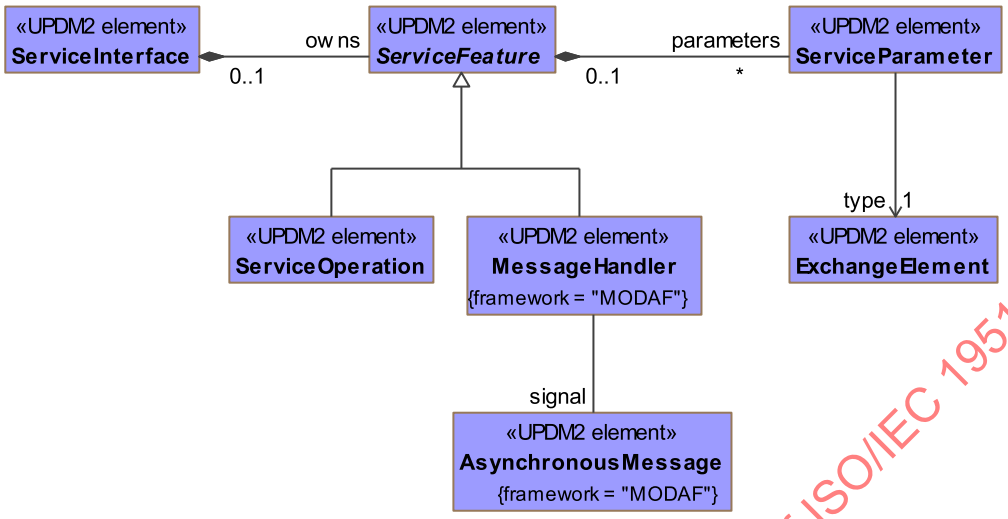

Figure A.19 - SOV-2 - DMM

A.2.4.3 SOV-3 - DMM

MODAF: The Capability to Service Mapping View (SOV-3) depicts which services contribute to the achievement of a capability.

DoDAF: The Operational Activity to Services Function Traceability Matrix (SvcV-5) DoDAF-described View addresses the linkage between service functions described in SvcV-4 and Operational Activities specified in OV-5.

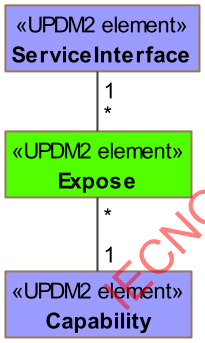

Figure A.20 - SOV-3 - DMM

A.2.4.4 SOV-4a - DMM

MODAF: The purpose of the Service Constraints View (SOV-4a) is to specify constraints that apply to implementations of services.

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DoDAF: The SvcV-10a DoDAF-described View describes constraints on the resources, functions, data, and ports that make up the Service View physical architecture. The constraints are specified in text and may be functional or structural (i.e., non-functional).

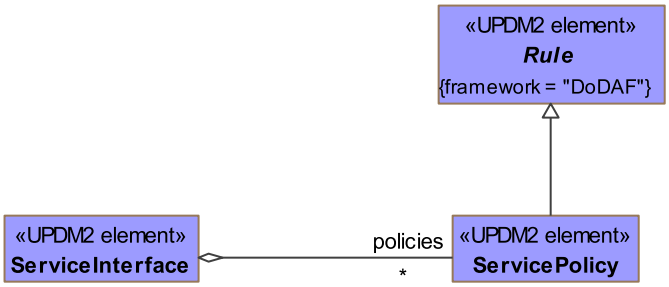

Figure A.21 - SOV-4a - DMM

A.2.4.5 SOV-4b - DMM

MODAF: The purpose of the Service State Model View (SOV-4b) is to specify the possible states a service may have, and the possible transitions between those states.

DoDAF: The Services State Transition Description DoDAF-described View is a graphical method of describing a resource (or function) response to various events by changing its state. The diagram basically represents the sets of events to which the resources in the Architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

Figure A.22 - SOV-4b - DMM

A.2.4.6 SOV-4c - DMM

The purpose of the Service Interaction Specification View (SOV-4c) is to specify how a service interacts with external agents, and the sequence and dependencies of those interactions. An SOV-4c product does not specify the sequencing of an orchestrated set of services (see OV-6c). Its purpose is to specify the general sequence of interactions that are possible for a given service.

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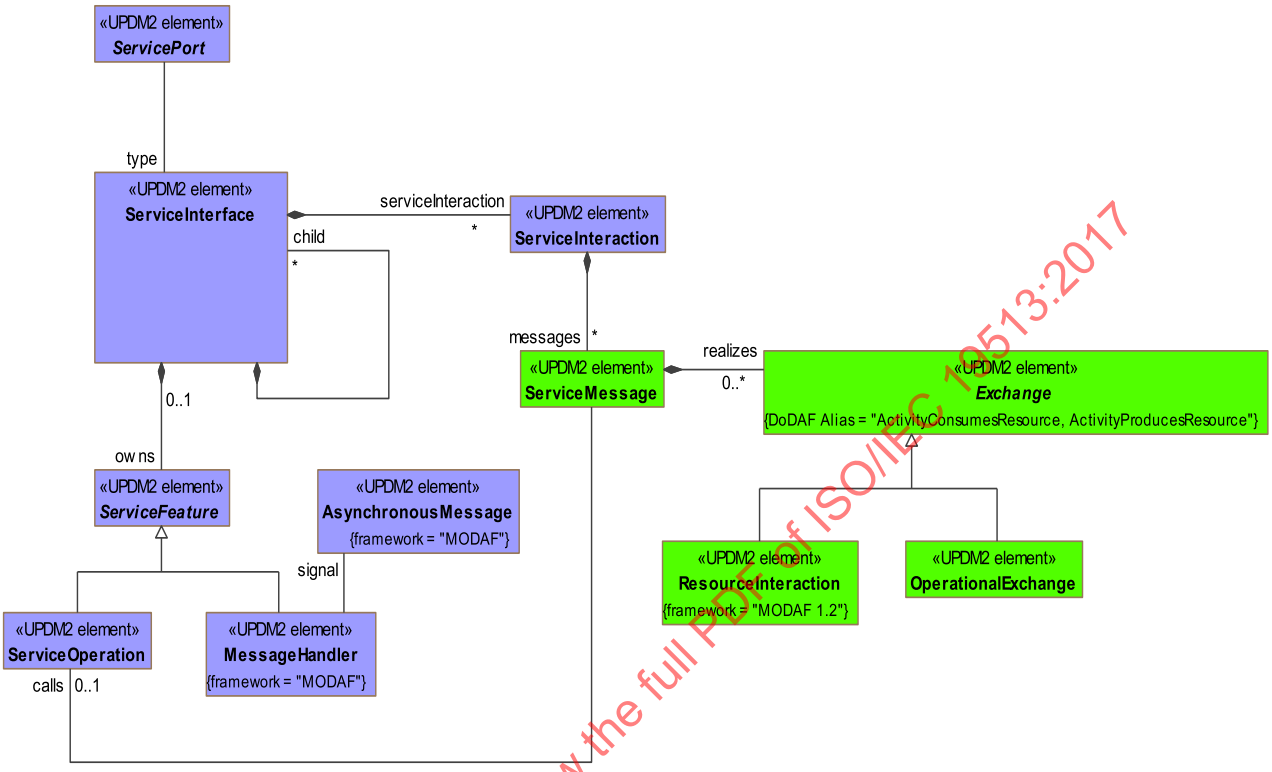

Figure A.23 - SOV-4c - DMM

A.2.4.7 SOV-5 - DMM

MODAF: The Service Functionality View (SOV-5) defines the behavior of a service in terms of the functions it is expected to perform.

DoDAF: The Services Functionality Description provides detailed information regarding the: Allocation of service functions to resources, and Flow of resources between service functions.

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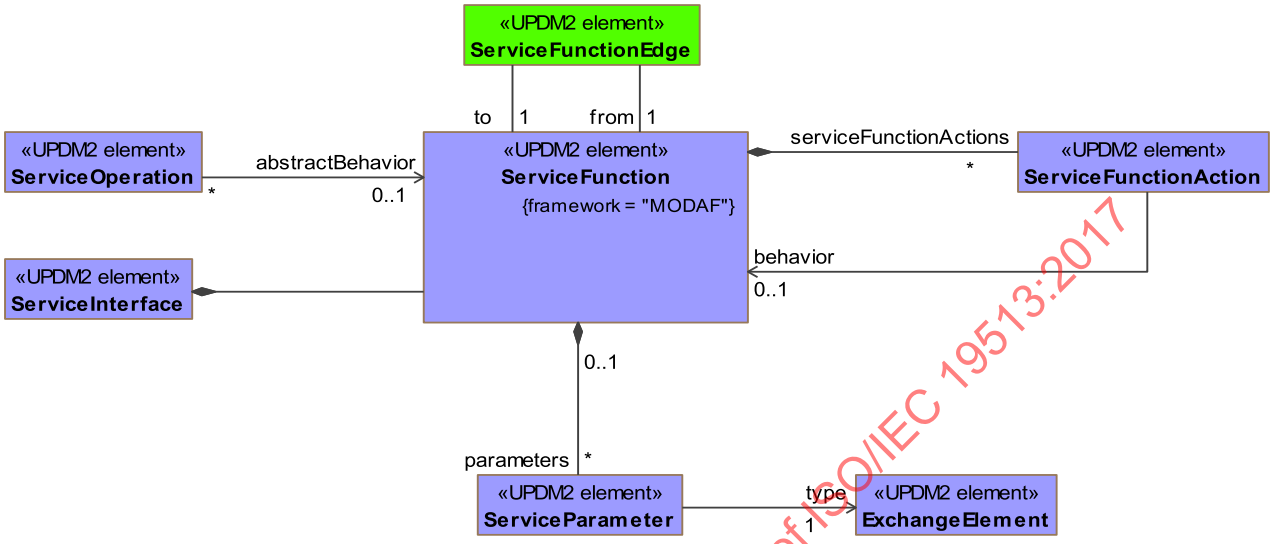

Figure A.24 - SOV-5 - DMM

A.2.5 StV/CV

The Strategic Elements are used in the Strategic View which provides an overall Enterprise Architecture assessment of the Capabilities and their relationships facilitating Capability Management (e.g., capability introduction, integration, re-alignment, and removal). While an Enterprise will have a number of UPDM Architecture Descriptions that have the Operational, System, Technical Standards, and All Views, only one Strategic View will exist across a number of Architecture Descriptions.

A.2.5.1 CV-7 - DMM

MODAF: NA

DoDAF: CV-7 details the mapping between DoDAF services (ServiceAccess) and the Capability that they realize.

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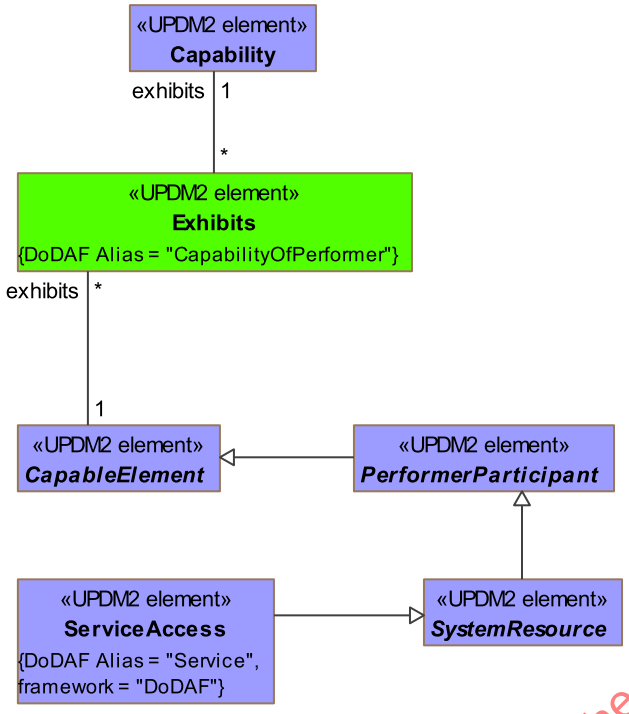

Figure A.25 - CV-7 - DMM

A.2.5.2 StV-1/CV-1- DMM

MODAF: StV-1 addresses the enterprise concerns associated with the overall vision for transformational endeavors and thus defines the strategic context for a group of Enterprise capabilities.

DoDAF: CV-1: Vision: addresses the enterprise concerns associated with the overall vision for transformational endeavors and thus defines the strategic context for a group of capabilities.

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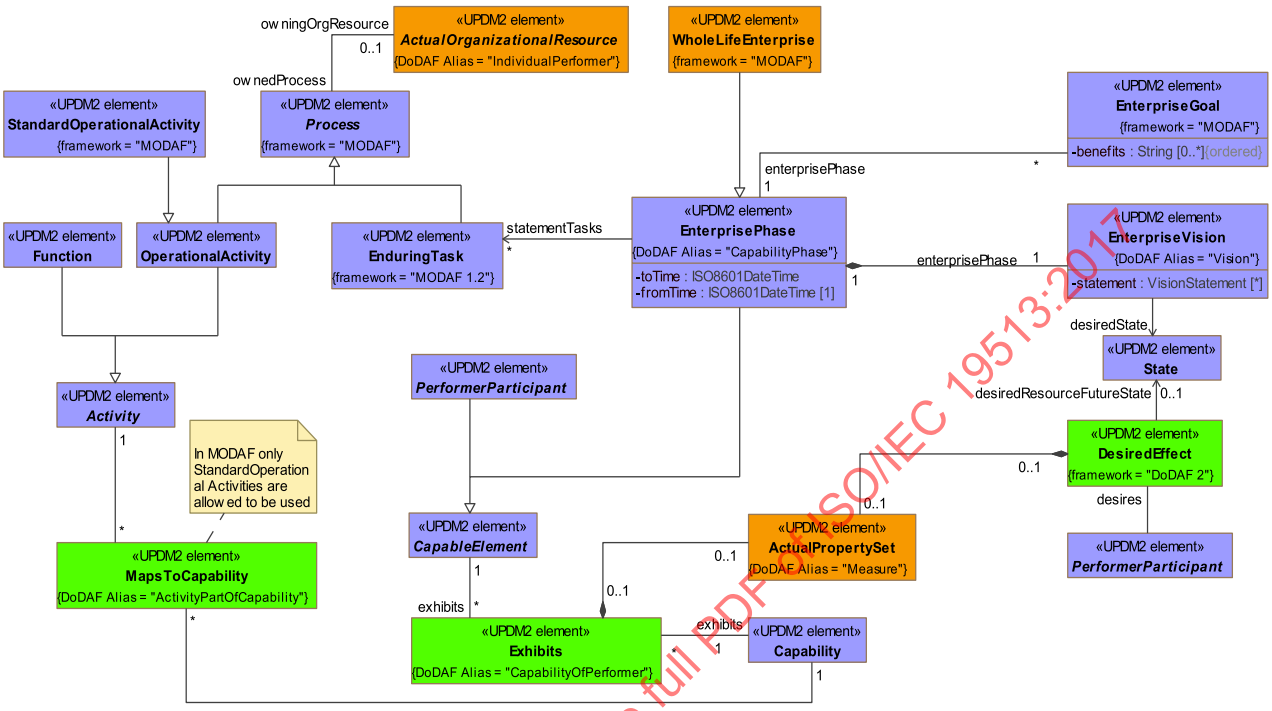

Figure A.26 - StV-1/CV-1 - DMM

A.2.5.3 StV-2/CV-2 - DMM

MODAF: The StV-2 Product models capability taxonomies.

DoDAF: The CV-2 DoDAF-described View models capability taxonomies.

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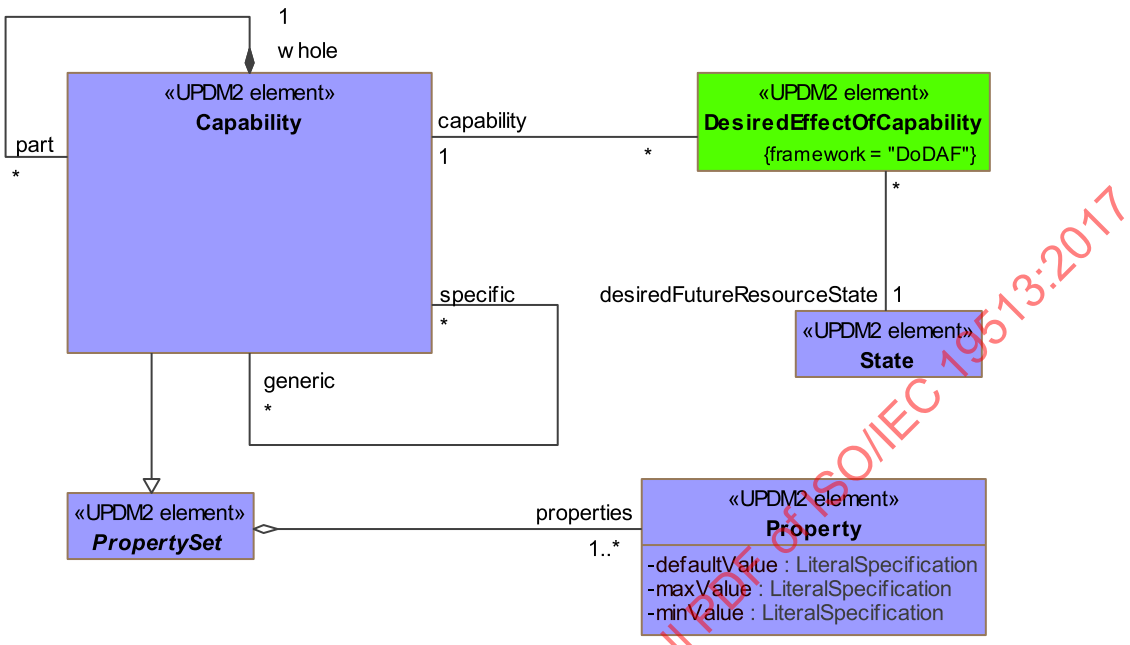

Figure A.27 - StV-2/CV-2 - DMM

A.2.5.4 StV-3/CV-3 - DMM

MODAF: StV-3 addresses the planned achievement of capability at different points in time or during specific periods of time (i.e., capability phasing).

DoDAF: CV-3: Capability Phasing The CV-3 addresses the planned achievement of capability at different points in time or during specific periods of time (i.e., capability phasing).

The IncrementMilestone in UPDM originates from the MODAF framework. It ties to a PhysicalArchitecture/ CapabilityConfiguration and if the latter is indicated this in turn ties to a Capability since it is a CapableElement that exhibits a Capability. Capabilities are by themselves timeless i.e., it should not be possible to associated Capabilities and time directly. If an IncrementMilestone connects to CapabiltyConfiguration X at time T and this configuration realizes Capability A, it cannot at a later time also realize Capability B without something having changed, i.e., there has to be a CapabilityConfiguration X' that is tied to an IncrementMilestone where capabilities A and B are realized. It is suggested that these two CapabilityConfigurations are treated as versions of a CapabilityConfiguration master (SV-8).

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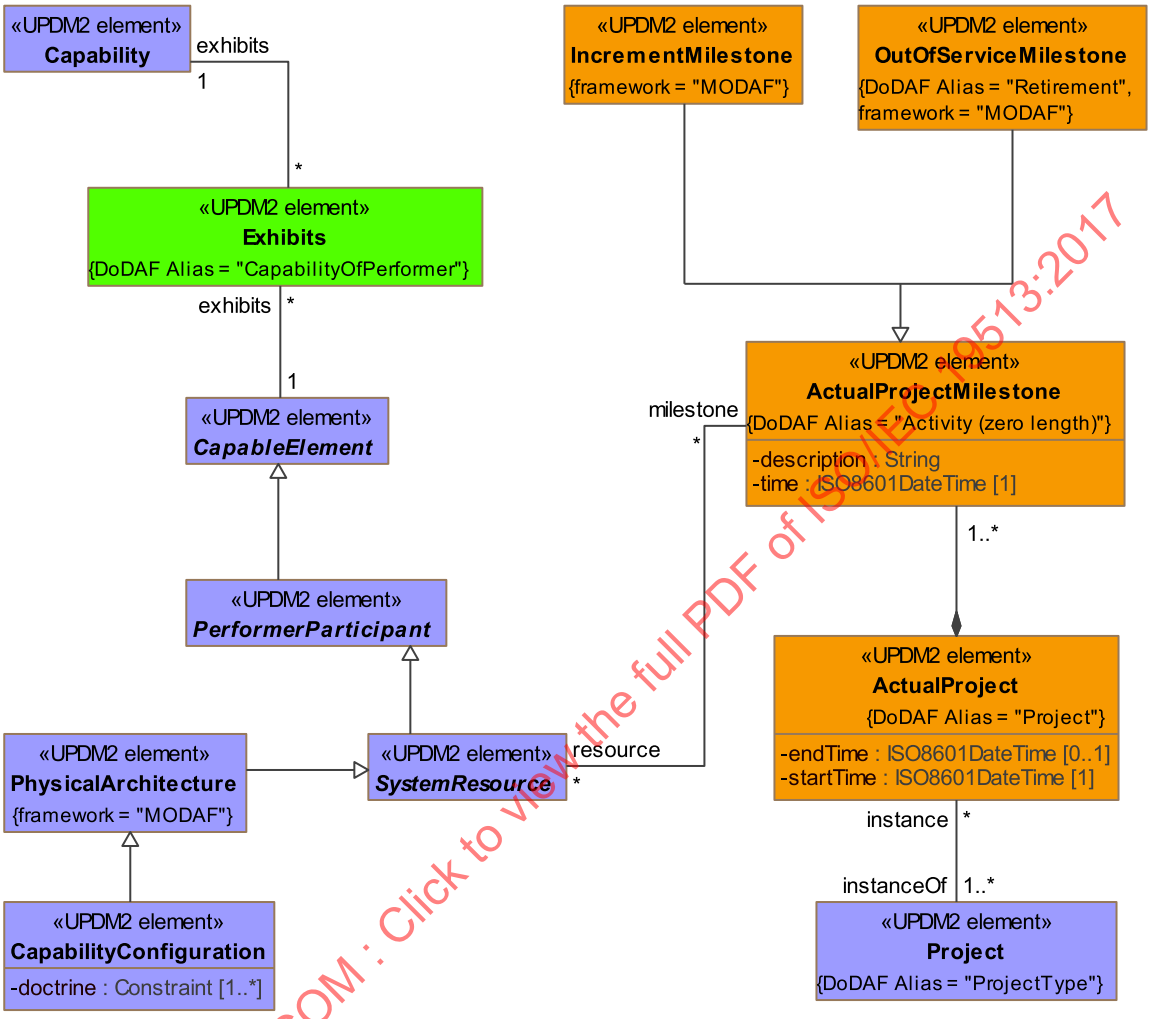

Figure A.28 - StV-3/CV-3 - DMM

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A.2.5.5 StV-4/CV-4 - DMM

MODAF: The StV-4 Product describes the dependencies between planned capabilities. It also defines logical groupings of capabilities (capability clusters).

DoDAF: CV-4: Capability Dependencies: The CV-4 DoDAF-described View describes the dependencies between planned capabilities. It also defines logical groupings of capabilities.

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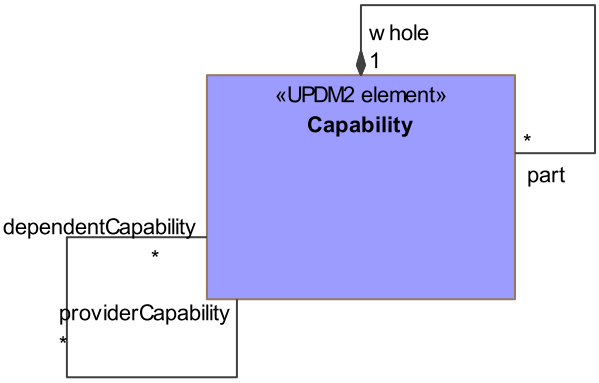

Figure A.29 - StV-4/CV-4 - DMM

A.2.5.6 StV-5/CV-5 - DMM

MODAF: StV-5 addresses the fulfillment of capability requirements, in particular by network enabled capabilities.

DoDAF: CV-5: Capability to Organizational Development Mapping: The CV-5 addresses the fulfillment of capability requirements.

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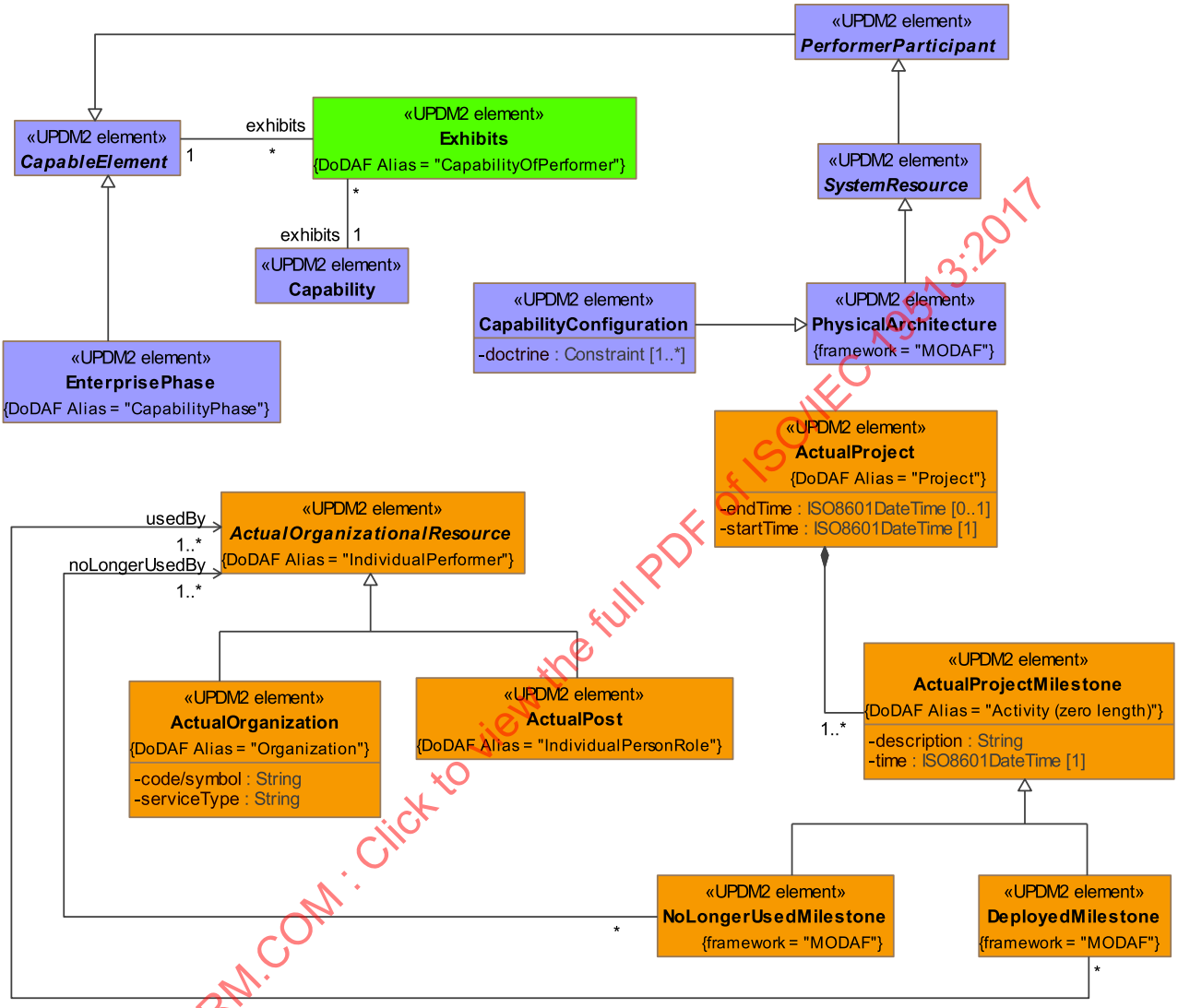

Figure A.30 - StV-5/CV-5 - DMM

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A.2.5.7 StV-6/CV-6 - DMM

MODAF: The StV-6 Product describes the mapping between the capabilities required by an Enterprise and the operational activities that those capabilities support.

DoDAF: CV-6: Capability to Operational Activities Mapping: The CV-6 DoDAF-described View describes the mapping between the capabilities required and the operational activities that those capabilities support.

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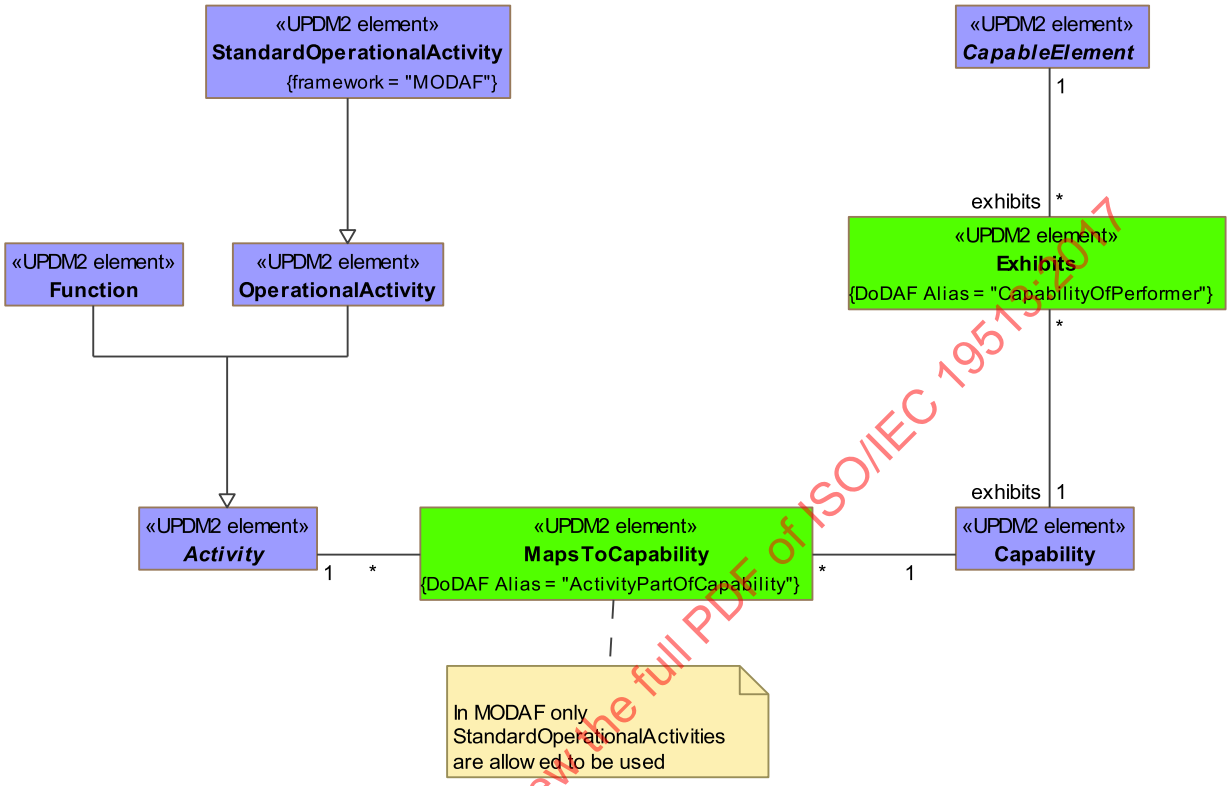

Figure A.31 - StV-6/CV-6 - DMM

A.2.6 SV/SvcV

Models in the System Viewpoint represent alternate realizations in terms of equipment capability of the operational capabilities expressed through models in the Operational Viewpoint and in the User Requirements. The System Viewpoint primarily addresses the specification of the system capability needed (rather than implementation details). Significant changes originally made in MODAF improved the ability for modelers to represent configuration of capability that include people as well as systems and platforms.

A.2.6.1 SV-1/SvcV-1 - DMM

MODAF: Resource Interaction Specification (SV-1) address the composition and interaction of resources. From MODAF v1.1, SV-1 incorporates the human elements - Posts, Organizations, and Roles.

DoDAF: The Systems Interface Description (SV-1) DoDAF-described View addresses the composition and interaction of Systems. For DoDAF v2.0, the SV-1 incorporates the human elements as types of Performers - Organizations and Personnel Types.

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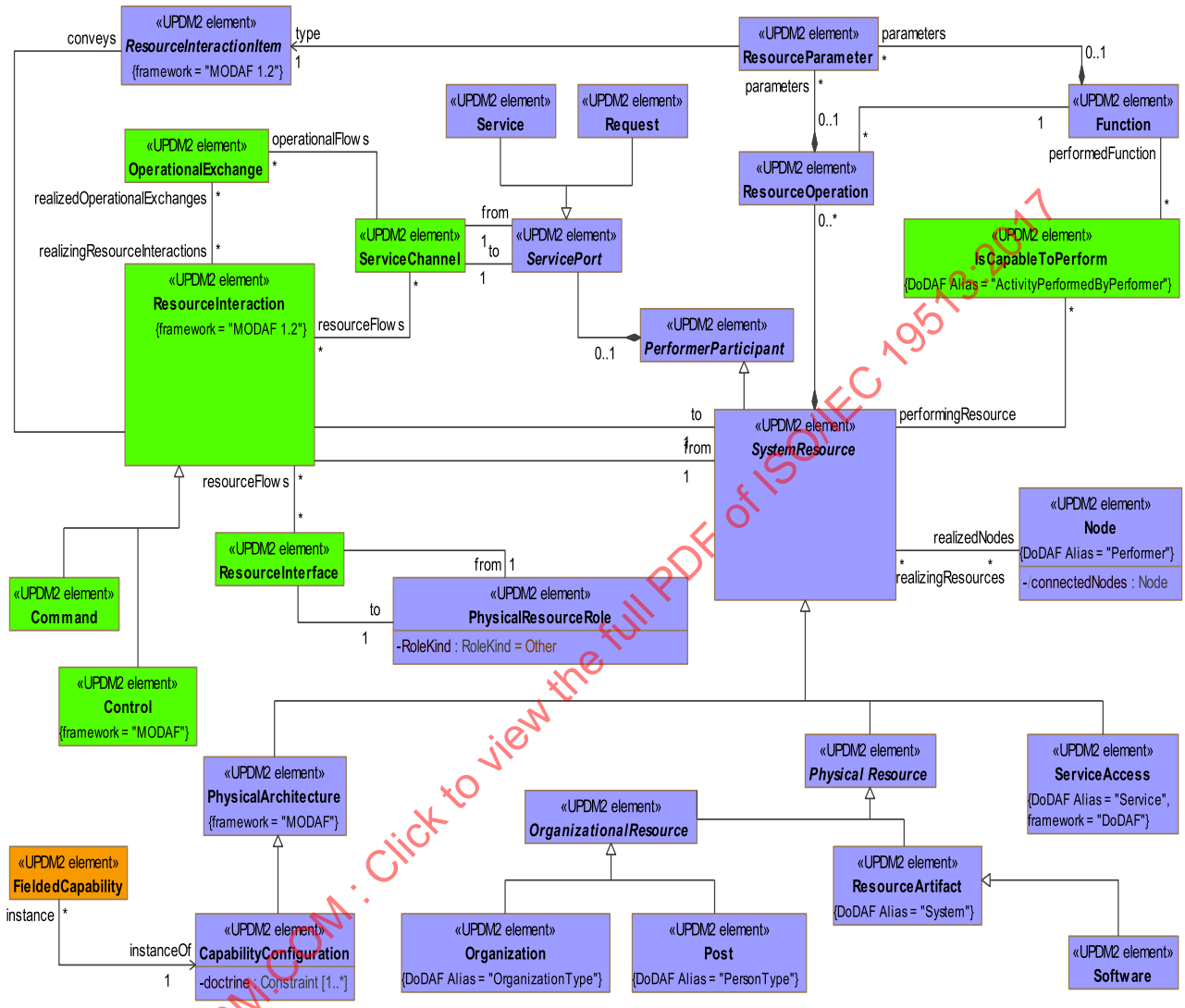

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Figure A.32 - SV-1/SvcV-1 - DMM

A.2.6.2 SV-10a/SvcV-10a - DMM

MODAF: The purpose of this Product is to specify functional and non-functional constraints on the implementation aspects of the architecture (i.e., the structural and behavioral elements of the SV viewpoint).

DoDAF: The SV-10a Systems Rules Model DoDAF-described View describes constraints on the resources, functions, data, and ports that make up the SV physical architecture. The constraints are specified in text and may be functional or structural (i.e., non-functional).

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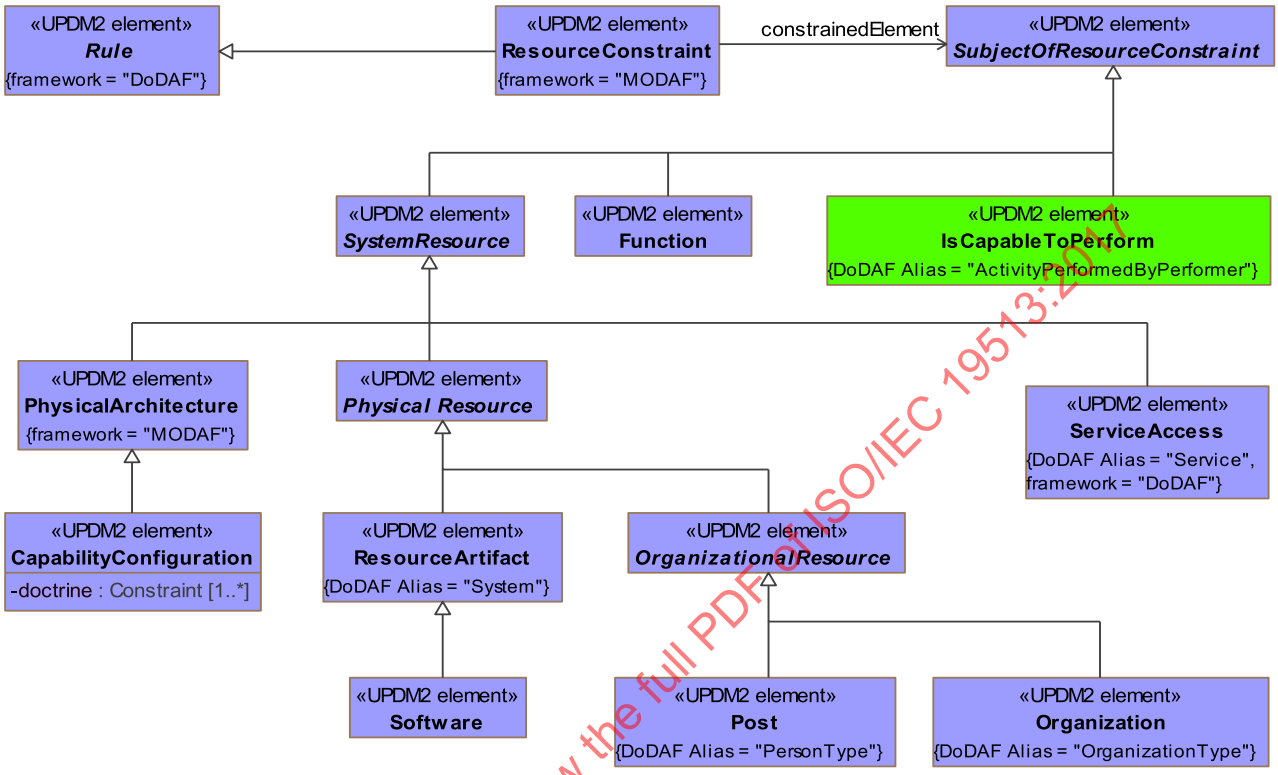

Figure A.33 - SV-10a/SvcV-10a - DMM

A.2.6.3 SV-10b/SvcV-10b - DMM

MODAF: The Resource State Transition Description is a graphical method of describing a resource (or function) response to various events by changing its state. The diagram basically represents the sets of events to which the Resources in the Architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

DoDAF: The Systems State Transition Description DoDAF-described View is a graphical method of describing a resource (or system function) response to various events by changing its state. The diagram basically represents the sets of events to which the resources in the Architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

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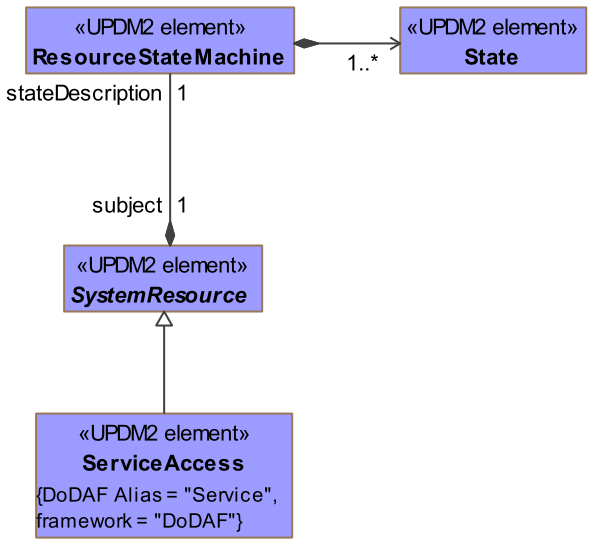

Figure A.34 - SV-10b/SvcV-10b - DMM

A.2.6.4 SV-10c/SvcV-10c - DMM

MODAF: The Resource Event-Trace Description provides a time-ordered examination of the interactions between resources. Each event-trace diagram will have an accompanying description that defines the particular scenario or situation.

DoDAF: The Systems Event-Trace Description provides a time-ordered examination of the interactions between functional resources. Each event-trace diagram will have an accompanying description that defines the particular scenario or situation.

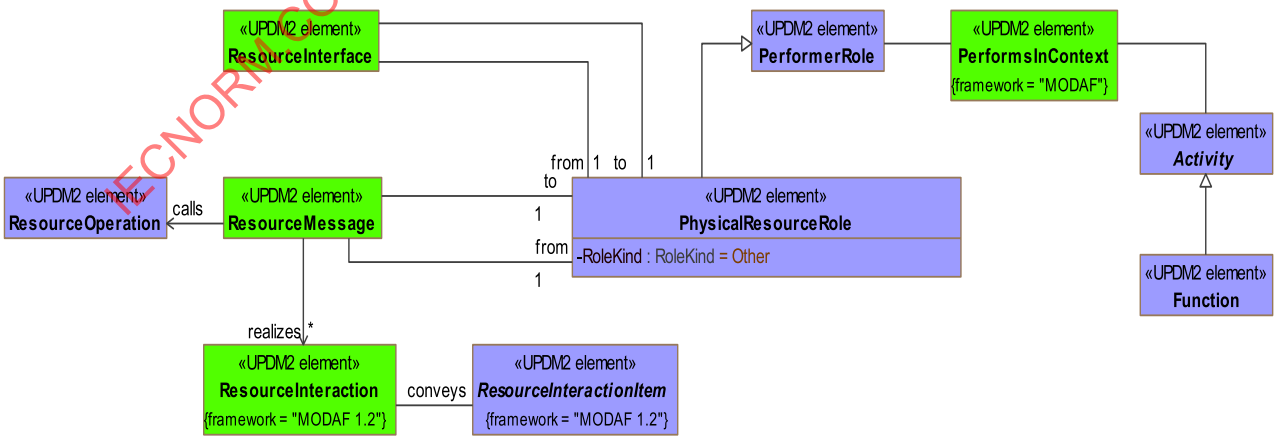

Figure A.35 - SV-10c/SvcV-10c - DMM

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A.2.6.5 SV-11/DIV-3 - DMM

MODAF: The SV-11 View defines the structure of the various kinds of system data that are utilized by the systems in the Architecture.

DoDAF: The DIV-3 Physical Data Model DoDAF-described view defines the structure of the various kinds of system or service data that are utilized by the systems or services in the Architecture.

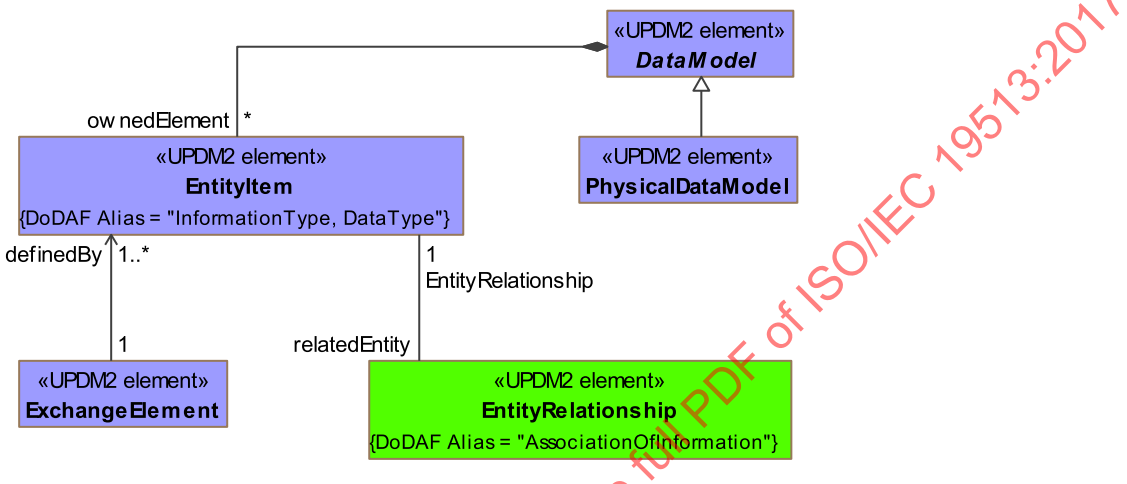

Figure A.36 - SV-11 - DMM

A.2.6.6 SV-12 - DMM

MODAF: The Service Provision View (SV-12) specifies configurations of resources that can deliver a service, and the levels of service those resources can deliver in different environments.

DoDAF: NA

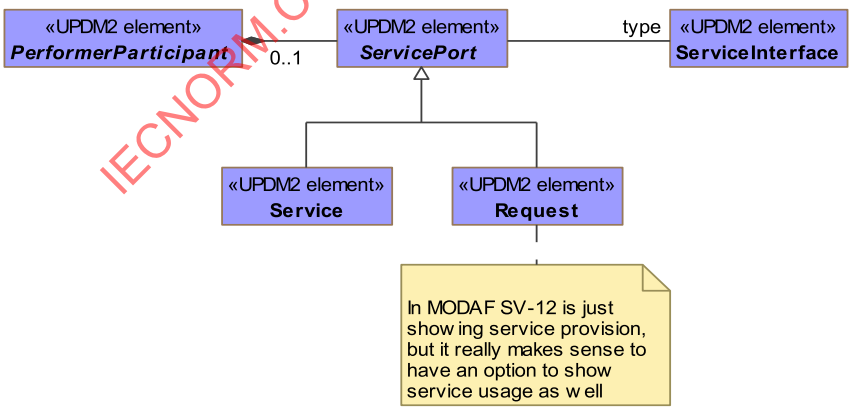

Figure A.37 - SV-12 - DMM

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A.2.6.7 SV-2/SvcV-2 - DMM

MODAF: The Systems Communications Description (SV-2a/2b/2c) series of views is intended for the representation of communications networks and pathways that link communications systems, and provides details regarding their configuration.

DoDAF: A Systems Resource Flow Description (SV-2) DoDAF-described View specifies the resource flows between Systems and may also list the protocol stacks used in connections.

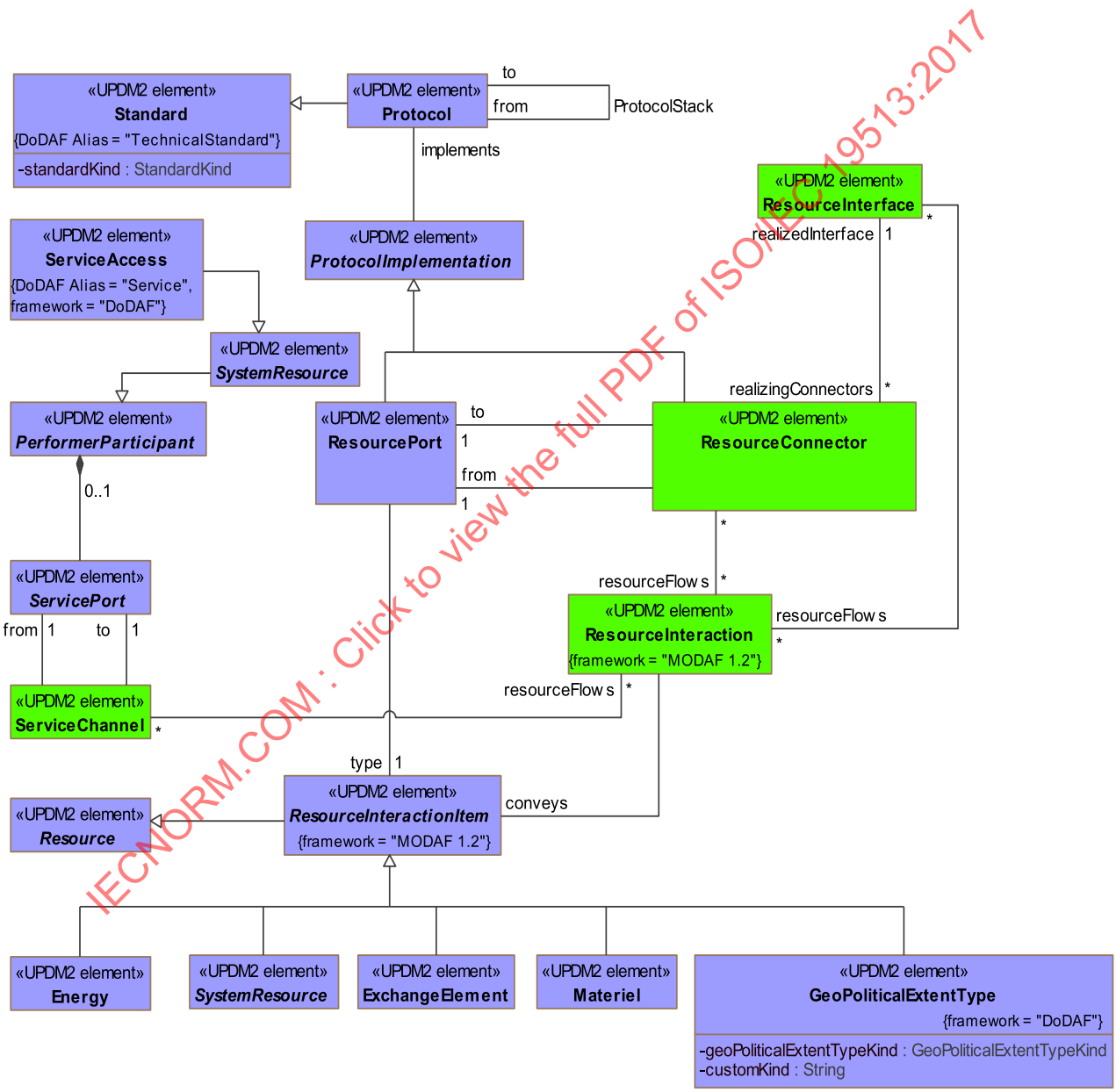

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Figure A.38 - SV-2/SvcV-2 - DMM

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A.2.6.8 SV-3/SvcV-3a/SvcV-3b - DMM

MODAF: The Resource Interaction Matrix provides a tabular summary of the resource interactions specified in the SV-1 for the Architecture.

DoDAF: The Systems - Systems Matrix (SV-3) DoDAF-described View provides a tabular summary of the system interactions specified in the SV-1 for the Architecture.

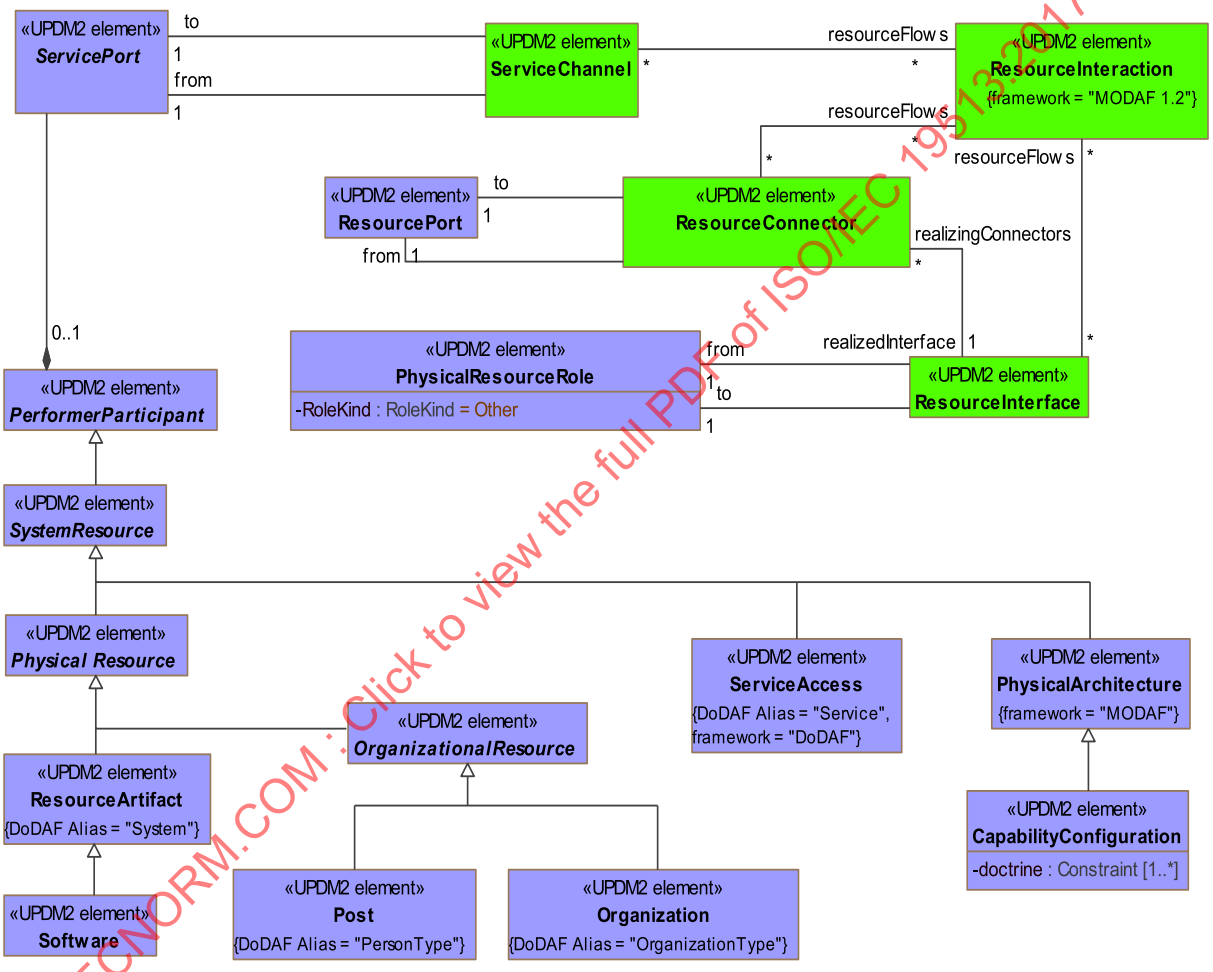

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Figure A.39 - SV-3/SvcV-3a/SvcV-3b - DMM

A.2.6.9 SV-4/SvcV-4 - DMM

MODAF: Functionality Descriptions (SV-4) address human and system functionality.

DoDAF: The Systems Functionality Description (SV-4) DoDAF-described View addresses human and system functionality.

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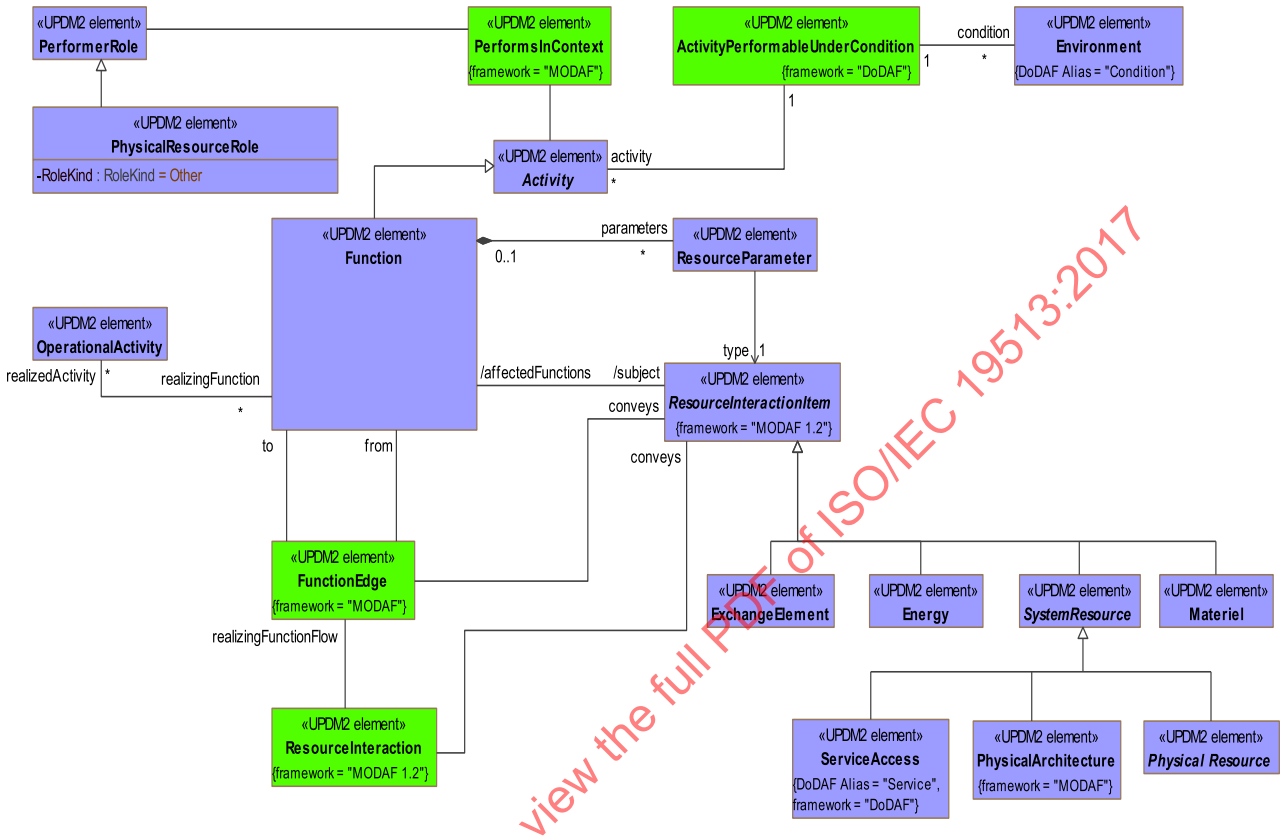

Figure A.40 - SV-4/SvcV-4 - DMM

A.2.6.10 SV-5/SvcV-5 - DMM

MODAF: SV-5 shows the Functions that implement the behavior of the OperationalActivities.

DoDAF: SV-5/ScvV Shows the SystemFunctions and Service that implement the behavior of the OperationalActivities.

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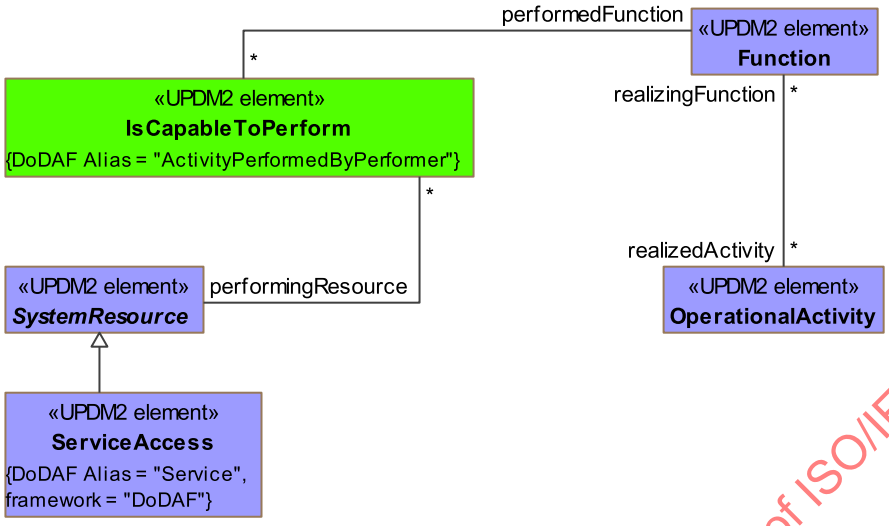

Figure A.41 - SV-5/SvcV-5 - DMM

A.2.6.11 SV-6 /SvcV-6 - DMM

MODAF: The Systems Data Exchange Matrix specifies the characteristics of the system data exchanged between systems. The focus is on data crossing the system boundary.

DoDAF: The Systems Resource Flow Exchange Matrix DoDAF-described View specifies the characteristics of the system resource flows exchanged between systems. The focus is on resource crossing the system boundary.

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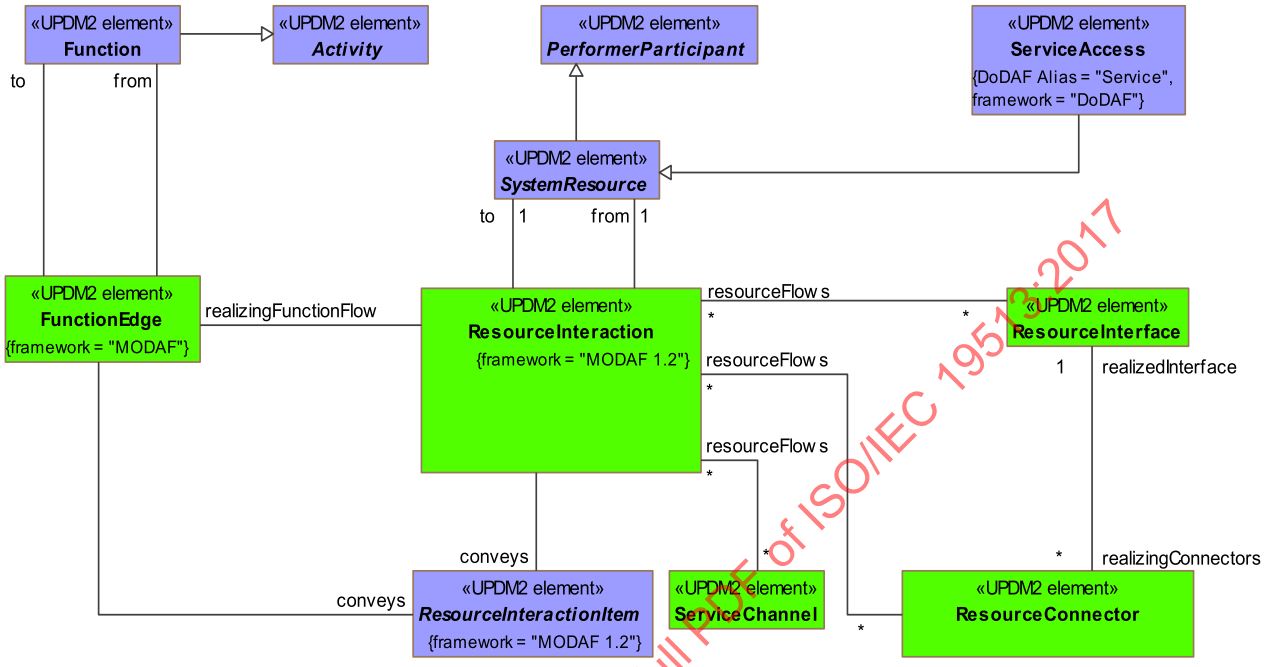

Figure A.42 - SV-6/SvcV-6 - DMM

A.2.6.12 SV-7/SvcV-7 - DMM

MODAF: The SV-7 is the Resource Performance Parameters Matrix and depicts the performance characteristics of a Resource (e.g., system, role or capability configuration).

DoDAF: The SV-7 DoDAF-described View is the Systems Measures Matrix and depicts the measures (metrics) of resources.

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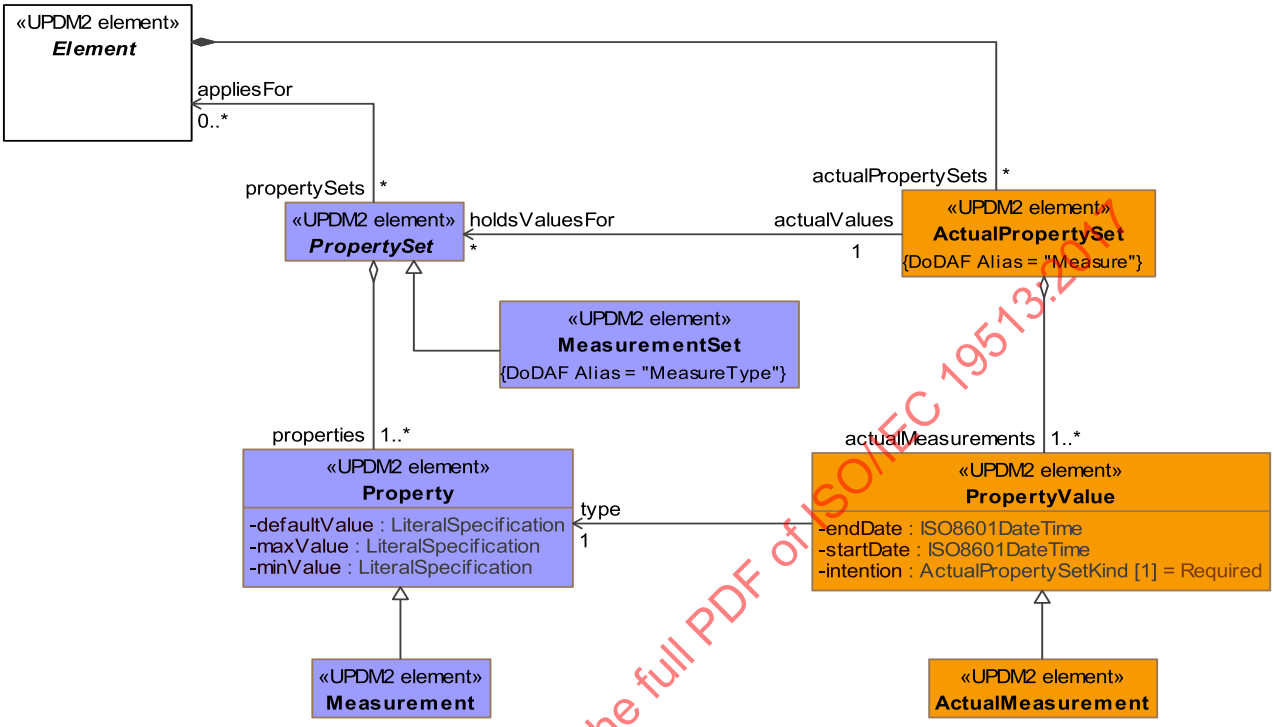

Figure A.43 - SV-7/SvcV-7 - DMM

A.2.6.13 SV-8/SvcV-8 - DMM

MODAF: The SV-8 provides an overview of how a capability configuration structure changes over time. It shows the structure of several capability configurations mapped against a timeline.

DoDAF: The Systems Evolution Description DoDAF-described View presents a whole lifecycle view of resources (systems), describing how it changes over time. It shows the structure of several resources mapped against a timeline.

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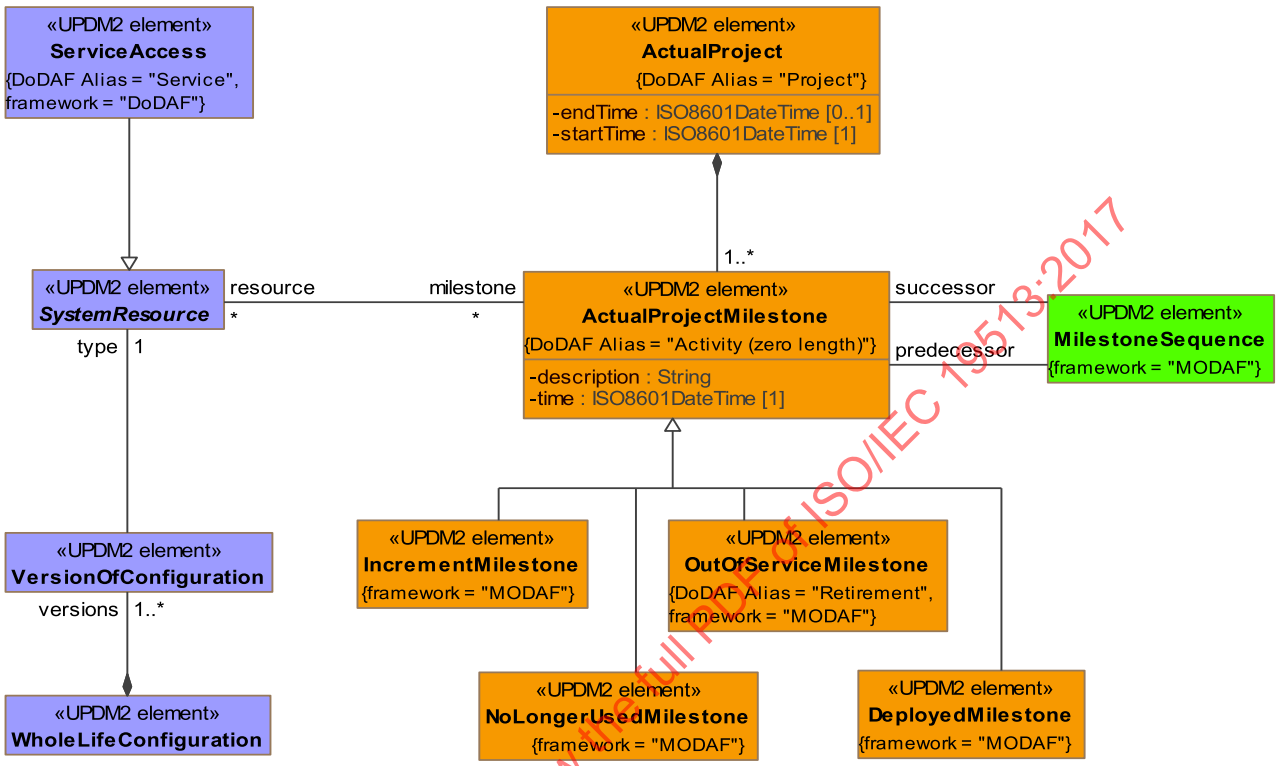

Figure A.44 - SV-8/SvcV-8 - DMM

A.2.6.14 SV-9/SvcV-9 - DMM

MODAF: The Technology & Skills Forecast defines the underlying current and expected supporting technologies and skills. Expected supporting technologies and skills are those that can be reasonably forecast given the current state of technology and skills, and expected improvements / trends. New technologies and skills will be tied to specific time periods, which can correlate against the time periods used in SV-8 milestones and linked to Enterprise Phases.

DoDAF: The Technology & Skills Forecast defines the underlying current and expected supporting technologies and skills. Expected supporting technologies and skills are those that can be reasonably forecast given the current state of technology and skills, and expected improvements / trends. New technologies and skills will be tied to specific time periods, which can correlate against the time periods used in SV-8 milestones and linked to Enterprise Phases.

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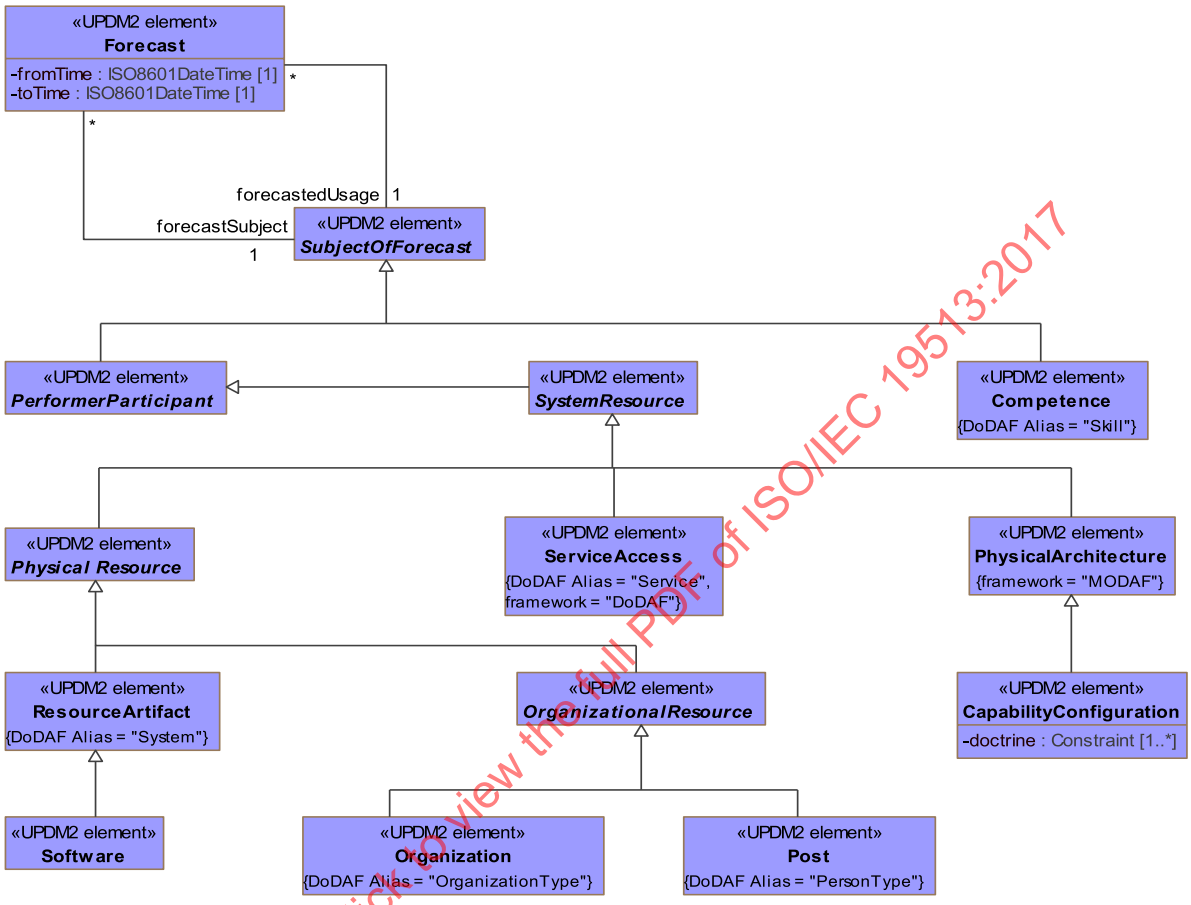

Figure A.45 - SV-9/SvcV-9 - DMM

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A.2.7 TV/StdV

The Technical View is a set of products delineating standards, rules, notations, and conventions that apply to the implementation of the system architecture. When the standards profile is tied to the system elements to which they apply, TV-1 serves as the bridge between the SV and TV. SV-9 forecasts relate to the TV-1 in that a timed technology forecast may contribute to the decision to retire or phase out the use of a certain standard in connection with a system element. Similarly, SV-9 forecasts relate to TV-2 standards forecasts in that a certain standard may be adopted depending on a certain technology becoming available (e.g., the availability of Java Script may influence the decision to adopt a new HTML standard).

MODAF extends the core DoDAF Technical Standards Views to include non-technical standards and policies applicable to the architecture such as operational doctrine, industry process standards, etc. Additionally, the TV-1 may also document policies and standards applicable to the operational or business context. MODAF also distinguishes between “applicability” and “conformance” with regard to architectural elements. If a standard is applicable to a given architecture, that architecture need not be fully conformant with the standard. The degree of conformance to a given standard may be judged on a risk basis at an approval point. An association between a Standard and an architectural element is not to be interpreted as stating the level of compliance of the element is fully compliant with that Standard.

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Additional evidences would need to be given (outside MODAF) to confirm the level of compliance. Finally, MODAF adds the explicit requirement that any Standards cited in TV-1 View must, where appropriate, be in accordance with the trend towards open architectures (i.e., standards which encourage stove-piped systems are expressly prohibited).

A.2.7.1 TV-1&2&3/StdV-1&2 - DMM

MODAF: Standards Profile (TV-1) defines the technical and non-technical standards, guidance, and policy applicable to the architecture.

The Standards Forecast (TV-2) contains expected changes in technology-related standards and conventions, which are documented in the TV-1 Product.

DoDAF: The Standards Profile StdV-1 DoDAF-described View defines the technical, operational, and business standards, guidance and policy applicable to the architecture.

The StdV-2 Standards Forecast DoDAF-described View contains expected changes in technology related standards, operational standards, or business standards and conventions, which are documented in the StdV-1 view.

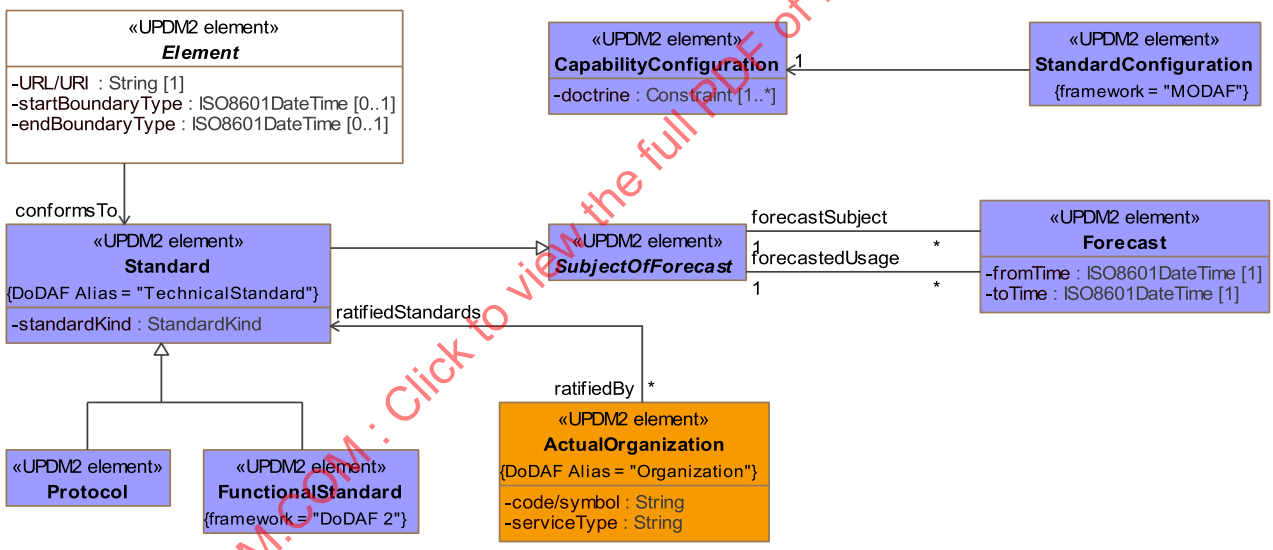

Figure A.46 - TV-1&2&3/StdV-1&2 - DMM

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A.3 SOPES

This sub clause shows the UPDM elements and relationships that are used to represent the SOPES metamodel in UPDM.

A.3.1 SOPES - DMM

The SOPES diagram shows the UPDM elements and the relationships that map to the concepts of the SOPES Metamodel.

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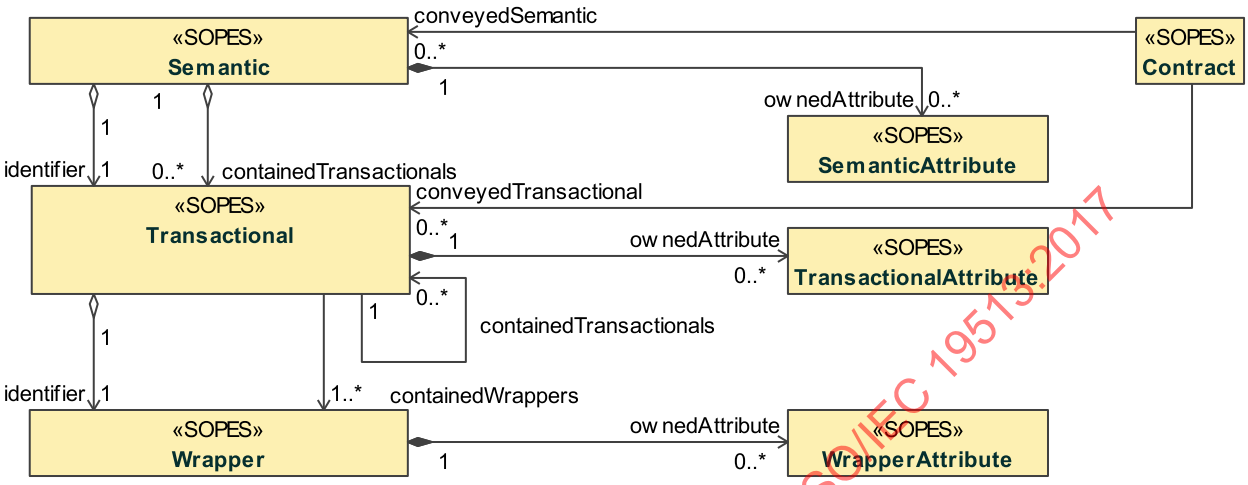

Figure A.47 - SOPES - DMM

A.4 SwAF

This sub clause shows the UPDM elements and relationships that are used to represent the Design Rules metamodel from NISP as submitted by Swedish Armed Forces (SWAF).

A.4.1 Design Rule - DMM

The Design Rule diagram shows the UPDM elements and the relationships that map to the concepts of the Design Rules metamodel from NISP as submitted by Swedish Armed Forces (SWAF).

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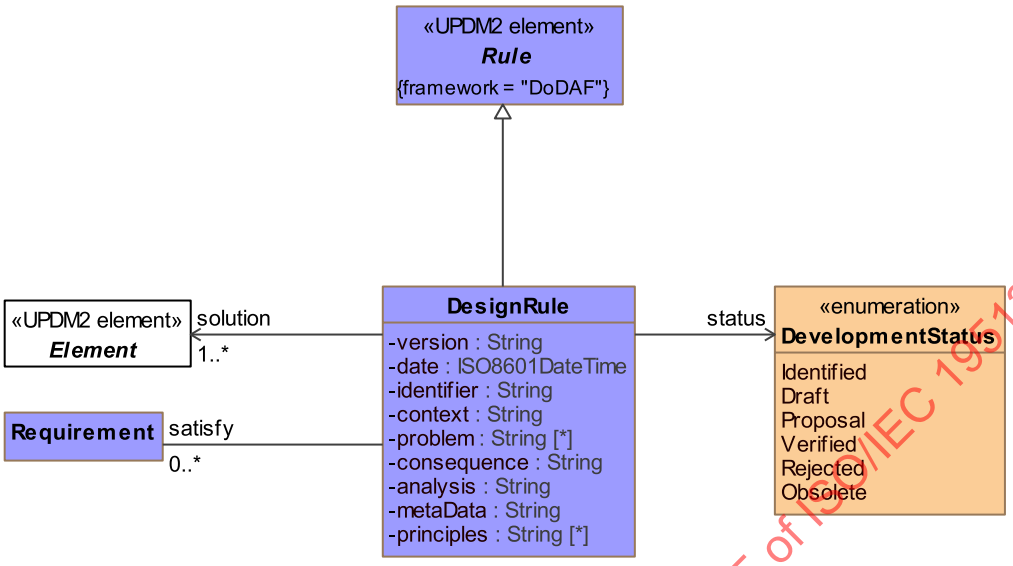

Figure A.48 - Design Rule - DMM

A.5 DM2

The DM2 sub clause gathers together UPDM Domain Meta Model elements and relationships into the same groupings of as detailed in the DoDAF 2.0.2 metamodel.

A.5.1 Activity - DM2

The Activity diagram shows the UPDM elements and the relationships that map to the concepts of Activity from the DoDAF 2.0.2 Metamodel.

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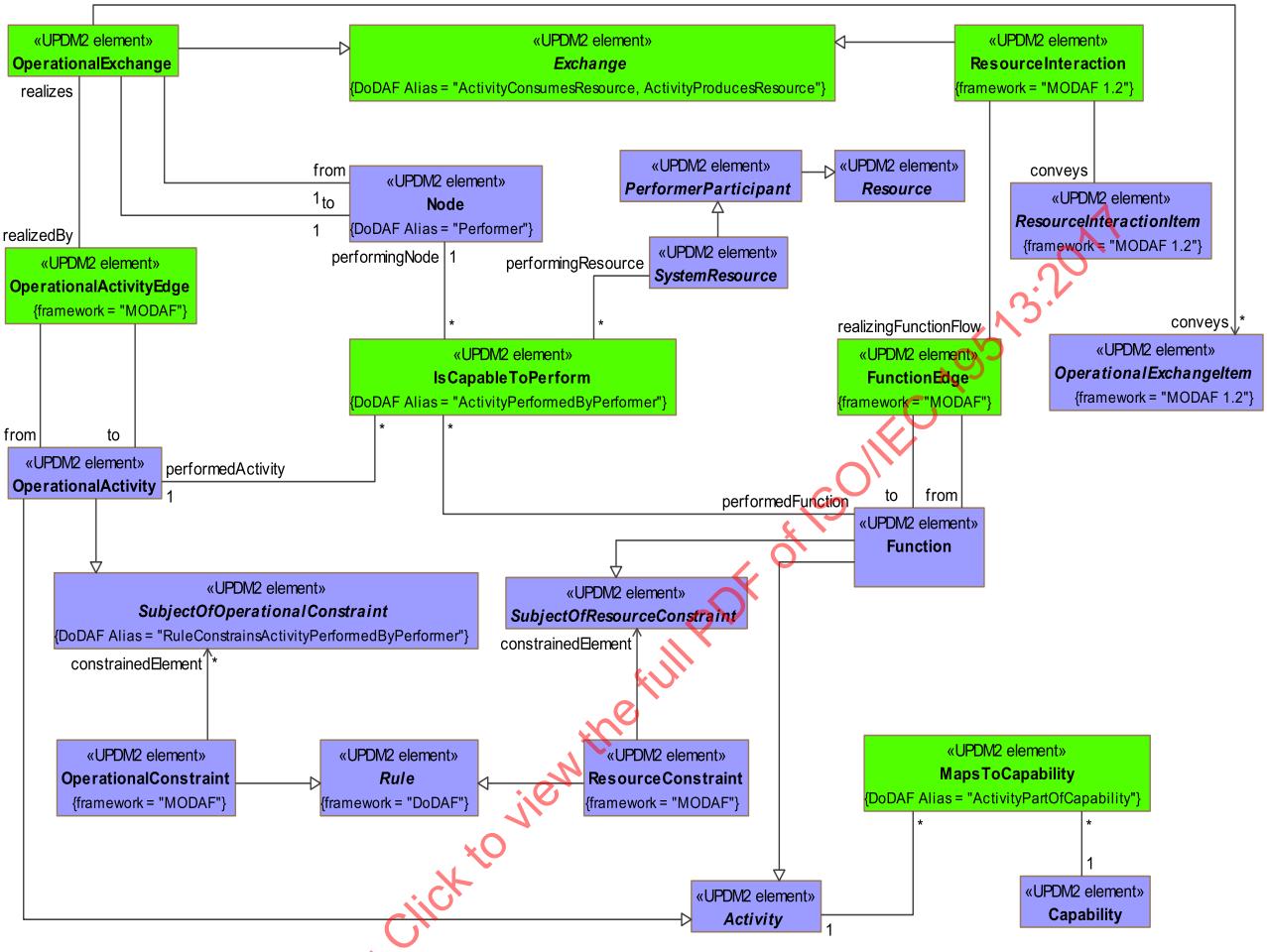

Figure A.49 - Activity - DM2

A.5.2 Capability - DM2

The Capability diagram shows the UPDM elements and the relationships that map to the concepts of Capability from the DoDAF 2.0.2 Metamodel.

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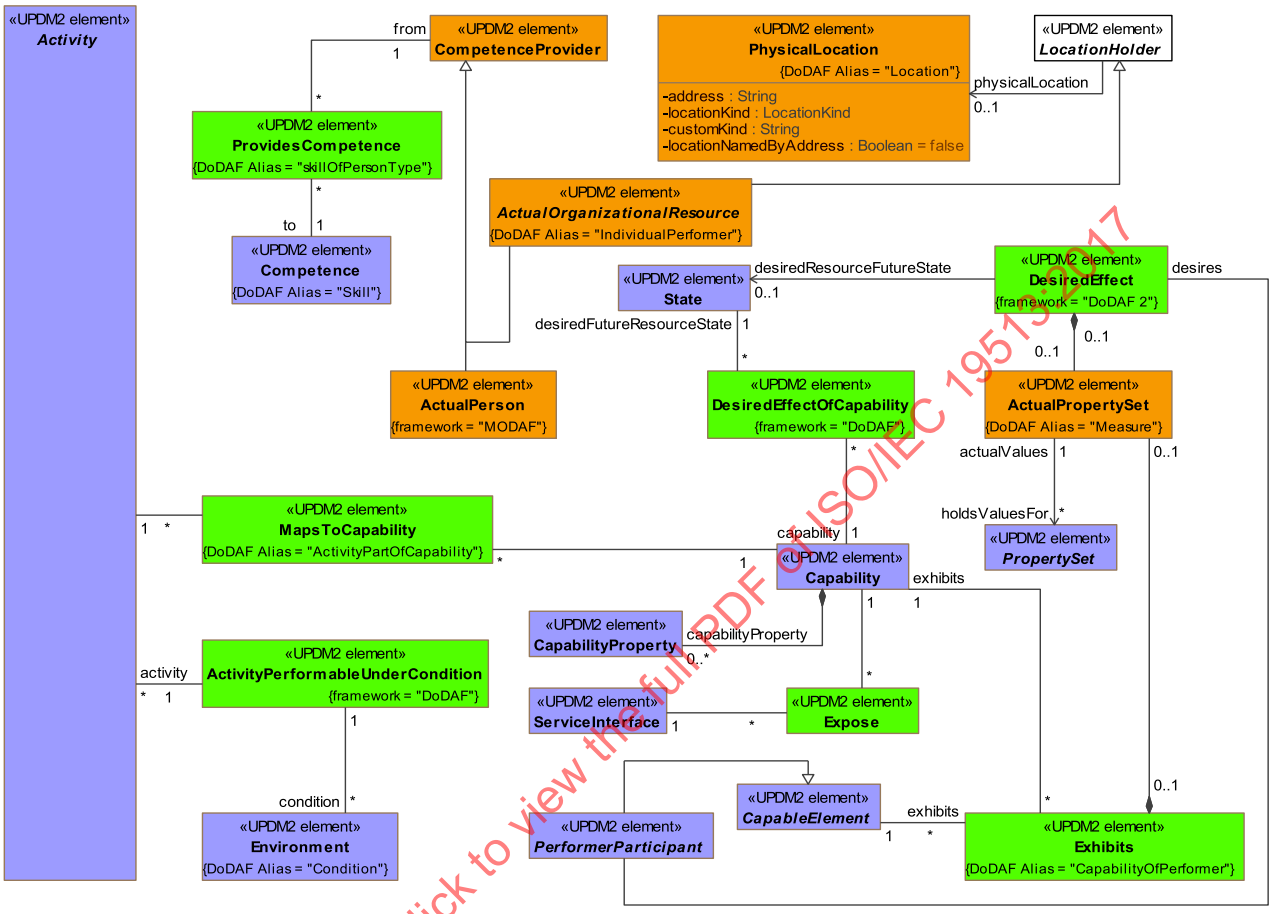

Figure A.50 - Capability - DM2

A.5.3 Goals - DM2

The Goals diagram shows the UPDM elements and the relationships that map to the concepts of Goals from the DoDAF 2.0.2 Metamodel.

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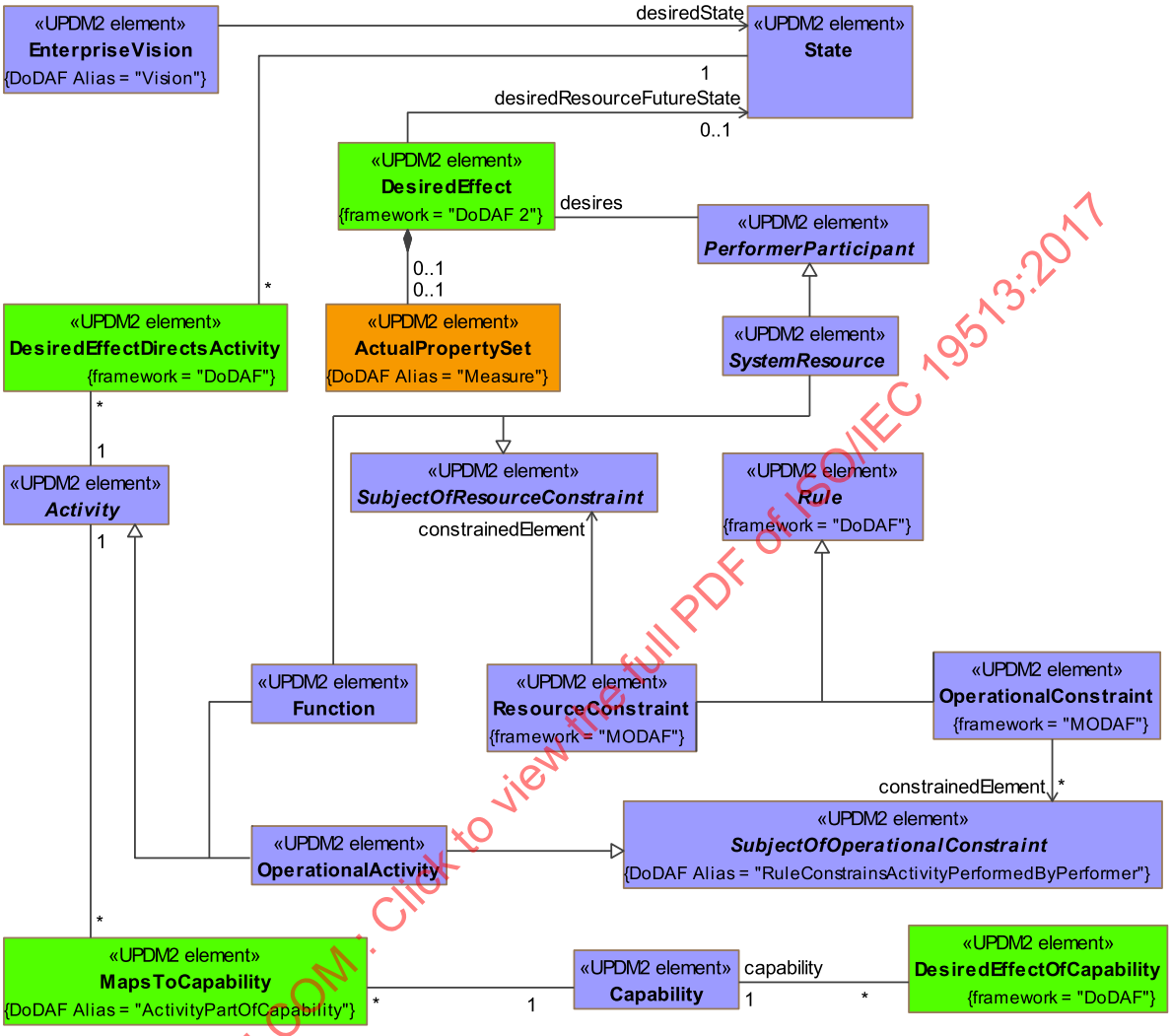

Figure A.51 - Goals - DM2

A.5.4 Information and Data - DM2

The Information and Data diagram shows the UPDM elements and the relationships that map to the concepts of Information and Data from the DoDAF 2.0.2 Metamodel.

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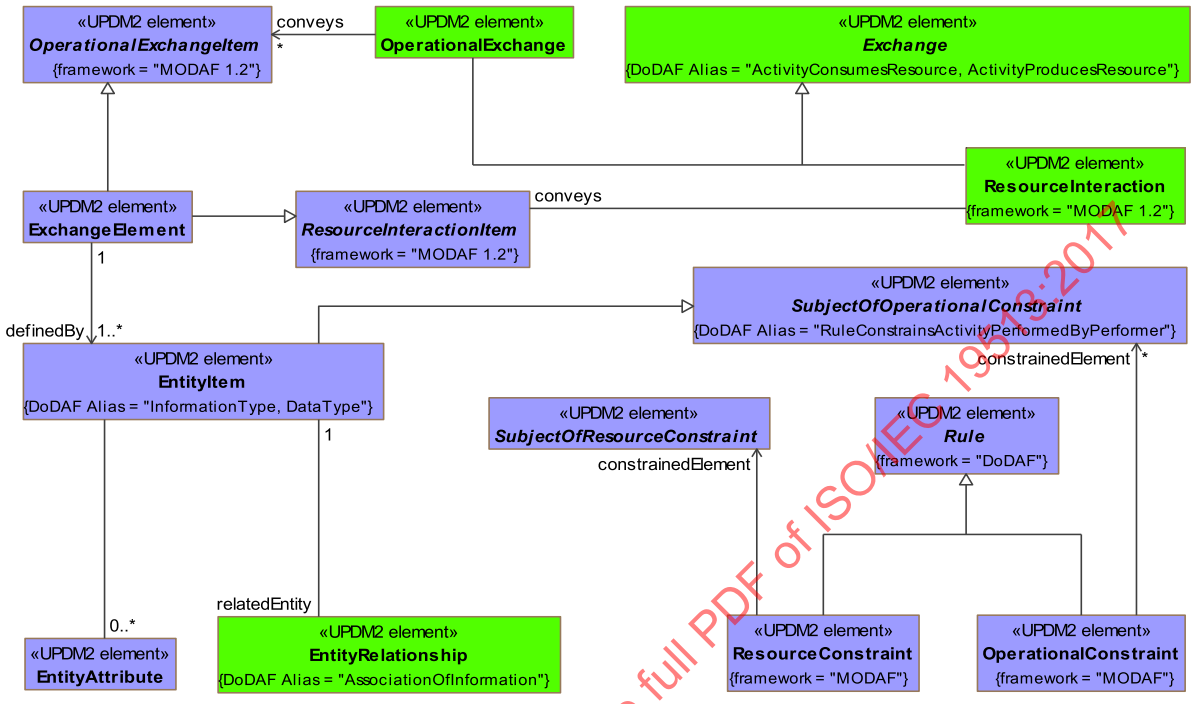

Figure A.52 - Information and Data - DM2

A.5.5 Information Pedigree - DM2

The Information Pedigree diagram shows the UPDM elements and the relationships that map to the concepts of Information Pedigree from the DoDAF 2.0.2 Metamodel.

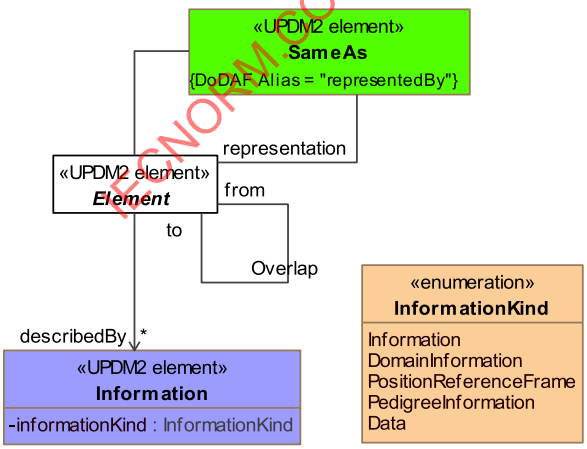

Figure A.53 - Information Pedigree - DM2

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A.5.6 Location - DM2

The Location diagram shows the UPDM elements and the relationships that map to the concepts of Location from the DoDAF 2.0.2 Metamodel.

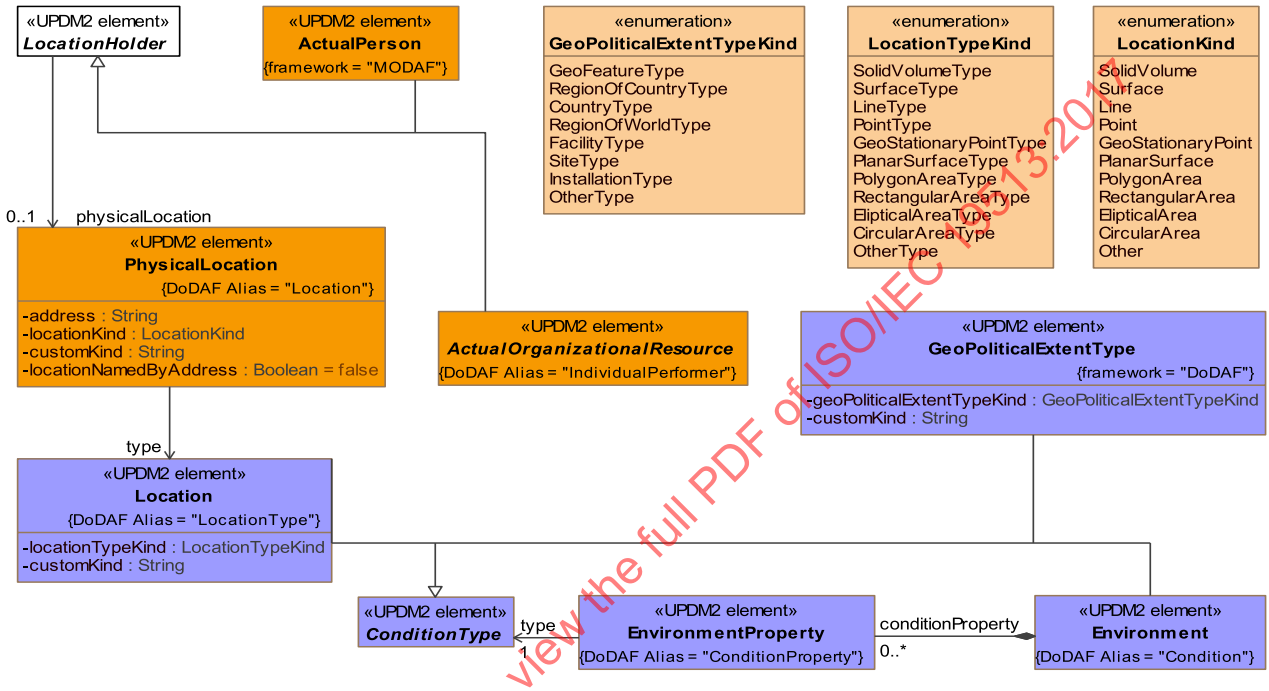

Figure A.54 - Location - DM2

A.5.7 Measure - DM2

The Measure diagram shows the UPDM elements and the relationships that map to the concepts of Measure from the DoDAF 2.0.2 Metamodel.

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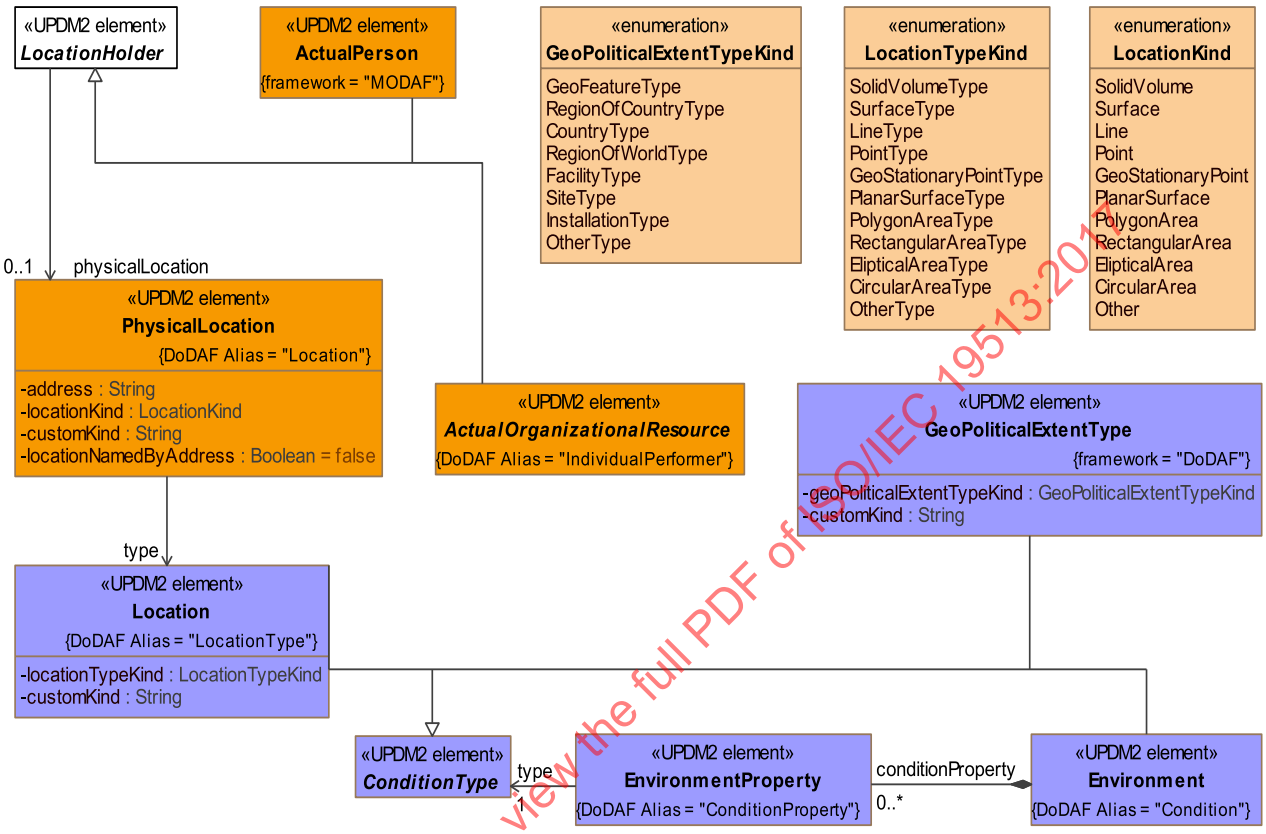

Figure A.55 - Measure - DM2

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A.5.8 Organizational Structure - DM2

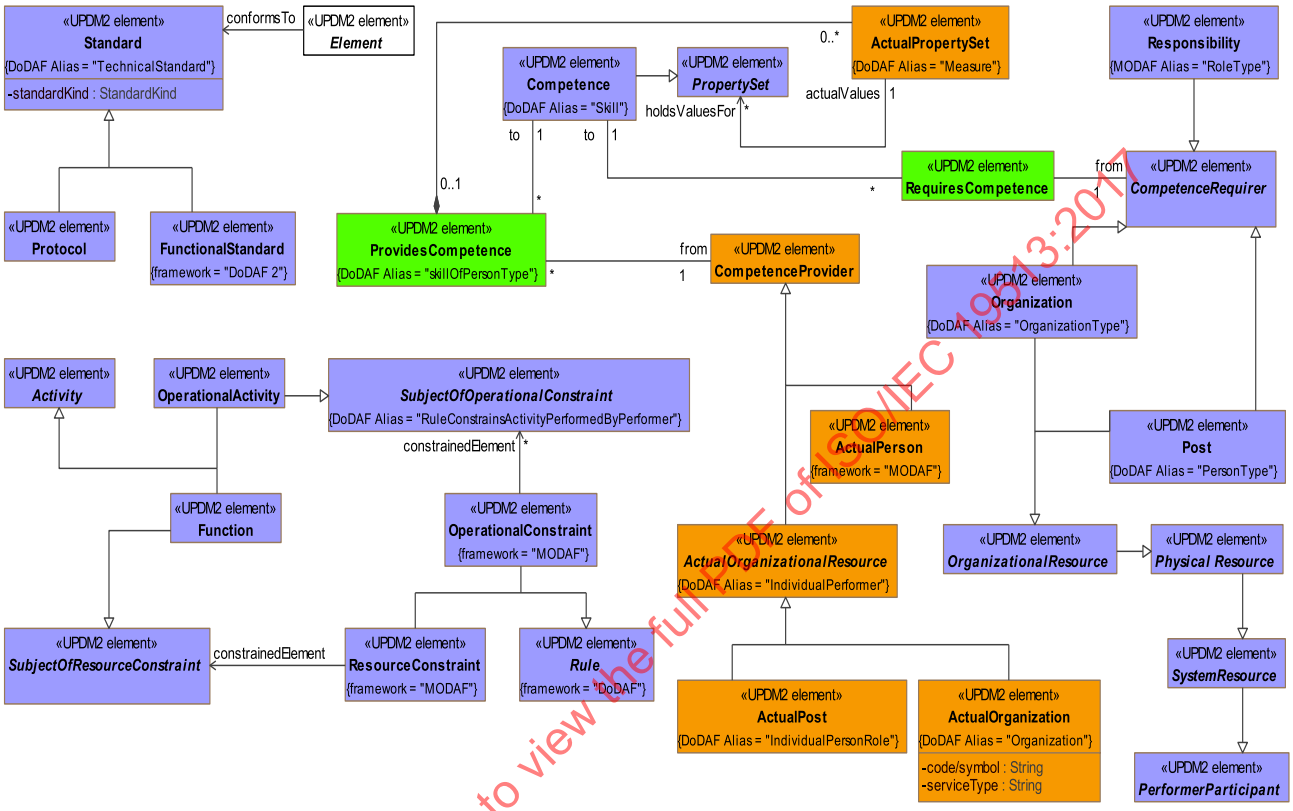

Figure A.56 - Organizational Structure - DM2

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A.5.9 Performer - DM2

The Performer diagram shows the UPDM elements and the relationships that map to the concepts of Performer from the DoDAF 2.0.2 Metamodel.

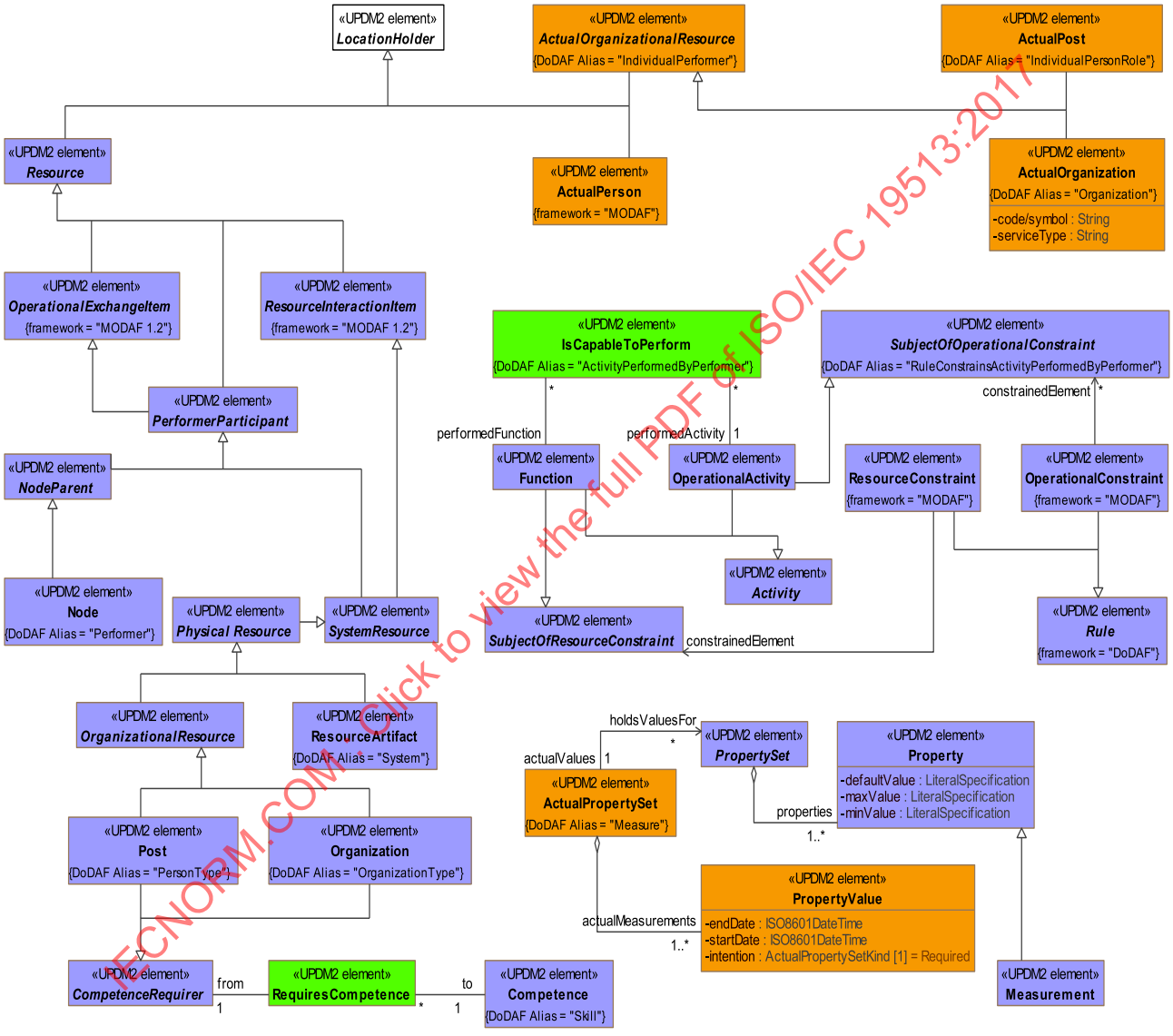

Figure A.57 - Performer - DM2

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A.5.10 Project - DM2

The Project diagram shows the UPDM elements and the relationships that map to the concepts of Project from the DoDAF 2.0.2 Metamodel.

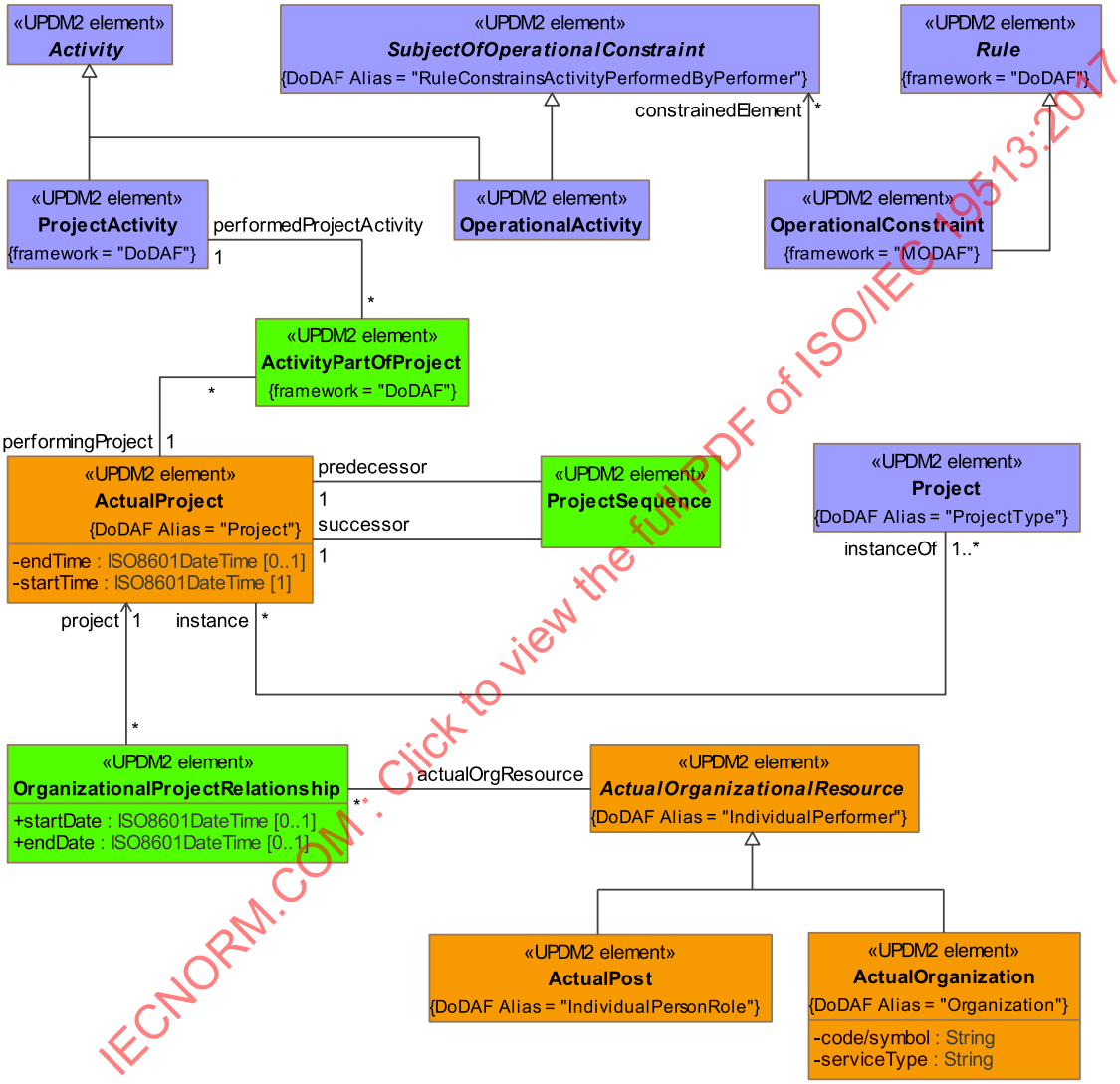

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Figure A.58 - Project - DM2

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A.5.11 Resource Flow - DM2

The Resource Flow diagram shows the UPDM elements and the relationships that map to the concepts of Resource Flow from the DoDAF 2.0.2 Metamodel.

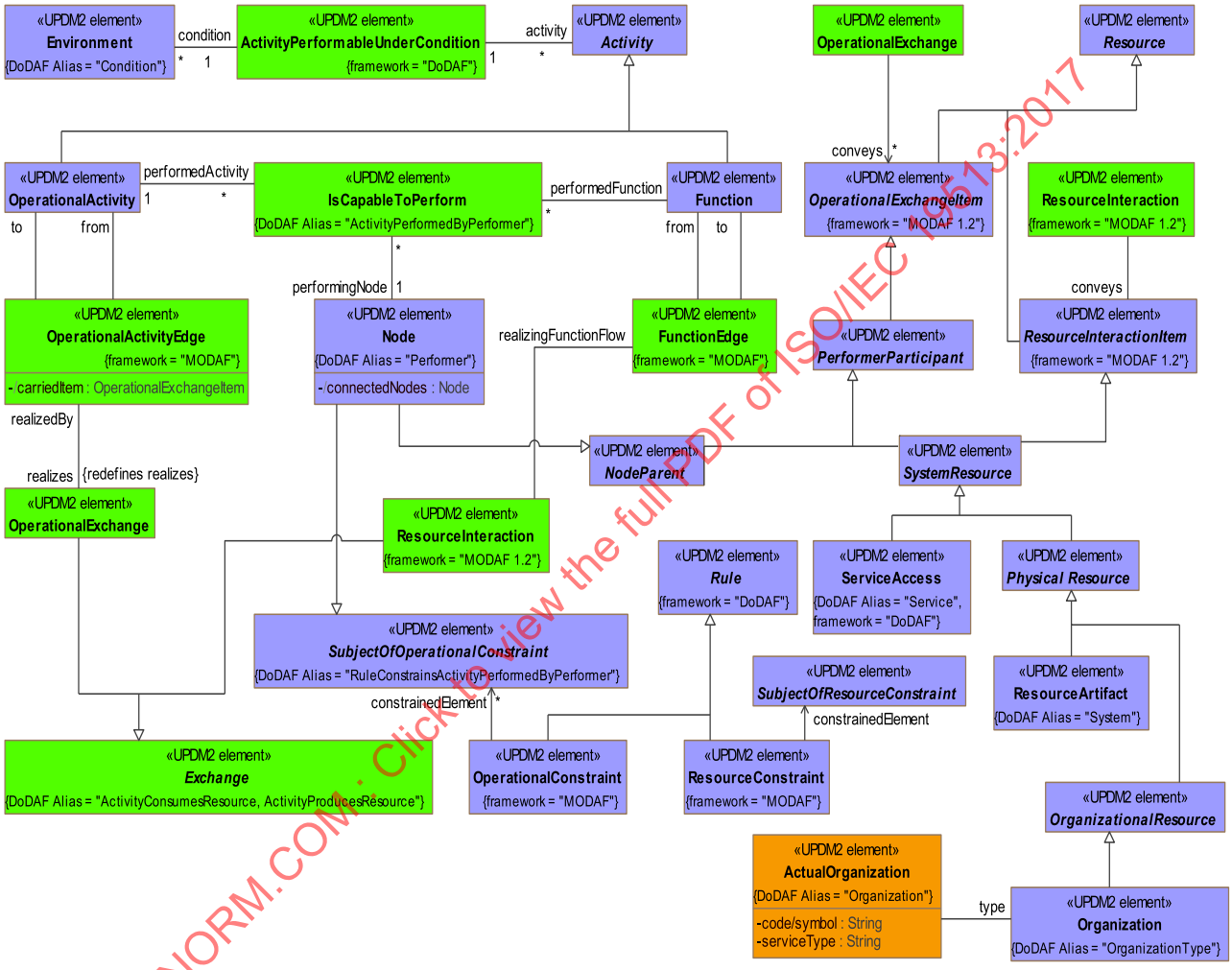

Figure A.59 - Resource Flow - DM2

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A.5.12 Rules - DM2

The Rules diagram shows the UPDM elements and the relationships that map to the concepts of Rules from the DoDAF 2.0.2 Metamodel.

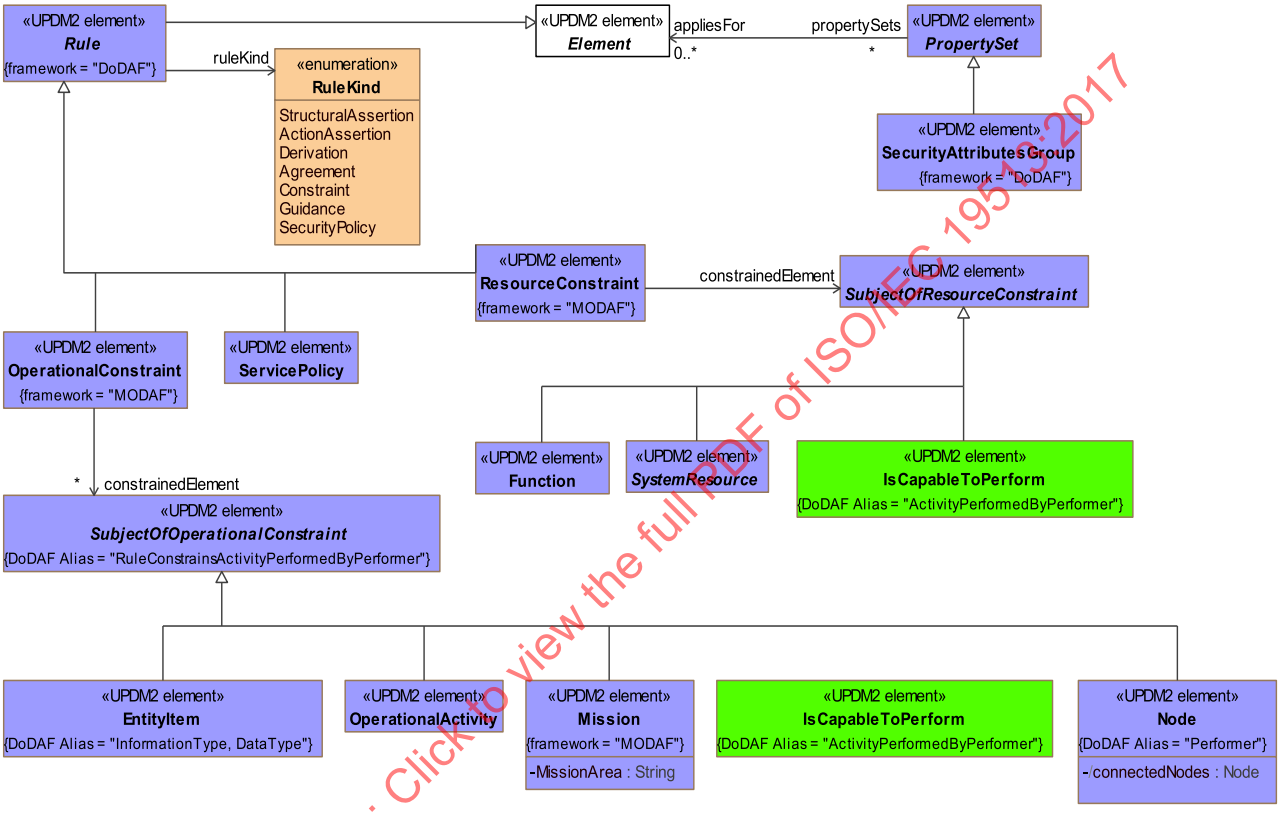

Figure A.60 - Rules - DM2

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A.5.13 Services - DM2

The Services diagram shows the UPDM elements and the relationships that map to the concepts of Services from the DoDAF 2.0.2 Metamodel.

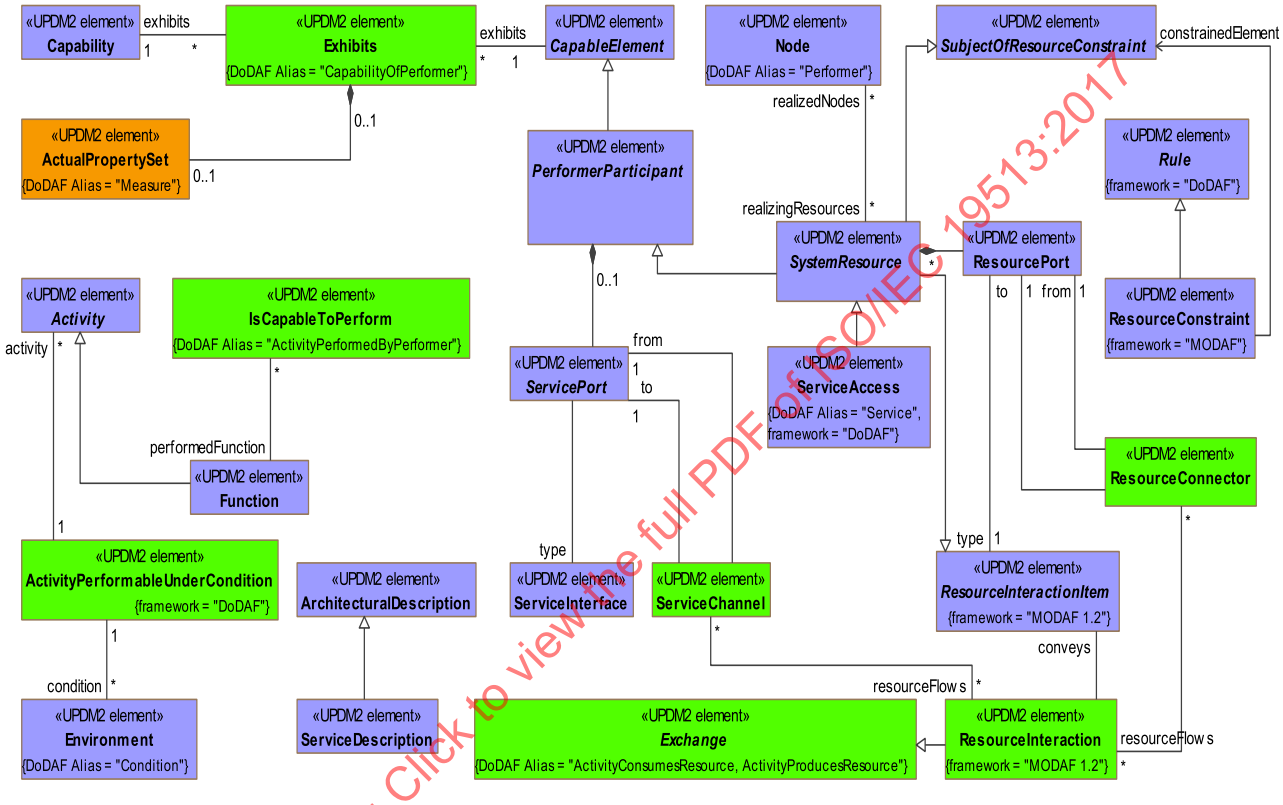

Figure A.61 - Services - DM2

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Annex B: UPDM Views (Profile)

(non-normative)

B.1 Introduction

This Annex is intended as non-normative guidance for developers and users as to what UPDM elements and relationships are applicable for each of the UPDM Views.

B.2 Products

MODAF: A connected and coherent set of Architectural Elements which conform to a View.

DoDAF Alias: View: DoDAF divides the problem space into manageable pieces, according to the stakeholder's Viewpoint, further defined in the framework as "Views."

B.2.1 AcV/PV

MODAF: The Acquisition Views (AcVs) describe programmatic details, including dependencies between projects and capability integration across the all the DLODs. These Views guide the acquisition and fielding processes.

DoDAF: Project Views (PV) within the Project Viewpoint describe projects, how those projects deliver capabilities, the organizations contributing to the projects and dependencies between projects.

B.2.1.1 AcV-1/PV-1

MODAF: AcV-1 view products represent an organizational perspective on projects.

DoDAF: AcV-1 view [DoDAF::Project Portfolio Relationships (PV-1) DoDAF-described View] represents an organizational perspective on programs, projects, or a portfolio of projects.

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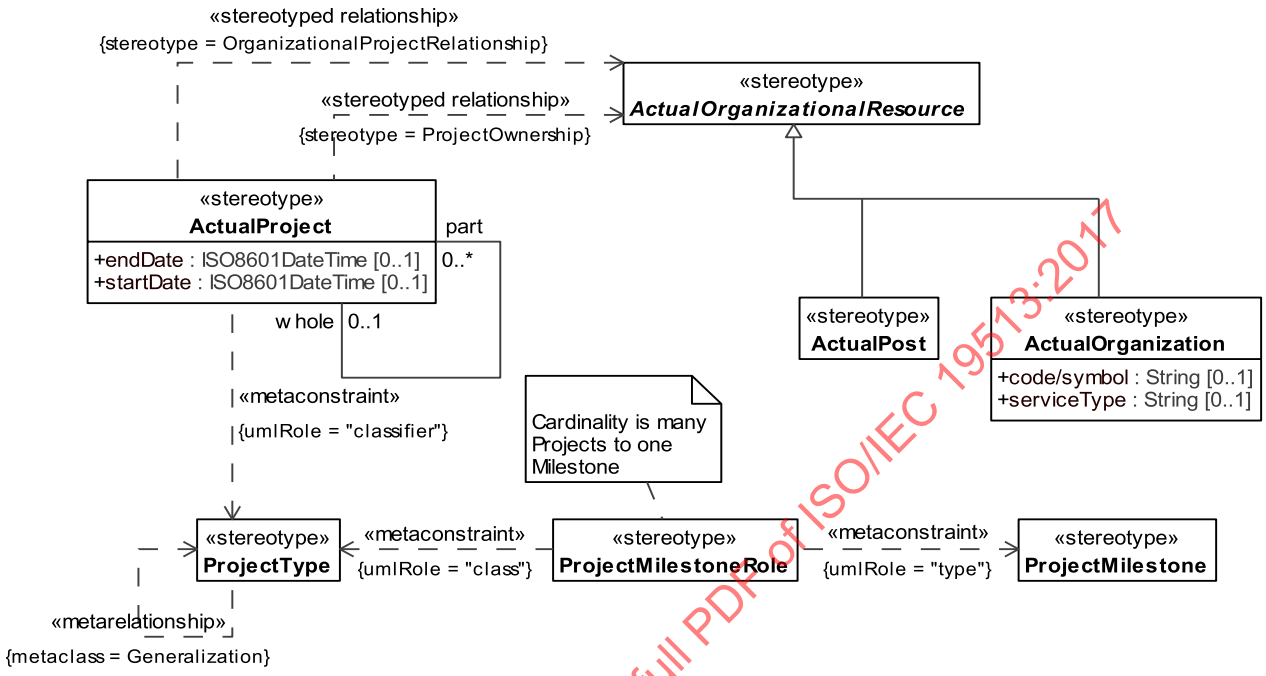

Figure B.1 - AcV-1/PV-1

B.2.1.2 AcV-2/PV-2

MODAF: AcV-2 view products provide a timeline perspective on projects.

DoDAF: AcV-2 (DoDAF::PV-2: Project Timelines DoDAF-described View) provides a timeline perspective on programs or projects.

IncrementMilestone and OutOfServiceMilestone are both tied to a particular SystemResource, this implies that the connection to a given SystemResource indicates how the pairing should be made. All in all there are 4 different milestones for which there is an implied order. This order is however not enforced by the framework and needs to be dealt with by the architect. The rules for this ordering are as follows:

- IncrementMilestone:
  Has to be associated with a date that precedes all milestones below for a specified uniquely identifiable SystemResource.
- DeployedMilestone:
  Has to be associated with a date that occurs after the IncrementMilestone and associated the SystemResource with a specific Organization.
- NoLongerUsedMilestone:
  Has to be associated with a date that occurs after the DeployedMilestone for a specific SystemResource, Organization combination. This milestone cannot exist if the DeployedMilestone does not exist for the same given SystemResource, Organization combination.
- OutOfServiceMilestone:

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Has to be associated with date that occurs after or at the same time as the latest NoLongerUsedMilestone for the uniquely identifiable SystemResource and requires that no organization still has this system resource deployed (or after the IncrementMilestone if the SystemResource was never deployed to any organization before being put outOfService).

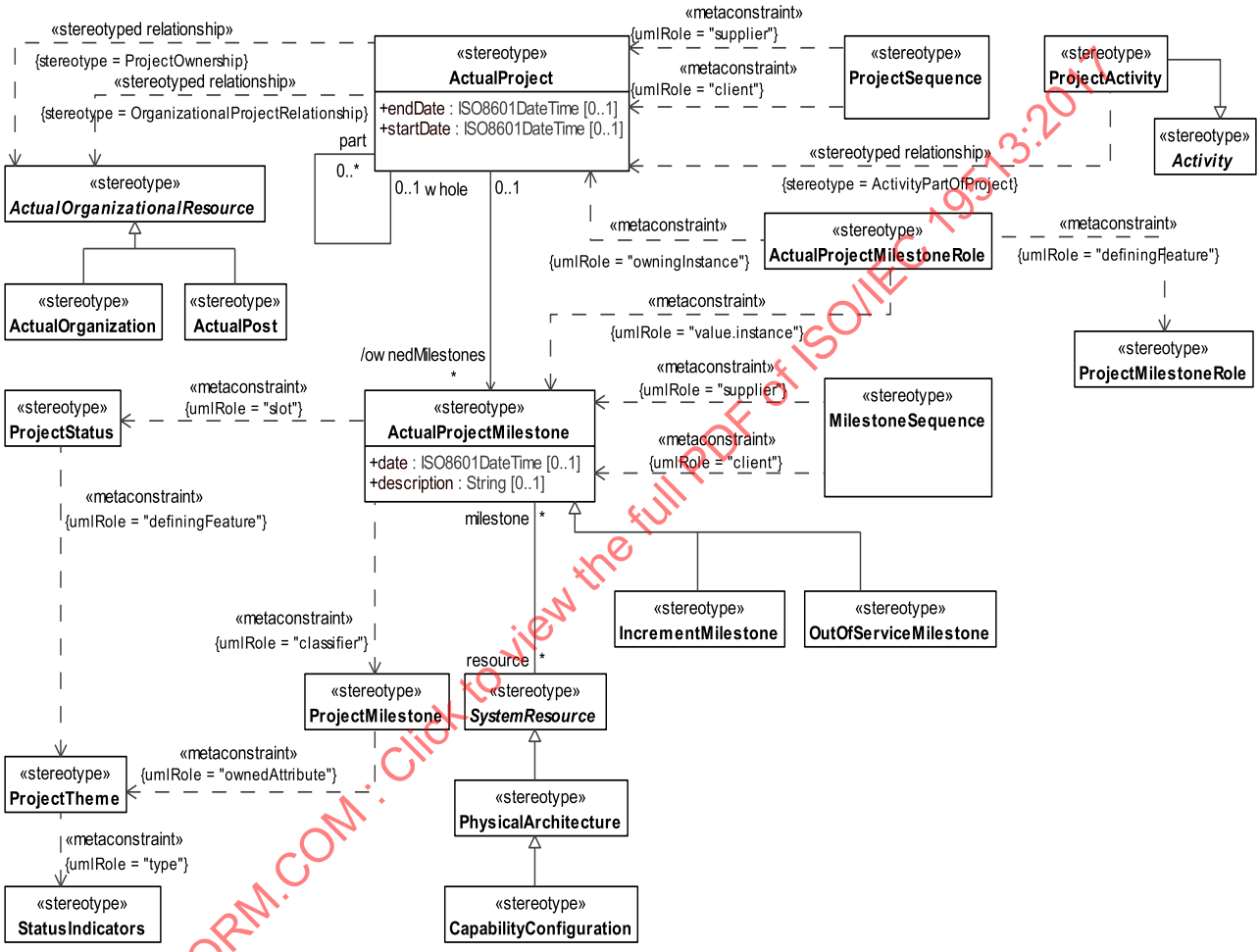

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Figure B.2 - AcV-2/PV-2

B.2.1.3 PV-3 Derived from Project Activity

MODAF: NA

DoDAF: PV-3 diagram indicates the Capabilities that are realized by a particular project.

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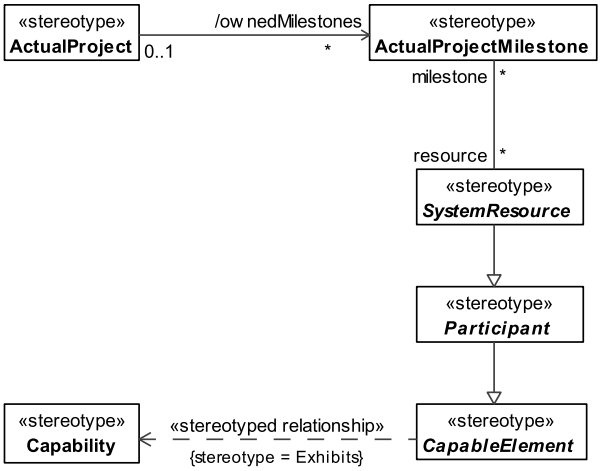

Figure B.3 - PV-3 Derived from Project Activity

B.2.1.4 PV-3 Derived from Project Milestones

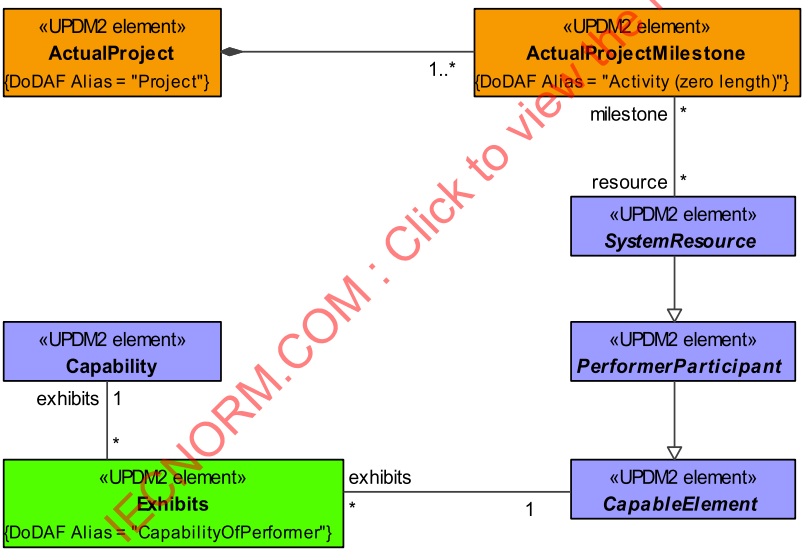

Figure B.4 - PV-3 Derived from Project Milestones

B.2.2 AV

MODAF: All View products provide information pertinent to the entire Architecture. They present supporting information rather than architectural models.

DoDAF: There are some overarching aspects of an architecture that relate to the entire architecture being developed. These overarching aspects are captured in the All Viewpoint (AV) DoDAF-described views.

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B.2.2.1 AV-1

MODAF: The overview and summary information contained within the AV-1 product provides executive-level summary information in a consistent form that allows quick reference and comparison between architectural descriptions. AV-1 includes assumptions, constraints, and limitations that may affect high-level decisions relating to an architecture-based work program.

DoDAF: The overview and summary information contained within the AV-1 DoDAF-described View provides executive-level summary information in a consistent form that allows quick reference and comparison between architectural descriptions. The AV-1 includes assumptions, constraints, and limitations that may affect high-level decisions relating to an architecture-based work program.

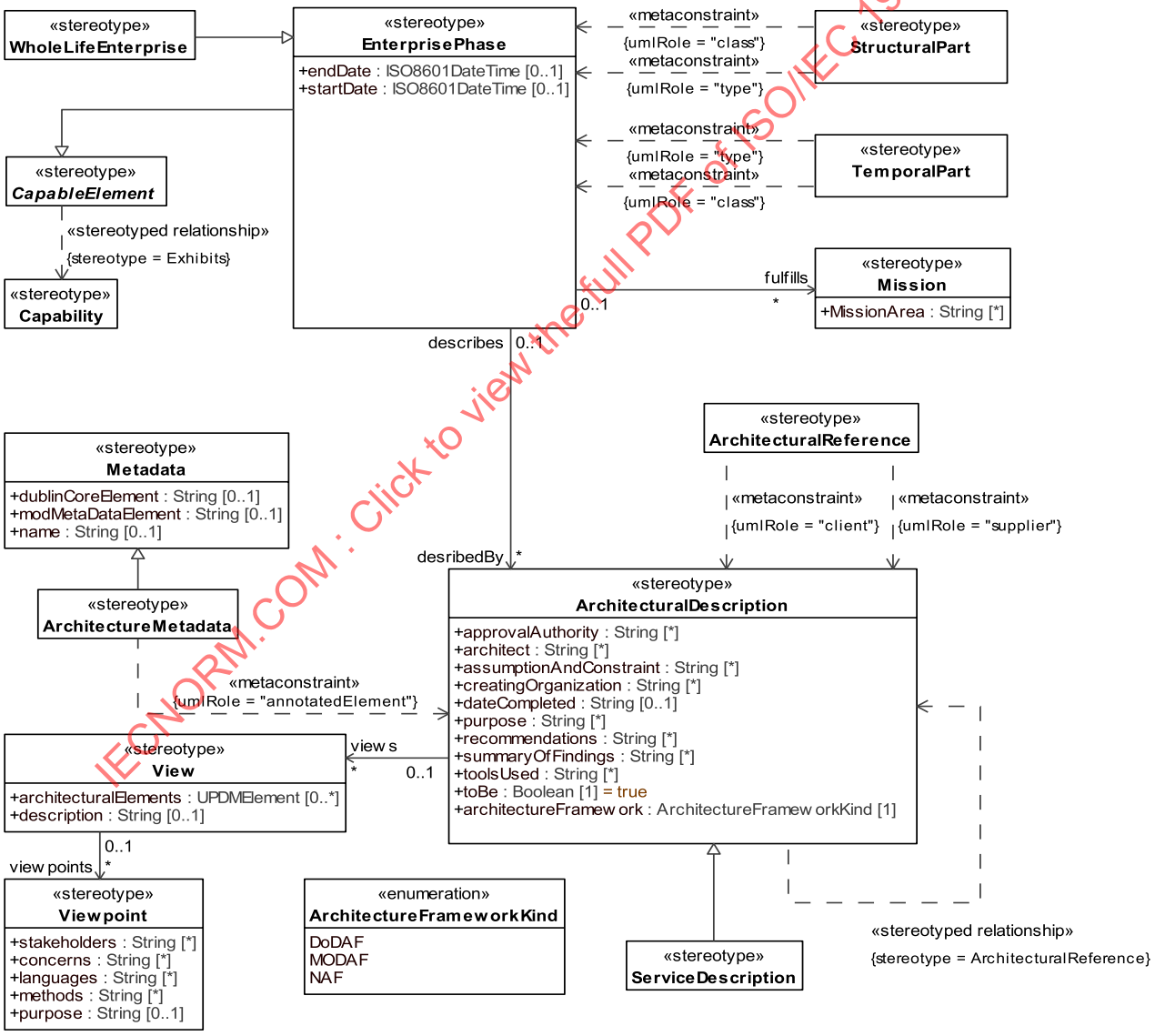

Figure B.5 - AV-1

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B.2.2.2 AV-2

MODAF: AV-2 presents all the Elements used in an architecture as a stand alone structure. An AV-2 presents all the Elements as a specialization hierarchy, provides a text definition for each one and references the source of the element (e.g., MODAF Ontology, IDEAS Model, local, etc.). An AV-2 shows elements from the MODAF Ontology that have been used in the architecture and new elements (i.e., not in the MODAF Ontology) that have been introduced by the architecture.

DoDAF: The AV-2 presents all the metadata used in an architecture as a standalone structure. An AV-2 presents all the metadata as a specialization hierarchy, provides a text definition for each one and references the source of the element (e.g., DoDAF Meta-model, IDEAS, a published document or policy). An AV-2 shows elements from the DoDAF Meta-model that have been used in the architecture and new elements (i.e., not in the DoDAF Meta-model) that have been introduced by the architecture.

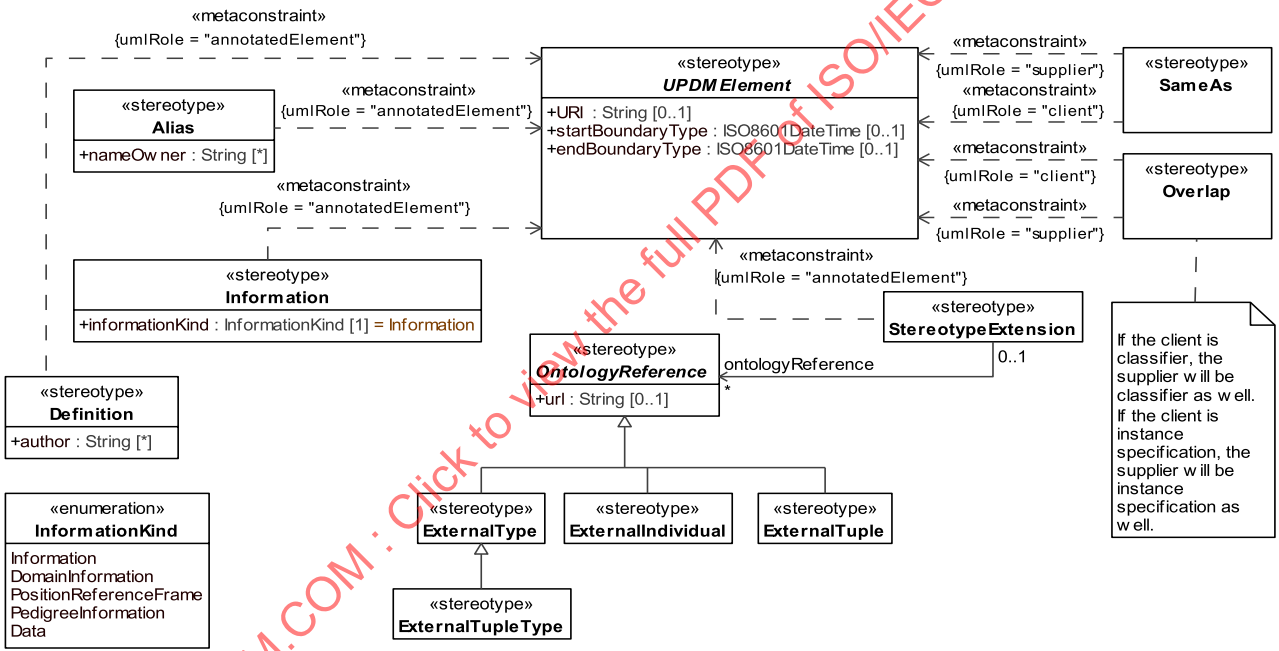

Figure B.6 - AV-2

B.2.2.3 Environment Elements

The Environments diagram shows the elements and relationships that are involved in defining the environments applicable to capability, operational concept, or set of systems.

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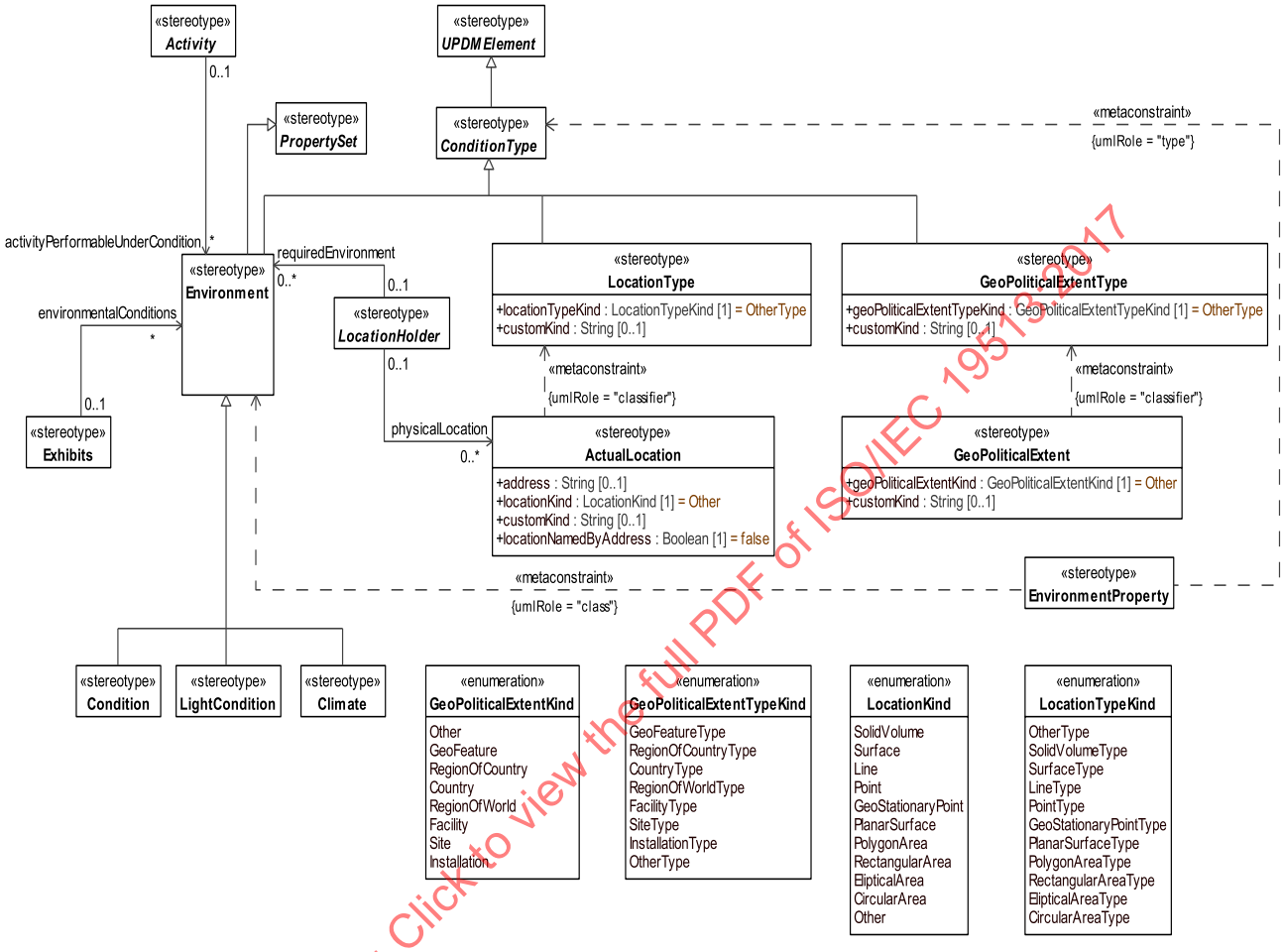

Figure B.7 - Environment Elements

B.2.2.4 Measurements

Shows the measurable properties of something in the physical world, expressed in amounts of a unit of measure that can be associated with a UPDMElement.

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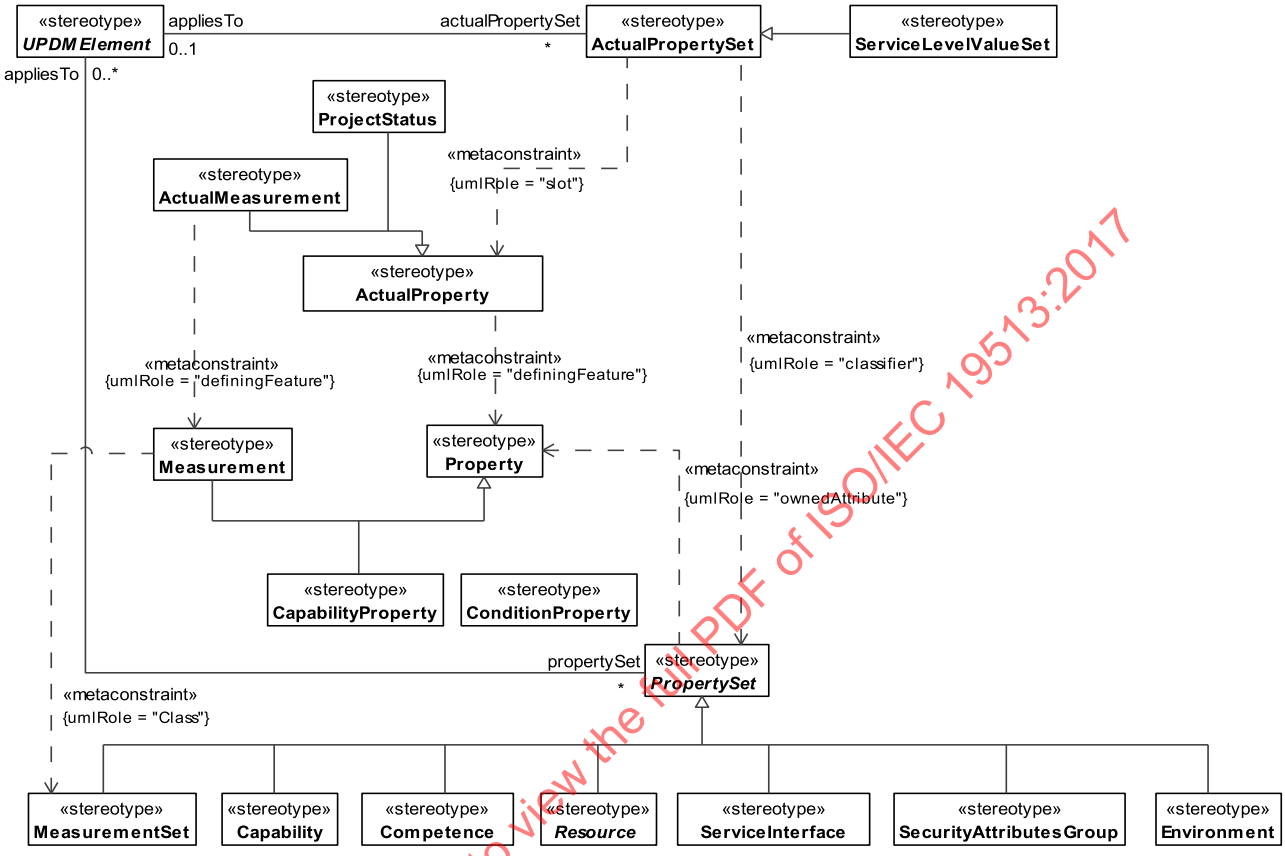

Figure B.8 - Measurements

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B.2.3 OV

MODAF: Operational Views describe the tasks and activities, operational elements, and information exchanges required to conduct operations. In MODAF thinking, the OV Views are considered to illustrate the Logical Architecture of the enterprise.

DoDAF: Operational Views within the Operational Viewpoint describe the tasks and activities, operational elements, and resource flow exchanges required to conduct operations. A pure operational view is materiel independent.

B.2.3.1 OV-1

MODAF: OV-1 addresses the high level operational concepts related to one or more missions. An OV-1 describes a mission, class of mission, or scenario; and highlights the main operational elements and interesting or unique aspects of operations.

The OV-1 has two purposes. First, it provides a means of organizing the operational architecture models into distinct groups based on scenario context. Second, it communicates the essence of the scenario context in an essentially graphical form.

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DoDAF: The OV-1 DoDAF-described View describes a mission, class of mission, or scenario. It shows the main operational concepts and interesting or unique aspects of operations. It describes the interactions between the subject architecture and its environment, and between the architecture and external systems. A textual description accompanying the graphic is crucial. Graphics alone are not sufficient for capturing the necessary architecture data.

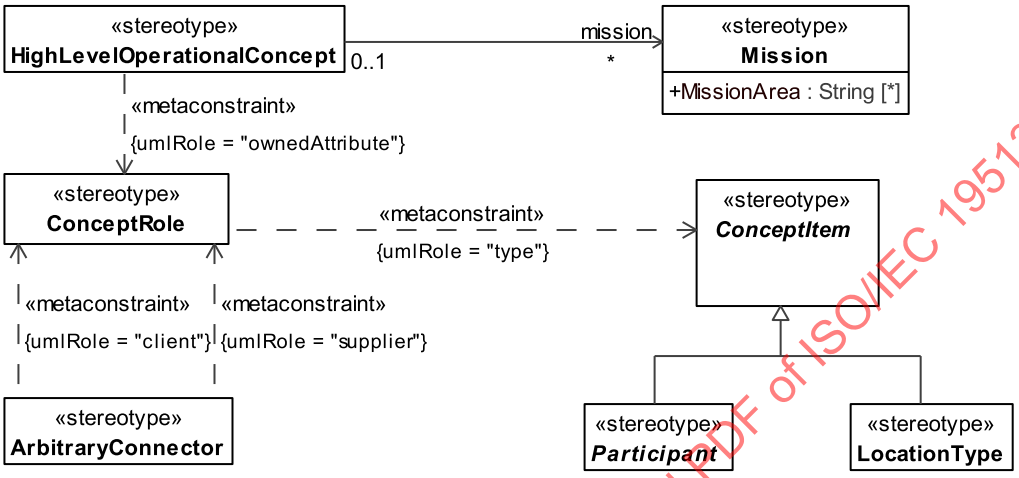

Figure B.9 - OV-1

B.2.3.2 OV-2

MODAF: The Operational Node Relationships Description (OV-2) addresses localization of operational capability.

DoDAF: The Operational Resource Description (OV-2) DoDAF-described View applies the context of the operational capability to a community of anticipated users.

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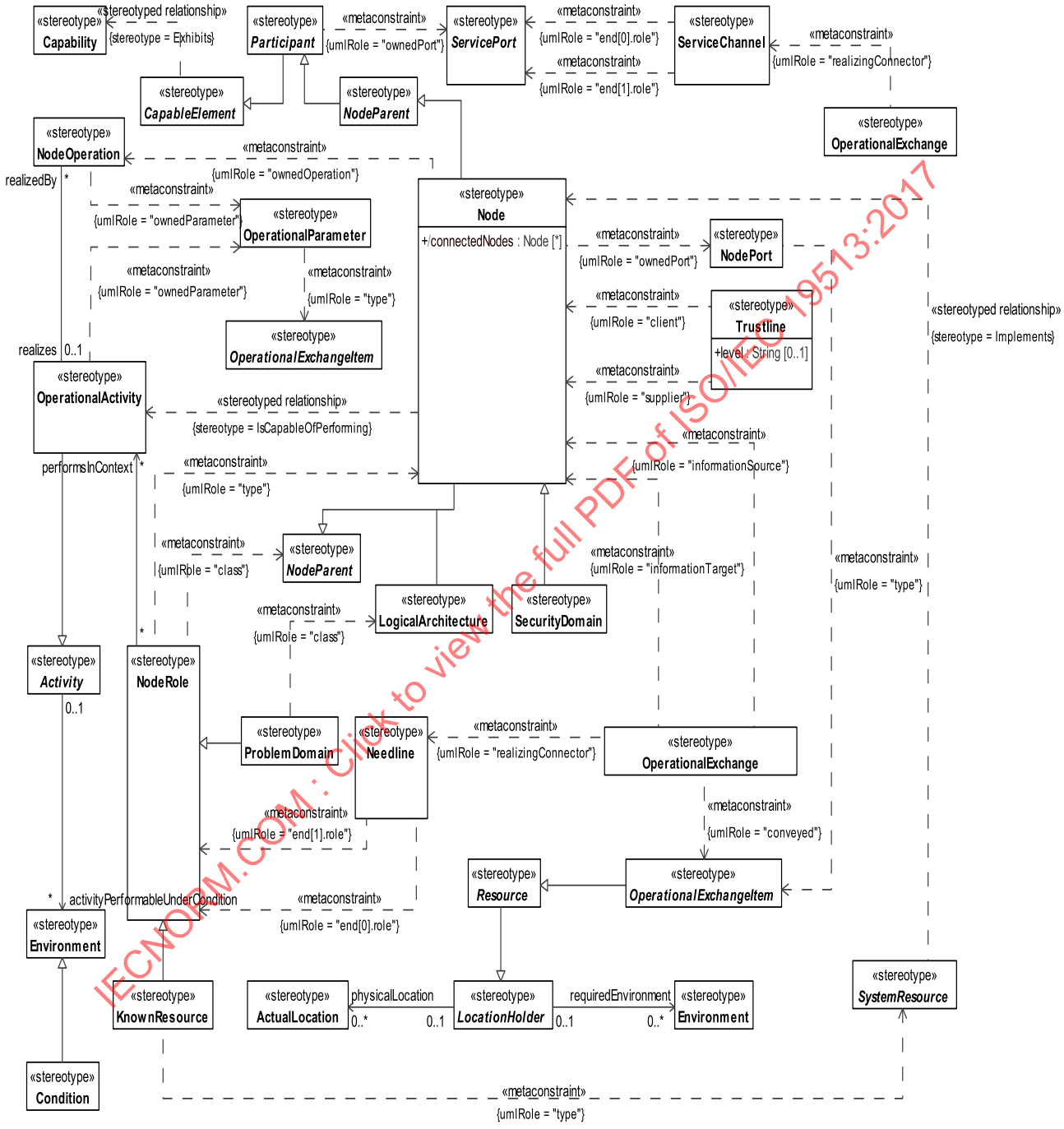

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Figure B.10 - OV-2

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B.2.3.3 OV-3

MODAF: The Operational Information Exchange Matrix (OV-3) addresses operational information exchanges between nodes.

DoDAF: The Operational Resource Flow Matrix (OV-3) DoDAF-described addresses operational resource flows exchanged between Operational Activities and locations.

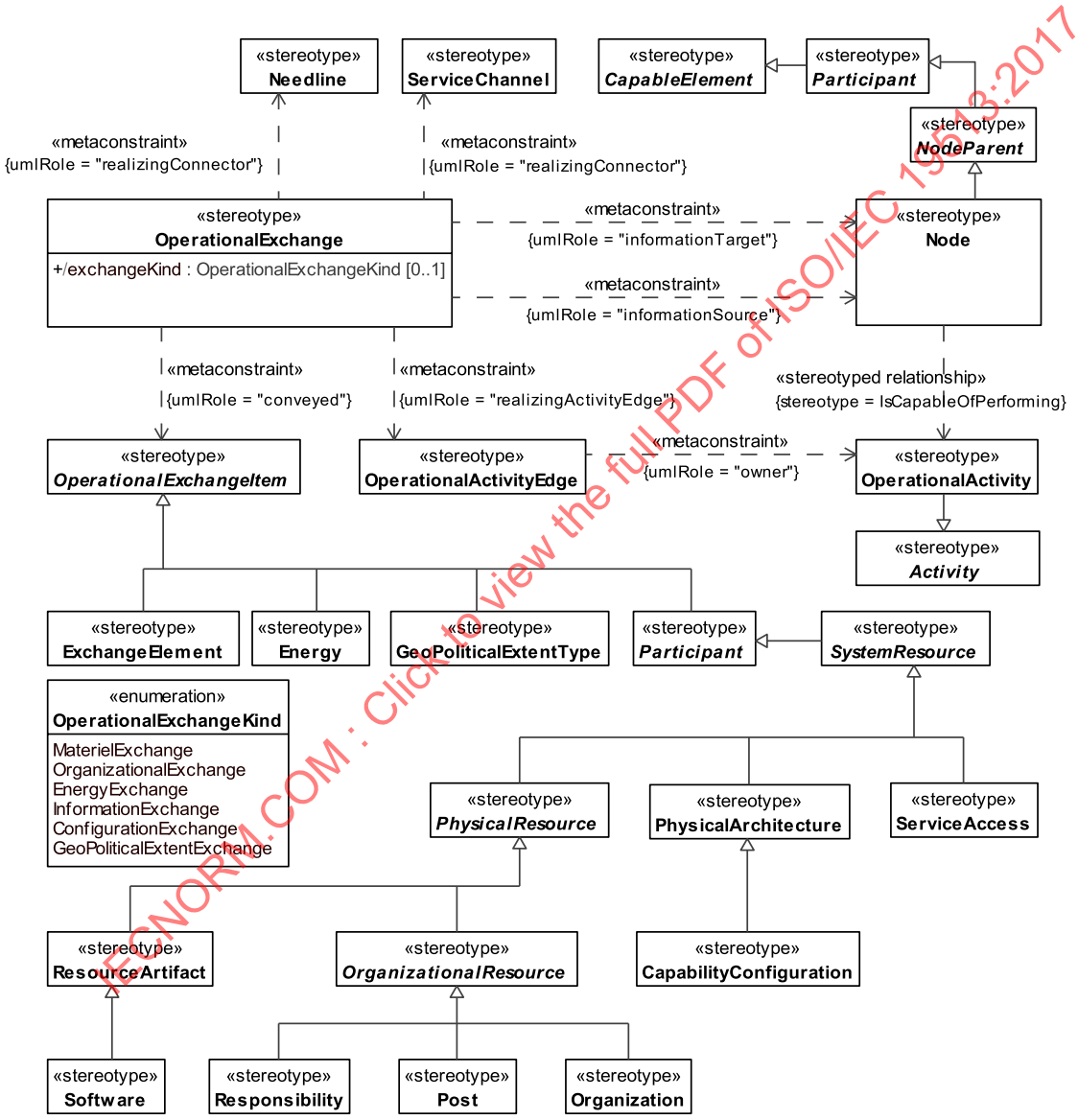

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Figure B.11 - OV-3

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B.2.3.4 OV-4 Actual

This is the OV-4 Actual View. The Organizational Relationships Chart illustrates the command structure or relationships (as opposed to relationships with respect to a business process flow) among human roles, organizations, or organization types that are the key players in architecture. MoDAF divides the OV-4 two views, an OV-4 Typical and an OV-4 Actual. The former is exactly as the DoDAF OV-4, while the latter is a special form of the SV-1; where the resources are restricted to being organizational.

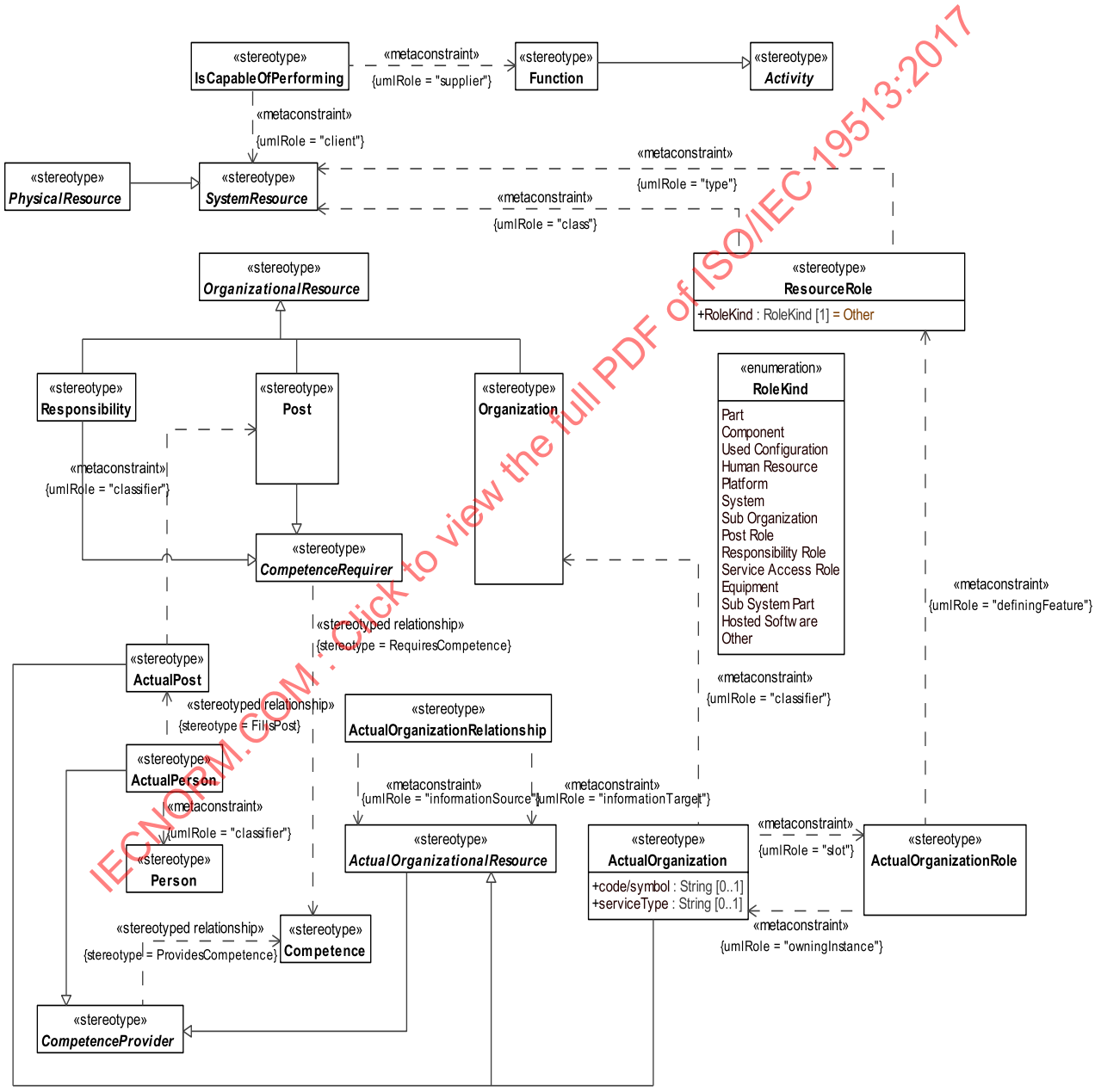

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Figure B.12 - OV-4 Actual

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B.2.3.5 OV-4 Typical

MODAF: The OV-4 shows organizational structures and interactions. The organizations shown may be civil or military. A typical OV-4 shows the possible relationships between organizational resources (organizations and posts).

DoDAF: DoDAF: The OV-4 DoDAF-described View shows organizational structures and interactions. The organizations shown may be civil or military. A typical OV-4 shows the possible relationships between organizational resources.

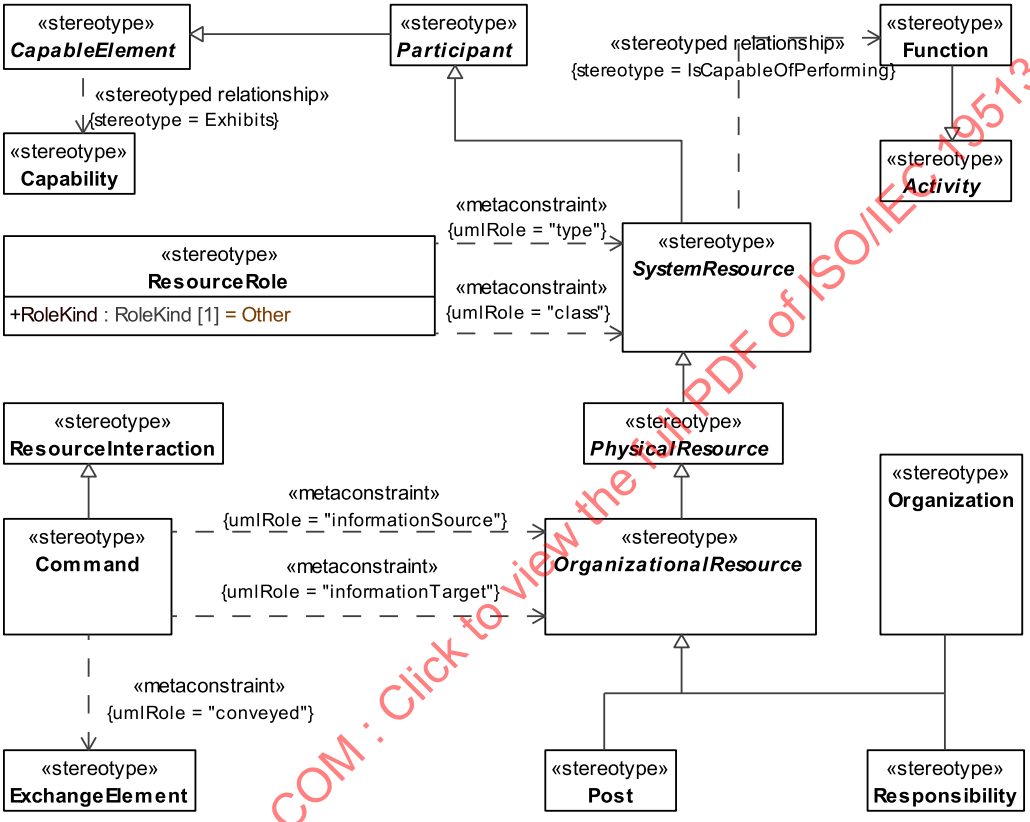

Figure B.13 - OV-4 Typical

B.2.3.6 OV-5

MODAF: The Operational Activity Model (OV-5) describes the operations that are normally conducted in the course of achieving a mission or a business goal. It describes operational activities (or tasks), Input/Output flows between activities and to/from activities that are outside the scope of the Architecture.

DoDAF: The Operational Activity Model DoDAF-described View describes the operations that are normally conducted in the course of achieving a mission or a business goal. It describes operational activities (or tasks); Input/Output flows between activities, and to/from activities that are outside the scope of the Architecture.

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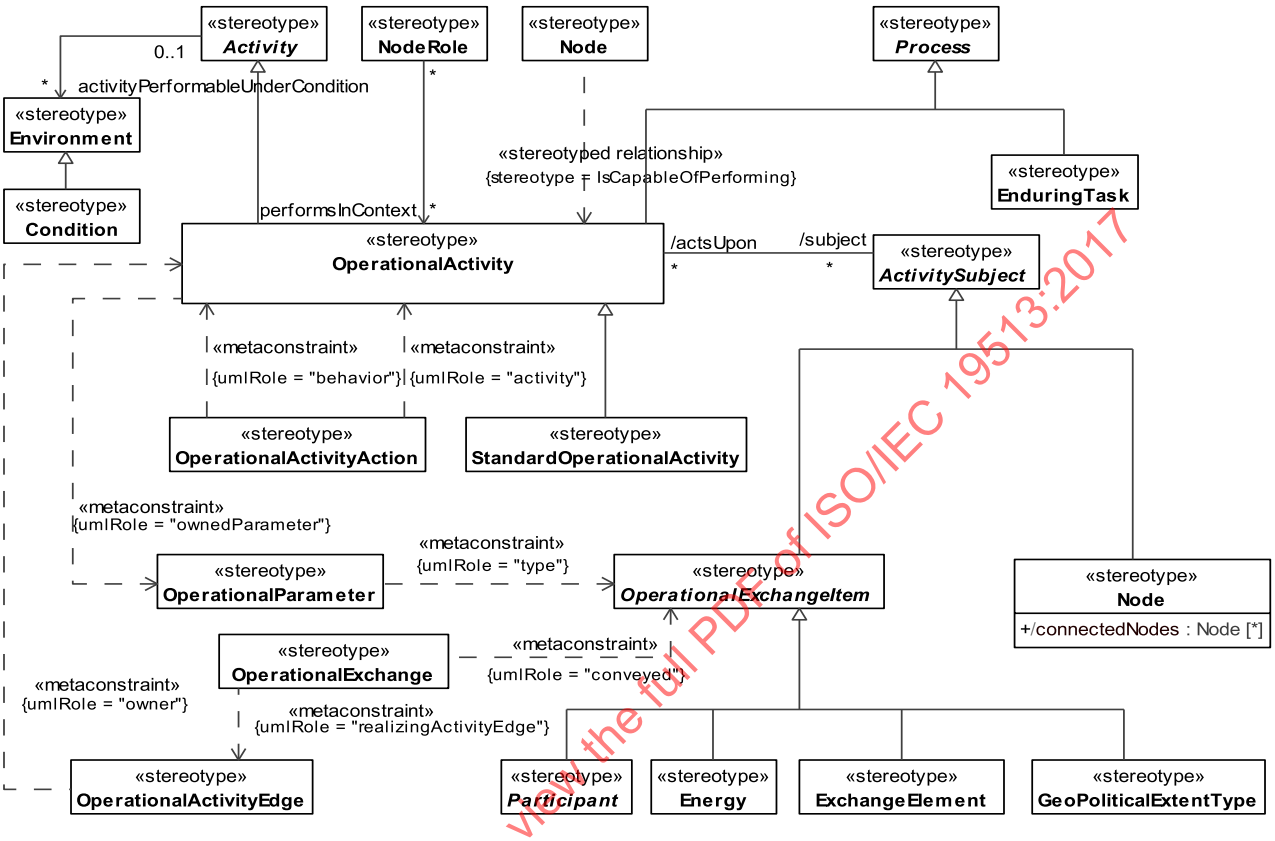

Figure B.14 - OV-5

B.2.3.7 OV-6a

MODAF: An Operational Rules Model (OV-6a) specifies operational or business rules that are constraints on the way that business is done in the enterprise.

DoDAF: An Operational Rules Model (OV-6a) DoDAF-described View specifies operational or business rules that are constraints on the way that business is done in the enterprise.

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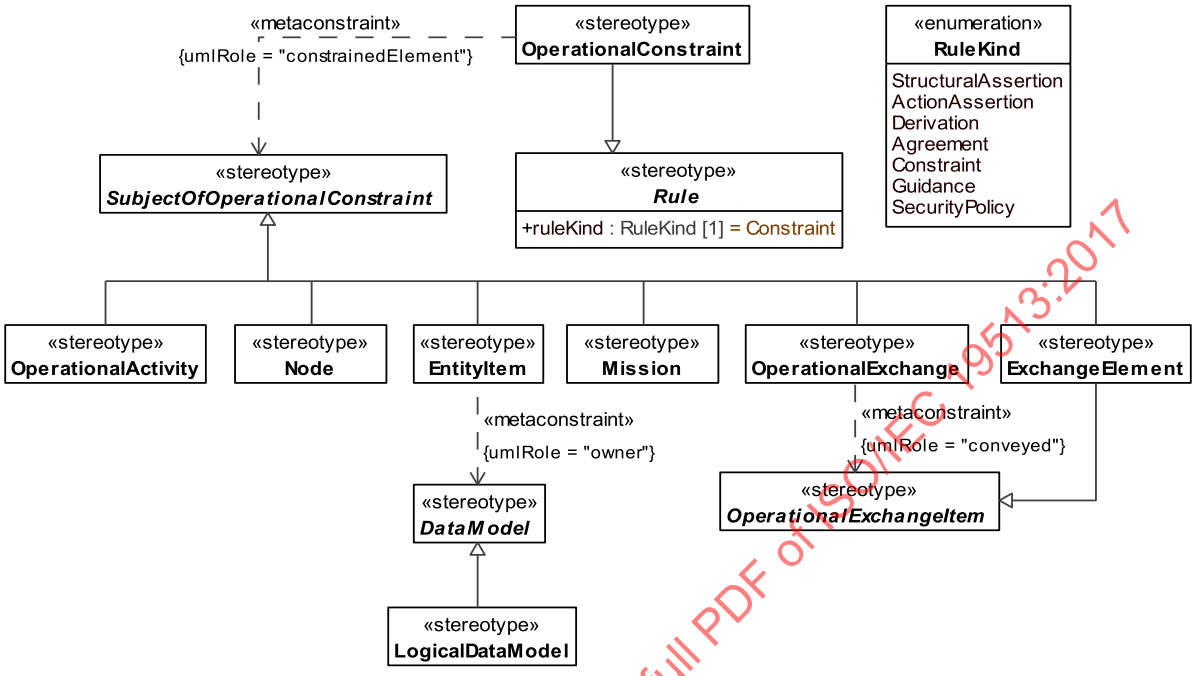

Figure B.15 - OV-6a

B.2.3.8 OV-6b

MODAF: OV-6b: The Operational State Transition Description is a graphical method of describing how an Operational Node or activity responds to various events by changing its state. The diagram represents the sets of events to which the Architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

DoDAF: The Operational State Transition Description (OV-6b) DoDAF-described View is a graphical method of describing how an Operational Activity responds to various events by changing its state. The diagram represents the sets of events to which the Architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

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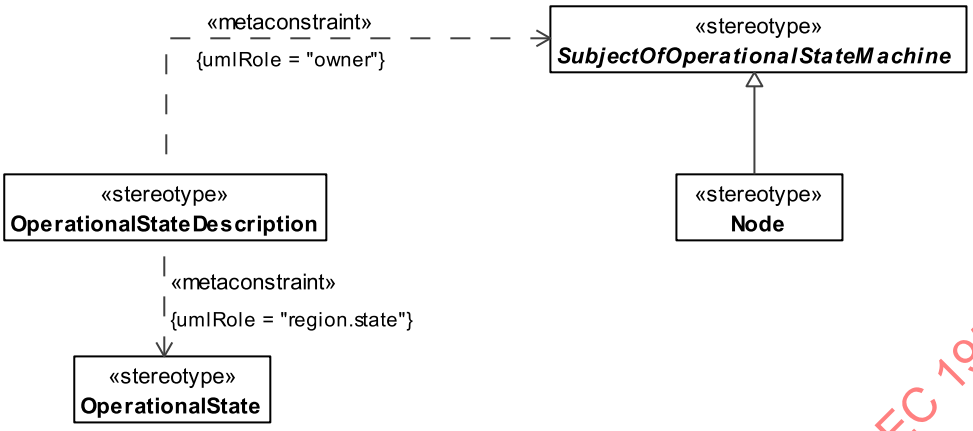

Figure B.16 - OV-6b

B.2.3.9 OV-6c

MODAF: OV-6c: The Operational Event-Trace Description provides a time-ordered examination of the information exchanges between participating Operational Nodes as a result of a particular scenario. Each event-trace diagram will have an accompanying description that defines the particular scenario or situation.

DoDAF: The Operational Event-Trace Description (OV-6c) DoDAF-described View provides a time ordered examination of the resource flows as a result of a particular scenario. Each event-trace diagram will have an accompanying description that defines the particular scenario or situation.

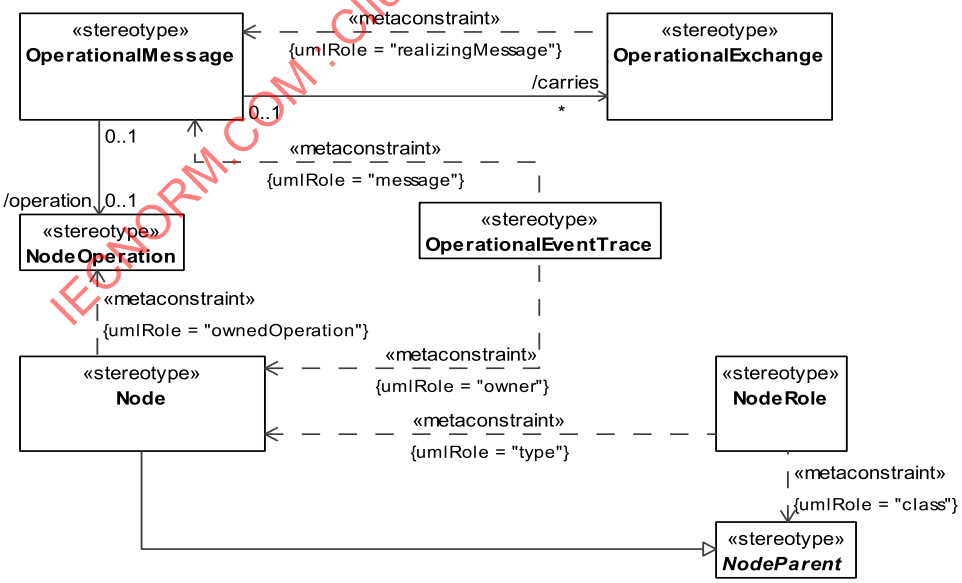

Figure B.17 - OV-6c

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B.2.3.10 OV-7/DIV-1/DIV-2

MODAF: Information Models (OV-7) address the information perspective on an operational architecture.

DoDAF: The Conceptual Data Model (DIV-1), a new DoDAF-described View in DoDAF V2.0, addresses the information concepts at a high-level on an operational architecture.

The Logical Data Model (DIV-2) DoDAF-described View allows analysis of an architecture's data definition aspect, without consideration of implementation specific or product specific issues.

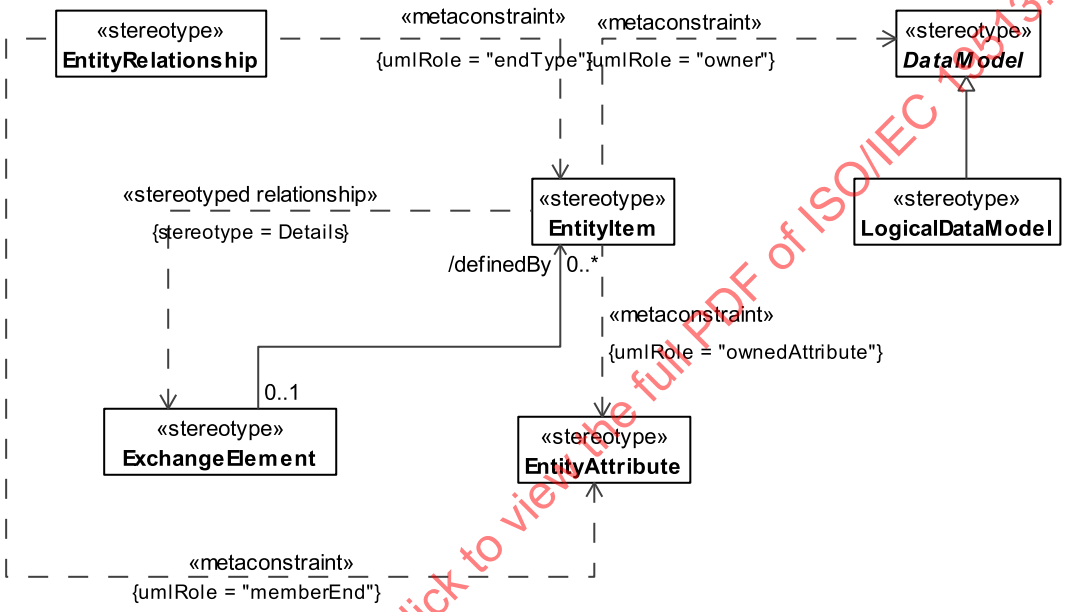

Figure B.18 - OV-7/DIV-1/DIV-2

B.2.4 SOV

MODAF: The Service-Orientated View (SOV) is a description of services needed to directly support the operational domain as described in the Operational View. A service within MODAF is understood in its broadest sense, as a unit of work through which a provider provides a useful result to a consumer.

DoDAF: The Service Views within the Services Viewpoint describe the design for service-based solutions to support operational development processes (JCIDS) and Defense Acquisition System or capability development within the Joint Capability Areas.

The relationship between architecture data elements across the Service Viewpoint to the Operational Viewpoint and Capability Viewpoint can be exemplified as services are procured and fielded to support organizations and their operations or a capability.

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B.2.4.1 SOV-1

MODAF: The Service Taxonomy View (SOV-1) specifies a hierarchy of services. The elements in the hierarchy are service specifications (rather than service implementations), and the relationships between the elements are specializations (i.e., one Service is a special type of another).

DoDAF: NA

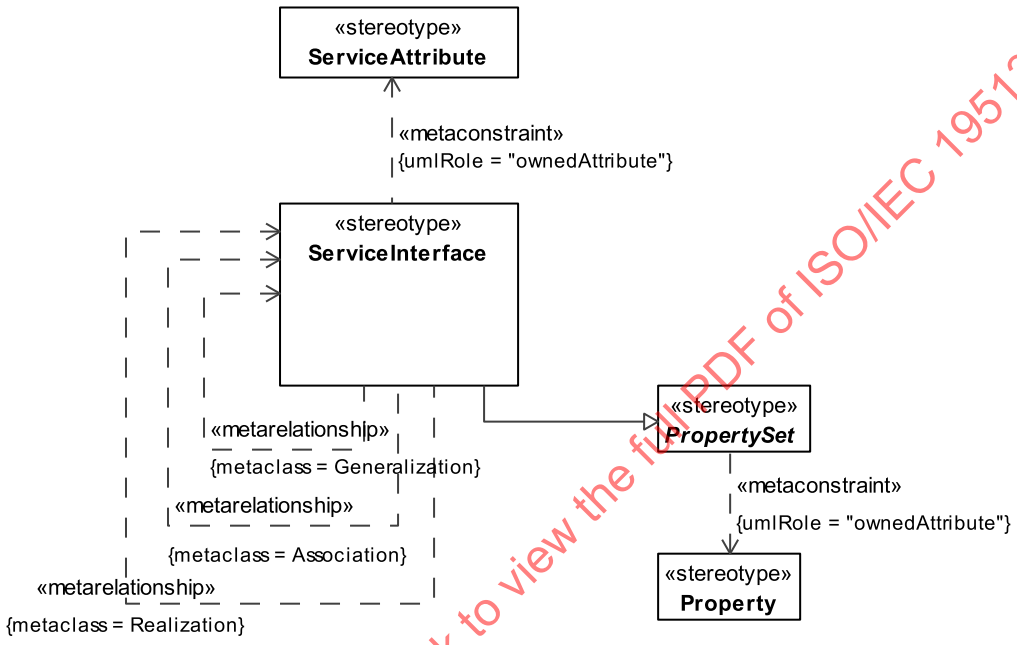

Figure B.19 - SOV-1

B.2.4.2 SOV-2

MODAF: The Service Taxonomy View (SOV-1) specifies a hierarchy of services. The elements in the hierarchy are service specifications (rather than service implementations), and the relationships between the elements are specializations (i.e., one Service is a special type of another).

DoDAF: NA

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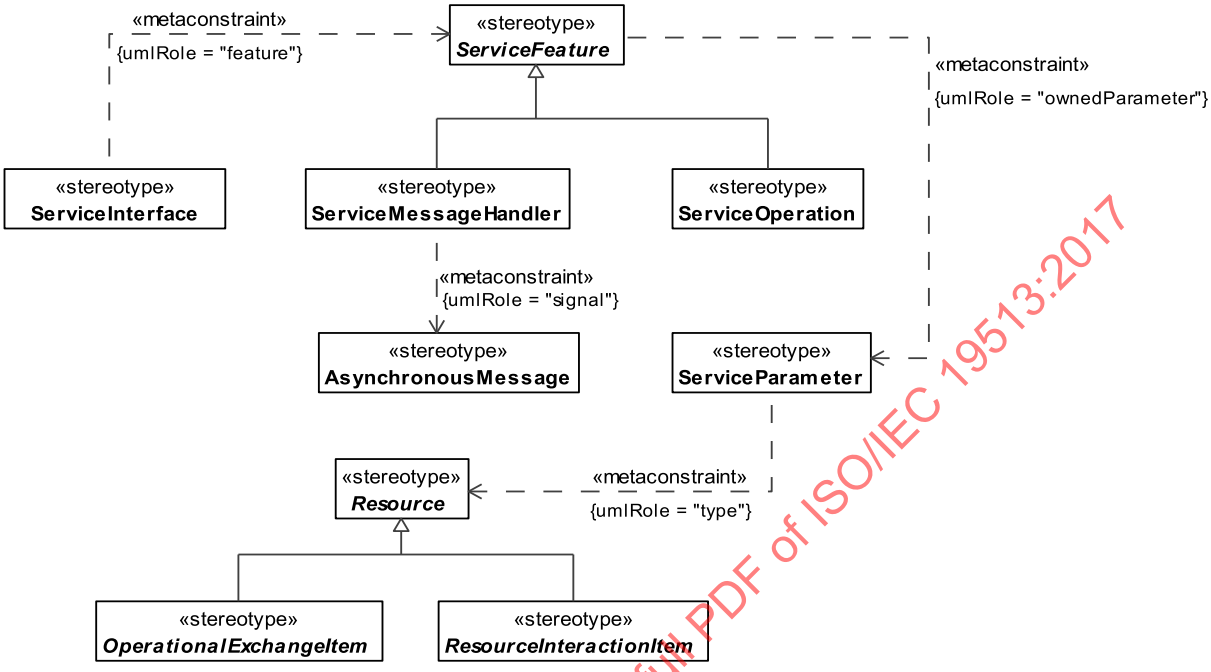

Figure B.20 - SOV-2

B.2.4.3 SOV-3

MODAF: The Capability to Service Mapping View (SOV-3) depicts which services contribute to the achievement of a capability.

DoDAF: CV-7 A mapping between the capabilities and the services that these capabilities enable.

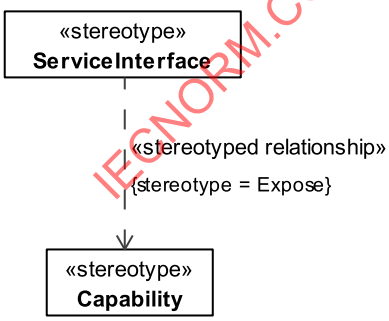

Figure B.21 - SOV-3

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B.2.4.4 SOV-4a

MODAF: The purpose of the Service Constraints View (SOV-4a) is to specify constraints that apply to implementations of services.

DoDAF: The SvcV-10a DoDAF-described View describes constraints on the resources, functions, data and ports that make up the Service View physical architecture. The constraints are specified in text and may be functional or structural (i.e., non-functional).

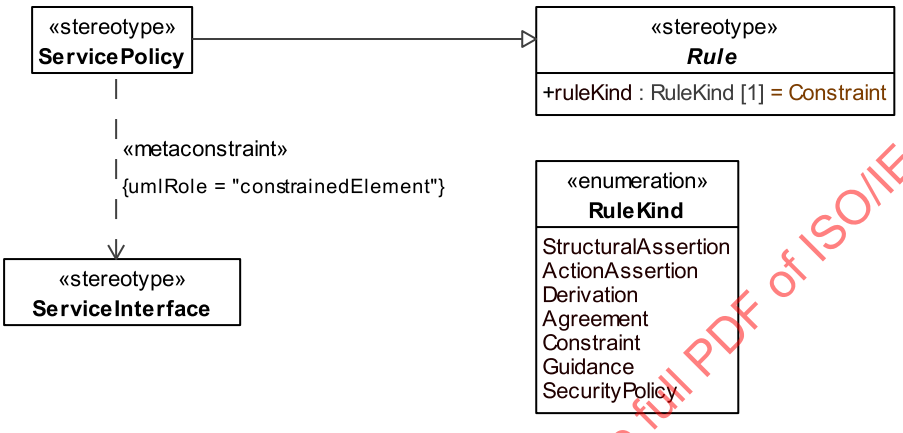

Figure B.22 - SOV-4a

B.2.4.5 SOV-4b

MODAF: The purpose of the Service State Model View (SOV-4b) is to specify the possible states a service may have, and the possible transitions between those states.

DoDAF: The Services State Transition Description DoDAF-described View is a graphical method of describing a resource (or function) response to various events by changing its state. The diagram basically represents the sets of events to which the resources in the Architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

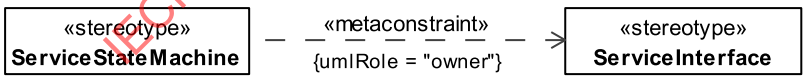

Figure B.23 - SOV-4b

B.2.4.6 SOV-4c

MODAF: The purpose of the Service Interaction Specification View (SOV-4c) is to specify how a service interacts with external agents, and the sequence and dependencies of those interactions.

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DoDAF: The Services Event-Trace Description DoDAF-described View provides a time-ordered examination of the interactions between services functional resources. Each event-trace diagram will have an accompanying description that defines the particular scenario or situation.

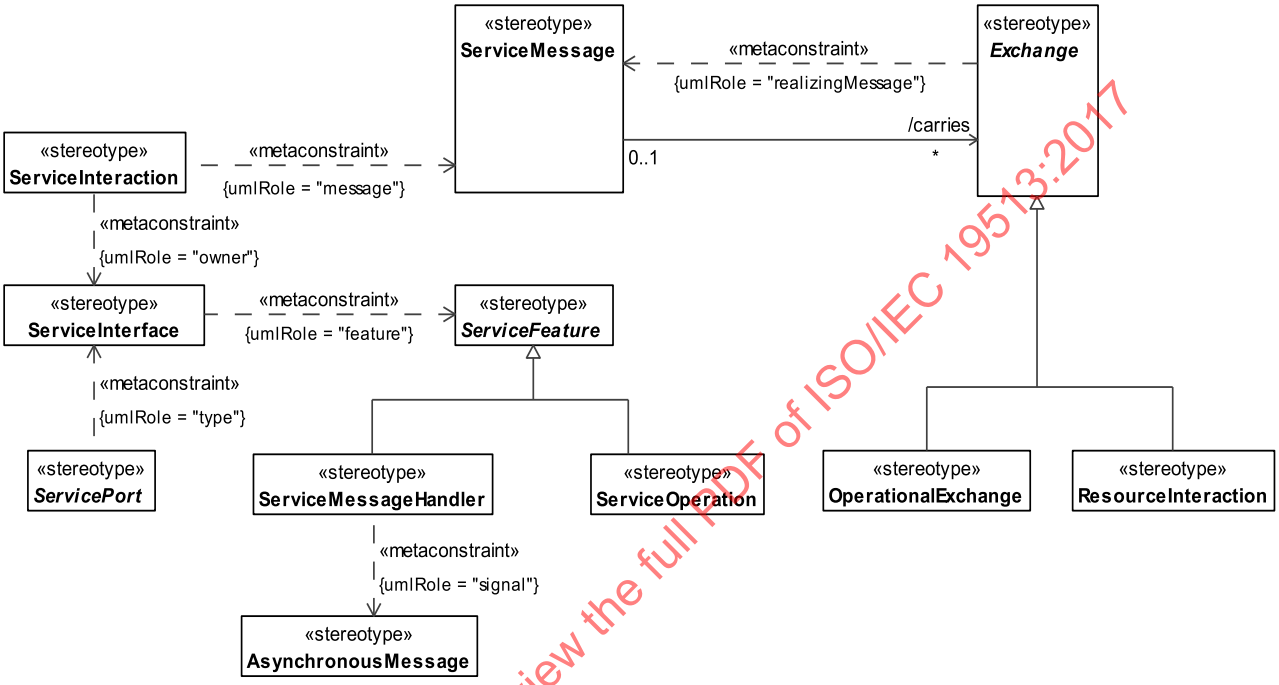

Figure B.24 - SOV-4c

B.2.4.7 SOV-5

MODAF: The Service Functionality View (SOV-5) defines the behavior of a service in terms of the functions it is expected to perform.

DoDAF: The Services Functionality Description provides detailed information regarding the: Allocation of service functions to resources, and Flow of resources between service functions.

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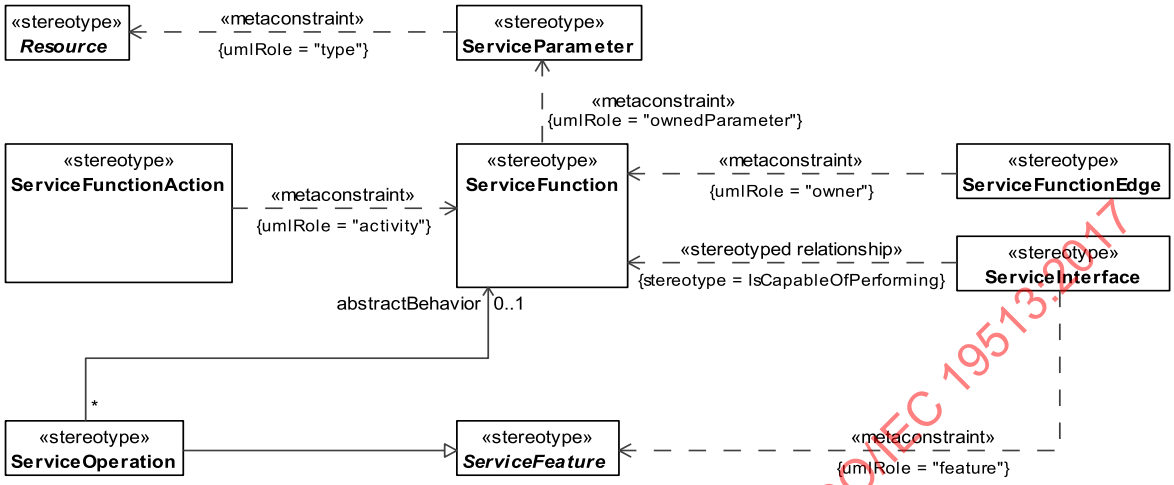

Figure B.25 - SOV-5

B.2.5 StV/CV

MODAF: The Strategic Views (StVs) have been introduced to support the capability management process.

DoDAF: The Capability Views within the Capability Viewpoint are introduced into DoDAF V2.0 to address the concerns of Capability Portfolio Managers. In particular, Capability Views describe capability taxonomy and capability evolution.

B.2.5.1 CV-7

MODAF: NA

DoDAF: CV-7 details the mapping between DoDAF services (ServiceAccess) and the Capability that they realize.

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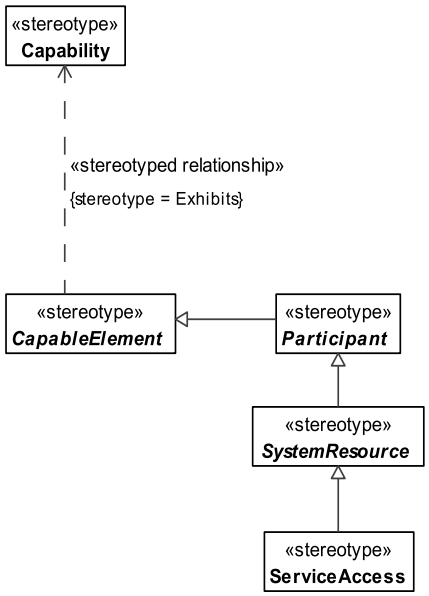

Figure B.26 - CV-7

B.2.5.2 StV-1/CV-1

MODAF: StV-1 addresses the enterprise concerns associated with the overall vision for transformational endeavors and thus defines the strategic context for a group of Enterprise capabilities.

DoDAF: CV-1: Vision: addresses the enterprise concerns associated with the overall vision for transformational endeavors and thus defines the strategic context for a group of capabilities.

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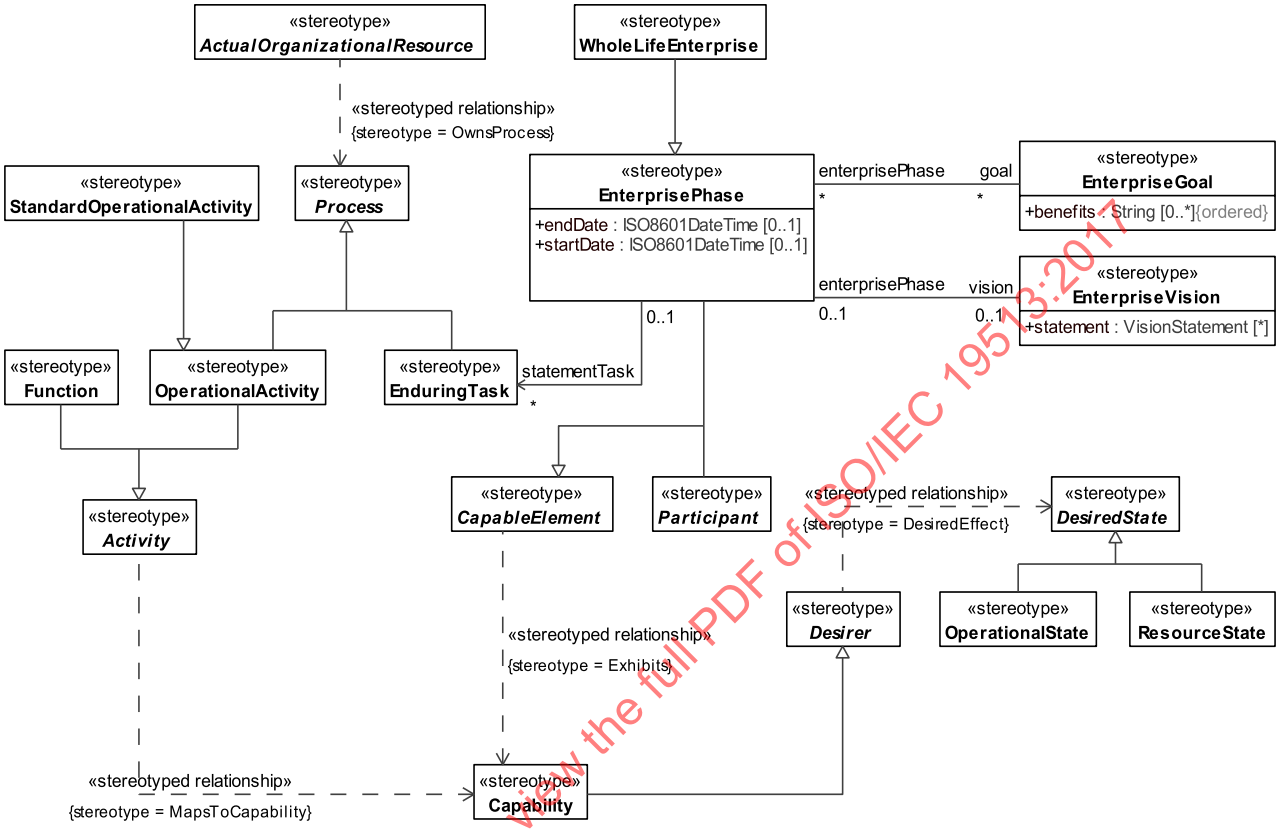

Figure B.27 - StV-1/CV-1

B.2.5.3 StV-2/CV-2

MODAF: The StV-2 Product models capability taxonomies.

DoDAF: The CV-2 DoDAF-described View models capability taxonomies.

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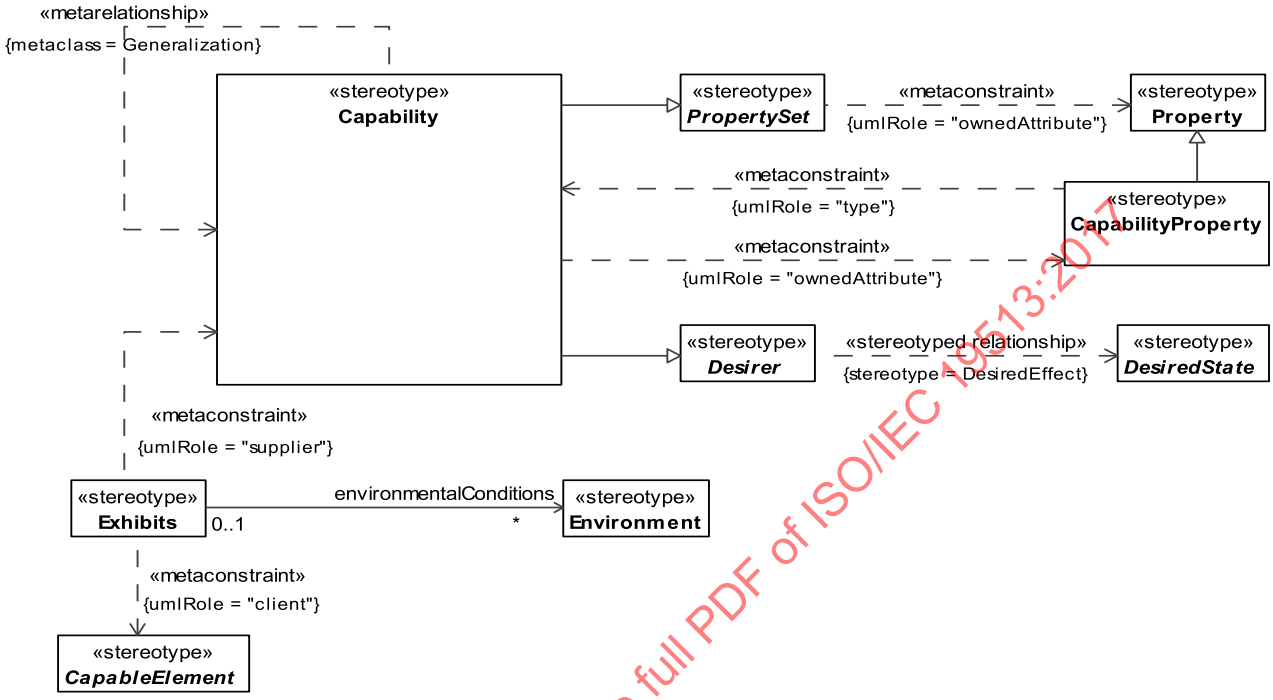

Figure B.28 - StV-2/CV-2

B.2.5.4 StV-3/CV-3

MODAF: StV-3 addresses the planned achievement of capability at different points in time or during specific periods of time (i.e., capability phasing).

DoDAF: CV-3: Capability Phasing The CV-3 addresses the planned achievement of capability at different points in time or during specific periods of time (i.e., capability phasing).

The IncrementMilestone in UPDM originates from the MODAF framework. It ties to a PhysicalArchitecture/ CapabilityConfiguration and if the latter is indicated this in turn ties to a Capability since it is a CapableElement that exhibits a Capability. Capabilities are by themselves timeless i.e., it should not be possible to associated Capabilities and time directly. If an IncrementMilestone connects to CapabiltyConfiguration X at time T and this configuration realizes Capability A, it cannot at a later time also realize Capability B without something having changed, i.e., there has to be a CapabilityConfiguration X' that is tied to an IncrementMilestone where capabilities A and B are realized. It is suggested that these two CapabilityConfigurations are treated as versions of a CapabilityConfiguration master (SV-8).

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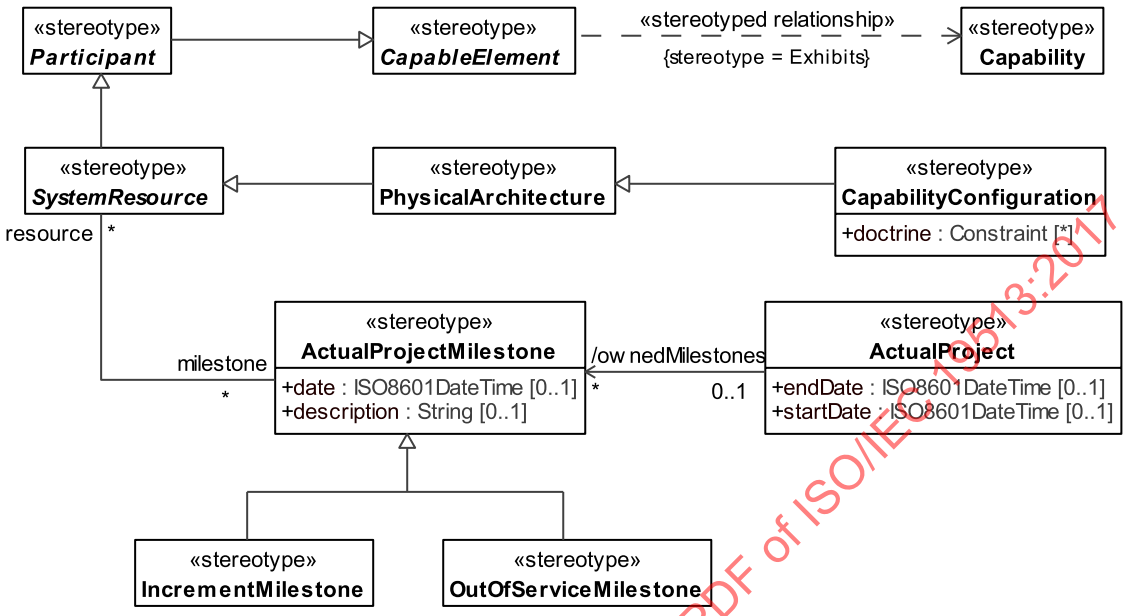

Figure B.29 - StV-3/CV-3

B.2.5.5 StV-4/CV-4

MODAF: The StV-4 Product describes the dependencies between planned capabilities. It also defines logical groupings of capabilities (capability clusters).

DoDAF: CV-4: Capability Dependencies: The CV-4 DoDAF-described View describes the dependencies between planned capabilities. It also defines logical groupings of capabilities.

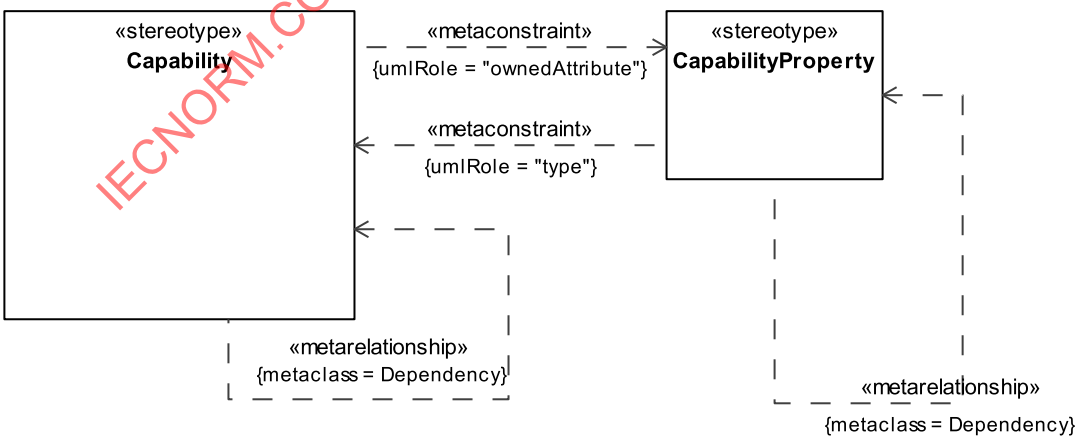

Figure B.30 - StV-4/CV-4

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B.2.5.6 StV-5/CV-5

MODAF: StV-5 addresses the fulfillment of capability requirements, in particular by network enabled capabilities.

DoDAF: CV-5: Capability to Organizational Development Mapping: The CV-5 addresses the fulfillment of capability requirements.

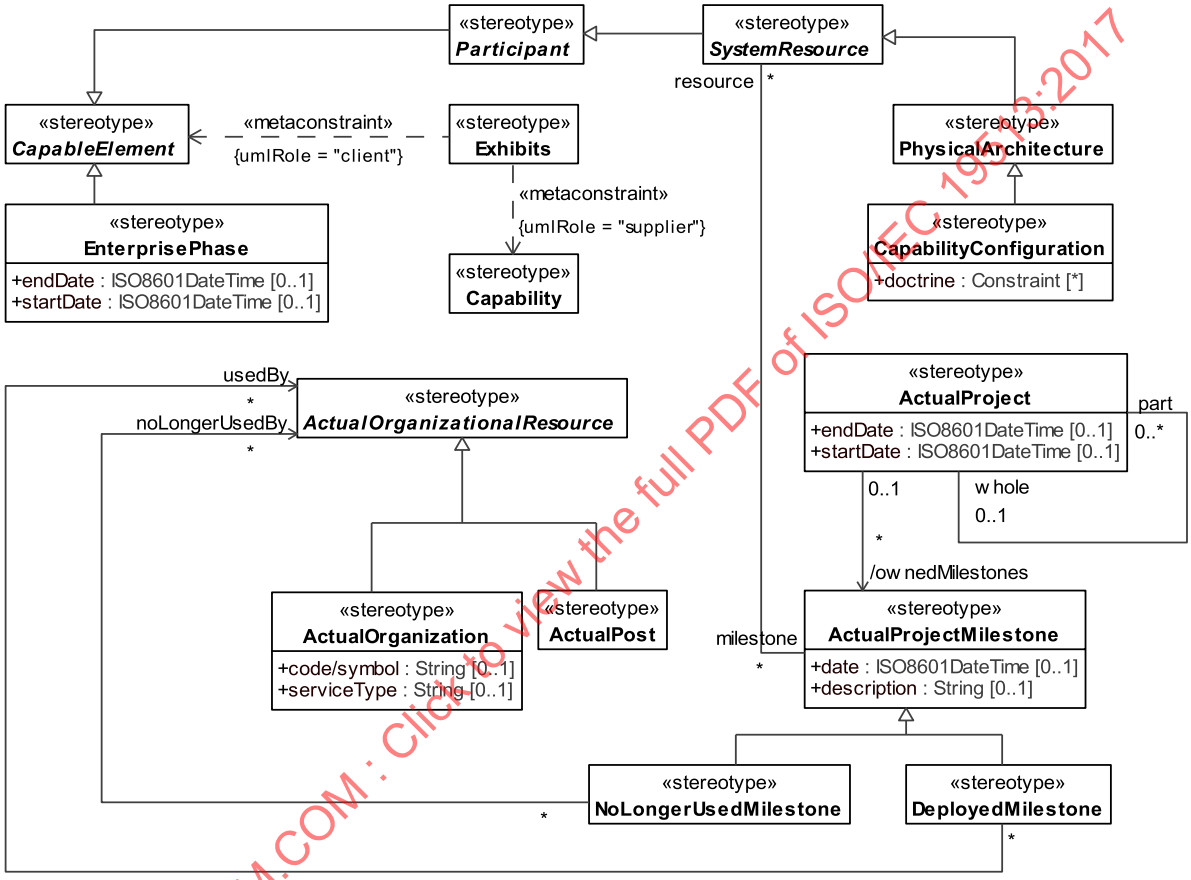

Figure B.31 - StV-5/CV-5

B.2.5.7 StV-6/CV-6

MODAF: The StV-6 Product describes the mapping between the capabilities required by an Enterprise and the operational activities that those capabilities support.

DoDAF: CV-6: Capability to Operational Activities Mapping: The CV-6 DoDAF-described View describes the mapping between the capabilities required and the operational activities that those capabilities support.

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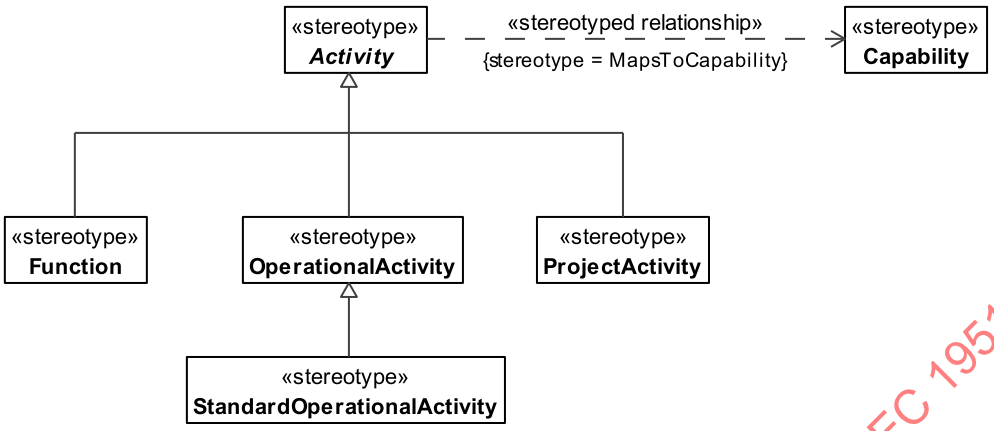

Figure B.32 - StV-6/CV-6

B.2.6 SV/SvcV

MODAF: A better name for these views in MODAF would be Solution or Specification View. In essence they should specify a requirement for a system or present the solution, without delving into the design elements of the system.

DoDAF: The Systems Views within the Systems Viewpoint describe systems and interconnections providing for, or supporting, DoD functions.

B.2.6.1 SV-1/SvcV-1

MODAF: Resource Interaction Specification (SV-1) address the composition and interaction of resources. From MODAF v1.1, SV-1 incorporates the human elements – Posts, Organizations, and Roles.

DoDAF: The Systems Interface Description (SV-1) DoDAF-described View addresses the composition and interaction of Systems. For DoDAF v2.0, the SV-1 incorporates the human elements as types of Performers- Organizations and Personnel Types.

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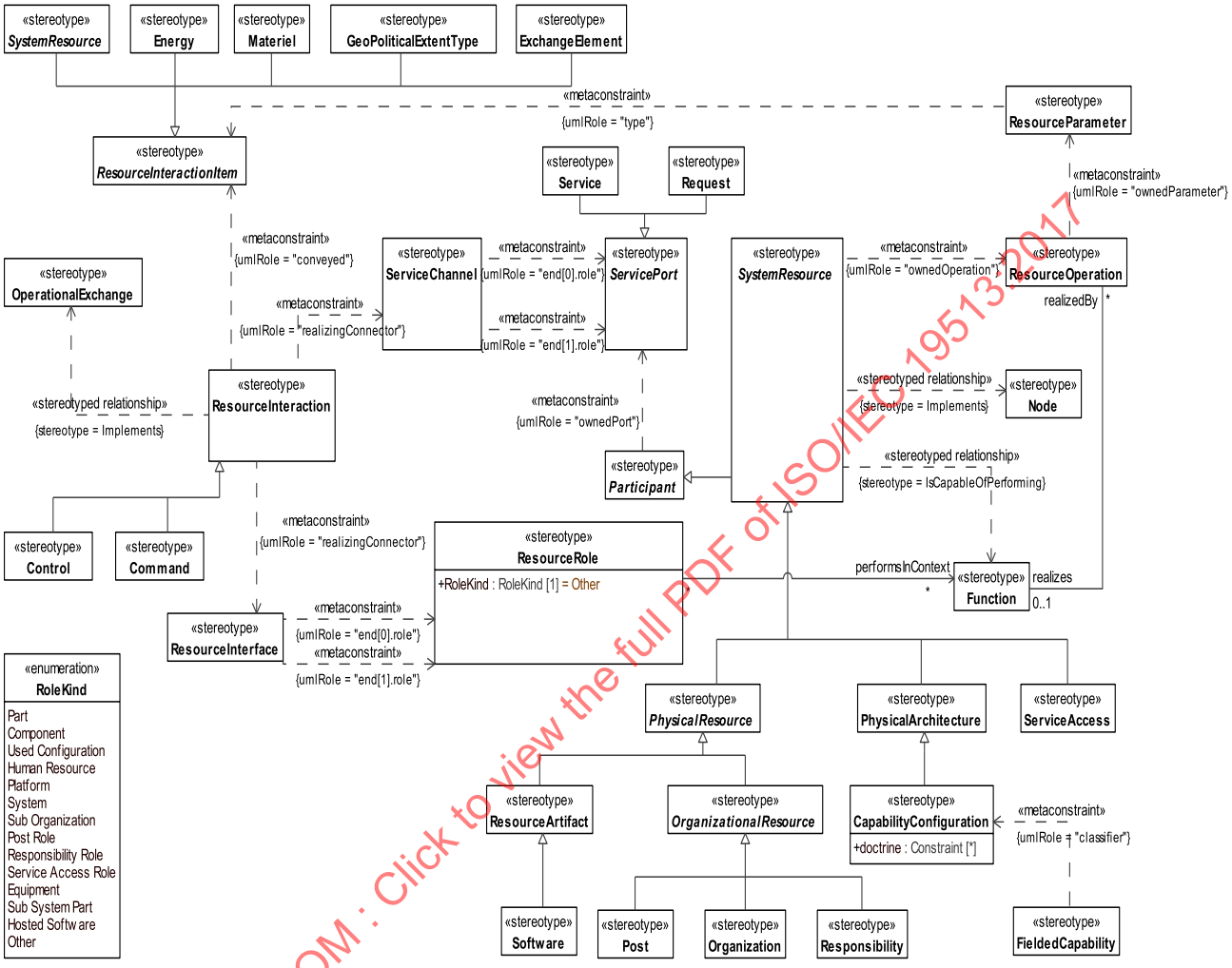

Figure B.33 - SV-1/SvcV-1

B.2.6.2 SV-10a/SvcV-10a

MODAF: The purpose of this Product is to specify functional and non-functional constraints on the implementation aspects of the architecture (i.e., the structural and behavioral elements of the SV viewpoint).

DoDAF: The SV-10a Systems Rules Model DoDAF-described View describes constraints on the resources, functions, data and ports that make up the SV physical architecture. The constraints are specified in text and may be functional or structural (i.e., non-functional).

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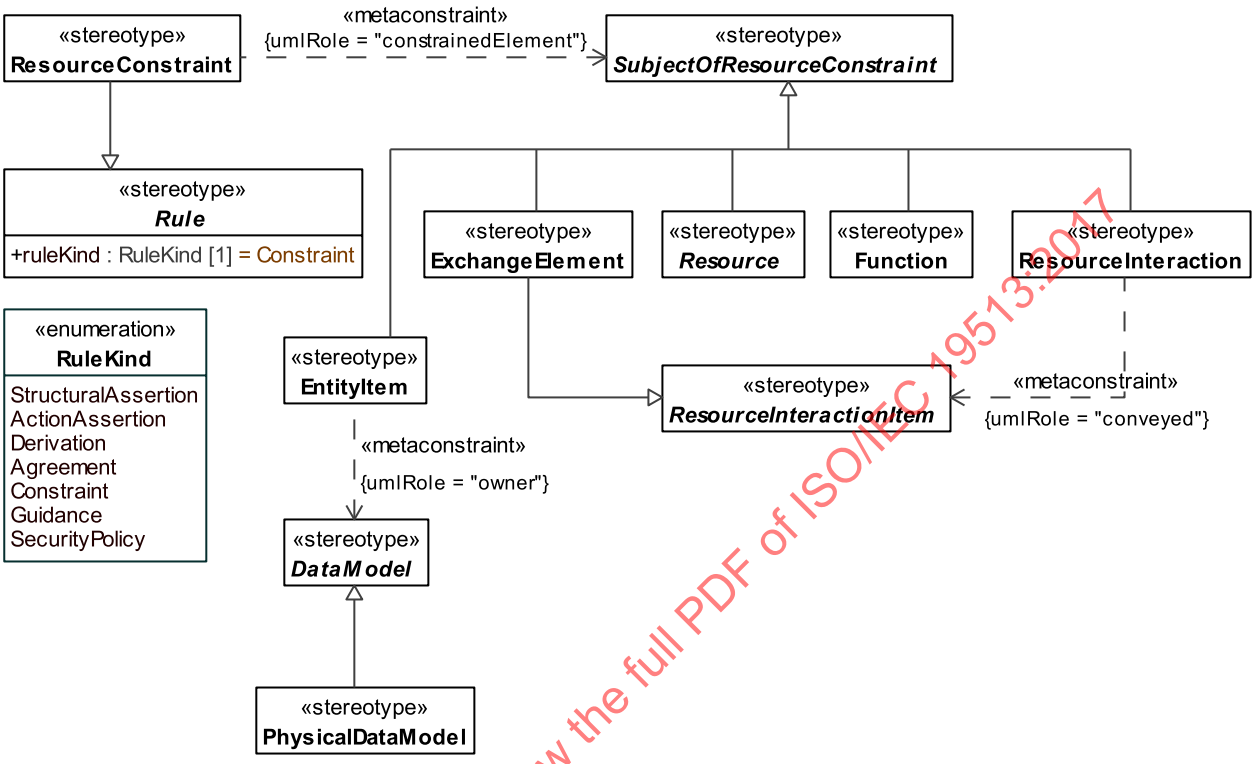

Figure B.34 - SV-10a/SvcV-10a

B.2.6.3 SV-10b/SvcV-10b

MODAF: The Resource State Transition Description is a graphical method of describing a resource (or function) response to various events by changing its state. The diagram basically represents the sets of events to which the Resources in the Architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

DoDAF: The Systems State Transition Description DoDAF-described View is a graphical method of describing a resource (or system function) response to various events by changing its state. The diagram basically represents the sets of events to which the resources in the Architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

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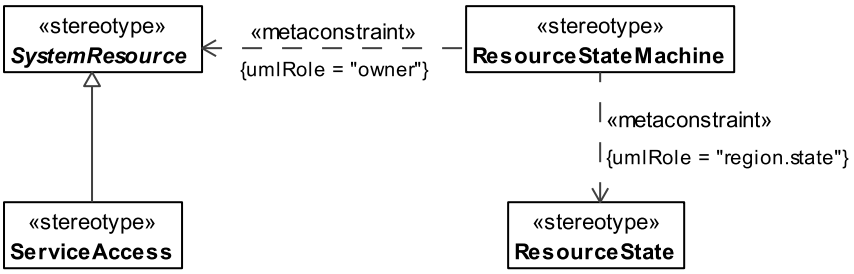

Figure B.35 - SV-10b/SvcV-10b

B.2.6.4 SV-10c/SvcV-10c

MODAF: The Resource Event-Trace Description provides a time-ordered examination of the interactions between resources. Each event-trace diagram will have an accompanying description that defines the particular scenario or situation.

DoDAF: The Systems Event-Trace Description provides a time-ordered examination of the interactions between functional resources. Each event-trace diagram will have an accompanying description that defines the particular scenario or situation.

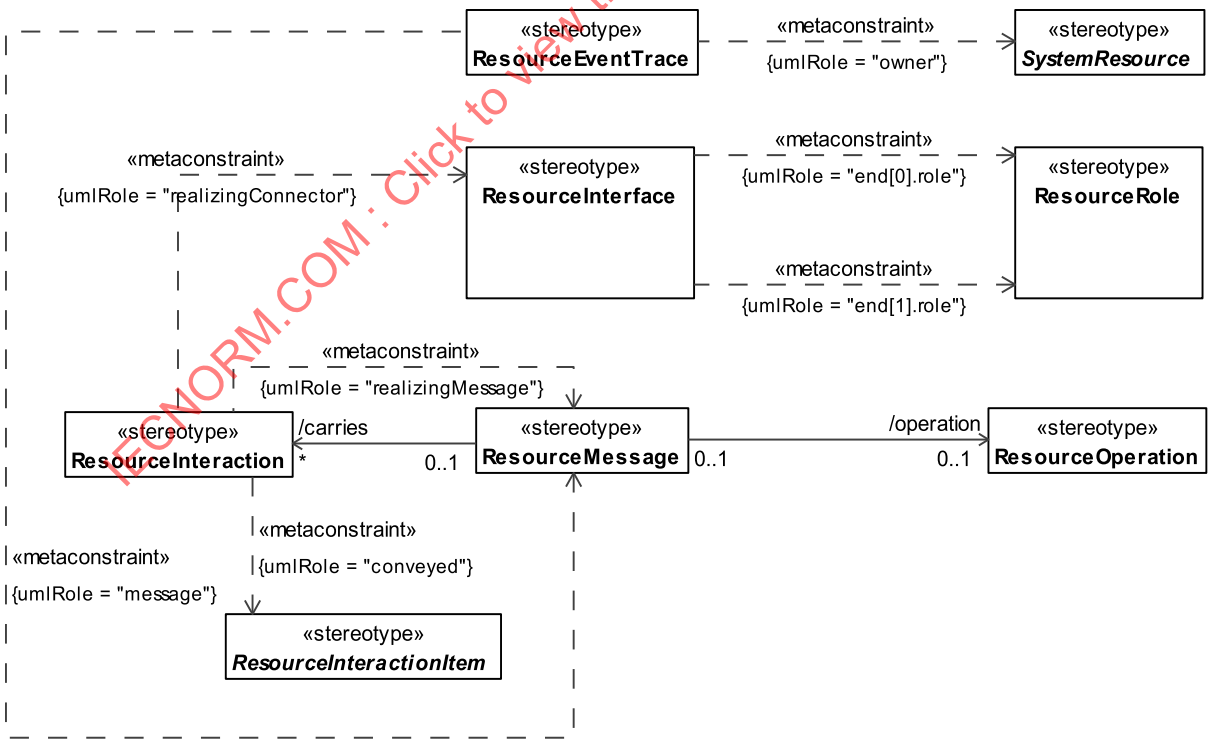

Figure B.36 - SV-10c/SvcV-10c

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B.2.6.5 SV-11/DIV-3

MODAF: The SV-11 View defines the structure of the various kinds of system data that are utilized by the systems in the Architecture.

DoDAF: The DIV-3 Physical Data Model DoDAF-described view defines the structure of the various kinds of system or service data that are utilized by the systems or services in the Architecture.

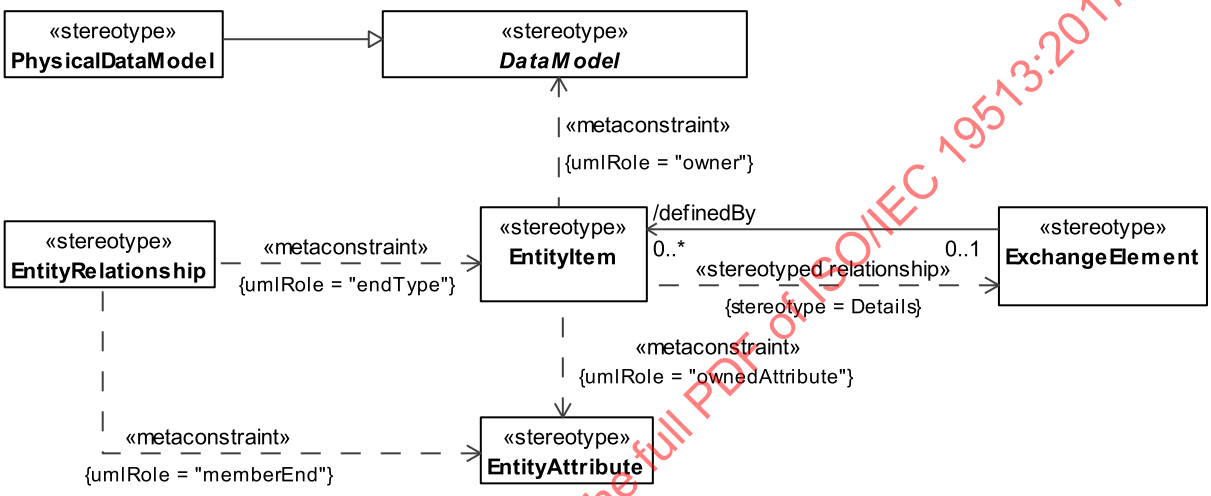

Figure B.37 - SV-11/DIV-3

B.2.6.6 SV-12

MODAF: The Service Provision View (SV-12) specifies configurations of resources that can deliver a service, and the levels of service those resources can deliver in different environments.

DoDAF: NA

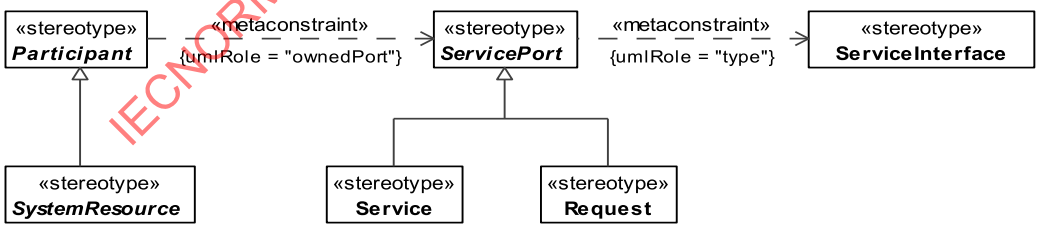

Figure B.38 - SV-12

B.2.6.7 SV-2/SvcV-2

MODAF: The Systems Communications Description (SV-2a/2b/2c) series of views is intended for the representation of communications networks and pathways that link communications systems, and provides details regarding their configuration.

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DoDAF: A Systems Resource Flow Description (SV-2) DoDAF-described View specifies the resource flows between Systems and may also list the protocol stacks used in connections.

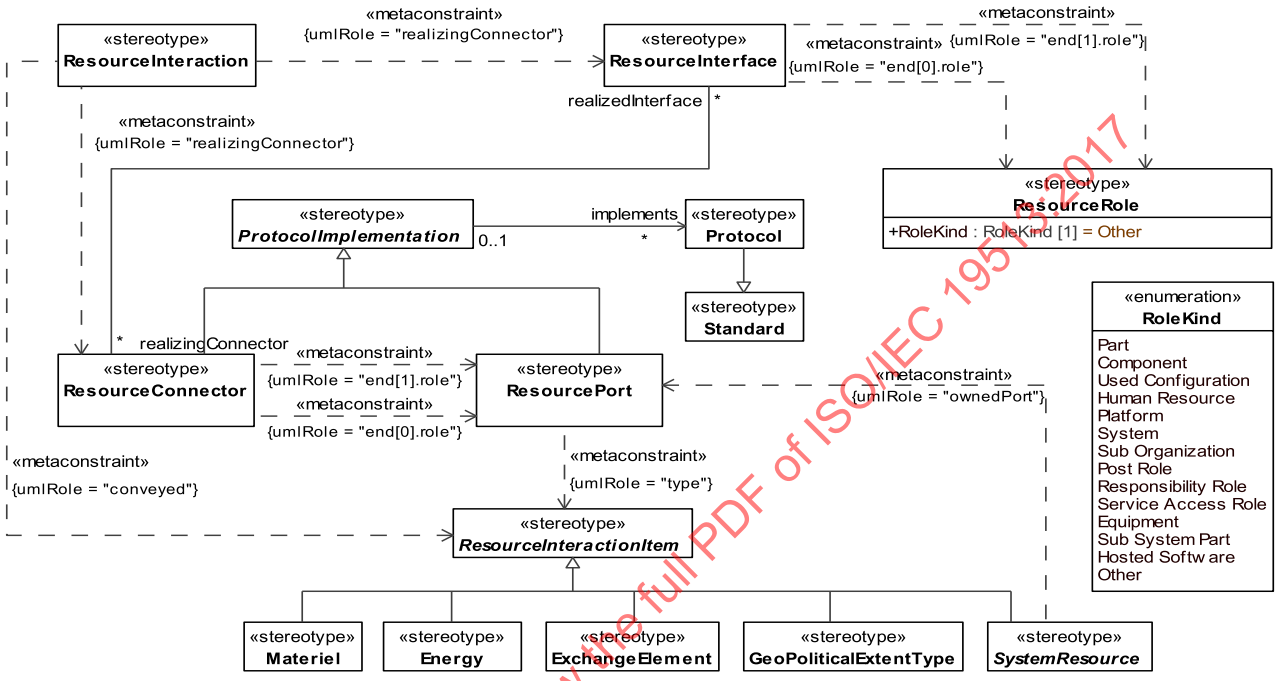

Figure B.39 - SV-2/SvcV-2

B.2.6.8 SV-3/SvcV-3a/SvcV-3b

MODAF: The Resource Interaction Matrix provides a tabular summary of the resource interactions specified in the SV-1 for the Architecture.

DoDAF: The Systems - Systems Matrix (SV-3) DoDAF-described View provides a tabular summary of the system interactions specified in the SV-1 for the Architecture.

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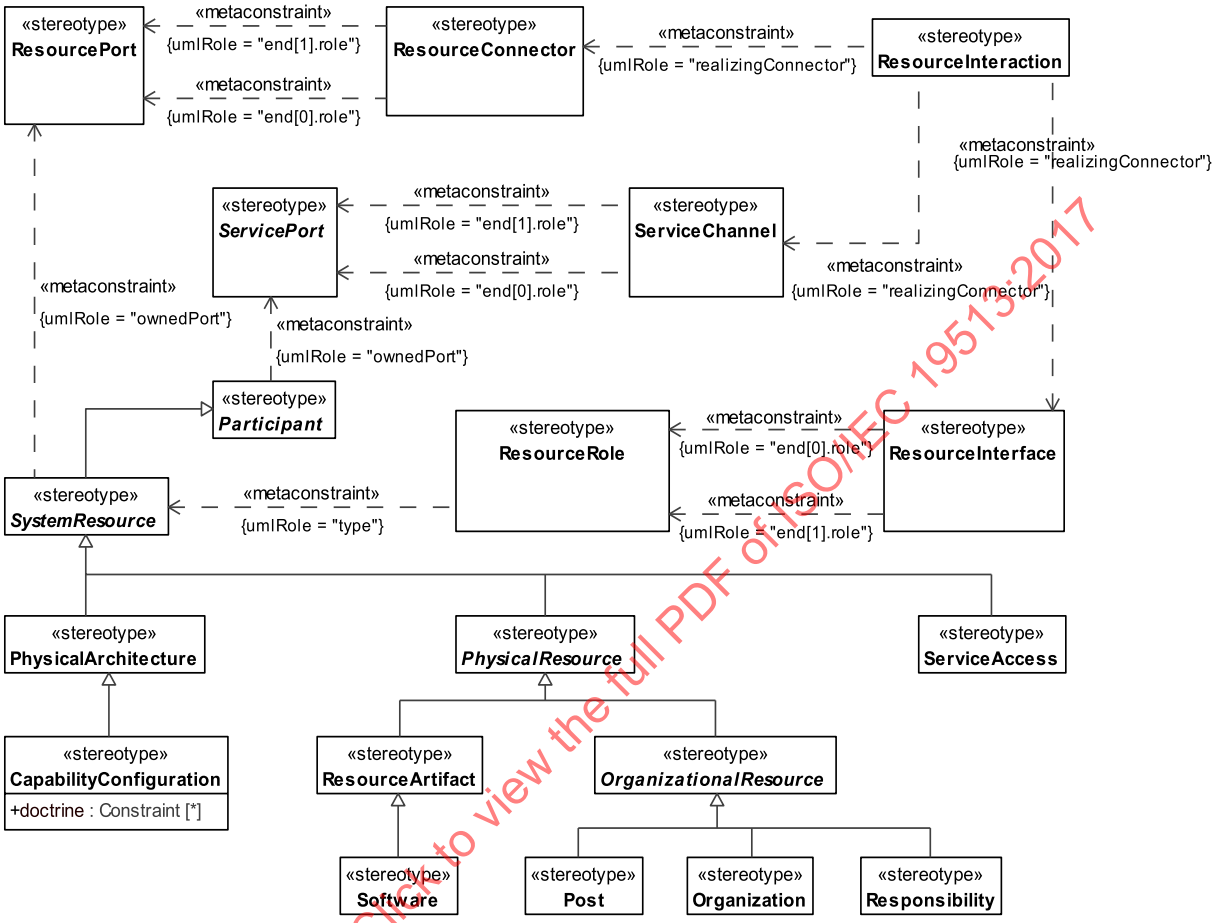

Figure B.40 - SV-3/SvcV-3a/SvcV-3b

B.2.6.9 SV-4/SvcV-4

MODAF: Functionality Descriptions (SV-4) address human and system functionality.

DoDAF: The Systems Functionality Description (SV-4) DoDAF-described View addresses human and system functionality.

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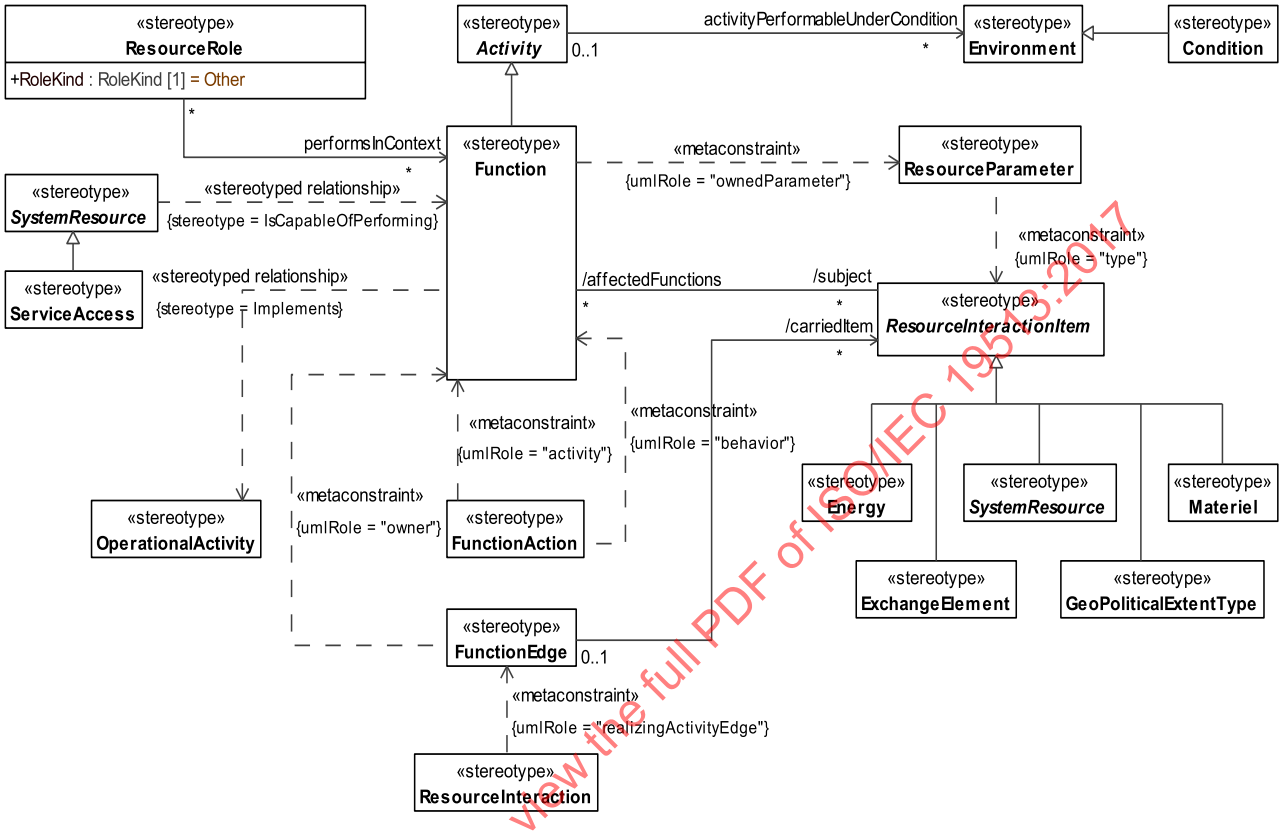

Figure B.41 - SV-4/SvcV-4

B.2.6.10 SV-5/SvcV-5

MODAF: This view has been expanded for the Service Orientated community by allowing for Service Functions as well as Operational Activities.

DoDAF: The Operational Activity to Systems Function Traceability Matrix (SV-5a) DoDAF-described View depicts the mapping of system functions (and, optionally, the capabilities and performers that provide them) to operational activities and thus identifies the transformation of an operational need into a purposeful action performed by a system or solution.

The Operational Activity to Systems Traceability Matrix (SV-5b) DoDAF-described View depicts the mapping of systems (and, optionally, the capabilities and performers that provide them) to operational activities and thus identifies the transformation of an operational need into a purposeful action performed by a system or solution.

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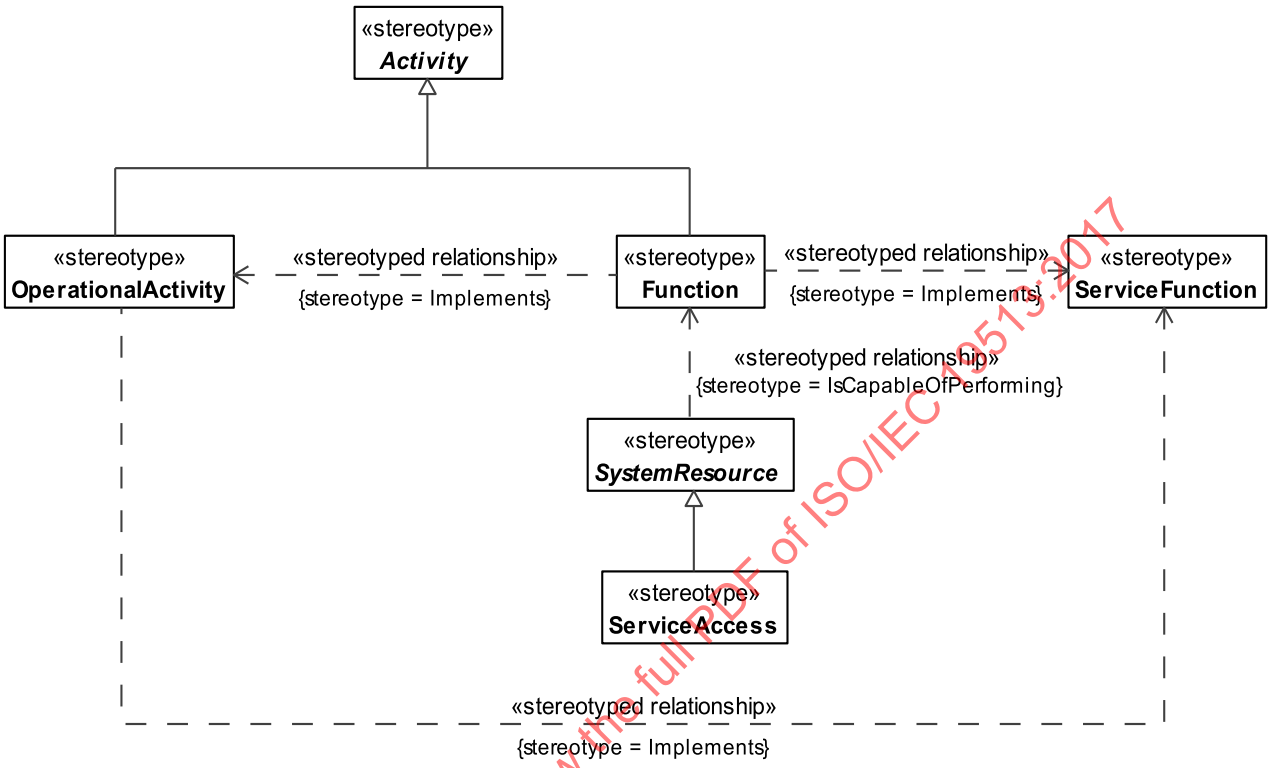

Figure B.42 - SV-5/SvcV-5

B.2.6.11 SV-6/SvcV-6

MODAF: The Systems Data Exchange Matrix specifies the characteristics of the system data exchanged between systems. The focus is on data crossing the system boundary.

DoDAF: The Systems Resource Flow Exchange Matrix DoDAF-described View specifies the characteristics of the system resource flows exchanged between systems. The focus is on resource crossing the system boundary.

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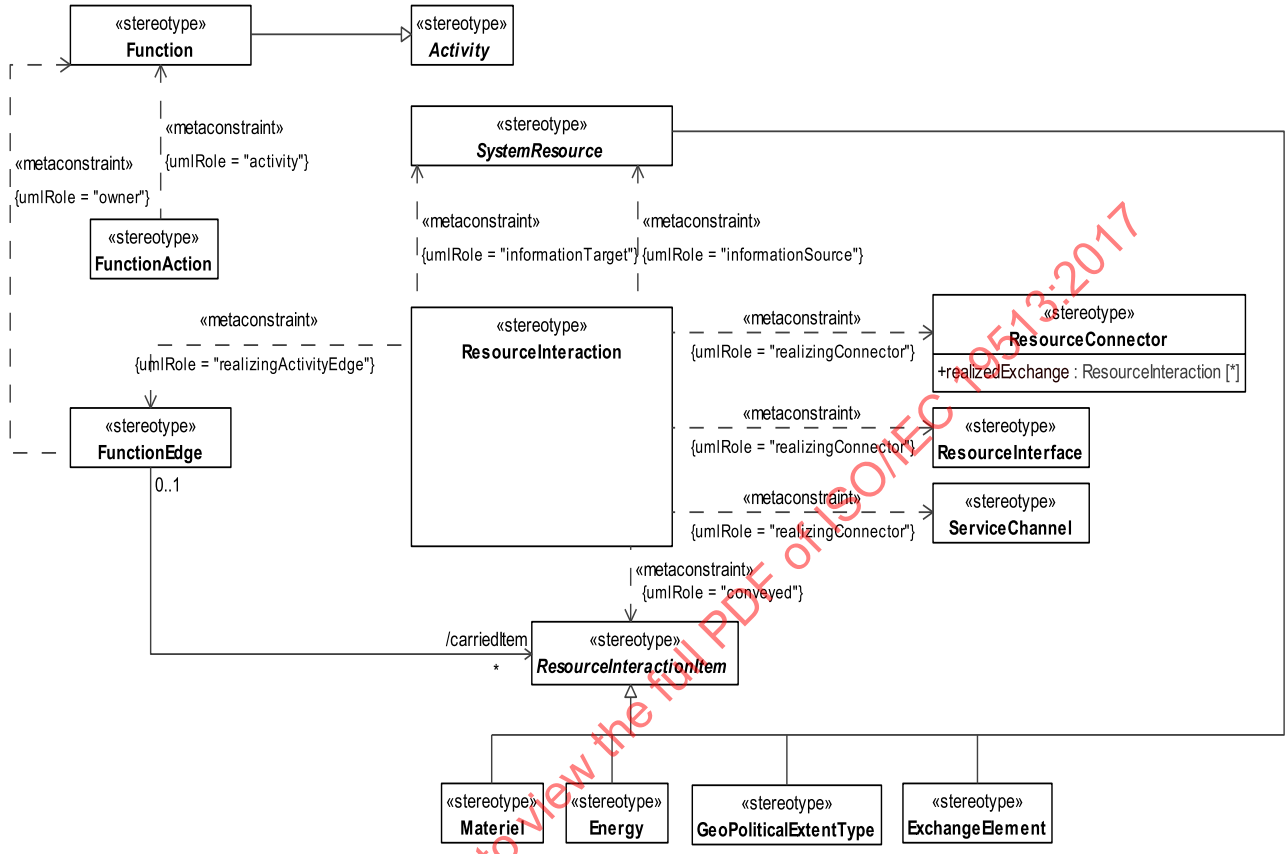

Figure B.43 - SV-6/SvcV-6

B.2.6.12 SV-7/SvcV-7

MODAF: The SV-7 is the Resource Performance Parameters Matrix and depicts the performance characteristics of a Resource (e.g., system, role, or capability configuration).

DoDAF: The SV-7 DoDAF-described View is the Systems Measures Matrix and depicts the measures (metrics) of resources.

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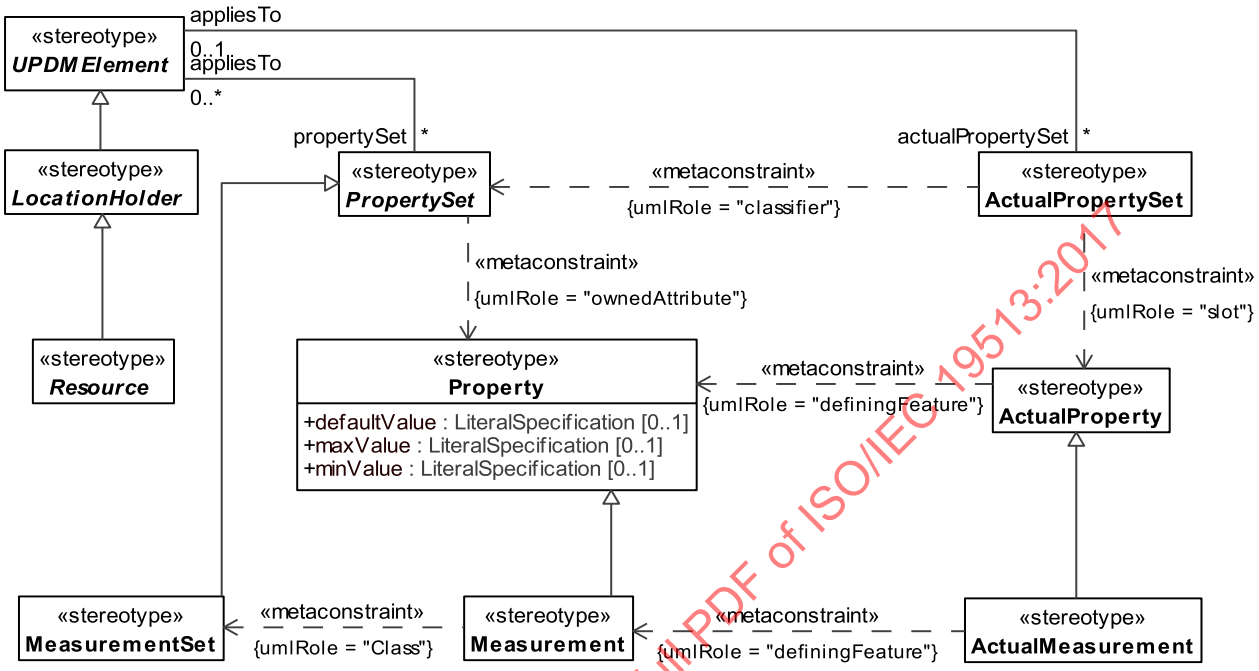

Figure B.44 - SV-7/SvcV-7

B.2.6.13 SV-8/SvcV-8

MODAF: The SV-8 provides an overview of how a capability configuration structure changes over time. It shows the structure of several capability configurations mapped against a timeline.

DoDAF: The Systems Evolution Description DoDAF-described View presents a whole lifecycle view of resources (systems), describing how it changes over time. It shows the structure of several resources mapped against a timeline.

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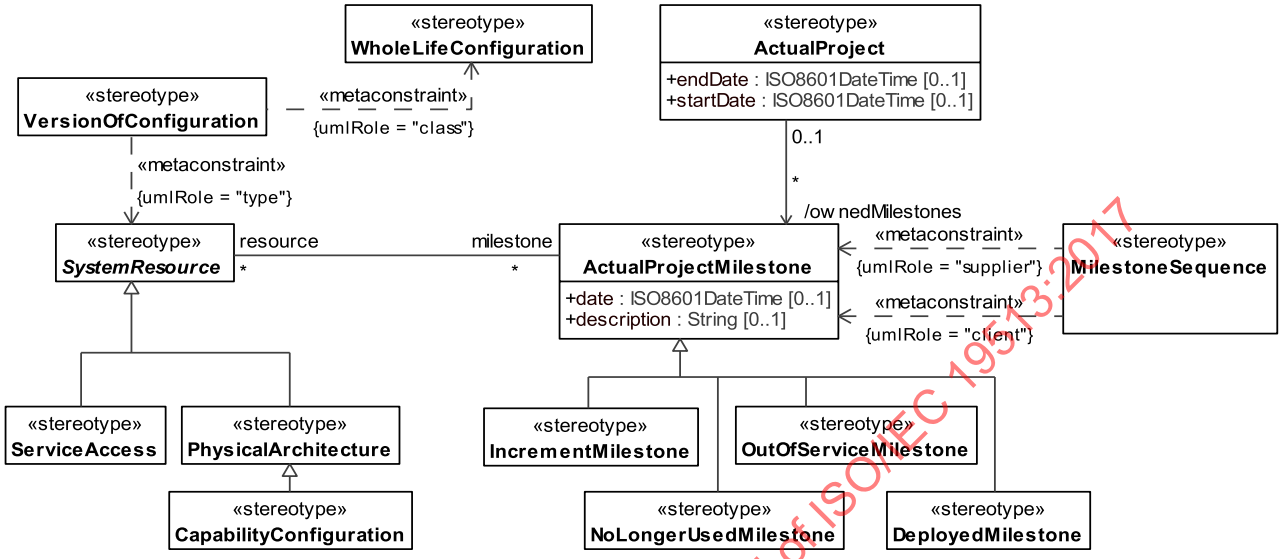

Figure B.45 - SV-8/SvcV-8

B.2.6.14 SV-9/SvcV-9

MODAF: The Technology & Skills Forecast defines the underlying current and expected supporting technologies and skills. Expected supporting technologies and skills are those that can be reasonably forecast given the current state of technology and skills, and expected improvements / trends. New technologies and skills will be tied to specific time periods, which can correlate against the time periods used in SV-8 milestones and linked to Enterprise Phases.

DoDAF: The Technology & Skills Forecast defines the underlying current and expected supporting technologies and skills. Expected supporting technologies and skills are those that can be reasonably forecast given the current state of technology and skills, and expected improvements / trends. New technologies and skills will be tied to specific time periods, which can correlate against the time periods used in SV-8 milestones and linked to Enterprise Phases.

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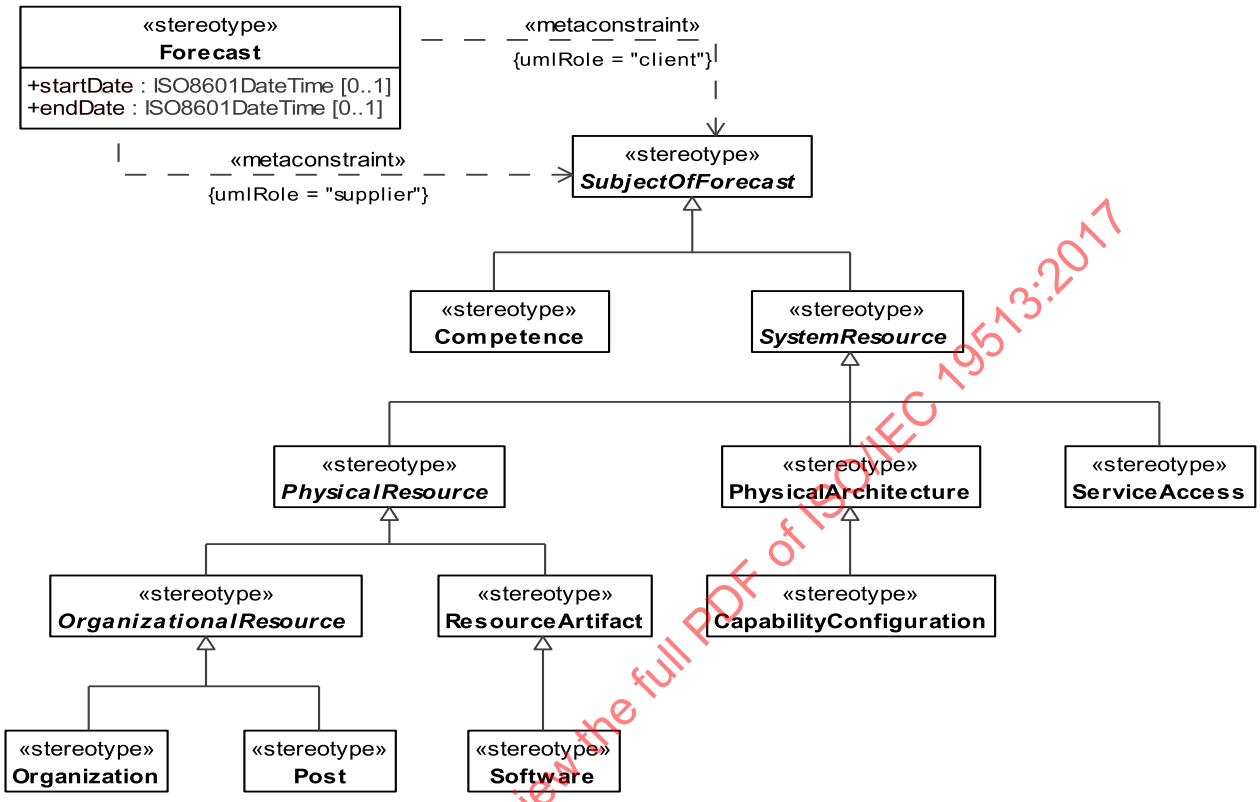

Figure B.46 - SV-9/SvcV-9

B.2.7 TV/StdV

MODAF: Technical Standards Views are extended from the core DoDAF views to include non-technical standards such as operational doctrine, industry process standards, etc.

DoDAF: The Standards Views within the Standards Viewpoint are the set of rules governing the arrangement, interaction, and interdependence of solution parts or elements.

B.2.7.1 TV-1&2&3/StdV-1&2

MODAF: Standards Profile (TV-1) defines the technical and non-technical standards, guidance and policy applicable to the architecture.

The Standards Forecast (TV-2) contains expected changes in technology-related standards and conventions, which are documented in the TV-1 Product.

DoDAF: The Standards Profile StdV-1 DoDAF-described View defines the technical, operational, and business standards, guidance and policy applicable to the architecture.

The StdV-2 Standards Forecast DoDAF-described View contains expected changes in technology related standards, operational standards, or business standards and conventions, which are documented in the StdV-1 view.

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