



UPDM – Unified Profile for DoDAF/MODAF



Matthew Hause
UPDM Co-Chair

UPDM Group

Adaptive
Artisan Software
ASMG
BAE Systems
DoD
DND
embeddedPlus
Generic
General Dynamics
IBM
Lockheed Martin Co
Mega

Mitre
Northrop Grumman
L3 Comms
MOD
NoMagic
Raytheon
Rolls Royce
Sparx Systems
VisumPoint
Selex SI
Thales
Unisys

July, 2010





What is UPDM? - Summary

- UPDM 1.0 is a standardized way of expressing DoDAF 1.5 and MODAF 1.2 artefacts using UML and SysML
 - UPDM is **NOT** a new Architectural Framework
 - UPDM is not a methodology or a process
 - UPDM 2.0 is scheduled to address DoDAF 2.0, MODAF 1.2, NAF 3.x, and DNDAF 1.7
- UPDM 1.0 was developed by members of the OMG with help from industry and government domain experts.
- UPDM 1.0 has been implemented by multiple tool vendors.
 - Tools supporting UPDM 1.0 are available now.



Outline

- Why?
 - The need for UPDM.
- When?
 - The history and projected timetable for UPDM.
- Who and Where?
 - Who is in the UPDM RFC Group?
- How?
 - How was the specification created?
- What?
 - What is UPDM in general?
 - A detailed look at a few things.
- Questions and answers?

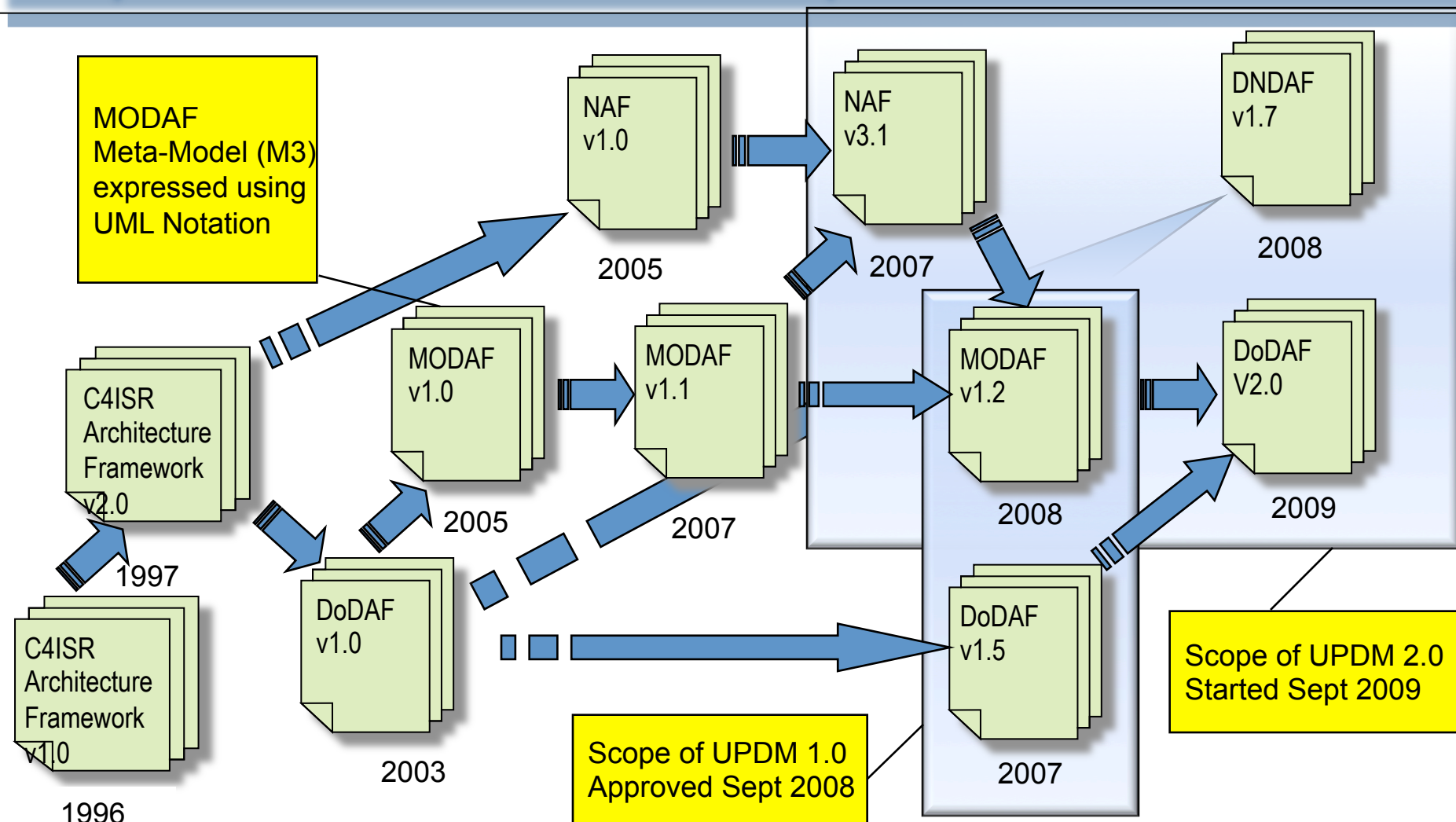


Why? The need for UPDM.

- Motivation
 - US DoD and UK MOD interested in leveraging commercial standards for their Military Architecture Framework
 - Military Architecture Framework Tool Interoperability
 - Key Goal for DoD, MOD, Enterprise and System Architects and Engineers
 - Formal MetaModel basis for the Military Architecture Framework
 - Critical to Interoperability Objectives
 - Critical to Understanding Profile Requirements
- Proliferation of Military Architectural frameworks
 - DoDAF, MODAF, DNDAF, NAF, AGATE, ADOAF, MDAF, etc.
 - Defence organizations, contractors and tool vendors are hoping to find a way out of the alphabet soup.



Why and When: Historical Development of AF's.





Who and Where: UPDM Team Members

- US DoD Liaison - DoD/DISA, OSD CIO, Mitre, Silver Bullet
- UK MOD Liaison - UK MOD, ModelFutures
- Canada DND Liaison – DND and ASMG Ltd
- NATO – Generic AB on behalf of SwAF and on contract by FMV
- Tool Vendors – Adaptive, Atego (Co-Chair), EmbeddedPlus, IBM (Co-Chair), Mega, NoMagic (Co-Chair), Sparx Systems, Visumpoint
- Aerospace – BAE Systems, General Dynamics, L3 Communications, Lockheed Martin, Northrop Grumman, Raytheon, Rolls-Royce, Selex SI, Thales, Unisys
- Advisors – Decisive Analytics
- Distributed multi national team (US, UK, France, Sweden, Lithuania, Australia, Canada, Thailand, Italy)



How: UPDM 1.0 Requirements

- Mandatory Requirements
 - Domain Metamodel
 - Metamodel (abstract syntax and constraints)
 - Profile
 - Notation (concrete syntax)
 - DoDAF 1.5 and MODAF 1.2 artifacts
 - Support for custom views and viewpoints
 - Element taxonomy reference
 - Data interchange
- Optional Requirements
 - Extensibility to Other Architecture Frameworks
 - Representation of Architectural Patterns



How: UPDM Features

- Integrates with SoaML – The Service Oriented Architecture Modelling Language
- SysML Extensions with UPDM level 1
 - Facilitates integration of DoDAF and MODAF models for system of systems modeling with SysML models for systems modeling
 - Enables UPDM to fully leverage SysML features



How: UPDM Level 1 Compliance SysML Extensions

- Enables UPDM to leverage SysML features
 - SysML blocks to represent structural elements such as operational nodes, artifacts (systems), capability configurations, which enable the use of flow ports, item flows, and value properties with units and distributions
 - SysML activities to support continuous flow modeling, activity hierarchies, and support for enhanced functional flow block diagrams
 - SysML parametrics to enable the integration of engineering analysis with the architecture models (e.g., performance parameters in an SV-7 can be captured in parametric equations)
 - SysML allocations to support various types of mappings such as an SV-5 that maps system functions to operational activities
- Other SysML Features
 - SysML requirements enable text based requirements to be captured and traced to other model elements using the satisfy, derive, verify and refine relationships
 - SysML view and viewpoint enable provide for multiple perspectives of the model, and to manage, control, and organize information.
 - Callout notation



What is UPDM?

UPDM - Domain Meta Model



UPDM RFC - Domain Meta Model Summary

Content Diagram diagrams [DMM Auxiliary Diagrams]

Auxiliary diagrams

Legend

Individual Type Tuple Thing

Component Collaboration Model

Information Product Element

Operational Object Element

NAV Measurable Properties

Business Rule Element

Component Element

Capability Element

NAV Requirements

NAV Environment

Process Element

EnterprisePhase

Service Element

NAV Effectivity

Actor Element

Competencies

Content Diagram diagrams [DMM Layers]

Layers

Legend

Individual Type Tuple Thing External to this view

AcV AV OV SOV StV SV TV

Content Diagram diagrams [DMM Products]

Products

Legend

Individual Type Tuple Thing

TV

TV-1&2&3

AV

AV-1 AV-2

OV

OV-1 OV-2 OV-3 OV-4 Typical OV-4 Actual OV-5
OV-6a OV-6b OV-6c OV-7

StV

StV-1 StV-2 StV-3 StV-4 StV-5 StV-6
StV-7

AcV

AcV-1 AcV-2

SOV

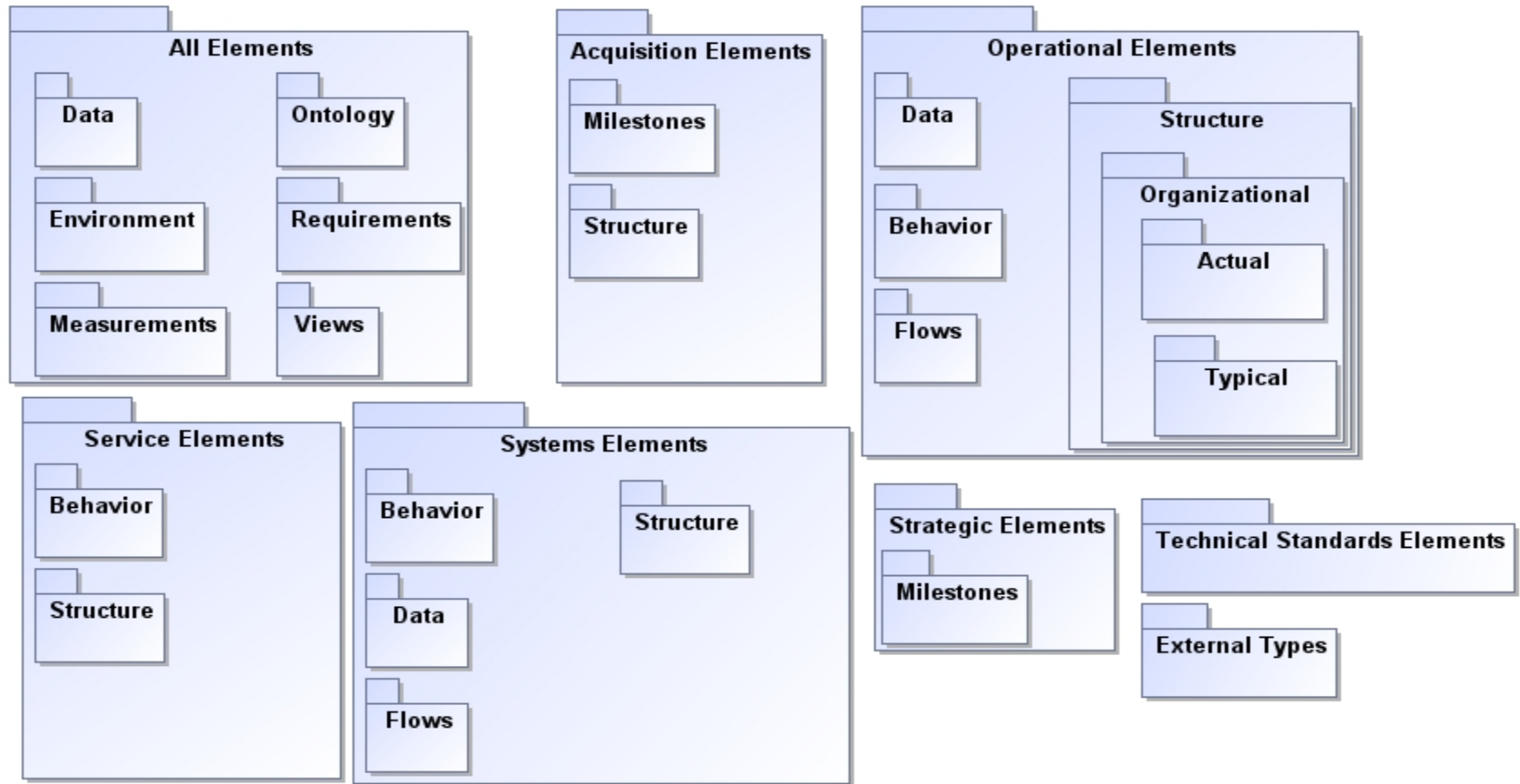
SOV-1 SOV-2 SOV-3 SOV-4 SOV-5

SV

SV-1 SV-2 SV-3 SV-4 SV-5
SV-6 SV-7 SV-8 SV-9 SV-10a
SV-10b SV-10c SV-11 SV-12



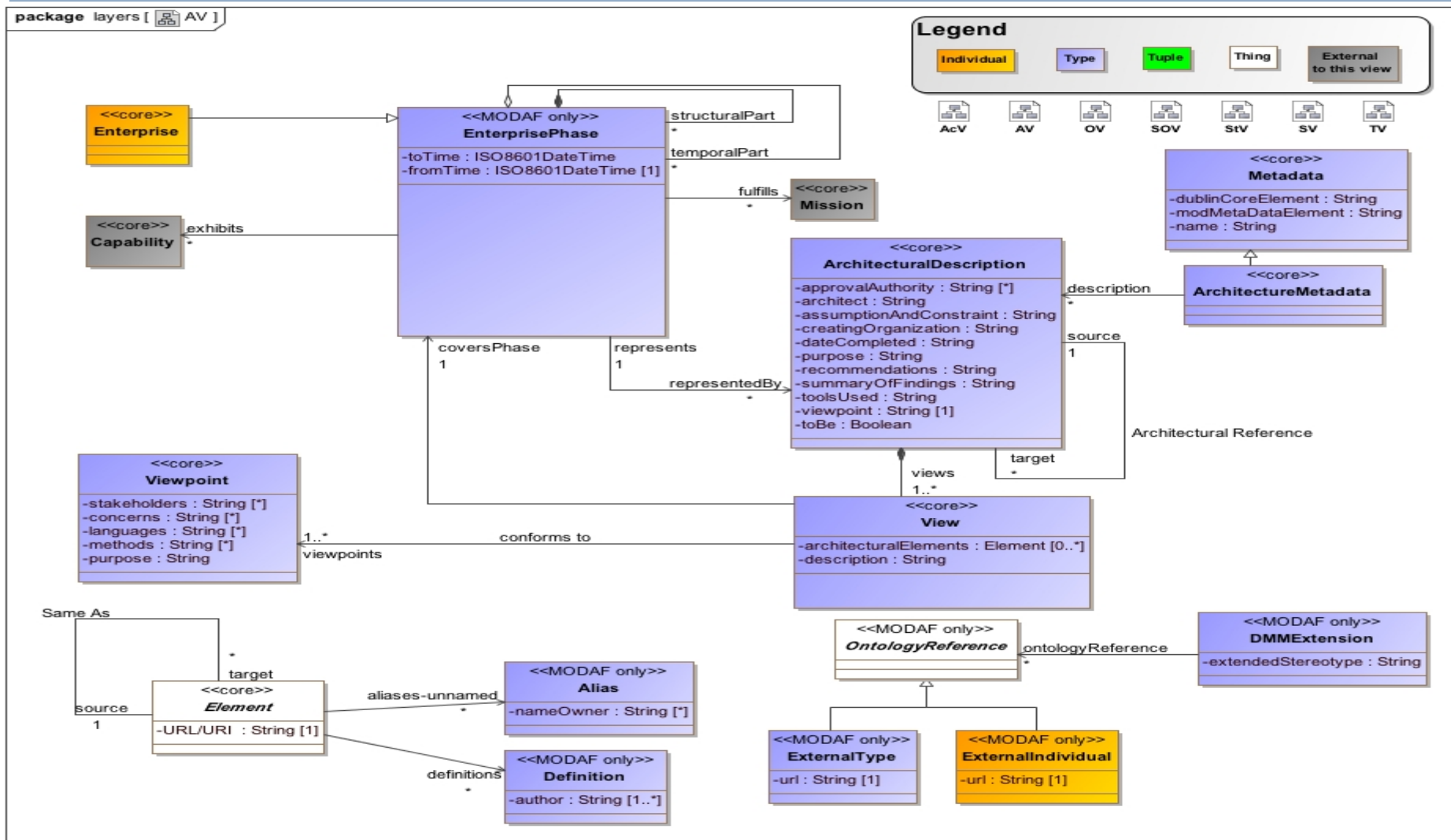
UPDM RFC - Domain Meta Model Summary (Packages.)



- Package structure organizes stereotypes by viewpoint
- Multiple viewpoints manage model complexity

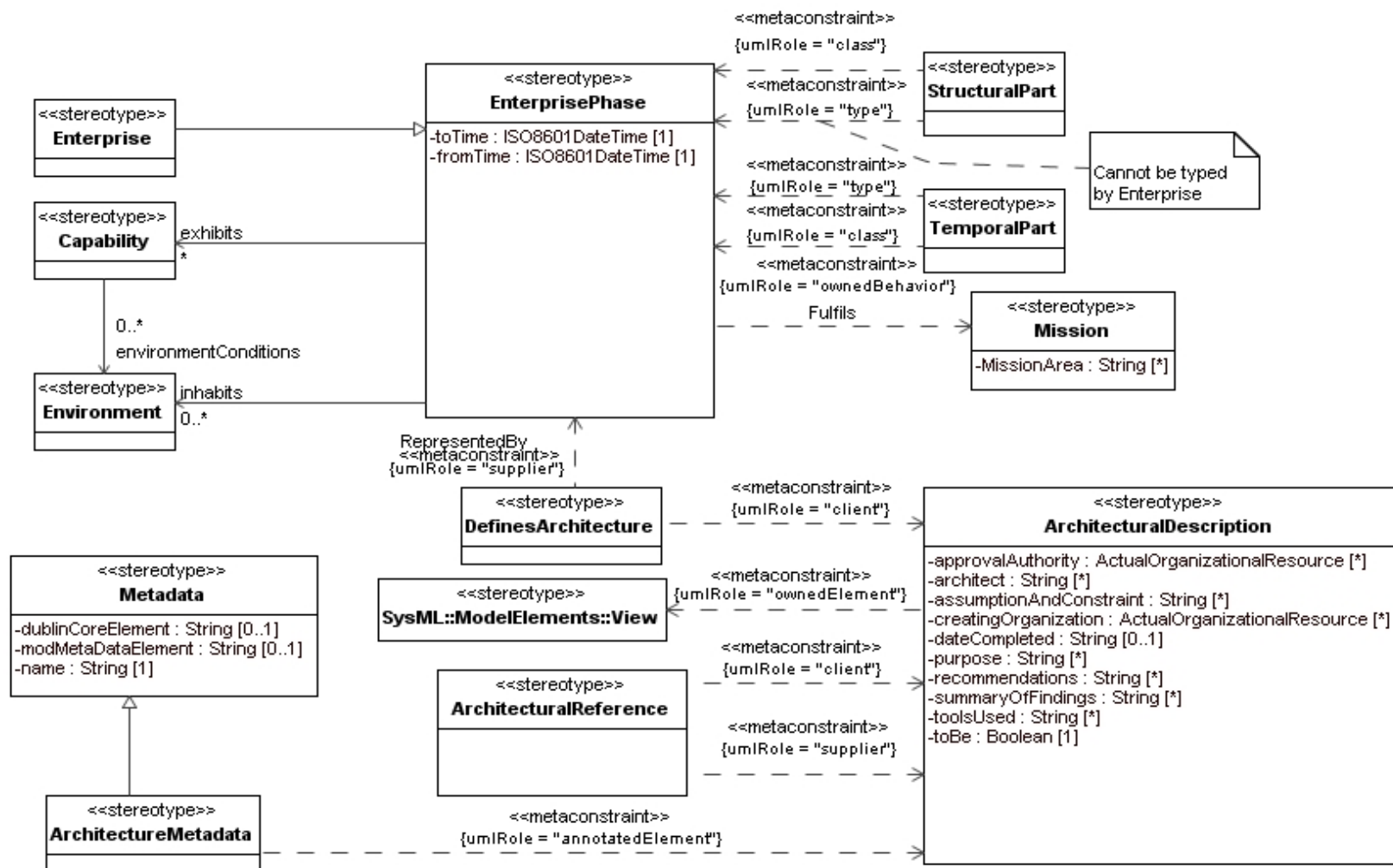


UPDM RFC - Domain Meta Model Summary (AV)





UPDM RFC - Profile Summary (AV-1)





When: UPDM 2.0 Roadmap

- Signed and Released DoDAF 2.0 in June 2009
- Preparation of RFP for UPDM 2.0 (Next Slide)
- Issue UPDM 2.0 RFP Sept 2009
-



When: UPDM 2.0 Roadmap

Event or Activity	Actual Date
<i>Preparation of RFP by TF</i>	<i>July 2009</i>
<i>RFP placed on OMG document server</i>	<i>Aug 17 2009</i>
<i>Approval of RFP by Architecture Board</i>	<i>Sept 14-18 2009</i>
<i>Review by TC</i>	<i>San Antonio</i>
<i>TC votes to issue RFP</i>	<i>September 18 2009</i>
<i>LOI to submit to RFP due</i>	<i>Dec 11 2009</i>
<i>Initial Submissions due and placed on OMG document server</i> <i>("Four week rule")</i>	<i>May 24 2010</i>
<i>Voter registration closes</i>	<i>March 8, 2010</i>
<i>Initial Submission presentations</i>	<i>June 20-25 2010</i>
<i>Preliminary evaluation by TF</i>	<i>June 20-25, 2010</i>
<i>Revised Submissions due and placed on OMG document server</i> <i>("Four week rule")</i>	<i>Aug 23, 2010</i>
<i>Revised Submission presentations</i>	<i>Sept 20-25, 2010</i>
<i>Final evaluation and selection by TF</i>	<i>December 2010</i>
<i>Recommendation to AB and TC</i>	
<i>Approval by Architecture Board</i>	<i>December 2010</i>
<i>Review by TC</i>	
<i>TC votes to recommend specification</i>	<i>February 2011</i>
<i>BoD votes to adopt specification</i>	<i>February 2011</i>
<i>Revised Submission presentations</i>	<i>December 4-8, 2011</i>



When: UPDM 2.0 Roadmap

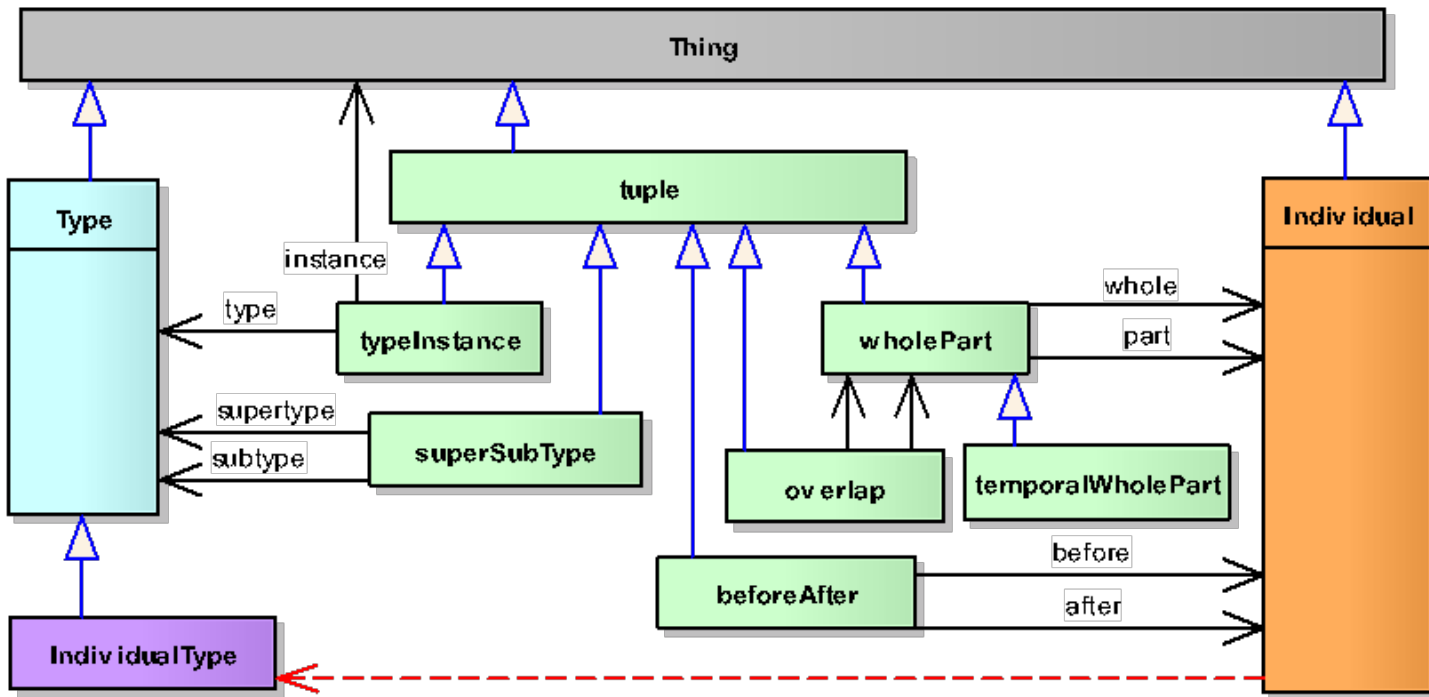
- RFP for UPDM 2.0
 - Inclusion of DoDAF 2.0
 - Continuing support for MODAF 1.2
 - Support for NAF 3
 - Support for DNDAF including the Information and Security views
 - Human Factors Views based on MODAF and DNDAF
 - Business Motivational Modeling/SBVR profile integration
 - Business process Modeling Notation
 - UPDM v2 optionally could use BPMN to model operational views

– Others?

IDEAS Recap - Top-Level Foundation

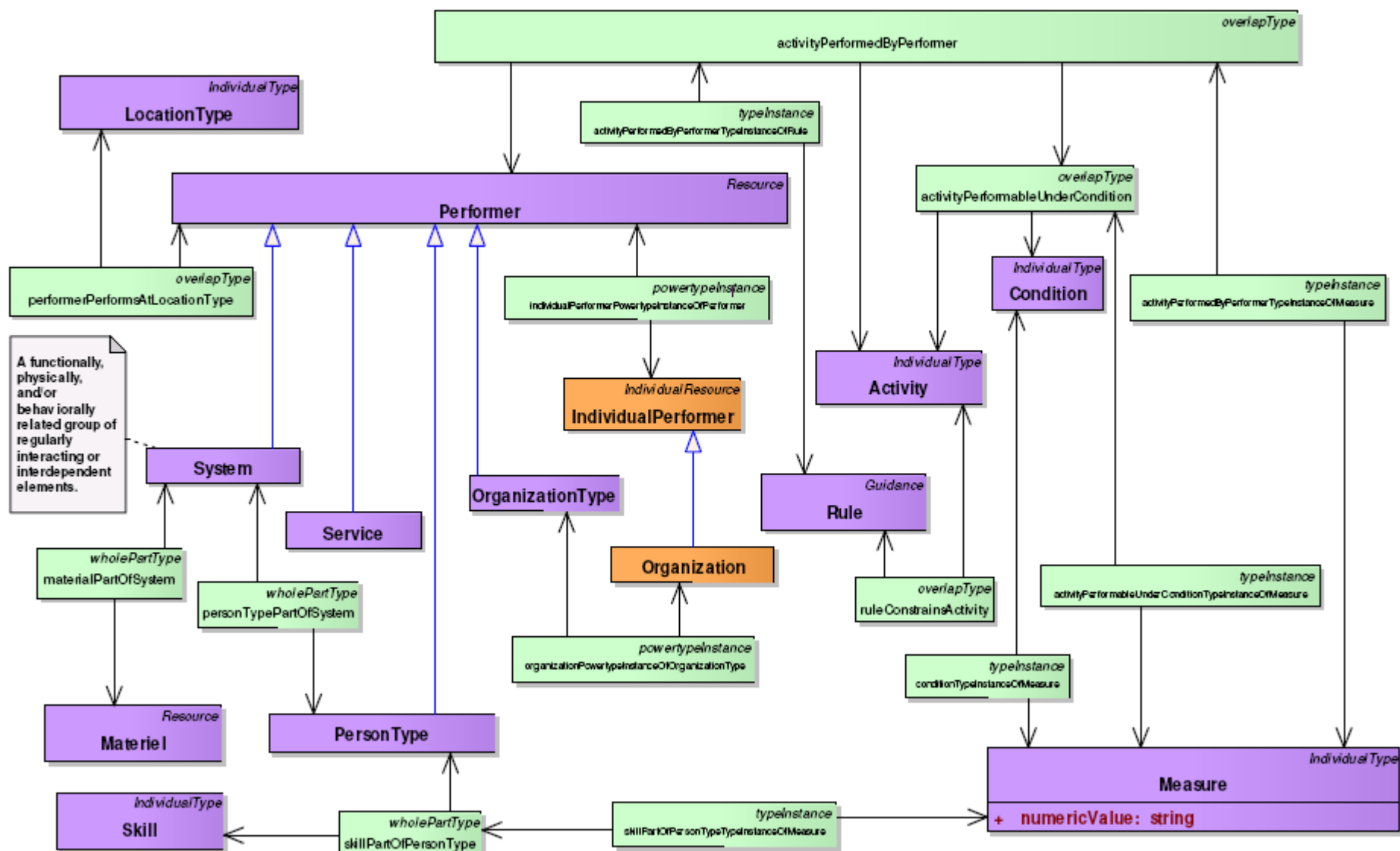


- Developed by an international group of computer scientists, engineers, mathematicians, and philosophers under defense sponsorship.
- See <http://www.ideasgroup.org> or http://en.wikipedia.org/wiki/IDEAS_Group



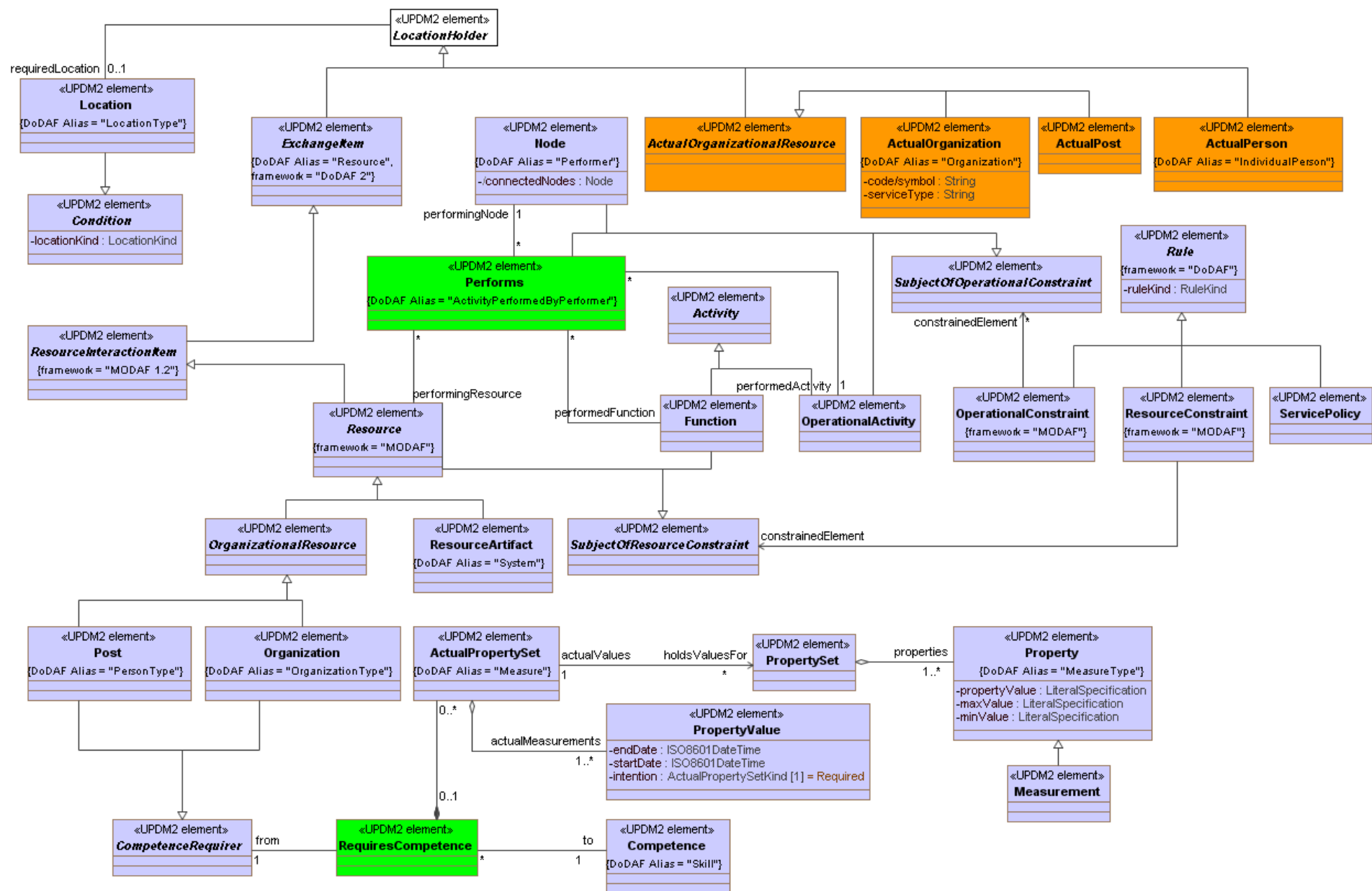


Performer



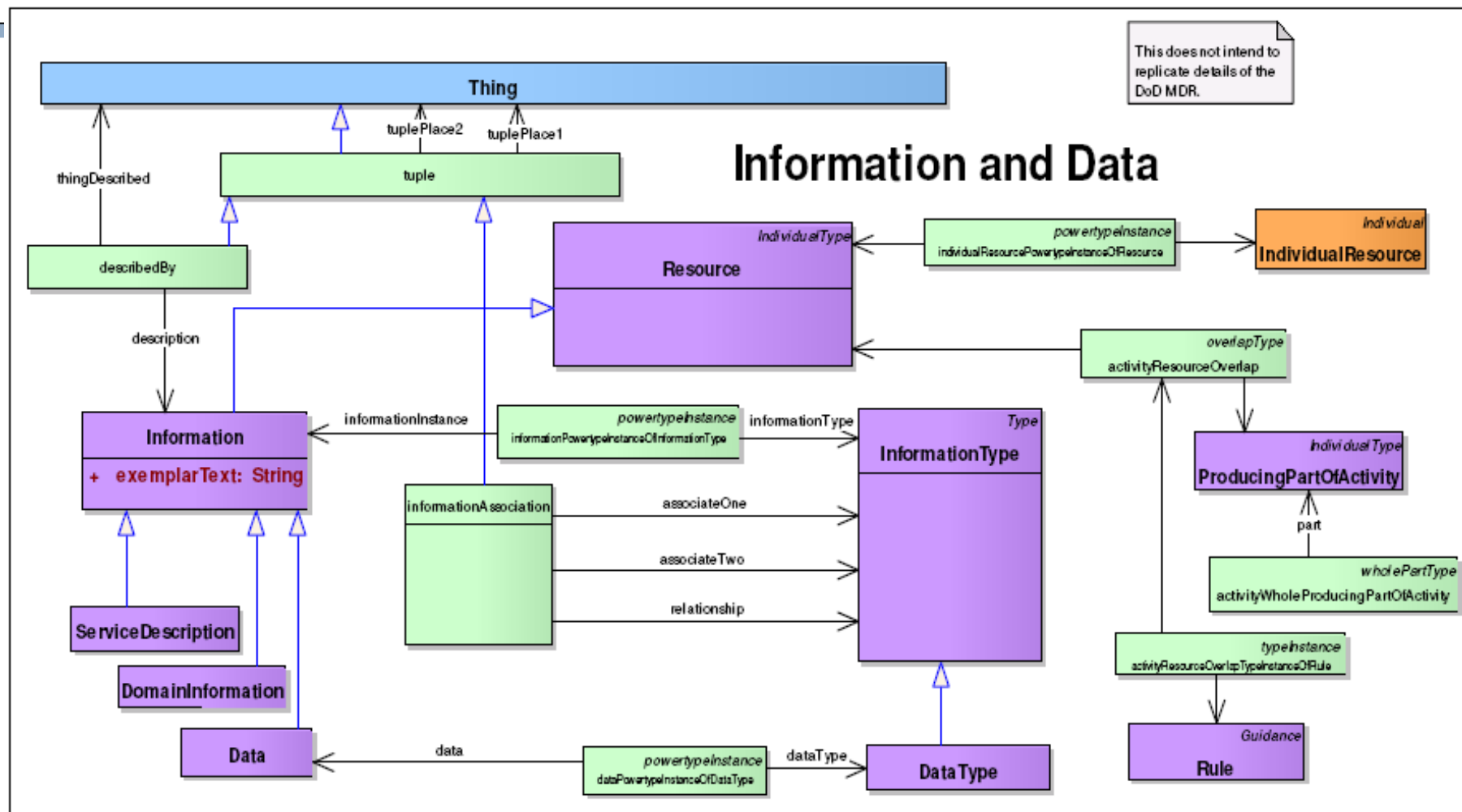


UPDM – Unified Profile for DoDAF and MODAF



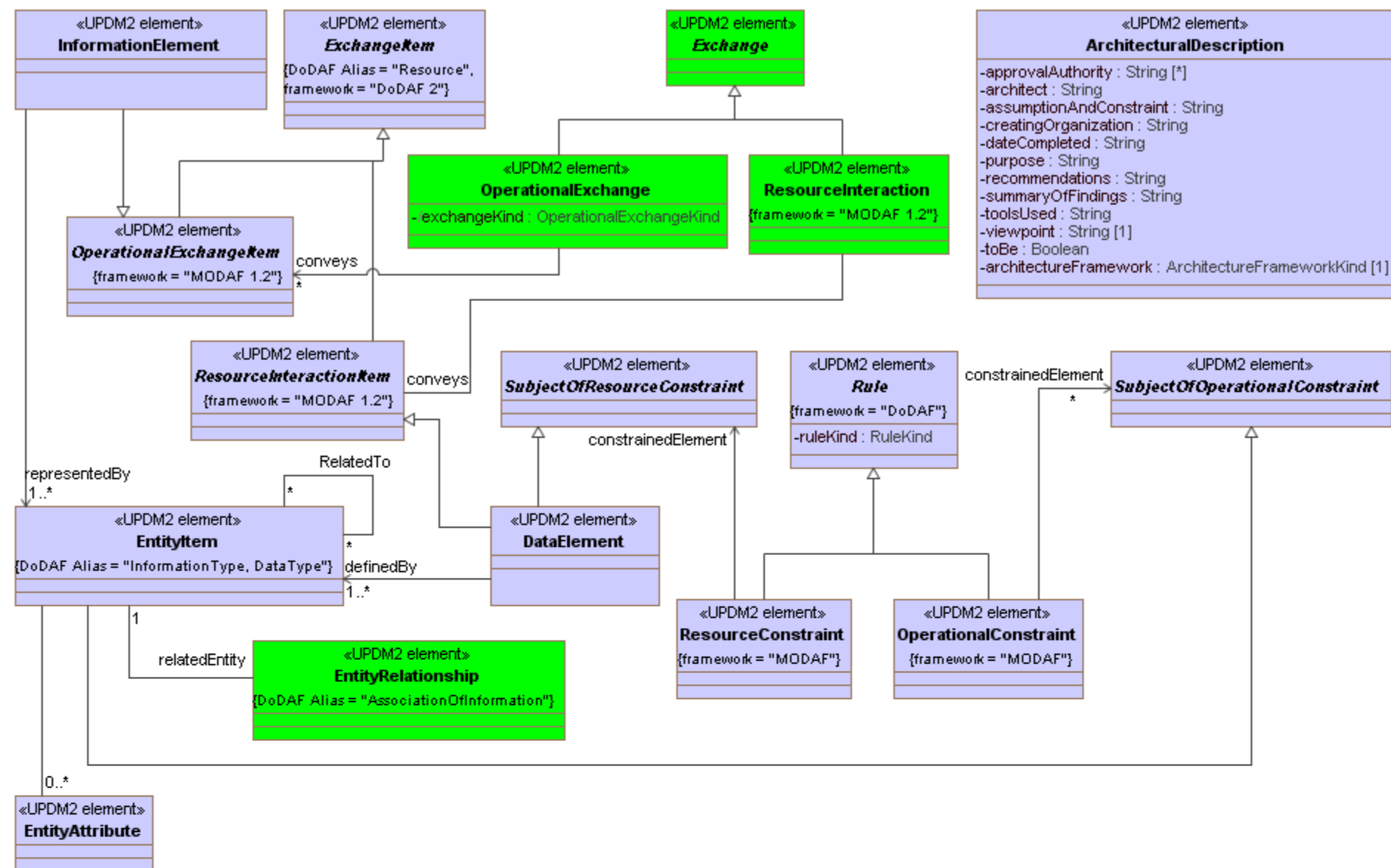


UPDM – Unified Profile for DoDAF and MODAF





UPDM – Unified Profile for DoDAF and MODAF

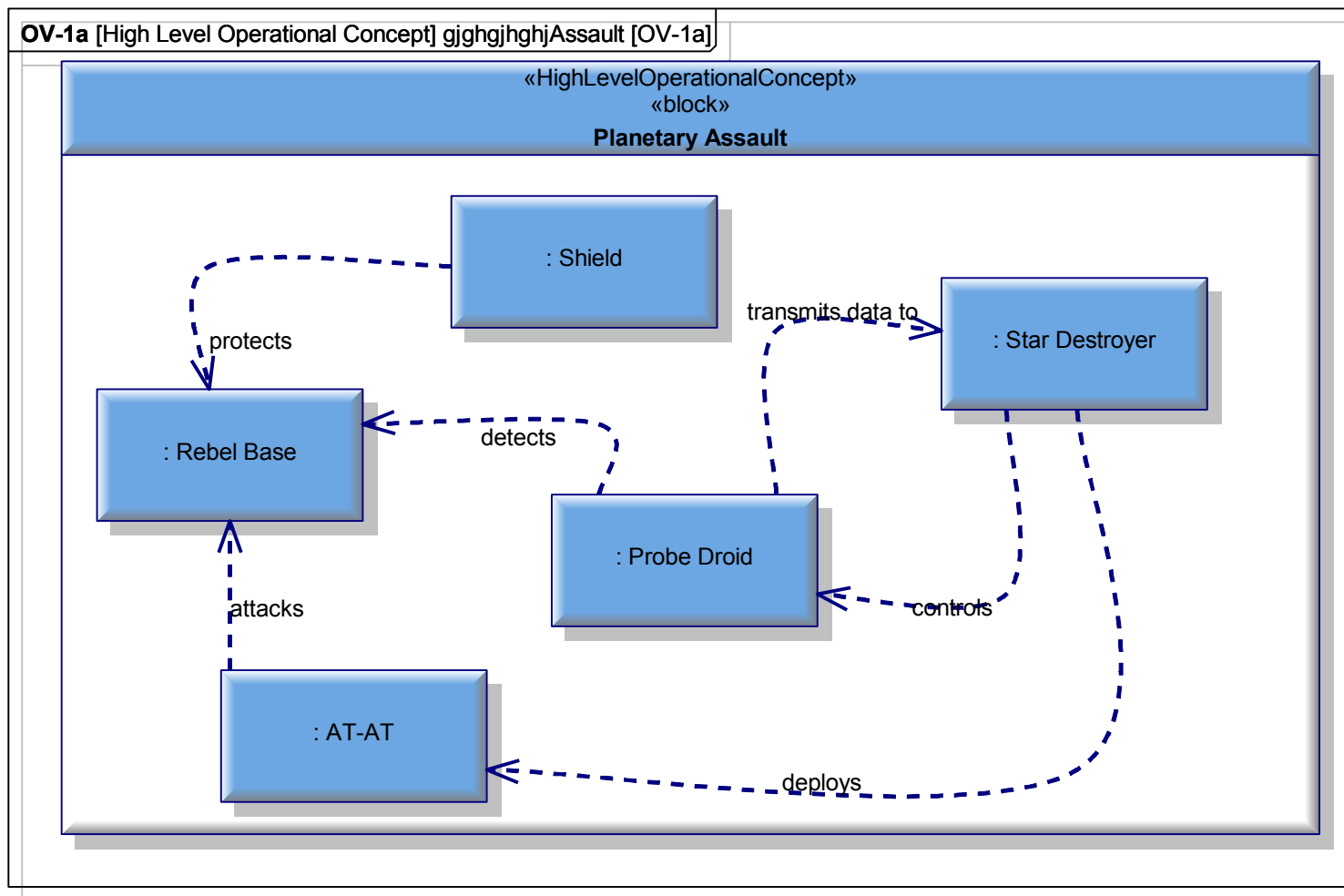




UPDM - Profile Example



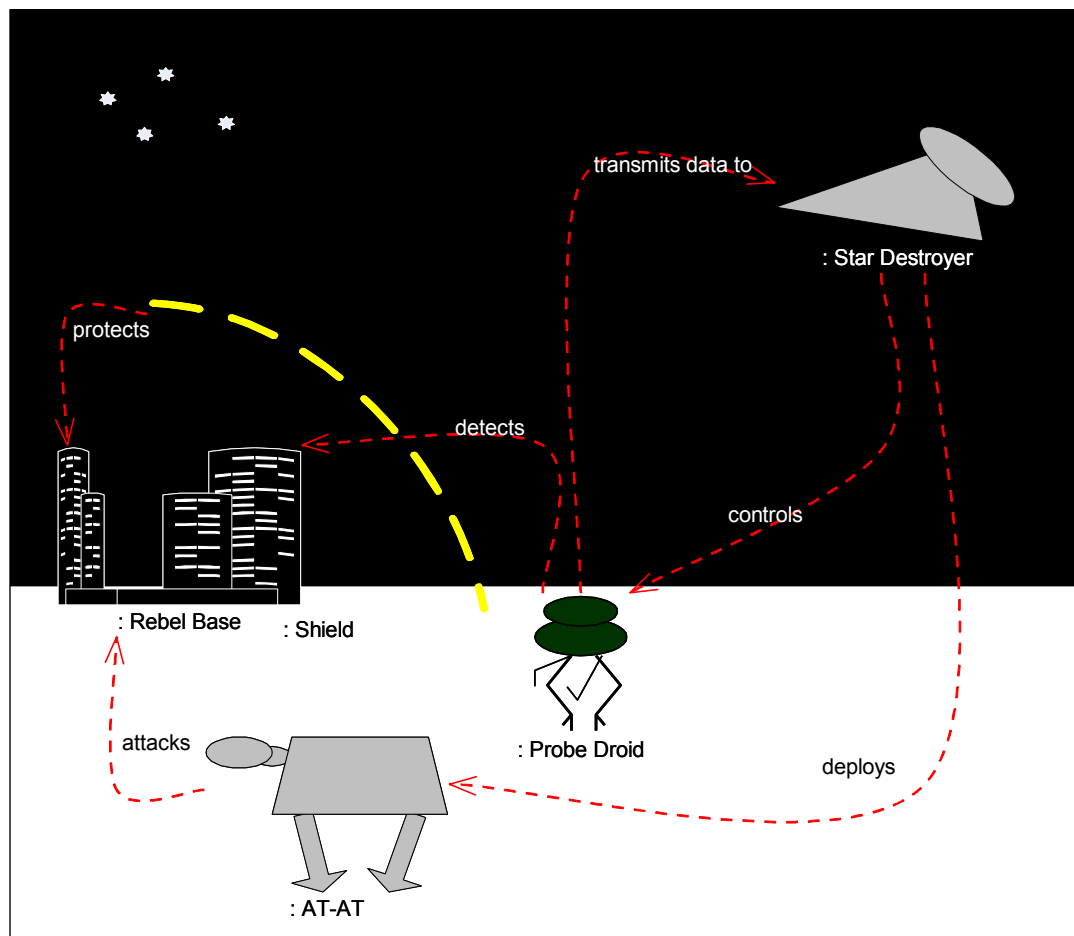
OV-1a: Operational Context Graphic





OV-1: Operational Context Graphic

OV-1a [High Level Operational Concept] Planetary Assault - Graphic Version [OV-1a]

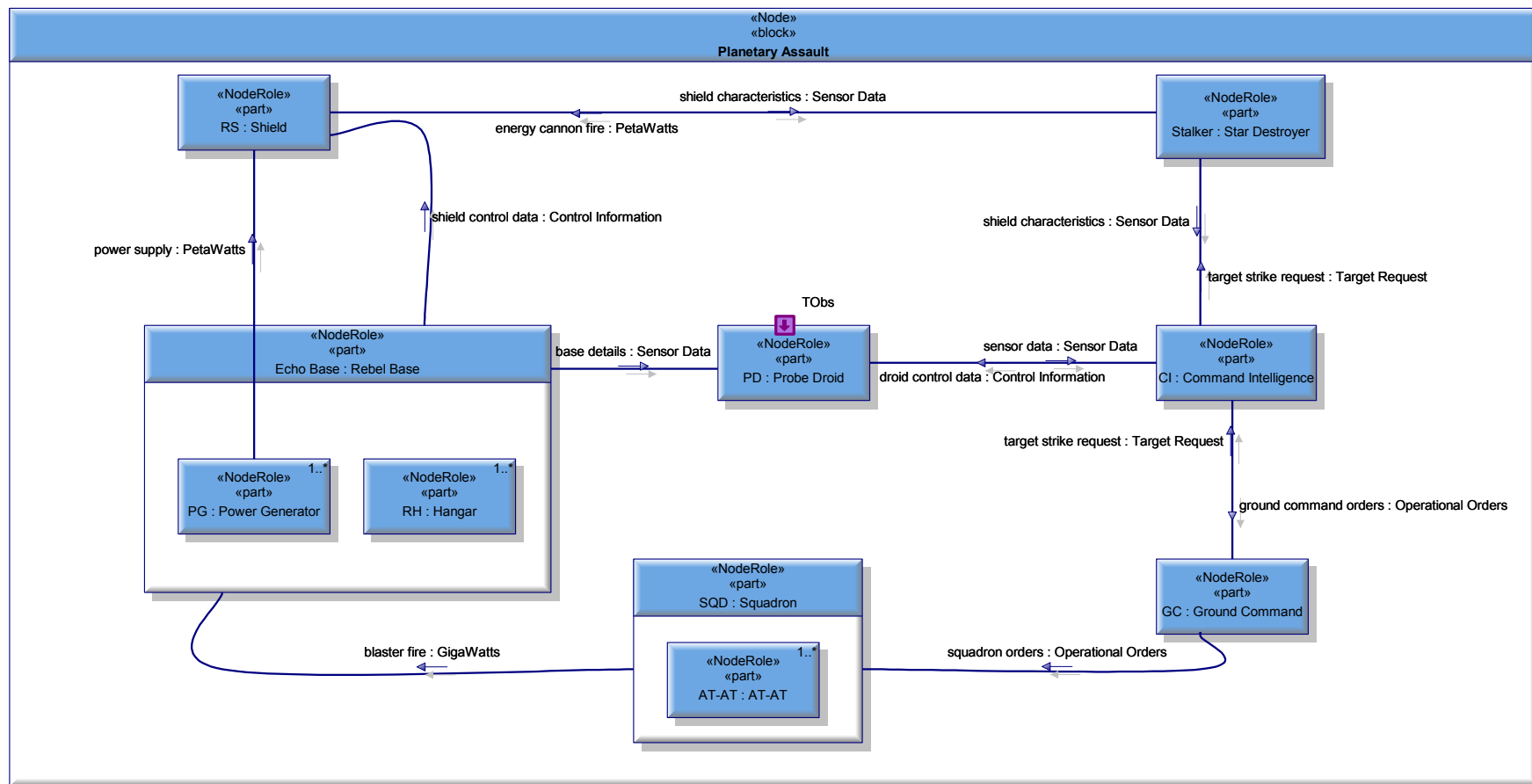


For a non-graphic version see [\[High Level Operational Concept\] gijghjhgjhjAssault \[OV-1a\]](#)



OV-2 Operational Nodes

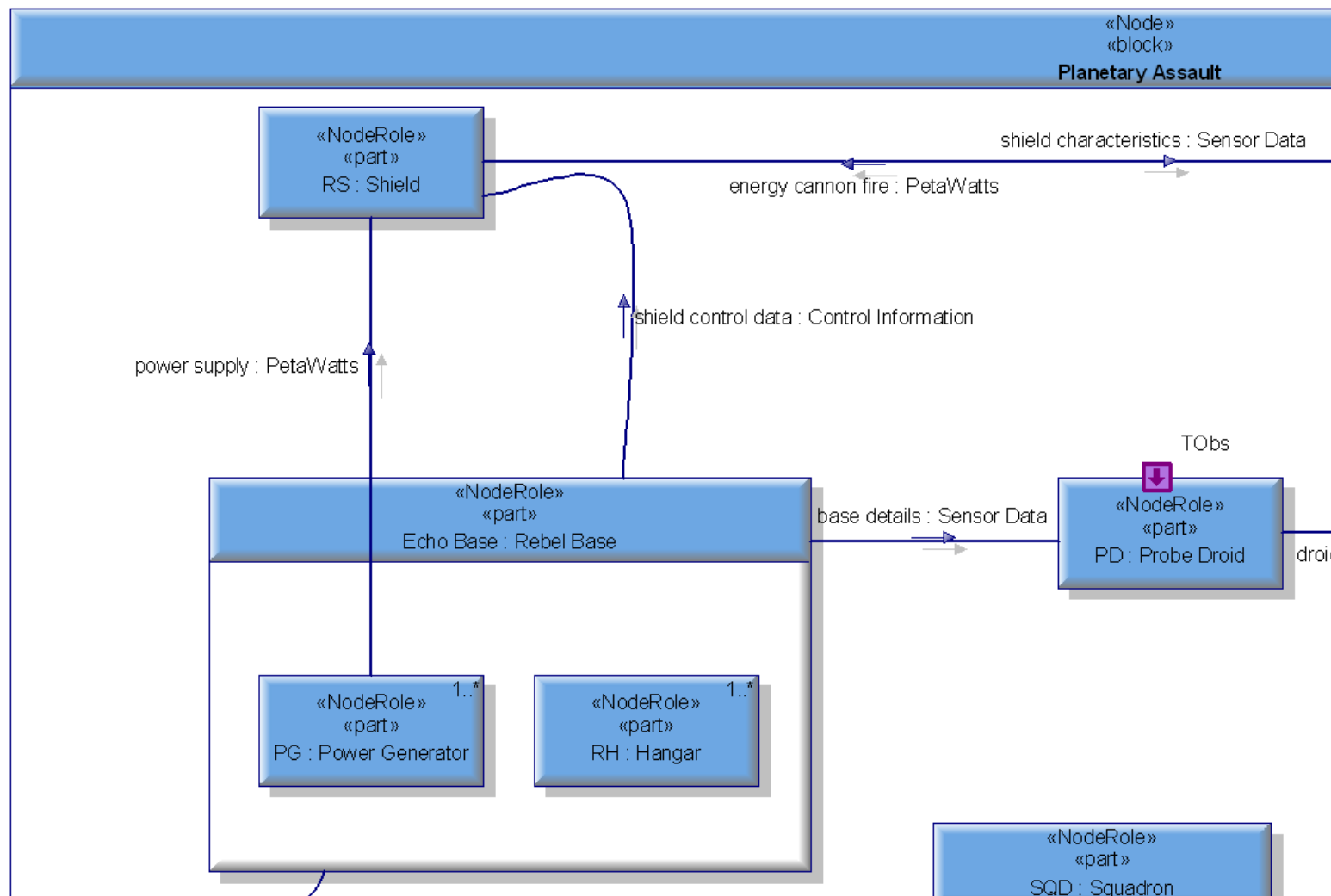
OV-2 [Node] Planetary Assault [OV-2]





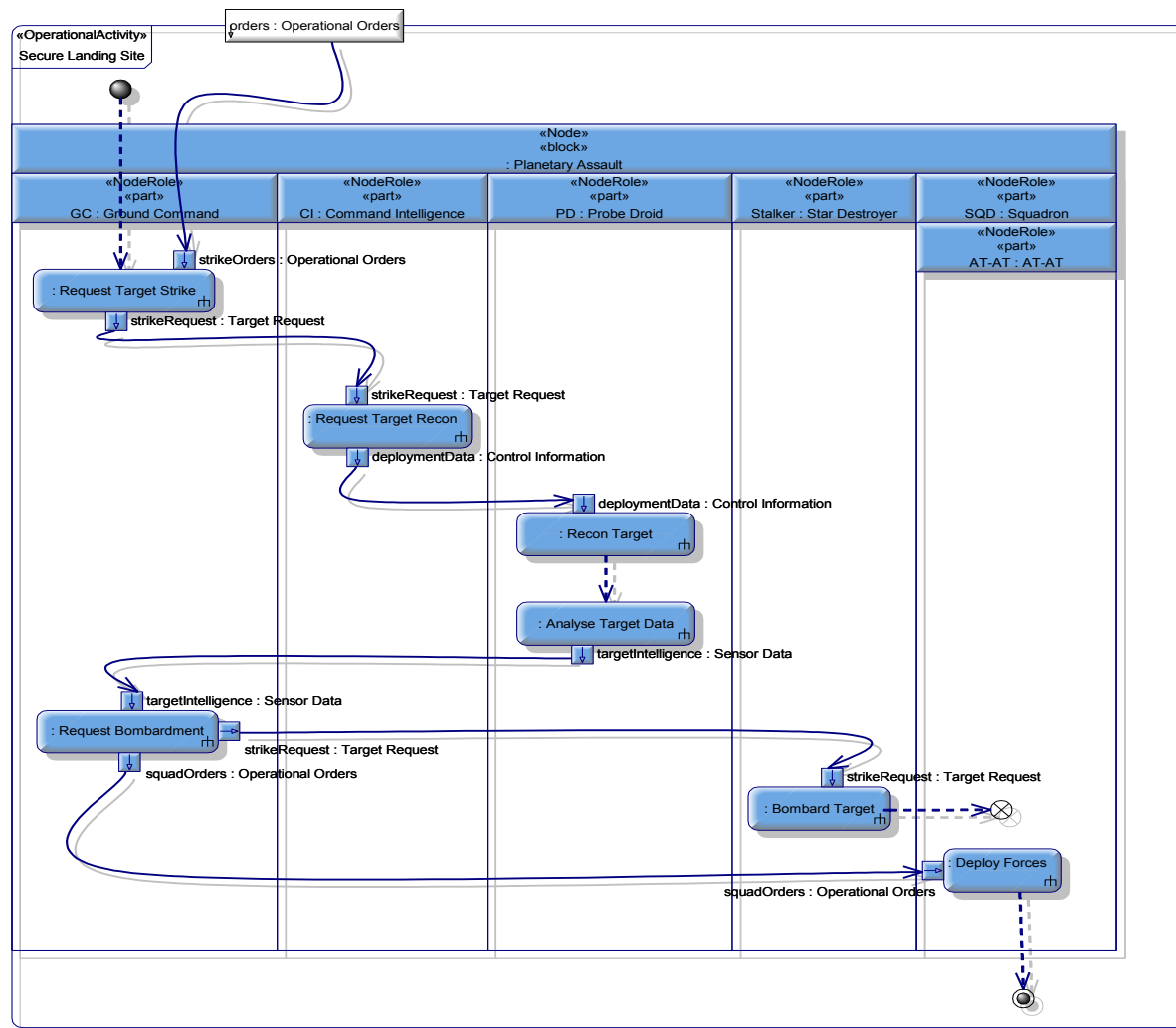
OV-2 Operational Nodes - Detail

OV-2 [Node] Planetary Assault [OV-2]



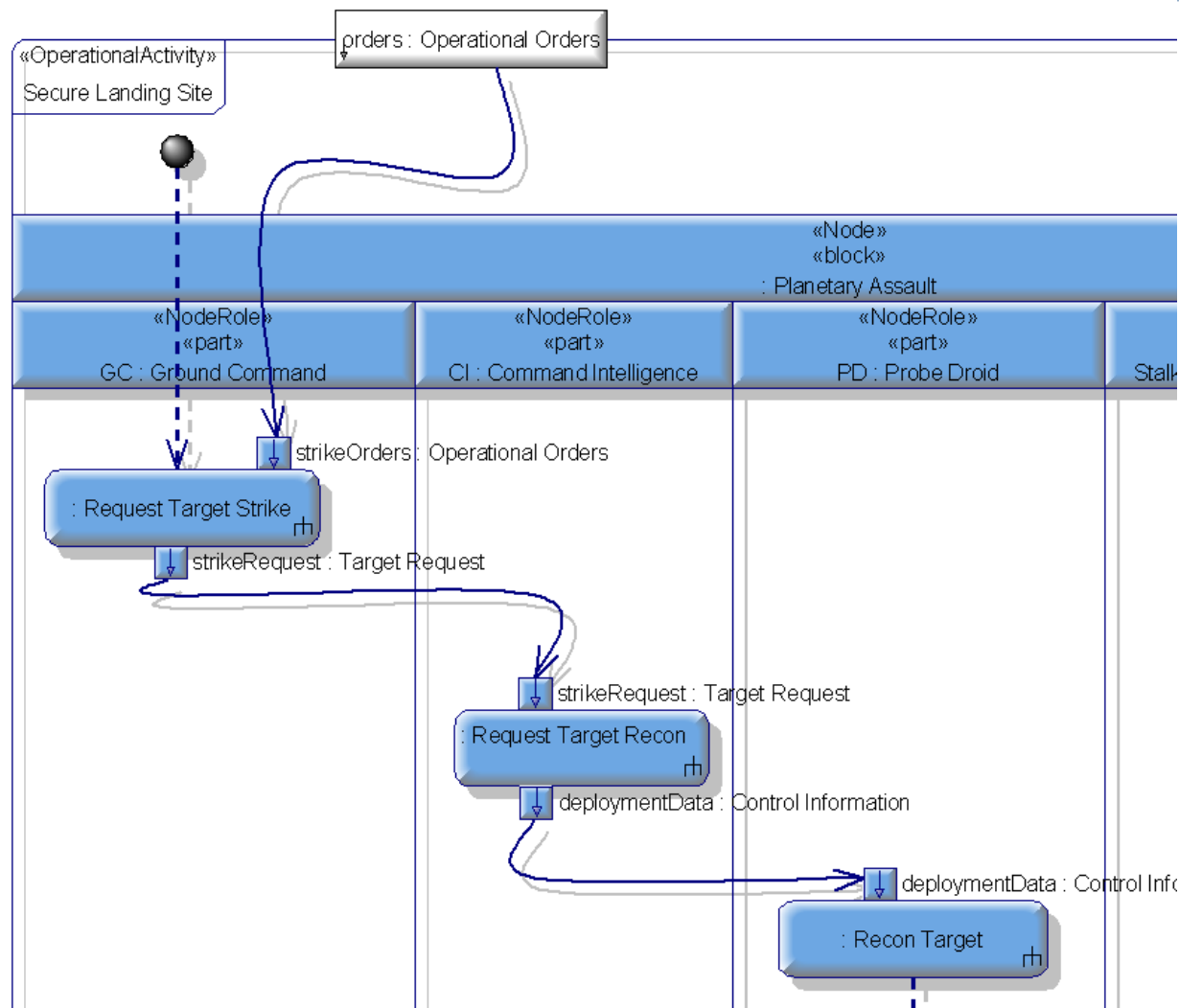


OV-5 Activity Diagram





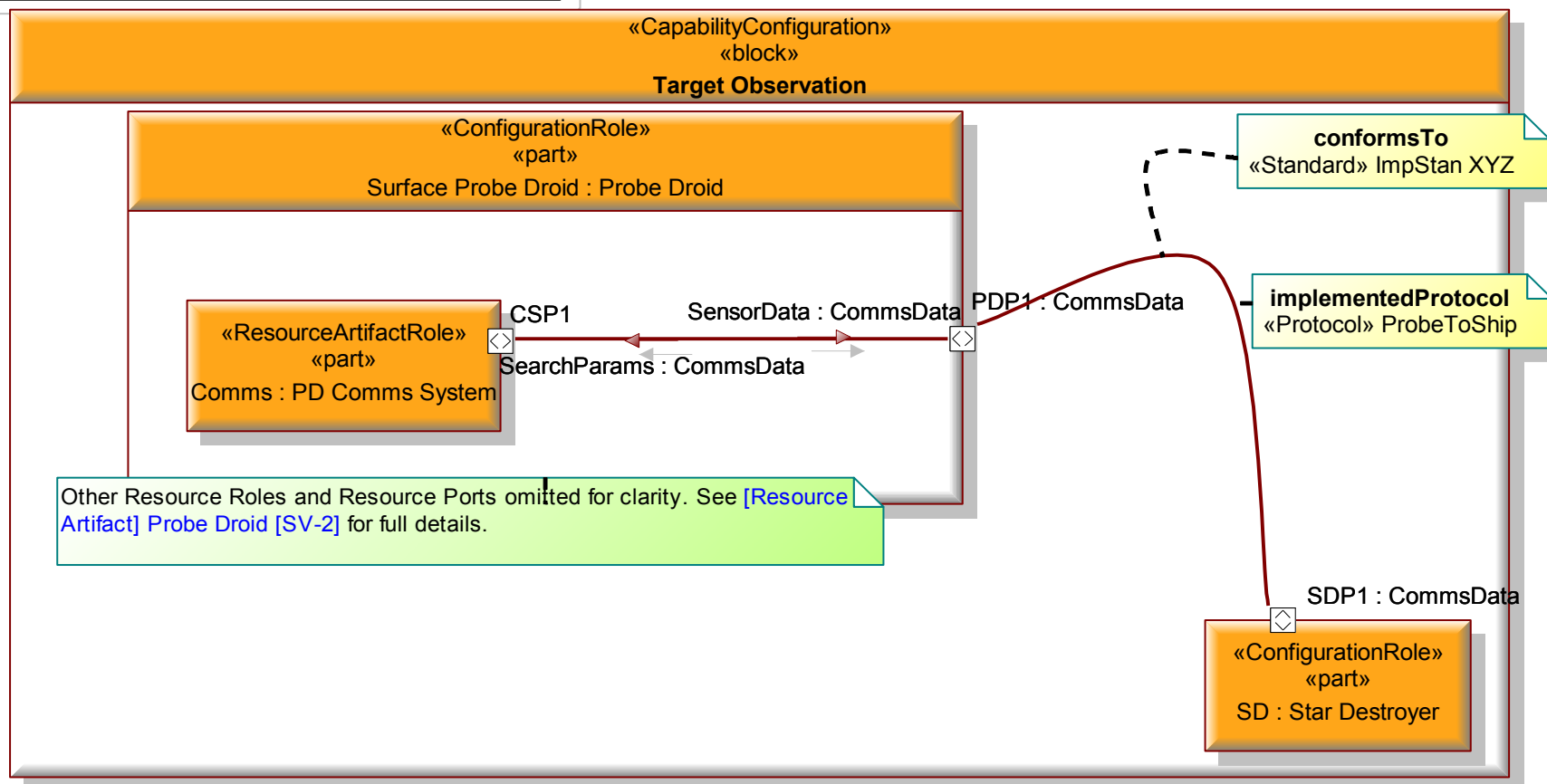
OV-5 Activity Diagram





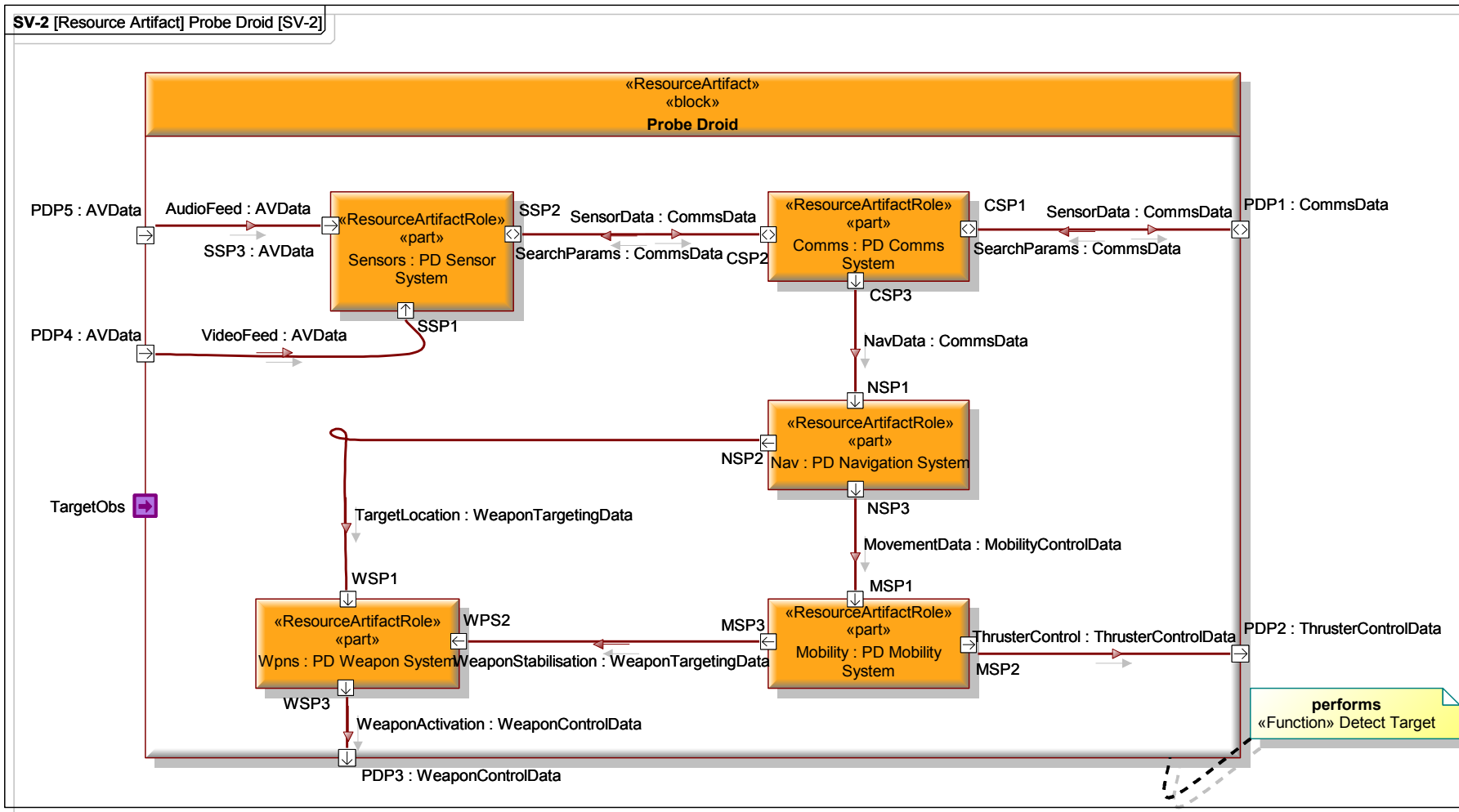
SV-1: Resource Interaction Specification

SV-2 [Capability Configuration] Target Observation [SV-2]



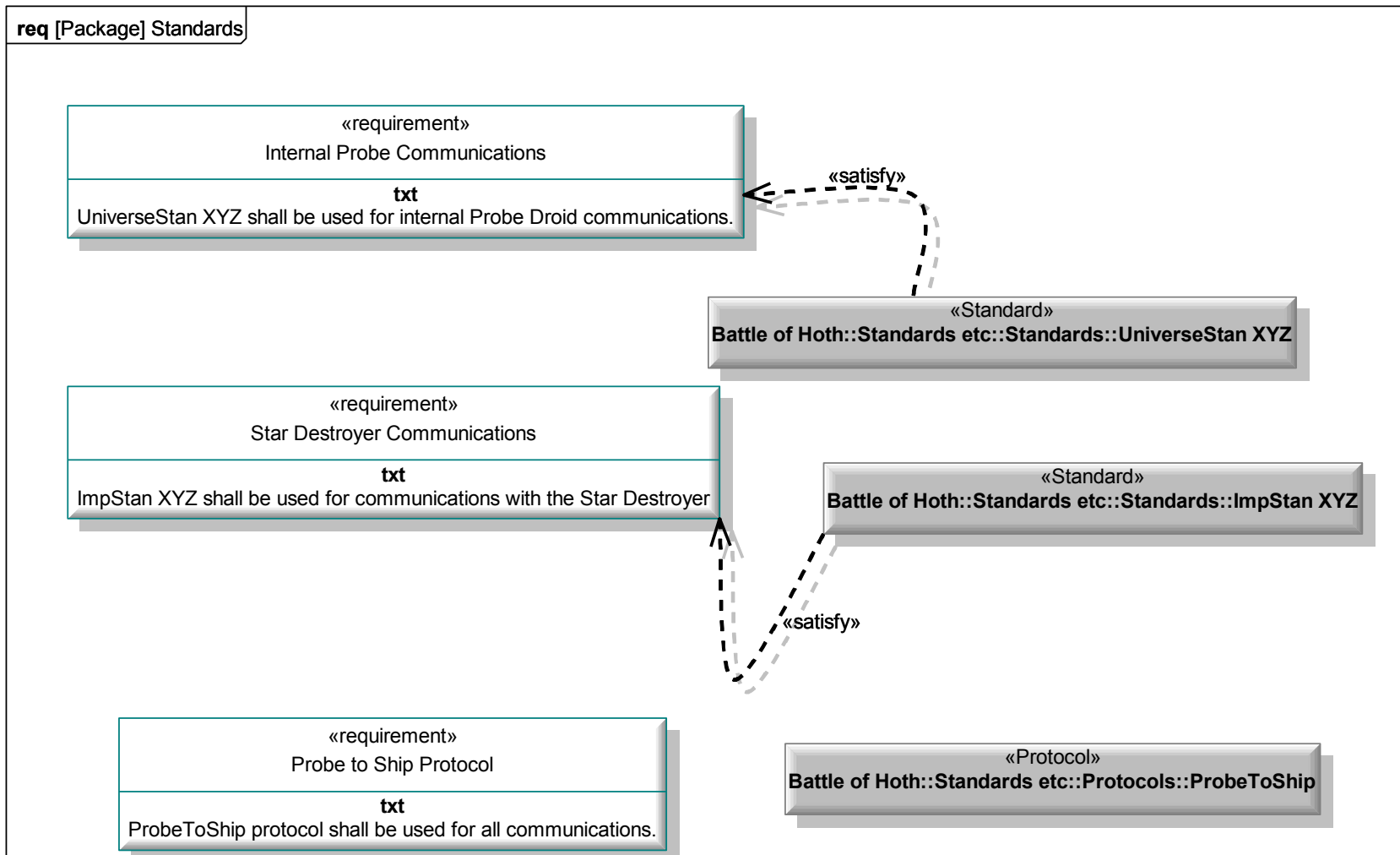


SV-2: Resource Interaction Specification





SysML Example: Requirements Traceability





International Adoption of UPDM

- United States
 - DoD statements of support issued
 - Vendor presentations given to DoD, Industry, conferences
 - UPDM being used on both bids and projects
- Great Britain
 - MOD statements of support issued
 - Vendor presentations given to MOD, Industry, conferences
 - UPDM being used on both bids and projects
- France
 - DGA favoring NATO NAF over AGATE; investigating UPDM
 - Vendor presentations given to DGA, Industry, conferences



DoD at OMG

DoD and MOD Recommended the C4i TF to vote and recommend formal Issuance of the UPDM Request For Comment (RFC):

- Critical Role for Enterprise Architecture**
- Time is now for Baseline Requirements**
- Sound Methodology - UPDM RFC**
- DoD long standing policy on standards**
- Strong Inter-Governmental Support**



DoD and MOD Position

- **Joint Statement (18 Sep 08)**
 - **Brian G. Wilczynski, Director, Enterprise Architecture & Standards, Office of the Department of Defense Deputy Chief Information Officer**
 - **John Keefe, United Kingdom Ministry of Defence**
 - **“UK MOD fully endorses and supports the position stated by the US DoD”.**



International Adoption of UPDM cont'd

- Sweden
 - FMV statements of support issued
 - Swedish SwAF have now adopted MODAF as standard
 - Vendor presentations given to SwAF, Industry
- Canada
 - DND participation in UPDM effort at OMG
 - Evaluating its use to support DNDAF
 - Provided security views
 - Vendor presentations given to DND, Industry, conferences
 - Public safety looking to adopt (Homeland Security)
- Norway
 - Vendor presentations given to defence dept, industry



International Adoption of UPDM cont'd

- NATO
 - UPDM update presentation given at NATO C3A briefing
 - UPDM group coordinating with NATO C3A for UPDM 2.0 oversight and support
- Italy
 - Vendor presentations given to Italian Armed forces, Industry, conferences
 - UPDM being used on both bids and projects
- Holland
 - Vendor presentations given to Dutch Armed forces, Industry, conferences



International Adoption of UPDM cont'd

- Israel
 - Vendor presentations given to Israeli Armed forces, Industry, conferences
- Use of UPDM for non-military applications
 - Disaster planning, event planning, space missions: satellites, manned missions, non-military government departments, humanitarian relief operations, industry infrastructure planning, banking, etc.
 - All of the above cited standardization and interchange as essential reasons for considering UPDM



Discussion

Questions?