

MODAF-M07-016

MINISTRY OF DEFENCE



MOD Architectural Framework Viewpoint Overview

Version 1.0

31 August 2005

Prepared by:- **MODAF**
partners

Approved by:- MODAF Project Review Board

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RECORD OF CHANGES

This page will be updated and re-issued with each amendment. It provides an authorisation for the amendment and a checklist to the current amendment number.

Issue No.	Date	Revision Details
Version 1.0	31 August 2005	First MODAF Baseline release

Disclaimer


Following review it has been decided that, to better reflect its intended audience and to avoid confusion with the Acquisition Process, the Acquisition Community of Interest (COI) Deskbook is to be renamed the Integrated Project Team (IPT) COI Deskbook. This change is immediate; all references in the MODAF documentation to the Acquisition COI Deskbook should be interpreted as the Integrated Project Team COI Deskbook. This change will be reflected in the MODAF documentation at the next update.

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1. ALL VIEWS

AV-1 Overview & Summary Information

<ul style="list-style-type: none"> • Architecture Project Identification <ul style="list-style-type: none"> – Name: Combat Assessment – Architect: Contractor ABC – Organization Developing the Architecture: ASD(C3I)/CISA – Assumptions and Constraints: None – Approval Authority: USCENTCOM – Date Completed: 12/10/98 – Level of Effort and Projected Costs to Develop the Architecture • Scope: Architecture View(s) and Products Identification <ul style="list-style-type: none"> – Views and Products Developed: All – Time Frames Addressed: Current – Organizations Involved: USCENTCOM J2 and J3 • Purpose and Viewpoint <ul style="list-style-type: none"> – Purpose, Analysis, Questions to be Answered by Analysis of the Architecture: Are information needs at operational nodes met by systems available? – From Whose Viewpoint the Architecture is Developed: Targeteer • Context <ul style="list-style-type: none"> – Mission: Assess combat results – Doctrine, Goals, and Vision – Rules, Criteria, and Conventions Followed: War time conventions – Tasking for Architecture Project, and Linkages to Other Architectures • Tools and File Formats Used: Combination • Findings <ul style="list-style-type: none"> – Analysis Results – Recommendations <div style="border: 1px solid black; padding: 5px; margin-top: 10px; width: fit-content;"> <p>Section to be completed after architecture description and analysis is completed</p>  </div>	<p>Data objects: Architecture identifier(s) Scope Purpose and viewpoint Context Tools and file formats Findings</p> <p>Usage: Provides context Defines architecture scope</p>
<p><i>Example –Joint Force Targeting (DoDAF Deskbook)</i></p>	
<p>Description: Executive level summary information about the architecture. Defines assumptions, constraints, limitations, and configuration control information.</p>	<p>Alternative Views Textual No UML equivalent</p>

AV-2 Integrated Dictionary

<div style="text-align: center;"> <p>GII Capabilities</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; vertical-align: top;"> <p>On-line collaboration</p> <ul style="list-style-type: none"> Voice telephony Voice conferencing Video conferencing Text chat Shared Workspace Push-to-talk voice (e.g. radio) Instant messaging <p>Asynchronous collaboration</p> <ul style="list-style-type: none"> Email Formal messaging Voice mail Text messaging Fax File sharing File transfer - text, images etc. <p>Live & Recorded Information Delivery</p> <ul style="list-style-type: none"> Video Streaming Audio Streaming Multi-media streaming Event Notification Text Streaming (e.g. news feeds) Track and location updates </td> <td style="width: 33%; vertical-align: top;"> <p>Discovery</p> <ul style="list-style-type: none"> Directories Information search Information brokering Service & Service Provider discovery <p>Common Applications</p> <ul style="list-style-type: none"> Office Automation, Browsers Data & Document management Geographic Info Systems <p>User access to information</p> <ul style="list-style-type: none"> Single sign-on Subscription to information products Personalised Information Access Publishing capabilities for users <p>System Management</p> <ul style="list-style-type: none"> Service Management User Management Security Management Resource Management Help desk Business continuity support Information Service Development Business application support <p>Info Assurance & Security</p> <ul style="list-style-type: none"> Confidentiality protection Integrity & authenticity assurance Computer Network Defence </td> <td style="width: 33%; vertical-align: top;"> <p>Communications Infrastructure</p> <ul style="list-style-type: none"> Circuit-Switched Packet-Switched Message-Switched (inc data-links) <p>Computing Infrastructure</p> <ul style="list-style-type: none"> Fixed environment computing devices & peripherals Tactical environment computing devices & peripherals <p>Information Storage</p> <ul style="list-style-type: none"> Web-servers Shared data-bases Archive storage <p>System Integration</p> <ul style="list-style-type: none"> Network Gateways / Proxies Mediation of information format and semantics </td> </tr> </table> </div>	<p>On-line collaboration</p> <ul style="list-style-type: none"> Voice telephony Voice conferencing Video conferencing Text chat Shared Workspace Push-to-talk voice (e.g. radio) Instant messaging <p>Asynchronous collaboration</p> <ul style="list-style-type: none"> Email Formal messaging Voice mail Text messaging Fax File sharing File transfer - text, images etc. <p>Live & Recorded Information Delivery</p> <ul style="list-style-type: none"> Video Streaming Audio Streaming Multi-media streaming Event Notification Text Streaming (e.g. news feeds) Track and location updates 	<p>Discovery</p> <ul style="list-style-type: none"> Directories Information search Information brokering Service & Service Provider discovery <p>Common Applications</p> <ul style="list-style-type: none"> Office Automation, Browsers Data & Document management Geographic Info Systems <p>User access to information</p> <ul style="list-style-type: none"> Single sign-on Subscription to information products Personalised Information Access Publishing capabilities for users <p>System Management</p> <ul style="list-style-type: none"> Service Management User Management Security Management Resource Management Help desk Business continuity support Information Service Development Business application support <p>Info Assurance & Security</p> <ul style="list-style-type: none"> Confidentiality protection Integrity & authenticity assurance Computer Network Defence 	<p>Communications Infrastructure</p> <ul style="list-style-type: none"> Circuit-Switched Packet-Switched Message-Switched (inc data-links) <p>Computing Infrastructure</p> <ul style="list-style-type: none"> Fixed environment computing devices & peripherals Tactical environment computing devices & peripherals <p>Information Storage</p> <ul style="list-style-type: none"> Web-servers Shared data-bases Archive storage <p>System Integration</p> <ul style="list-style-type: none"> Network Gateways / Proxies Mediation of information format and semantics 	<p>Data objects: Glossary Taxonomies Metadata repository</p> <p>Usage: Ensures a common understanding of the architecture Provides a “pick list” of standard objects within architectural tools</p>
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<p><i>Example –GII Services Dictionary</i></p>				
<p>Description: Contains definitions of terms used in the given architecture. It consists of textual definitions in the form of a glossary, a repository of architecture data, their taxonomies, and their metadata.</p>	<p>Alternative Views: Textual UML data dictionary No UML equivalent</p>			

2. STRATEGIC VIEWS

StV-1 Capability Vision

<p style="text-align: center;">UNCLASSIFIED</p> <p style="text-align: center;">THE UK JOINT HIGH LEVEL OPERATIONAL CONCEPT CAPPING PAPER</p> <p>101. Fighting power comprises conceptual, moral and physical components. The conceptual component of joint fighting power was articulated in UK Joint Vision, where the importance of the enduring nature of the Principles of War was endorsed. The Vision provided broad guidance for future capabilities in the form of a joint High Level Operational Concept (HLOC), an effects based framework for operations and a description of capability as seven discrete but closely interlocking components. However, UK Joint Vision did not develop the conceptual components in detail. Using the Defence Capability Framework, this Analytical Concept describes the components of capability in sufficient detail to inform Joint Operational Concept Committee stakeholders, particularly the single Services, who are developing their own high level operational concepts in parallel. The three components of capability, Command, Inform and Operate, form the capability backbone of the HLOC around which considerations for the remaining four components – Prepare, Project, Protect and Sustain – have been woven to form the complete concept. The concept addresses the 2020 timeframe, assessed as the best compromise between the need to break free from the dominance of current systems⁴ without venturing into the purely speculative. It has also been harmonised with US joint concepts, noting the clear guidance from COS that we must be able to operate <i>with</i> but not necessarily <i>as</i> our close allies.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>OPERATE CORE CONCEPT</p> <p>An agile task-oriented joint force with freedom of action to synchronise effects throughout the Battlespace and with maximum potential to exploit fleeting opportunities.</p> </div> <p style="text-align: center;"><i>Example – Joint HLOC Extract</i></p>	<p>Data objects: Textual description of Operational Concept, vision or capability statements, etc</p> <p>Usage: Long term capability planning Concept development</p>
<p>Description: Outlines the vision for a capability area over a particular time frame. Describes how high level goals and strategy are to be delivered in capability terms</p>	<p>Alternative Views: Textual No UML equivalent</p>

StV-2 Capability Taxonomy

<p style="text-align: center;"><i>Example –Extract of CBM capabilities in UML format</i></p>	<p>Data objects: Capabilities Capability metrics</p> <p>Usage: Framework for Capability Audit Capability overlap/gap analysis Definition of Capability Options Acceptance of acquired capability</p>
<p>Description: A comprehensive and structured decomposition of military capability functions</p>	<p>Alternative Views: Textual (tabular or indented lists) UML Composite Structure Diagram (see example)</p>

StV-3 Capability Phasing

CAPABILITY FUNCTIONS	Epoch 1 (New - 2008)	Epoch 2 (2004-2007)	Epoch 3 (2006-2011)	Epoch 4 (NEC enables 2009-2012)
COMMAND BATTLESPACE MANAGEMENT				
Decision Support	JCS (IPM only) GP3 HQ ARRC only/RAFCOS/RN CSS	JCS (IPM only) GP3 HQ ARRC only/RAFCOS/RN	JCS/ComBAT/CP3 (HQ ARRC only)/RAFCOS/RNCS/JCS(SF)	JCS(SF)/JTOC/ComBAT/ARRC C2IS
Op Planning				
Operational Analysis		JTOC IOC	JTOC	JCS(SF)/JTOC/ARRC C2IS?
Mission Rehearsal			ComBAT/CP3 (HQ ARRC only)/JCS/RNCS/SHM SIFF/GRAD RAP	JTOC/ComBAT/ARRC C2IS?
Situational Awareness	BMETS/JCS/CP3 (HQ ARRC only)/RNCS	BMETS/JCS/BS/AMGP3 (HQ ARRC only)/RNCS/SHM/RAFCOS SIFF/RAFCOS/INTBS/JCS(C)/P CNRS	ComBAT/CP3 (HQ ARRC only)/JCS/RNCS/SHM SIFF/GRAD RAP	ComBAT/CD7/JCS/SHM/AMSF/ARRC C2IS/GRAD RAP IDC/FOC/ASTRID/T23 C2IS/4 & Av. BTDS/INTBS
Intelligence	JCS (IPM only) GP3 HQ ARRC only/RNCS/RAFCOS	JCS (IPM only) GP3 HQ ARRC only/RNCS/RAFCOS/AMR?	JCS/CO BISA/CP3 (HQ ARRC only)/AMR/T2-62 STAR BISA	J2-62 ISTAR BISA/AMR
Decision Support Interoperability				
Joint Strategic Intelligence	JCS	MIDB/LOC		
Operational Intelligence	INT-CICTT	INTELWEB/IMDB/INTBS/ICTT		
Joint Logistics		JCS Log		
NATO G2 & Int	CRONS (IPM only)	NDTS/NSWAN	ACE ACSS	BI-SCNS
NATO Comms	OWAN (IPM only?)			
Land US Coalition		FBCB2/MCS?	FBCB2/MCS?/ACBS?/MBCOM?/FCS?/AMDWS?/ASAS?/CSOS?	
Relat Interoperability	US-GCCS (IPM only)	MIP Messaging/US-GCCS		MIP Database/US-GCCS
Maxime	RNCS/LP/RJ/T2/T23/T42/CV5	RNCS/LP/RJ/T2/T23/T42/CV5/T45		
Air C2/Coord	JFAC/JPC/RAFCOS/NCC/NRS	JFAC/JPC/RAFCOS/NCC/NRS/JCS?		DNCS/JFAC/JCS?
Functional Planning Support				
Info Ops Planning	BSMS		Log G4 BISA/G1 BISA?	
Logistic Planning	AP3/CP24	AP3		
Medical		SGS		Medical BISA?
Acquisition Logistics Sp	ACCESS			Air Support BISA?
Personnel Planning	AP3/JCS/Log			G4 BISA/JCS Log/JCS?
EW Planning			ACCESS	
Air Defence Planning	ADCS	AD Br/C	KBAD IOC	
Artillery Fire Planning	BATES	FCA	FCBS/AFPA	JETS/IOC?
Air Planning	WAH-64 GSS		AM BISA	
Engineer/EOD Planning	ASH		MAWEFAST/EOD BISA	
CIS Planning	CP3	GP3/SAM	GP3/ComBAT	ComBAT
NBC	BRACIS/BATES/BRACIS NT	NBC BISA/BATES	NBC BISA	
Comms Management		BCMS/COMORANT CMS	FALCON CMS/BCMS/COMORANT CMS	
IS Management	Ata/CS/JCS/RNCS/RAFCOS	DBL II EOC	BSL II IOC & FOC/IN/ID Inc 2	
Functional Planning Support Interoperability				
NATO AD			ACCS LOC1	
Relat Fire Support	FATDS/ASCA		FATDS II-ASCA	
Medical				IPASS/In barracks Med

Example – Extract of Land CBM Capability Phasing

Data objects:

Capabilities
Periods of time (can be defined as epochs)
Resources, specifically including systems

Usage:

Capability overlap/gap analysis
Supports capability delivery scheduling
Delivery capacity analysis; high-level identification of capacity issues

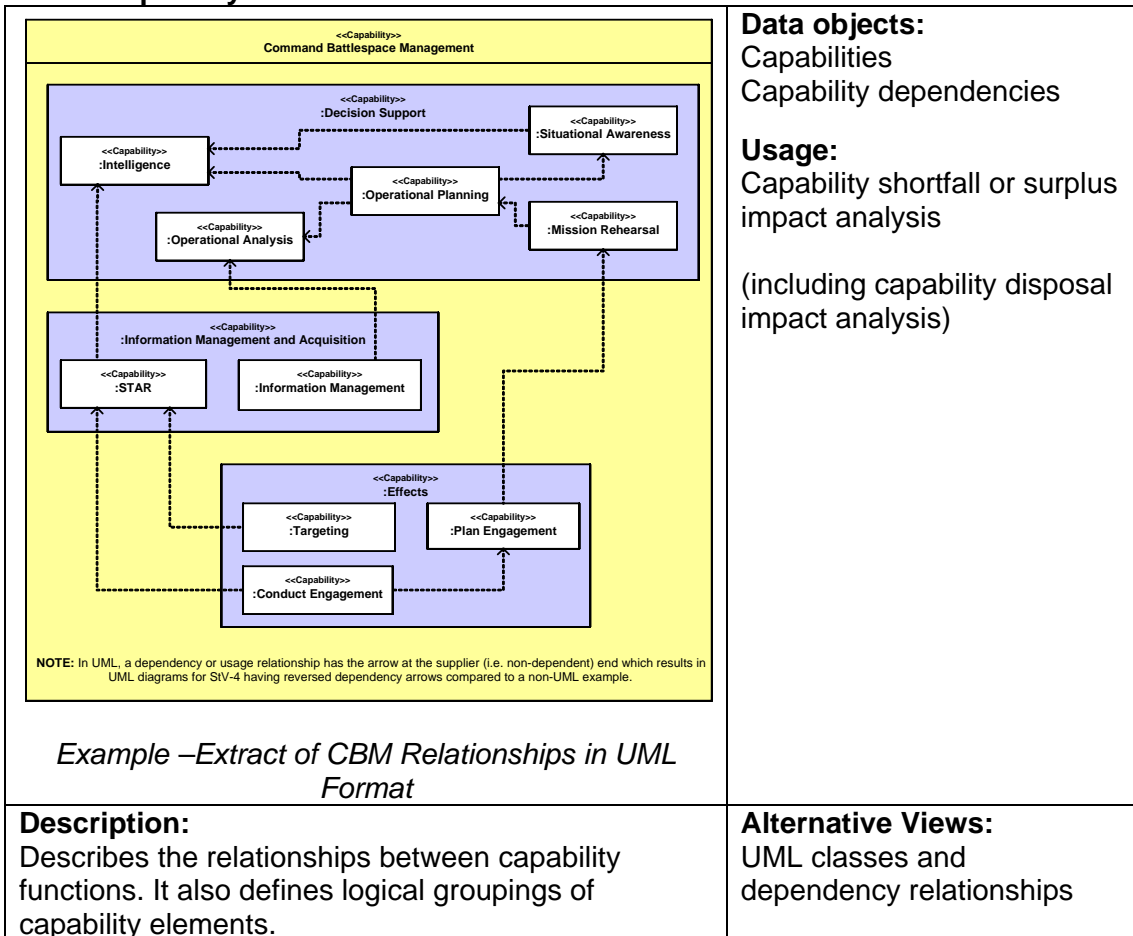
Description:

Provides a representation of the available military capability at different points in time

Alternative Views:

No UML equivalent

StV-4 Capability Clusters



Example – Extract of CBM Relationships in UML Format

Data objects:

Capabilities
Capability dependencies

Usage:

Capability shortfall or surplus impact analysis

(including capability disposal impact analysis)

Description:

Describes the relationships between capability functions. It also defines logical groupings of capability elements.

Alternative Views:

UML classes and dependency relationships

StV-5 Capability to Systems Deployment Mapping

	Period of Time				
	Target Location Acquisition	SA	Ops Planning & Execution	Effect Delivery	BDA
Joint HQ	SATELLITE		JPCS		
Strike Command				EF	EF
RM				ATG	MORTAR
RN				FG	
ARMY		BISA		AFV	
ISTAR	E3				WATCH-KEEPER

Example – Hypothetical Land Operational Tasks

Data objects:
 Capabilities
 Organisational units
 Nodes
 Resources, specifically including Systems
 System relationships
 Periods of time

Usage:
 Capability overlap/gap analysis
 Deployment level shortfall analysis
 Dependency and impact analysis; across capabilities, systems and organisations
 Specifying capability deployment and system interoperability requirements
 Validation of delivered capability and system deployment

Description:
 Represents planned capability deployment as interconnected system units deployed to organisations over a period of time.

Alternative Views:
 No UML equivalent

StV-6 Capability Function to Operational Mapping

	Capability Functions (see StV-2)			
	ISTAR	Decision Support	Effects – Planning	Effects – Engagement
Prepare Estimate		X		
Plan Collection	X			
Manage Intel Collection	X			
Assess Intel	X			
Maintain Recognised Picture	X	X		
Deconflict Battlespace			X	
Conduct Fires				X
Battle Damage Assessment	X			

Operational Activities (see OV-5)

Example – Hypothetical Land Operational Tasks

Data objects:
 Capabilities
 Operational activities

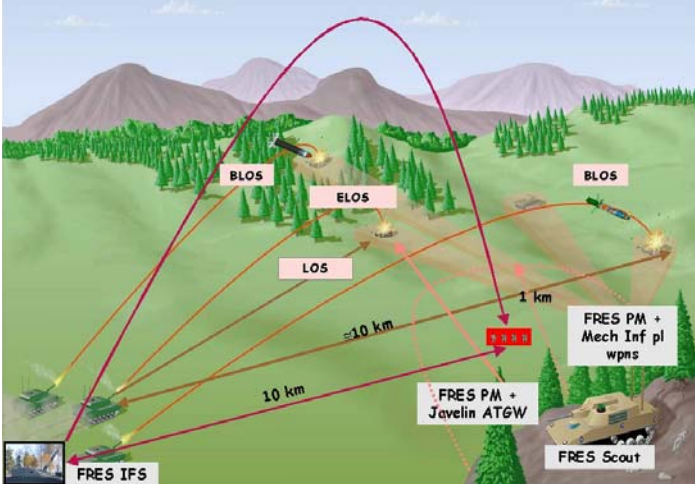
Usage:
 Operational analysis of support to capability requirements
 Definition of URD scenarios and vignettes

Description:
 Describes the mapping between capability elements and the operational activities that can be performed using them.

Alternative Views:
 No UML equivalent

3. OPERATIONAL VIEWS

OV-1a High Level Operational Concept

 <p style="text-align: center;"><i>Example – FRES scenario</i></p>	<p>Data objects: All business objects of interest, including:</p> <p>Nodes, Systems, Organisations, Information Flows, Environmental context objects</p> <p>Usage: Contextual articulation of an operational situation or scenario Tool for discussion and presentation; for example, aids industry engagement in acquisition</p>
<p>Description: Graphical representation of a scenario or use-case as a set of business objects and interconnectivity in a contextual battlespace environment.</p>	<p>Alternative Views: No UML equivalent</p>

OV-1b High Level Operational Concept Description

<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>ISTAR information is currently provided by the SPECS system, the LOOKER UAV system and by the NEMESIS system. SPECS is an Operational level asset, and communicates via a data link to its dedicated base station. LOOKER is a tactical UAV system that can transmit real-time video footage directly to either Fighting Patrols or to the Brigade HQ. NEMESIS is a strategic asset that has considerable on-board processing capability, enabling the data to be exploited during flight. The resultant information can be communicated either by Satellite communications or directly to a receiver based on board a Naval vessel</p> </div> <p style="text-align: center;"><i>Example – Description of a Hypothetical ISTAR Scenario</i></p>	<p>Data objects: Textual description</p> <p>Usage: Must be used to describe each OV-1a (adds detail and clarity to the OV-1a View)</p>
<p>Description: Provides a supplementary description of the High Level Operational Concept OV-1a View</p>	<p>Alternative Views: No UML equivalent</p>

OV-1c Operational Performance Attributes

Attribute	Measure	Value			
		As - Is	Epoch 1	Epoch 2	Target
Operational Tempo	Rate of Advance for an Armoured Brigade against light resistance	20 km/day	40 km/day	60 km/day	80 km/day
Synchronisation of Effects	Simultaneous rounds on impact delivered by an Arty Bty	30 rounds	40 rounds	60 rounds	100 rounds
Sortie Rate	Period to re-fuel and re-arm an aircraft	4 hours	3 hours	2 hours	1 hours

Example – Hypothetical Ground Manoeuvre Attributes

Data objects:
 Attributes
 Measures
 Values
 Period of time (can be defined as epochs)

Usage:
 Lists quantifiable operational requirements for URD and capability sustainment

Description:
 Provides detail of the operational performance attributes associated with the scenario / use case represented in the High Level Operational Concept Graphic (OV-1)

Alternative Views:
 No UML equivalent

OV-2 Operational Node Connectivity Description

Example – Hypothetical Node Connectivity

Example – Hypothetical UML OV-2

Data objects:
 Nodes
 Organisations
 Resources
 Need lines

Usage:
 Operational analysis of information requirements and dependencies
 Specification of user information requirements in URD

Description:
 Graphically depicts the operational nodes (or organisations) with need lines between those nodes that indicate a need to exchange information

Alternative Views:
 UML Class Diagram

OV-3 Operational Information Exchange Matrix

Needline Identifier	Information Exchange Identifier	Information Element Description					Producer		Consumer		Nature of Transaction				
		Information Element Name and Identifier	Content	Scope	Accuracy	Language	Sending Op Node Name and Identifier	Sending Op Activity Name and Identifier	Receiving Op Node Name and Identifier	Receiving Op Activity Name and Identifier	Mission /Scenario UTL or METL	Transaction Type	Triggering Event	Interoperability Level Required	Criticality
1	WOC-JFAC-C1	BDA Report	Report on Battle Damage	Theater	1 Day	English	WOC	Conduct Battle Damage Assessment	JFACC	Conduct Munitions Effects Assessment	Combat Assessment	Collab-orate	Air Strike 072200, 0615am	2A	High
1	WOC-JFAC-C2	Target Nominations	Report on Possible Targets	Theater	2 Hours	English	WOC	Recon-struct Restrike	JFACC	Request Target Materials	Combat Assessment	Direct	AirTO XX, 072300	1B	High
2															
11	MAW-JFAC-C1	BDA Report	Report on Battle Damage	Theater	1 Day	English	MAW	Conduct Battle Damage Assessment	JFACC	Conduct Munitions Effects Assessment	Combat Assessment	Collab-orate	Air Strike 072200, 0615am	2A	High

Example – Joint Force Targeting (DoDAF Deskbook)

Description:
Who exchanges what information, with whom, why the information is necessary, and how the information exchange must occur

Data objects:
Information exchanges with taxonomy allowable attributes including:

- Description
- Producer
- Consumer
- Nature of transaction

Usage:
In-depth operational analysis of operational information requirements
Specification of user information exchanges in URD

Alternative Views:
No UML equivalent

OV-4 Organisational Relationships Chart

Example – Generic Organisational Template

Data objects:
Organisations
Resources

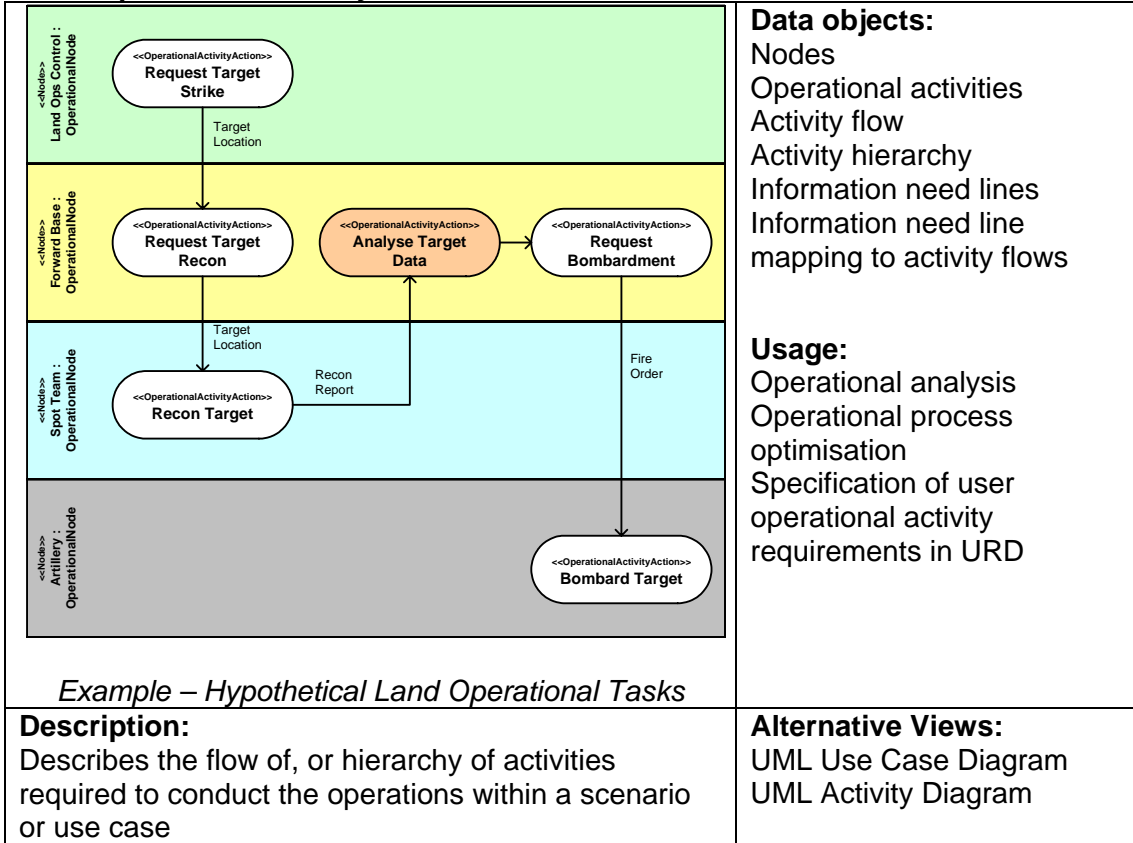
Usage:
Operational analysis
Organisation optimisation

Example – UML version of OV-4

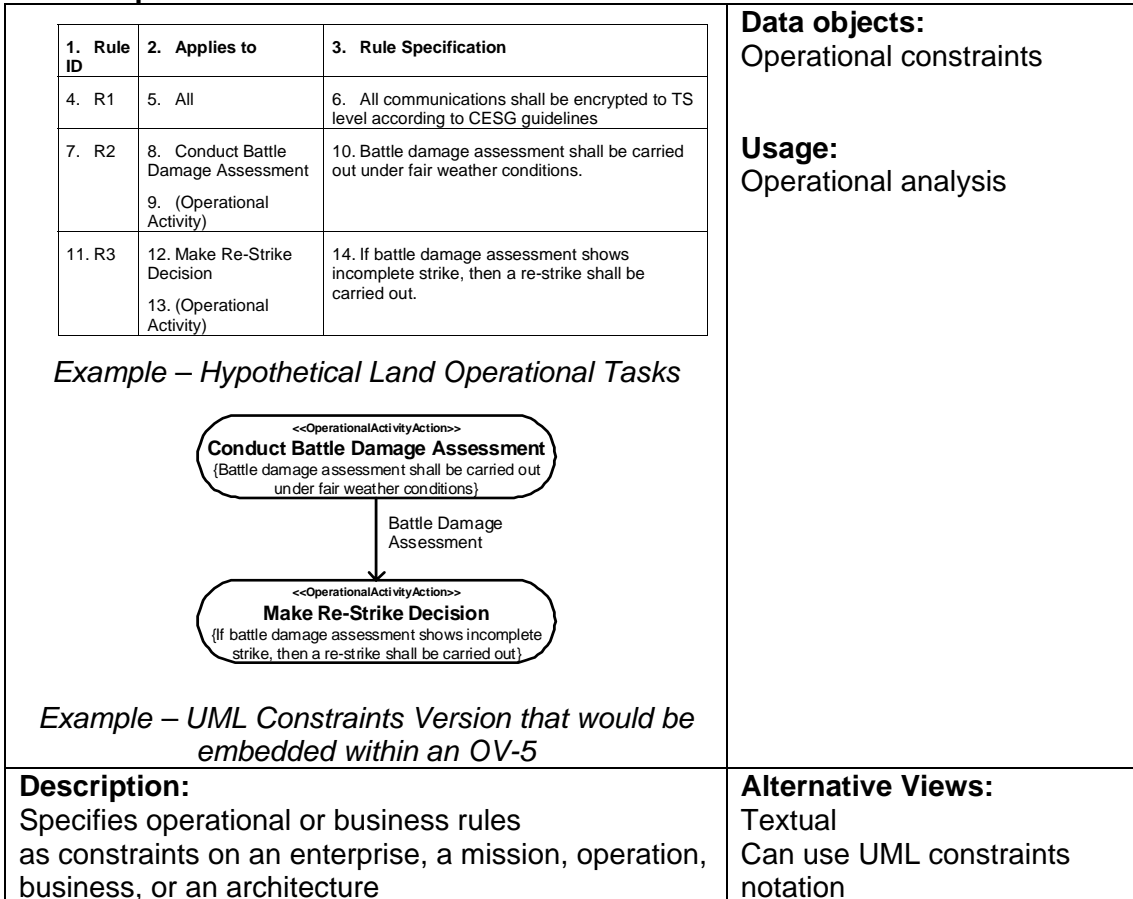
Description:
Illustrates the command structure / relationships -as opposed to relationships with respect to a business process flow

Alternative Views:
UML Class Diagram with Actor Icon

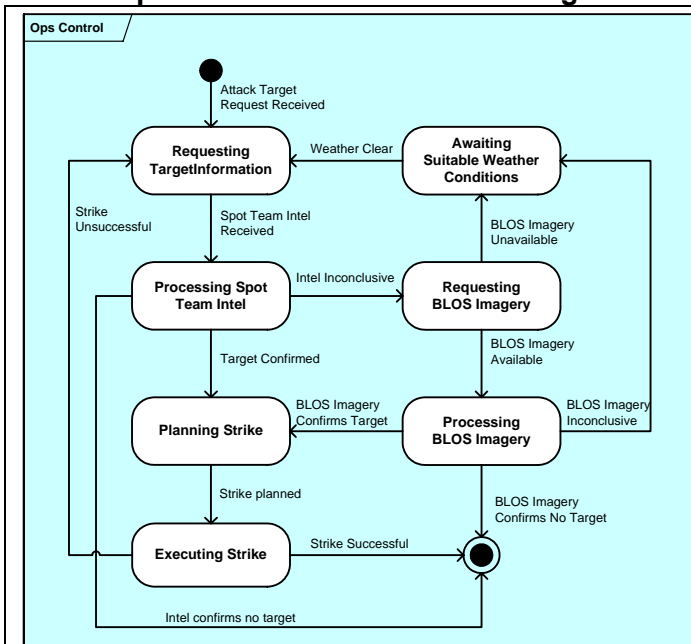
OV-5 Operational Activity Model



OV-6a Operational Rules Model



OV-6b Operational State Transition Diagram



Example – UML Version of OV-6b

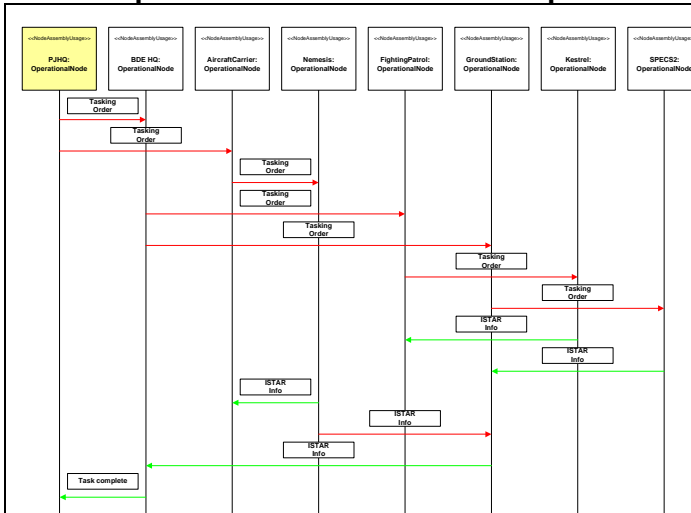
Description:
Graphical method of describing how an operational node or activity responds to various events by changing its state

Data objects:
Operational states
Events
Operational state transitions

Usage:
Operational analysis

Alternative Views:
UML Statechart Diagram

OV-6c Operational Event Trace Description



Example – UML Style OV-6c

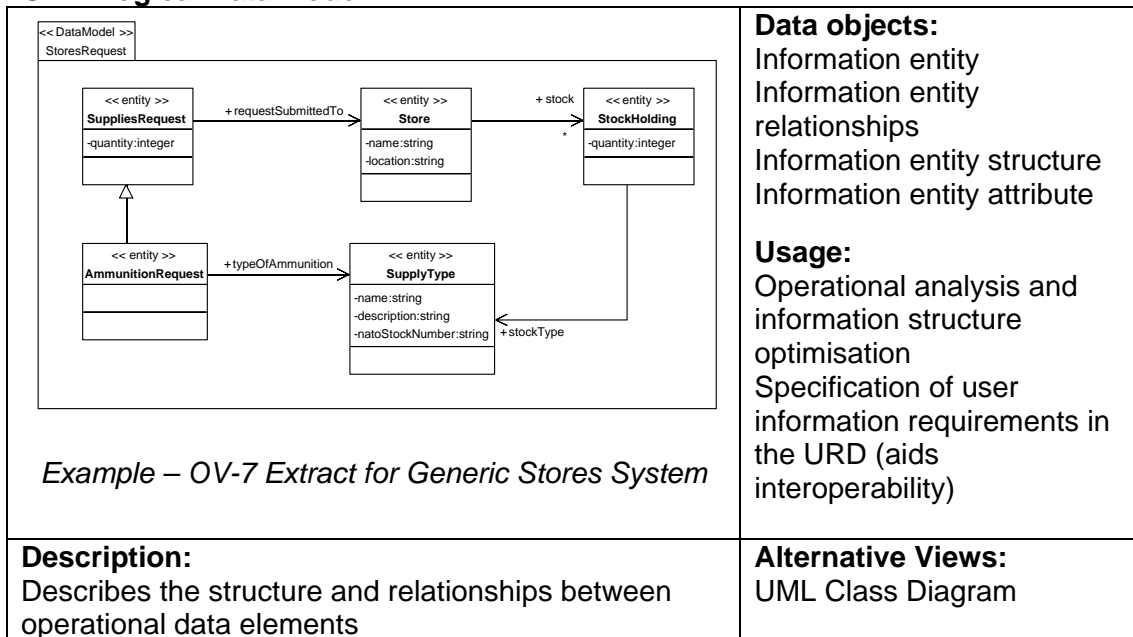
Description:
Provides a time-ordered sequence of the information exchanges between operational nodes during a particular scenario / use case

Data objects:
Nodes
Events
Operational activities

Usage:
Operational analysis
Capturing operational missions and lessons learned

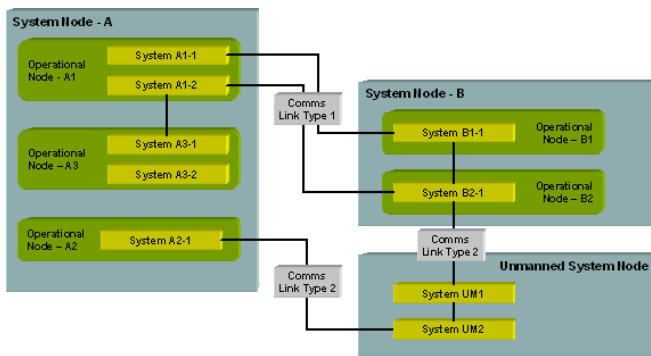
Alternative Views:
UML Sequence Diagram
IDEF-3

OV-7 Logical Data Model

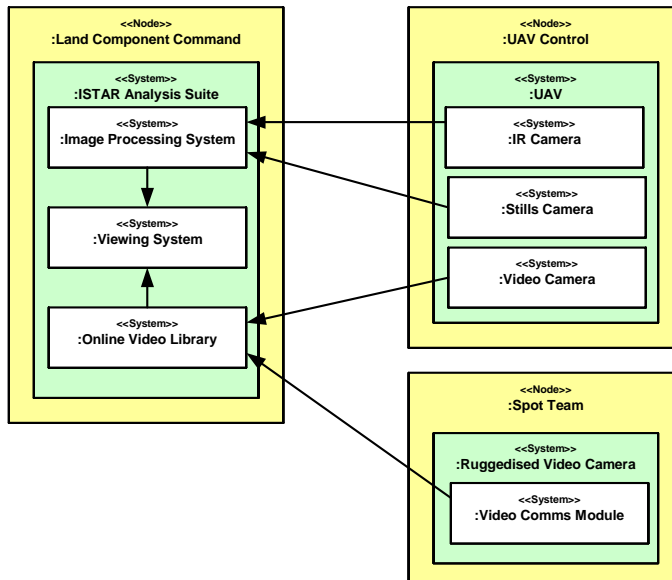


4. SYSTEM VIEWS

SV-1 System Interface Description



Example –Generic SV-1



Example – UML Version of Generic SV-1

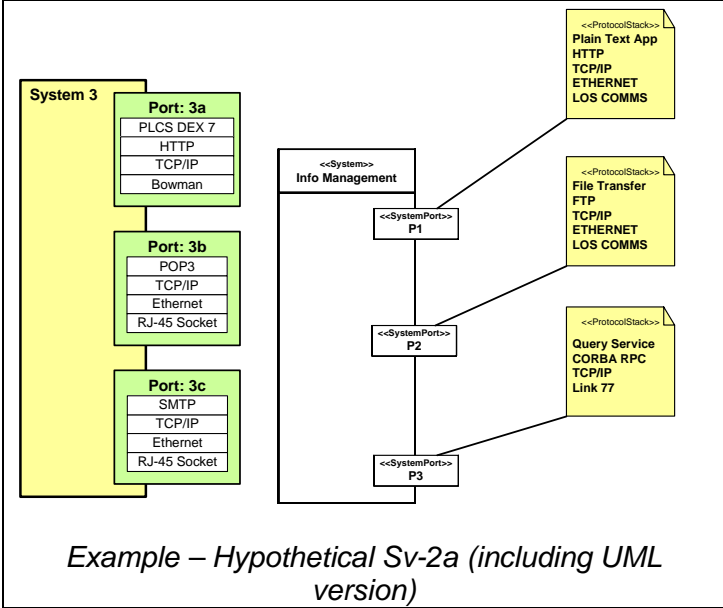
Data objects:
 Nodes (can be operational or system by taxonomy)
 Organisations
 Resources, specifically including systems
 System connections

Usage:
 Operational analysis
 Interoperability analysis
 Specification of system-node associations as requirements in SRD

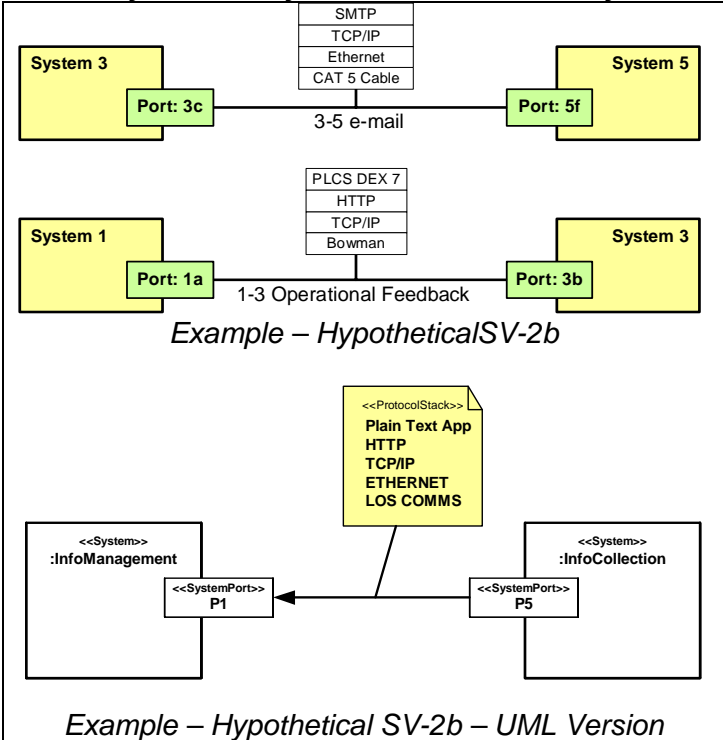
Description:
 Depicts systems and identifies the interfaces between those systems. Also shows the system nodes at which those systems are located, and overlays operational nodes that are deployed at system nodes.

Alternative Views:
 UML Class Diagram

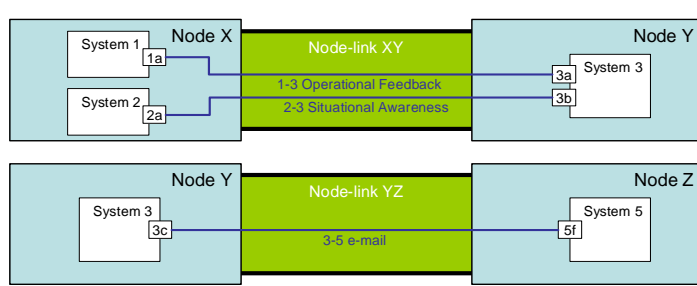
SV-2a System Port Specification

 <p><i>Example – Hypothetical Sv-2a (including UML version)</i></p>	<p>Data objects: Systems Ports Protocols</p> <p>Usage: System & interoperability analysis Articulation of system composition, as ports and protocols Specification of system interoperability requirement in SRD</p>
<p>Description: Specifies the ports on a system, and the protocols used by those ports when communicating with other systems.</p>	<p>Alternative Views: UML and possible SysML alternatives</p>

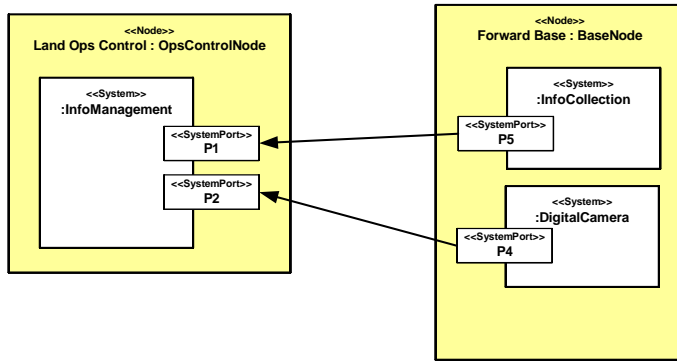
SV-2b System To System Port Connectivity

 <p><i>Example – Hypothetical SV-2b</i></p> <p><i>Example – Hypothetical SV-2b – UML Version</i></p>	<p>Data objects: Systems Ports Port Connections</p> <p>Usage: Interoperability analysis Articulation of system composition, as the nature of a connection between two systems. Specification of system interoperability requirement in SRD</p>
<p>Description: Defines the protocol stack used by a connection between two ports. The ports may be on different systems.</p>	<p>Alternative Views: UML and possible SysML alternatives</p>

SV-2c System Connectivity Clusters



Example – Hypothetical SV-2c



Example – Hypothetical SV2c – UML Variant

Data objects:
 Nodes
 Systems
 Ports
 Port connections

Usage:
 Operational analysis
 Specification of system connectivity constraints in SRD

Description:
 Defines how individual connections between system ports are grouped into logical connections between nodes.

Alternative Views:
 UML alternative

SV-3 Systems-Systems Matrix

	SYSTEM 1	SYSTEM 2	SYSTEM 3	SYSTEM 4	SYSTEM 5	SYSTEM 6	SYSTEM 7	SYSTEM 8	SYSTEM 9	SYSTEM 10
SYSTEM 1										
SYSTEM 2										
SYSTEM 3										
SYSTEM 4										
SYSTEM 5										
SYSTEM 6										
SYSTEM 7										
SYSTEM 8										
SYSTEM 9										
SYSTEM 10										

Example – Hypothetical System-System Matrix

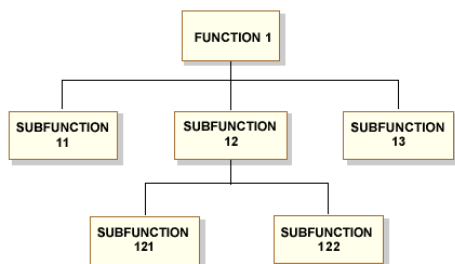
Data objects:
 System
 System relationships

Usage:
 Operational analysis, including interoperability analysis
 Specification of system connectivity requirements in SRD

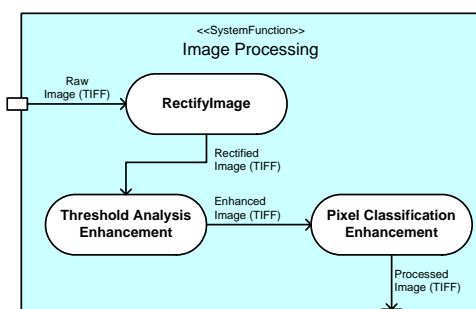
Description:
 Provides detail on the interface characteristics described in SV-1, arranged in matrix form.

Alternative Views:
 No UML equivalent

SV-4 Systems Functionality Description



Example – Generic System Functional Breakdown



Example – Hypothetical UML Activity Diagram

Data objects:
 System function / sub function (including external system functions)
 System data flow
 System function hierarchy

Usage:
 System analysis
 Specification of system functional requirements in SRD

Description:
 Documents system functional hierarchies, system functions, and the system data flows between them

Alternative Views:
 UML Activity Diagram

SV-5 Operational Activity to Systems Functionality Traceability Matrix

Operational Activity	SPECS 2 Functions					
	Rece	Collate Intelligence	Conduct Estimate	Co-ordinate Plan	Attack	Re-cuperate
Provision Of Real-Time Video Imagery	X	X			X	X
Provision Of Real-Time IR Imagery	X	X			X	X
Monitoring Of Airspace	X	X				X
Timelapse Recording Of Designated Areas	X				X	
Communications Relay	X	X	X	X	X	X
Command & Control				X	X	

Example – Hypothetical Land Operational Tasks

Data objects:
 Systems
 System functions
 Operational activities

Usage:
 Operational and system analysis; identification of missing system functions, and stove-piped systems
 Confirms linkage between user and system requirements

Description:
 Shows the relationship between operational activities applicable to an architecture and the set of system functions that support them

Alternative Views:
 No UML equivalent

SV-6 Systems Data Exchange Matrix

IER No.	Sender	Receiver	Content	Media	Info Char	Format	Security	Freq	Timeliness	Thru put
1	JFMCC	CVIC	Target ID	JTIDS/SAT	Data	J 3 90	EGV-8	N/A	30 sec	N/A
2	DDG-51	JFMCC	Track Init	DDS	Sensor	CEC data	EY-7	N/A	1 sec	N/A
3	JFMCC	E-2C	Engage Order	JTIDS/SAT	Data	J 13 85	EGV-8	N/A	15 sec	N/A
4	E-2C	JFMCC	Track Update	DDS	Sensor	CEC data	EY-7	N/A	7ms	N/A
5	CVIC	F/A-18	Engage Order	JTIDS	Data	J 13 85	EGV-8	N/A	10ms	N/A
6	DDG-51	CVIC	Target Loc	DDS	Sensor	CEC data	EY-7	N/A	4 sec	N/A
7	Patriot	CVIC	Target Acq	JTIDS	Data	J 4 56	EGV-8	N/A	2 min	N/A
8	F/A-18CD	CVIC	Target Killed	JTIDS	Data	J 8 76	EGV-8	N/A	3 min	N/A
9	E-2C	CVIC	CAF Posn	JTIDS	Data	J 10 74	EGV-8	N/A	35 sec	N/A
10	Patriot	AWACS	Target Loc	JTIDS/SAT	Data	J 12 101	EGV-8	N/A	4 Sec	N/A
11	CG-47	CVIC	Target Loc	DDS	Sensor	J 12 101	EY-7	N/A	2 sec	N/A
12	CG-47	DDG-81	Target ID	DDS	Sensor	CEC data	EY-7	N/A	1 sec	N/A
13	DDG-51	CG-47	Posit Info	DDS	Sensor	CEC data	EY-7	N/A	500 ms	N/A
14	CG-47	AWACS	Cse Orders	JTIDS	Data	J 7 99	EGV-8	N/A	2 min	N/A
15	CG-47	SHARFS	Cse Orders	JTIDS	Data	J 7 99	EGV-8	N/A	2 min	N/A
16	Patriot	JFMCC	Target Loc	JTIDS/SAT	Data	J 12 101	EGV-8	N/A	4 min	N/A
17	Hawk	JFMCC	Target Loc	JTIDS/SAT	Data	J 12 101	EGV-8	N/A	4 min	N/A
18	E-2C	F/A-18EF	Cse Orders	JTIDS	Data	FDL	EGV-8	N/A	30 sec	N/A
19	F/A-18EF	CG-47	Target ID	JTIDS	Data	J 3 90	EGV-8	N/A	30 sec	N/A
20	DDG-81	DDG-51	Target ID	JTIDS	Data	J 3 90	EGV-8	N/A	30 sec	N/A

Example – Notional Strike Mission (DoDAF Deskbook)

Data objects:
Systems
System data exchanges with taxonomy allowable attributes including:

- Description
- Producer
- Consumer
- Nature of Transaction

Usage:
System analysis
Specification of system interoperability requirements in SRD

Description:
Specifies the characteristics of the system data exchanged between systems

Alternative Views:
No UML equivalent

SV-7 Systems Performance Parameters Matrix

System Name	Performance Range (Threshold and Objective) Measures		
	Time ₀ (Baseline Architecture Time Period)	Time ₁	Time _n (Target Architecture Time Period)
Hardware Element 1			
Maintainability			
Availability			
System Initialization Time			
Architecture data Transfer Rate			
Program Restart Time			
S/W Element 1 / H/W Element 1			
Architecture Data Capacity (e.g., throughput or # of input types)			
Automatic Processing Responses (by input type, # processed/unit time)			
Operator Interaction Response Times (by type)			
Availability			
Effectiveness			
Mean Time Between S/W Failures			
Organic Training			
S/W Element 2 / H/W Element 1			
Hardware Element 2			

Example – Notional Performance Parameter Matrix

Data objects:
System
Performance parameter
Performance measure

Usage:
Specifying sustainment expectations for system performance
Specification of system performance requirements in SRD
Supports critical parameters for trade-offs / analyses during system acquisition

Description:
Specifies the quantitative characteristics of systems and system hardware/software items, their interfaces, and their functions.

Alternative Views:
No UML equivalent

SV-8 Systems Evolution Description

<p>Mainframe IDB FORT/FORTRIS IDB-II CSIDS SDB DIA JMIS MIIPS XIDB Collateral XIDB RAILS STANS CONSTANT WEB MIDB C&P Capability PORTS MARS (HATS) ACOM Amphibious DB MILFAC ACOM TMM C&P Data Server EOB-S</p>	<p>Data objects: System Period of time Milestones</p> <p>Usage: Created during acquisition, it informs sustainment activities via the TLMP.</p>
<p><i>Example – Hypothetical System Evolution - Migration</i></p> <p>Description: Captures evolution plans that describe how the system, or the architecture in which the system is embedded, will evolve over a lengthy period of time.</p> <p>Alternative Views: No UML equivalent</p>	

SV-9 Systems Technology Forecast

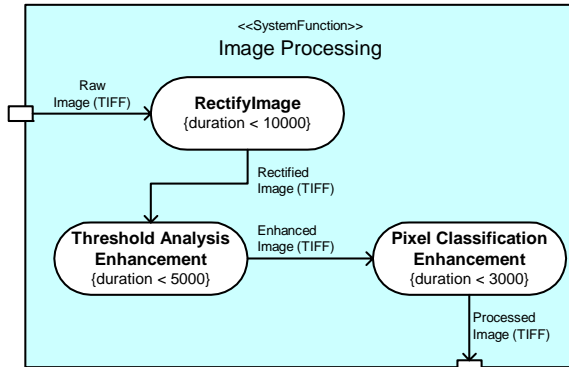
TECHNOLOGY AREA	TECHNOLOGY FORECASTS		
	SHORT TERM	MEDIUM TERM	LONG TERM
APPLICATION SOFTWARE			
OFFICE APPLICATIONS	MICROSOFT OFFICE 2000	MICROSOFT OFFICE 2005 (DISTRIBUTED)	MICROSOFT DISTRIBUTED OFFICE APPS
BUSINESS APPLICATIONS	INDIVIDUAL APPS - BATES, GP24	BGA'S	INTEGRATED BGA SUITE
APPLICATION PLATFORM			
DATA MANAGEMENT	ORACLE 9	ORACLE 10	
OPERATING SYSTEM	WINDOWS 2000	NEXT WINDOWS OS	OPEN SOURCE OS
EXTERNAL ENVIRONMENT			
USER INTERFACE		THIN TOUCH SCREEN	BIOMETRIC INTERFACE
STORAGE	HDD	SOLID STATE MEMORY CHIPS	ORGANIC STORAGE
COMMS	BOVMAN	BOVMAN-VDP	ALL IP COMMS

<p><i>Example – Hypothetical Technology Forecast</i></p> <p>Description: Defines the underlying current and expected supporting technologies – those that can be reasonably forecast</p>	<p>Data objects: Technology forecast item Technology forecast</p> <p>Usage: Informs project strategy, approach and planning. Informs equipment and system strategy during acquisition.</p> <p>Alternative Views: No UML equivalent</p>
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SV-10a System Rules Model

*If field A in FORM-X is set to value T,
Then field B in FORM-Y must be set to value T
And field C in FORM-Z must be set to value T
End If*

Example – Hypothetical Land Operational Tasks



Example – Hypothetical UML constraints version – included within SV-4

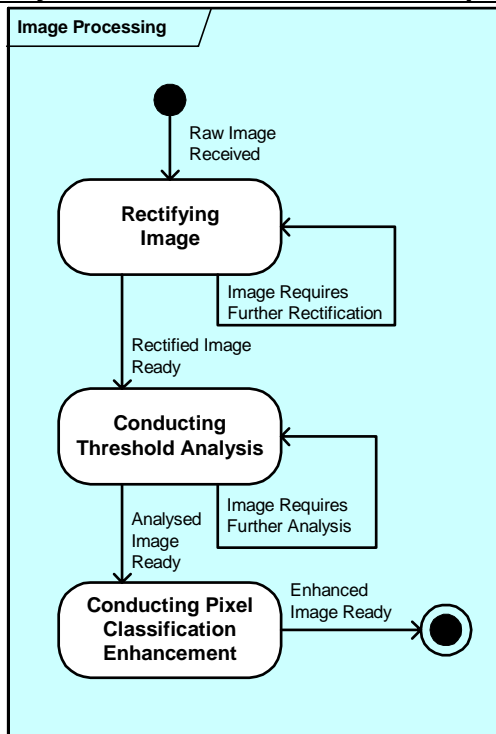
Data objects:
System
System and function constraints

Usage:
System analysis

Description:
Describes the rules under which the architecture or its systems behave under specified conditions

Alternative Views:
Textual
No UML equivalent

SV-10b Systems State Transition Description



Example – Notional State Transition Diagram

Data objects:
System states
System state transitions

Usage:
System Analysis

Description:
A graphical method of describing a system (or system function) response to various events by changing its state

Alternative Views:
UML Statechart Diagram

SV-10c Systems Event-Trace Description

<p>The diagram shows two main system boundaries: UAV Control (containing UAV, Still Camera, IR Camera, and Video Camera) and Land Component Command (containing STAR Analysis Suite, Image Processing System, Online Video Library, and Viewing System). Red arrows indicate the flow of events: Image Submitted, IR Image Submitted, and VT Clip Submitted from the UAV side to the Land Component Command side. Corresponding Notification events are shown as arrows pointing from the Land Component Command side back to the UAV side.</p> <p><i>Example – Notional Event Trace Diagram</i></p>	<p>Data objects: System System functions Events Period of time</p> <p>Usage: System Analysis</p>
<p>Description: Provides a sequence-based structure of the system data elements exchanged between participating systems (external and internal), system functions, or human roles as a result of a particular scenario</p>	<p>Alternative Views: UML sequence diagram</p>

SV-11 Physical Schema

<p>The diagram is a UML Class Diagram for a Physical Schema. It features three entities: Image, Person, and ImageUsage. Image has attributes: <code>-imageSizeInBytes : LongInt</code>, <code>-imageName : string[20]</code>, <code>-description : VarString</code>, <code>-captureDateTime : dateTime</code>, and <code>-location : gpsCoordinates</code>. Person has attributes: <code>-name : string[40]</code> and <code>-rank : string[20]</code>. ImageUsage has attributes: <code>-retrievalDate : dateTime</code> and <code>-reasonForRetrieval : VarString</code>. Relationships include: Image as + creator and + owner of Person; ImageUsage as + usedImage of Image; and ImageUsage as + user of Person.</p> <p><i>Example – UML Class Diagram for Physical Schema</i></p>	<p>Data objects: Data Data relationship Data structure Data attribute</p> <p>Usage: System analysis and data structure optimisation Specification of system data requirements for system interoperability</p>
<p>Description: Defines the structure of the various kinds of system data that are utilised by the systems in the architecture</p>	<p>Alternative Views: Entity Relationship Diagram UML Class Diagram</p>

5. TECHNICAL VIEWS

TV-1 Technical Standards Profile

Service Area	Service	System Elements	Standard / Policy
Transport Services	TCP/IP	BOWMAN	IP v6
Data transfer	Data compression algorithms	CRYPTO	JSP XXX ISO XXX
Operating System	Microsoft Windows	JOP	JSP XXX ISO XXX
Deployment	Physical Activity	HQ Equipment	SOP A10

Example – Hypothetical Standards Profile

Data objects:
Standards/ policy
Taxonomy allowable
associations to that standard
or policy including:

- Service area
- Service
- Applicable elements

Usage:
Specification of standards,
procedures, policies and
expectations to be met –
specific use in URD.
Informs project strategy and
approach.
Informs capability, equipment
and system strategy.

Description:
Presents the various systems standards rules that constrain the choices that can be made in the design and implementation of an architecture.

Alternative Views:
No UML equivalent

TV-2 Technical Standards Forecast

TRM CATEGORY	STANDARDS FORECASTS		
	SHORT TERM (1 year)	MID TERM (3 years)	LONG TERM (5 years)
<i>Application Platform</i>			
Data Interchange Document Interchange	Security Marking DTD – in CAPCO coordination (proposed IC standard)		
Mapping	Geography DTD 2.0 – accepted by GIS Consortium	Commercial products that use the standard become available	
	Geospatial XSD – in coordination Open GIS		Geospatial XSD – accepted by Open GIS
Communications Electronic Mail		IETF RFC2060 Internet Mail Access Protocol (iMAP) – accepted, replaces de facto standard	
World Wide Web Services	IETF - Common Gateway Interface (CGI) 1.2 – becomes proposed standard		IETF - Common Gateway Interface (CGI) 1.2 – accepted, replaces CGI 1.1, the de facto standard
			IETF – RFC 2818 HTTP Over TLS – accepted, replaces RFC 2816
Communications Transport Services		IETF – Wireless Extensions to TLS – becomes proposed standard	
		IETF – RFC 2002 IP Mobility Support - accepted	IETF – IPv4 Mobile IP Protocol – becomes proposed standard
Security			IETF - RFC 2246 The Transport Layer Security (TLS) Protocol Version 1.0 – accepted; replaces SSL

Example – Hypothetical Standards Forecast (DoDAF)

Data objects:
Standards/ policy
Standards/ policy forecast

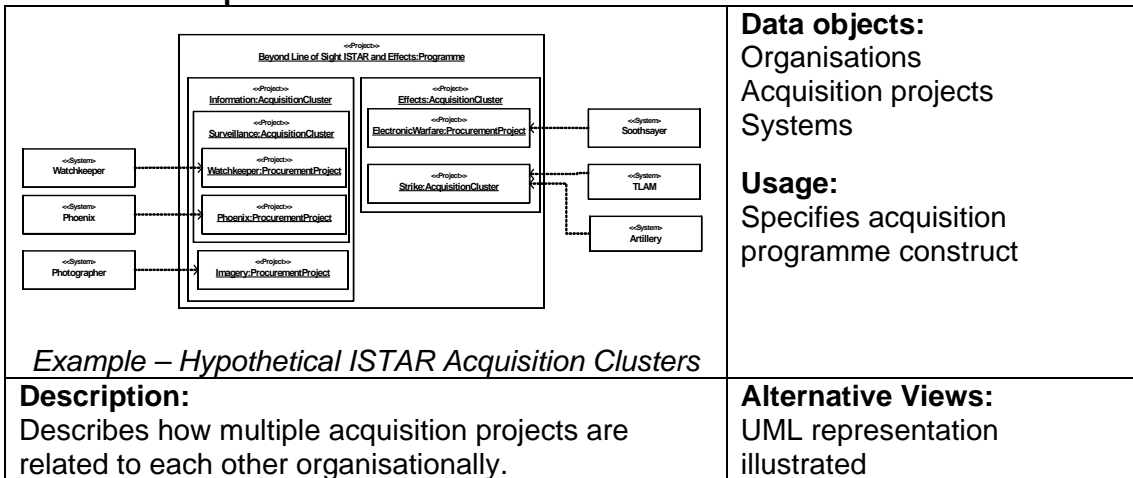
Usage:
Informs project strategy,
approach and planning.
Informs capability, equipment
and system strategy.
Capability analysis: impact of
evolving standards on the
capability.

Description:
Contains expected changes in technology-related standards and conventions, which are documented in the TV-1

Alternative Views:
No UML equivalent

6. ACQUISITION VIEWS

AcV-1 SoS Acquisition Clusters



AcV-2 SoS Acquisition Programmes

