Exemplar Series # 1
Interpretation of UPDM 1.0 SAR Diagrams in DoDAF 2.0 / DM2 Concepts

Extracts for DoD EA Conference May 2010

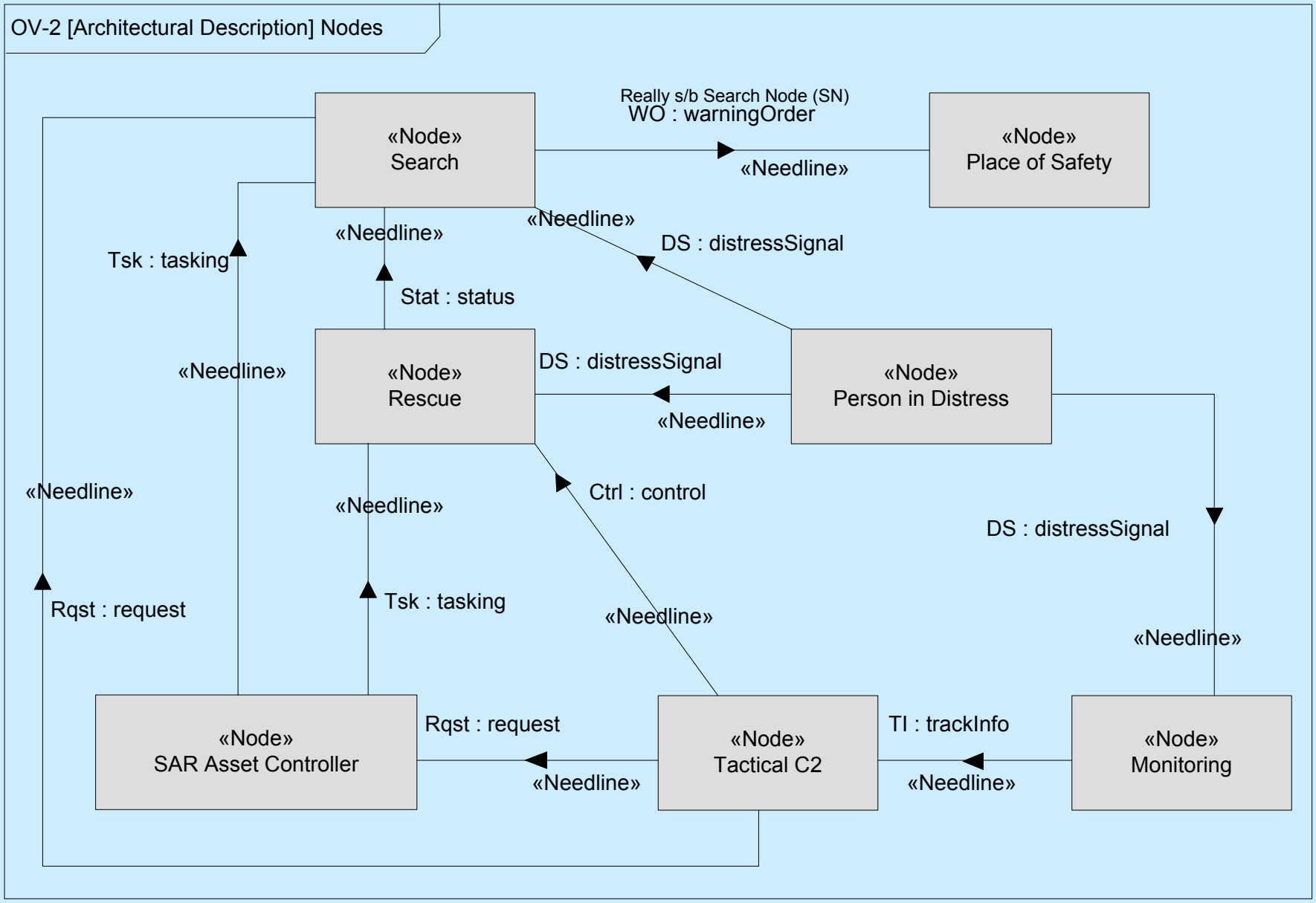
DoDAF Development Team

Briefing Structure

- The OMG UPDM Team developed examples of the views as part of UPDM 1.0. It is called "Sample Problem" and is Annex C in the UPDM 1.0 Spec.
  - The UPDM Team is working on a refinement of the Sample Problem for UPDM 2.0.
- The DoDAF 2 development team went through the examples and interpreted in DoDAF 2 / DM2 terms.
  - DM2 PES XML documents corresponding to each marked-up diagram are being posted on the DM2 collaboration site (www.silverbulletinc.com/dm2)
- Briefing format
  1. A UPDM diagram will be shown first, in it's native form from UPDM 1.0 Annex C. Blue background.
  2. Then DM2 annotated version of the same diagram will be shown. White background.

UPDM SAR OV-2

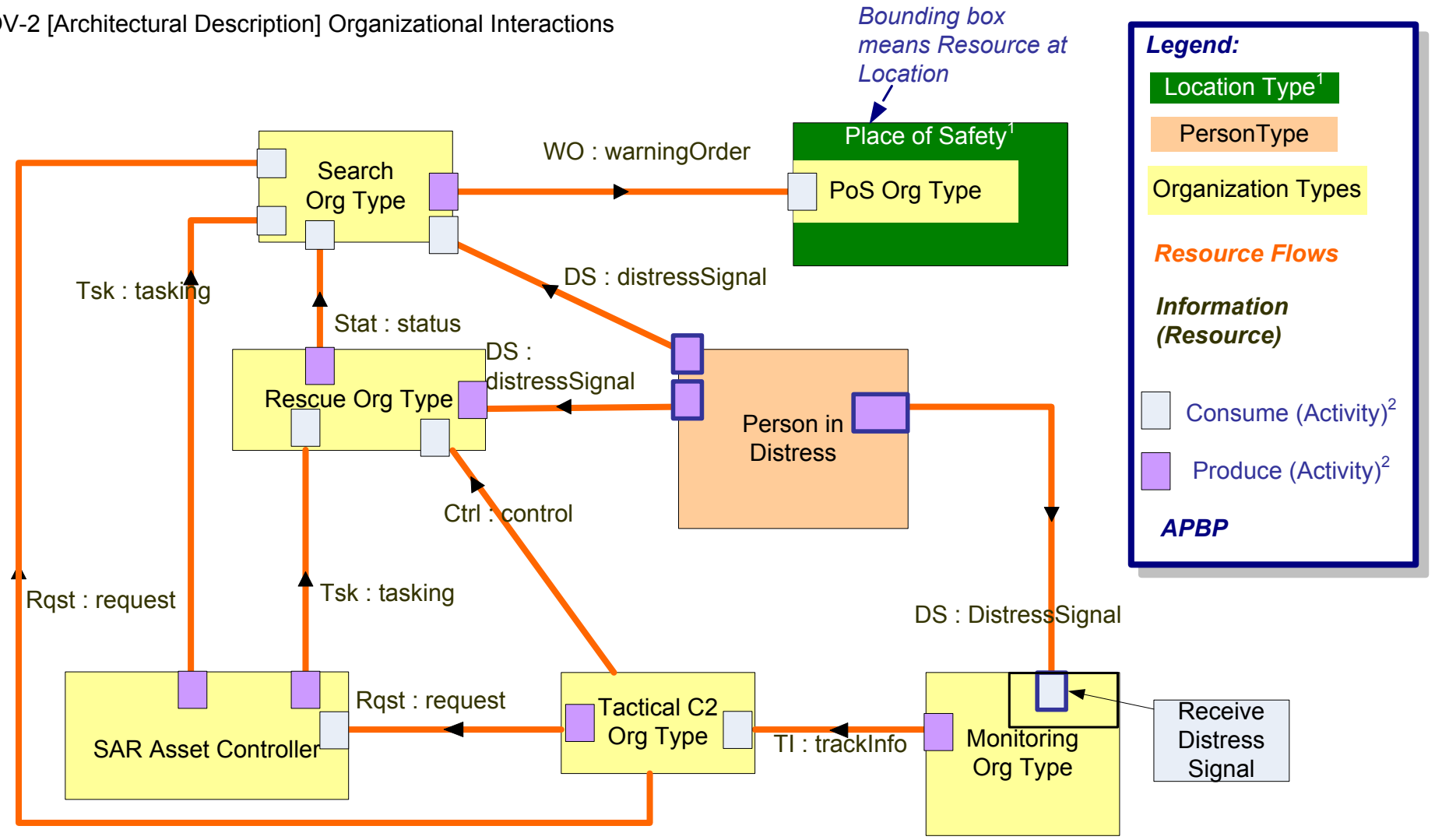
OV-2: Operational Connectivity Description	Operational connectivity and resource flow needlines



OV-2 with DM2 Markups

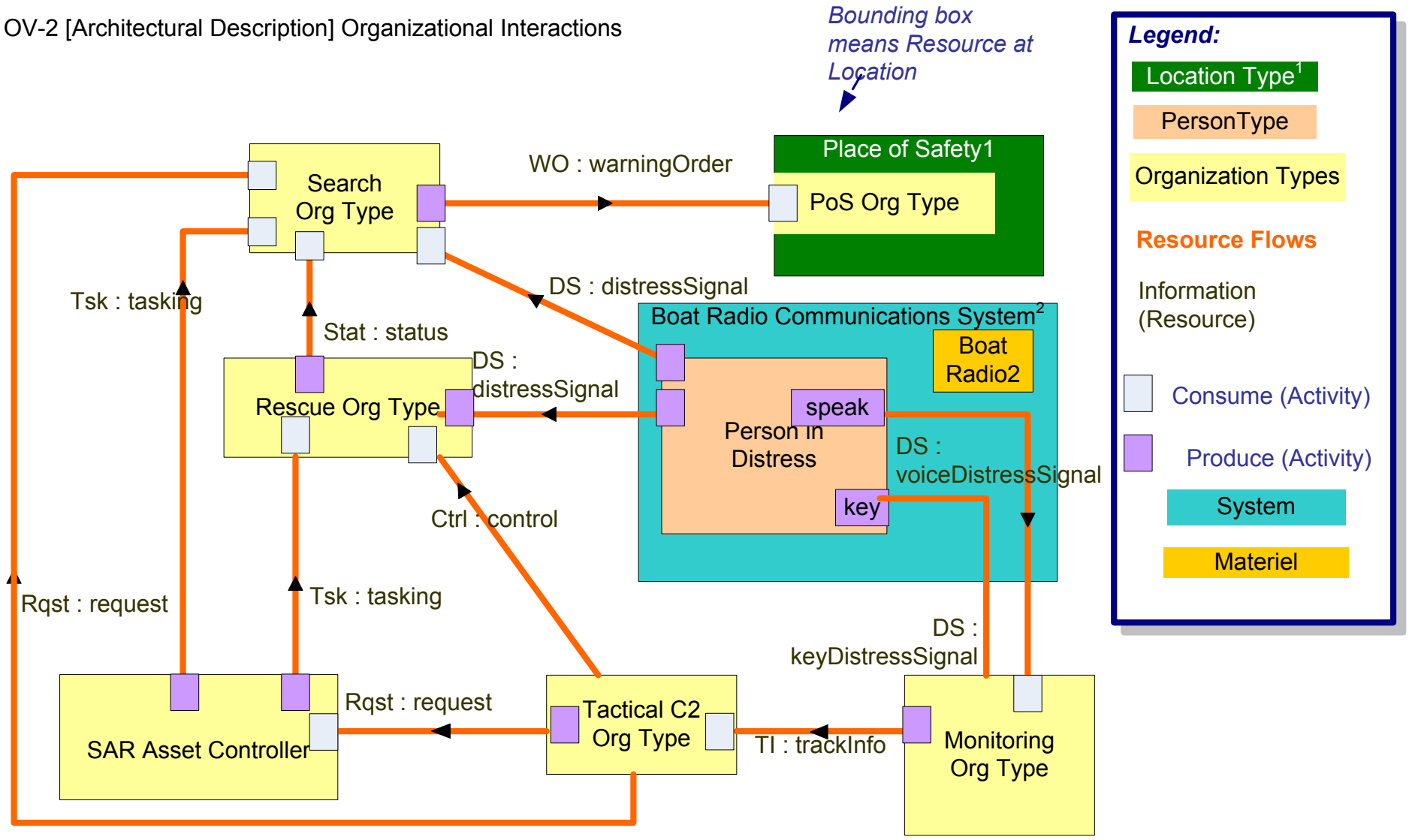
OV-2: Operational Connectivity Description	Operational connectivity and resource flow needlines

OV-2 [Architectural Description] Organizational Interactions



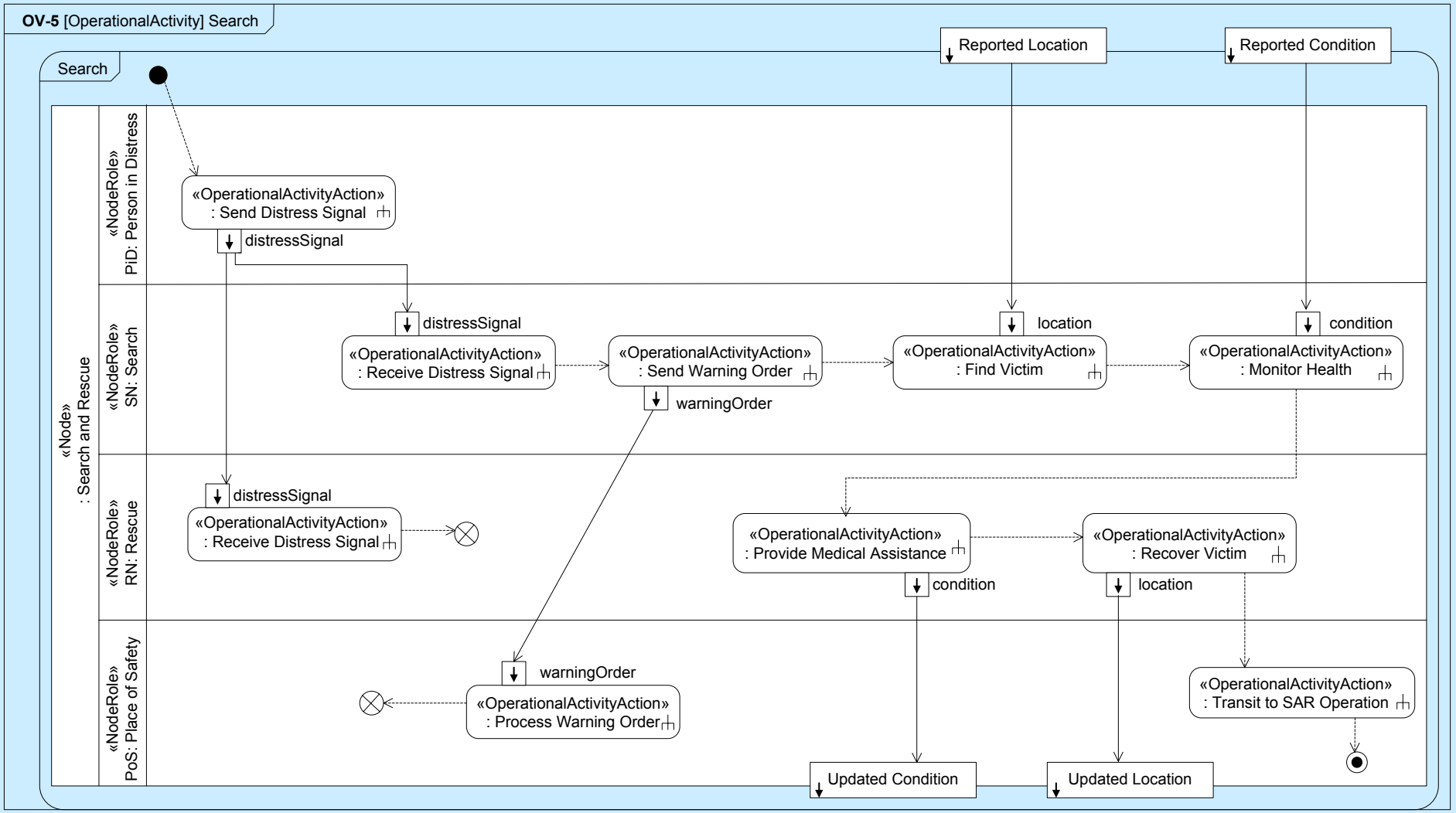
NOTE 1. Should generally not be shown in OV-2 unless an important constraint, i.e., not within the solution trade space.
NOTE 2: Implied. In DoDAF 2, "produce", "consume", "send", "receive" are Activities. An OV-2 diagram need not show the implied activities but the DM2 PES XML document must, even if they are just placeholders to be completed later, e.g., during OV-5 development. This precision solves the "overspecification" problem of earlier DoDAF OV's.

Fit-for-Purpose OV-2 with SV-1 Composite



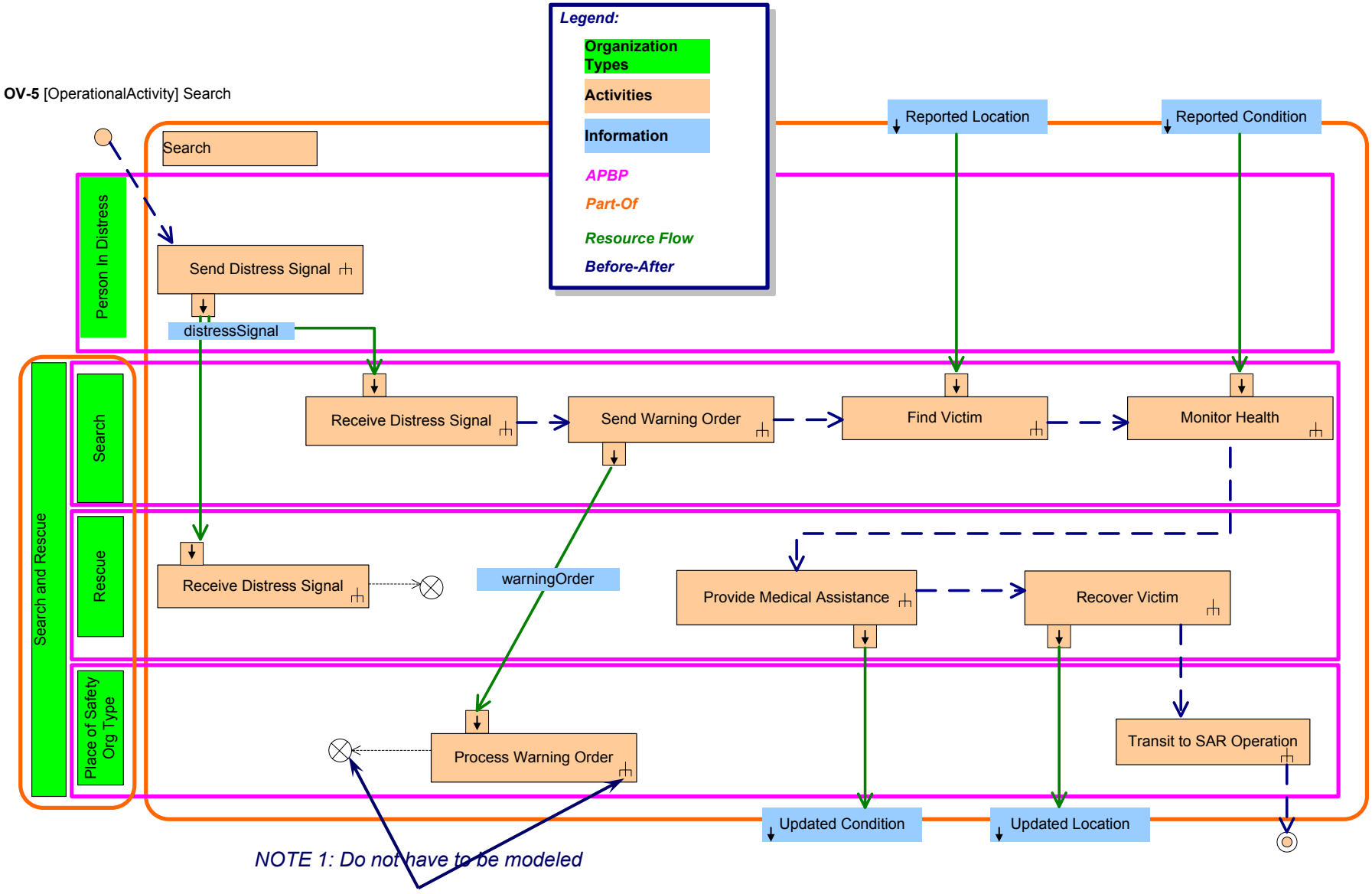
UPDM SAR OV-5

OV-5b: Activity Model	Capabilities, activities (operational activities), relationships among activities, inputs, and outputs; overlays can show cost, performers or other pertinent information



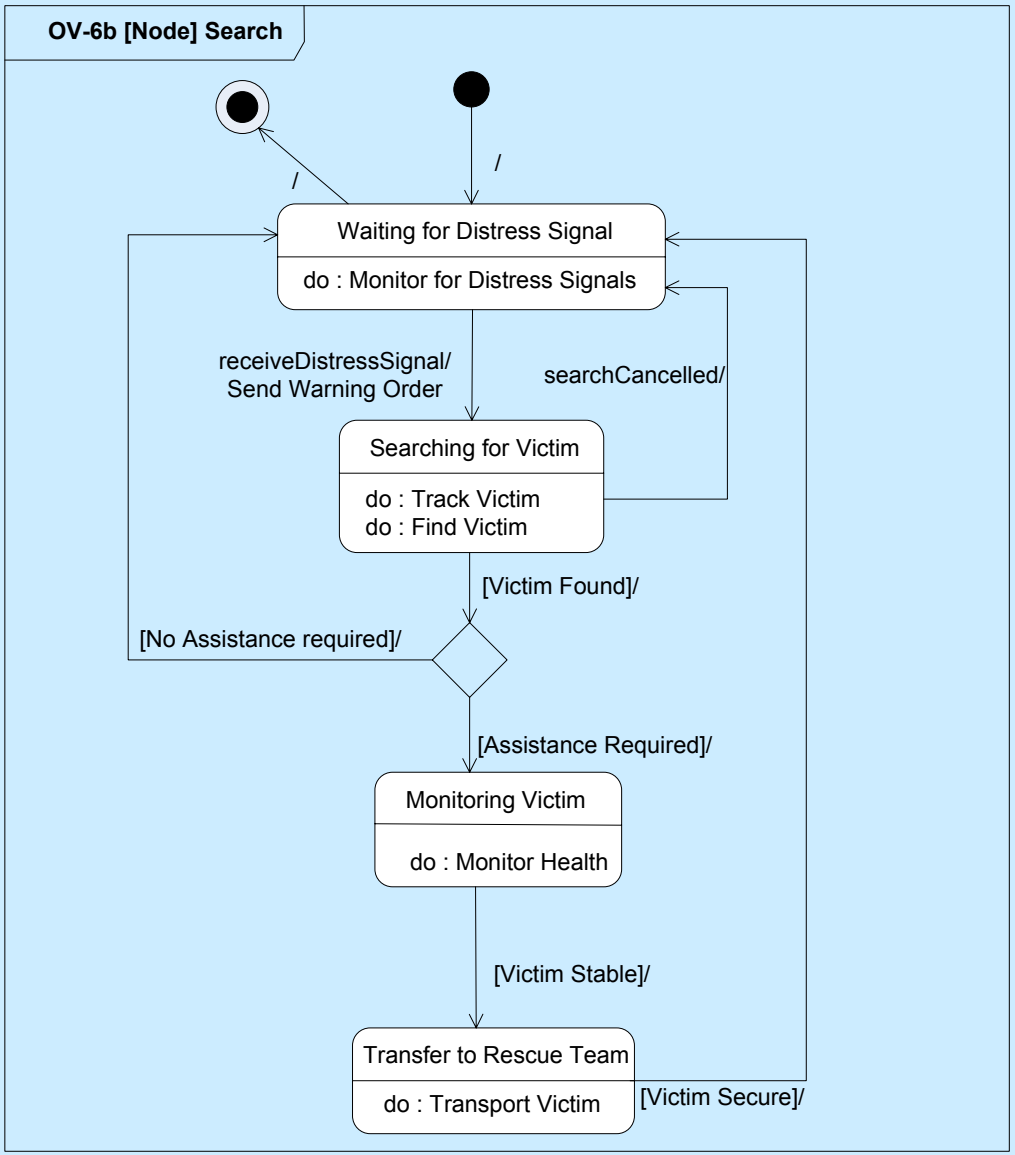
FFP OV-5b/6c Hybrid

OV-5b: Activity Model	Capabilities, activities (operational activities), relationships among activities, inputs, and outputs; overlays can show cost, performers or
OV-6c: Event-Trace Description	One of three models used to describe activity (operational activity) - traces actions in a scenario or sequence of events



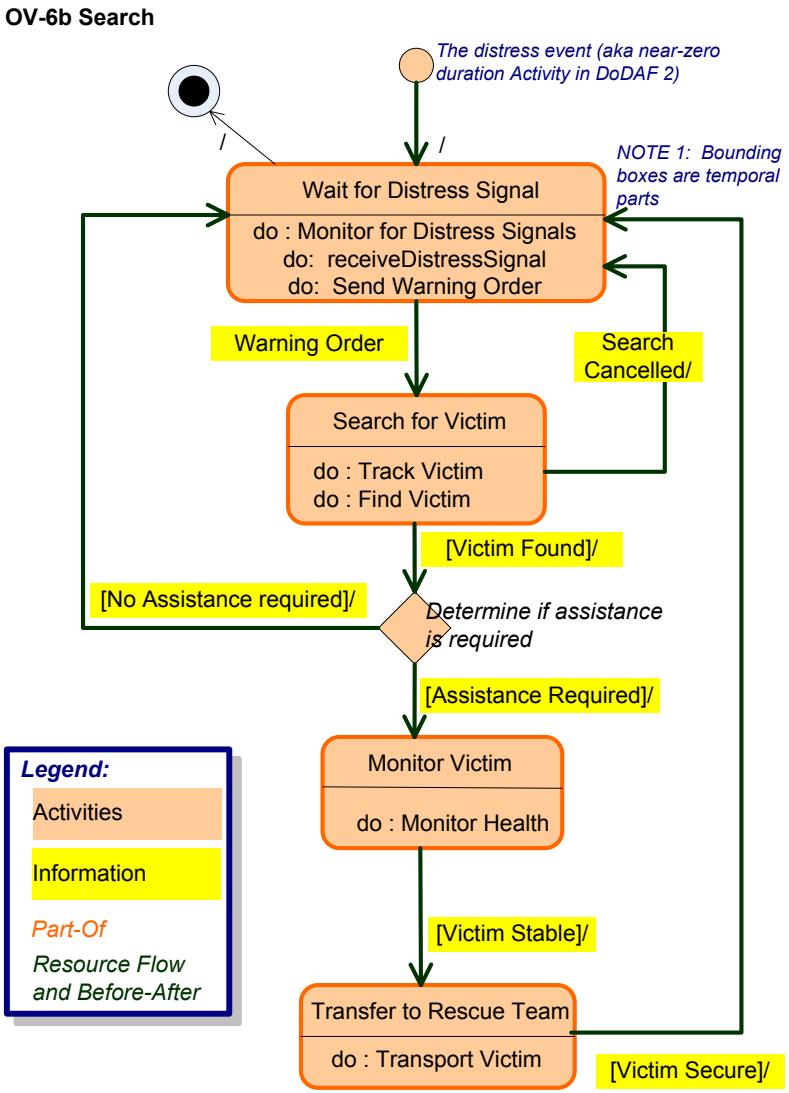
UPDM SAR OV-6b

OV-6b: State Transition Description	One of three models used to describe activity (operational activity) - identifies business process responses to events



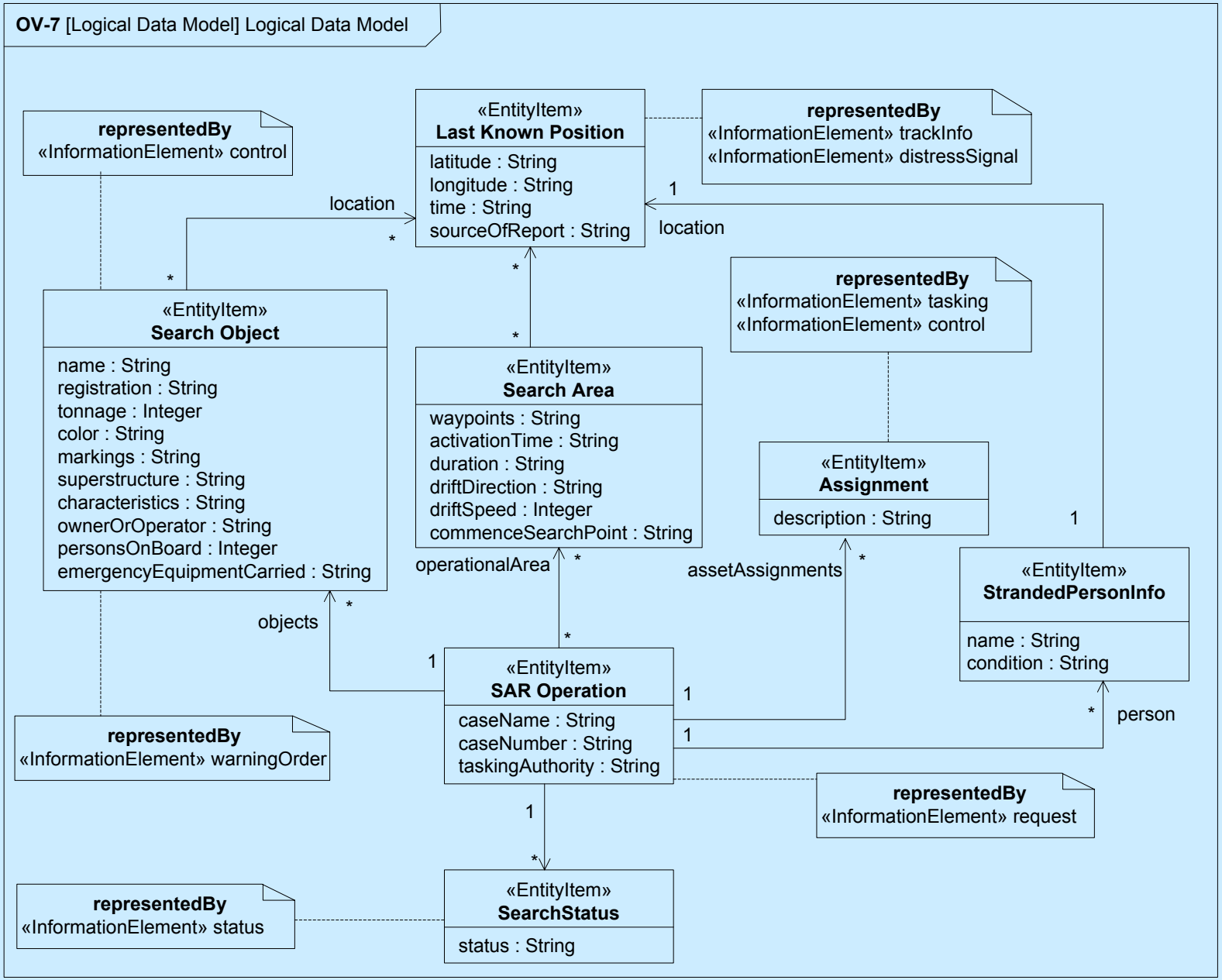
OV-6b with DM2 Markups

OV-6b: State Transition Description	One of three models used to describe activity (operational activity) - identifies business process responses to events



UPDM SAR DIV-2

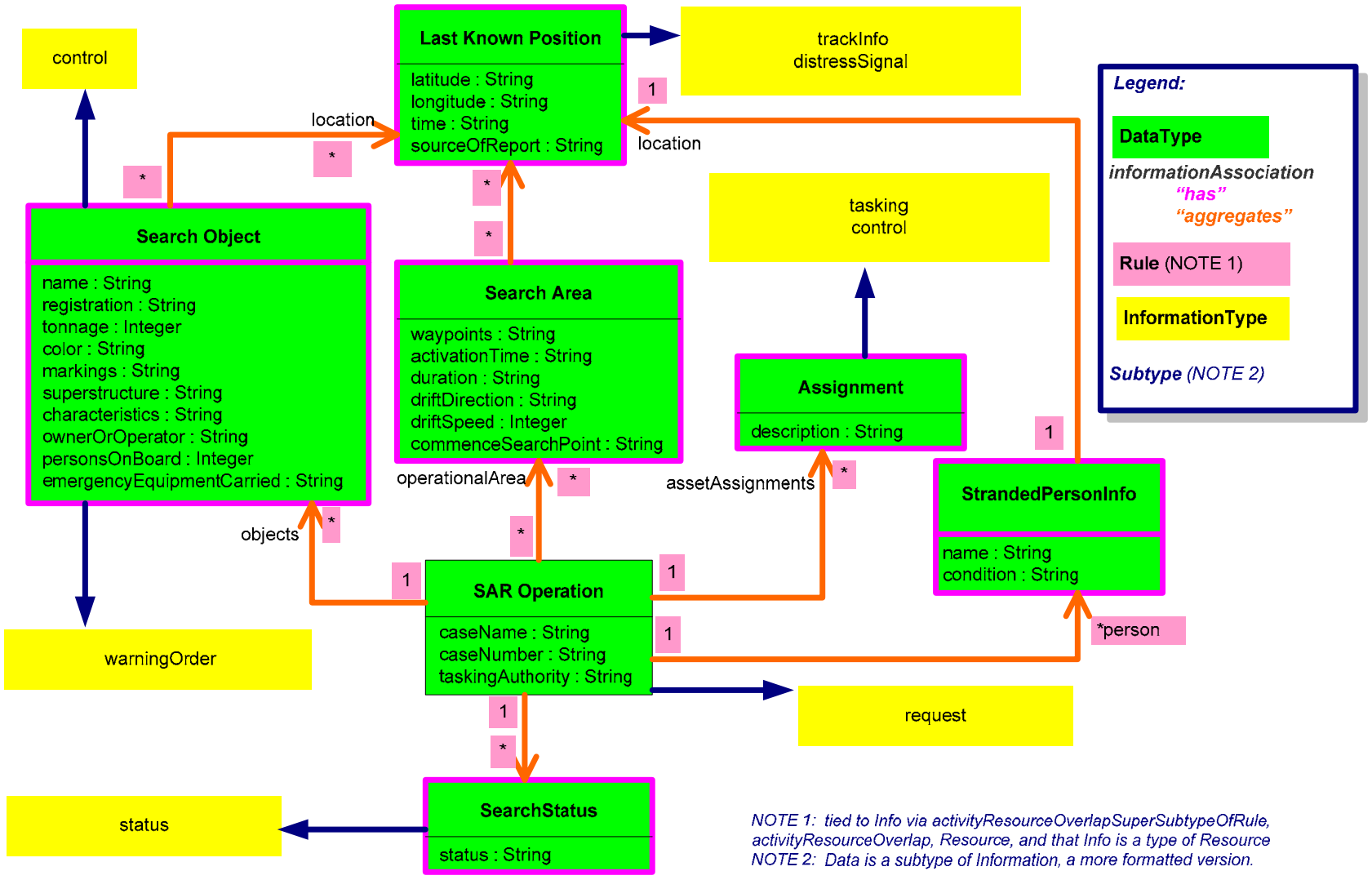
DIV-2: Logical Data Model	Documentation of the data requirements and structural business process rules (In DoDAF V1.5, this was the OV-7)



DIV-2 with DM2 Markups

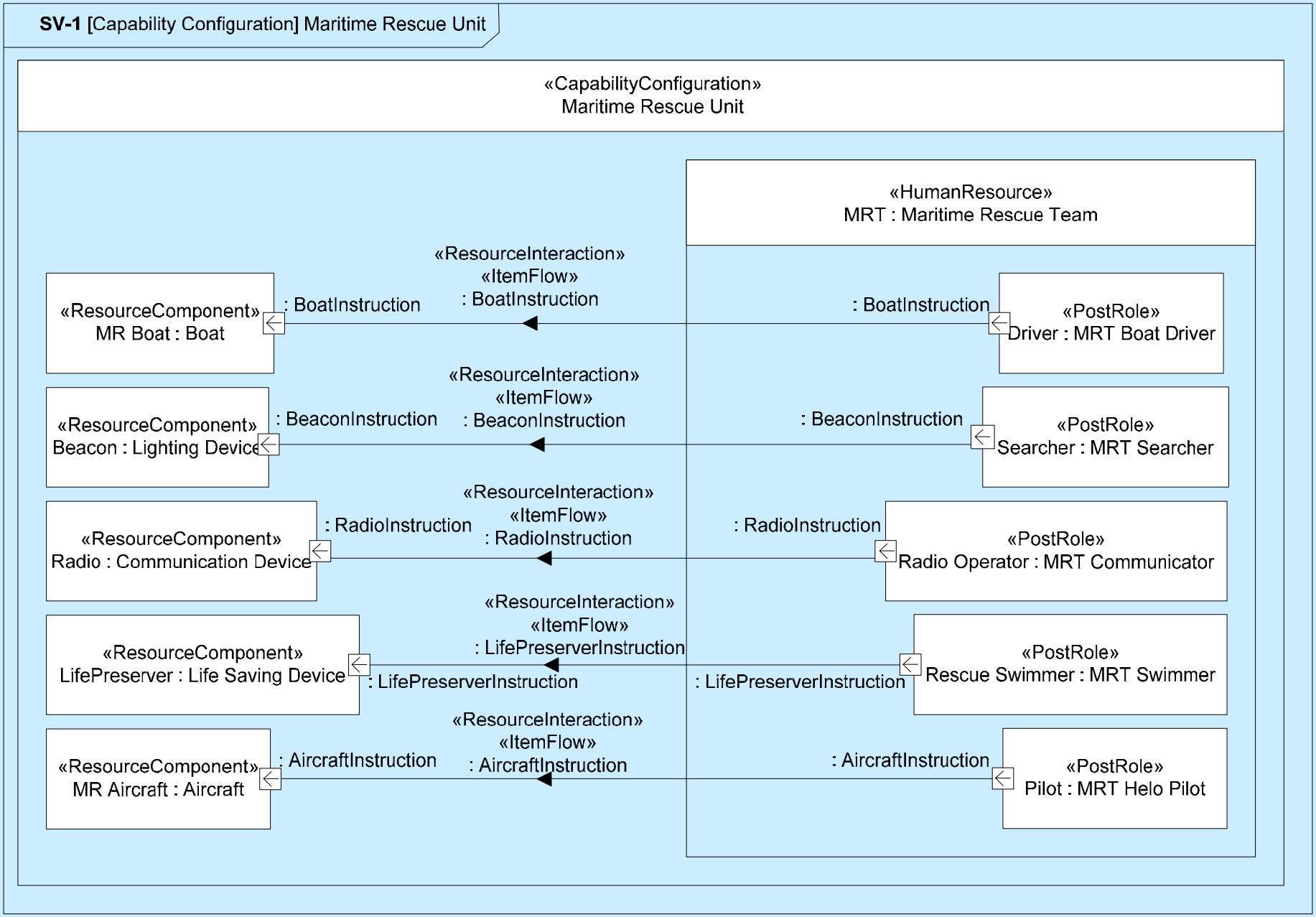
DIV-2: Logical Data Model	Documentation of the data requirements and structural business process rules (In DoDAF V1.5, this was the OV-7)

DIV-2 [Logical Data Model] Logical Data Model



UPDM SAR SV-1

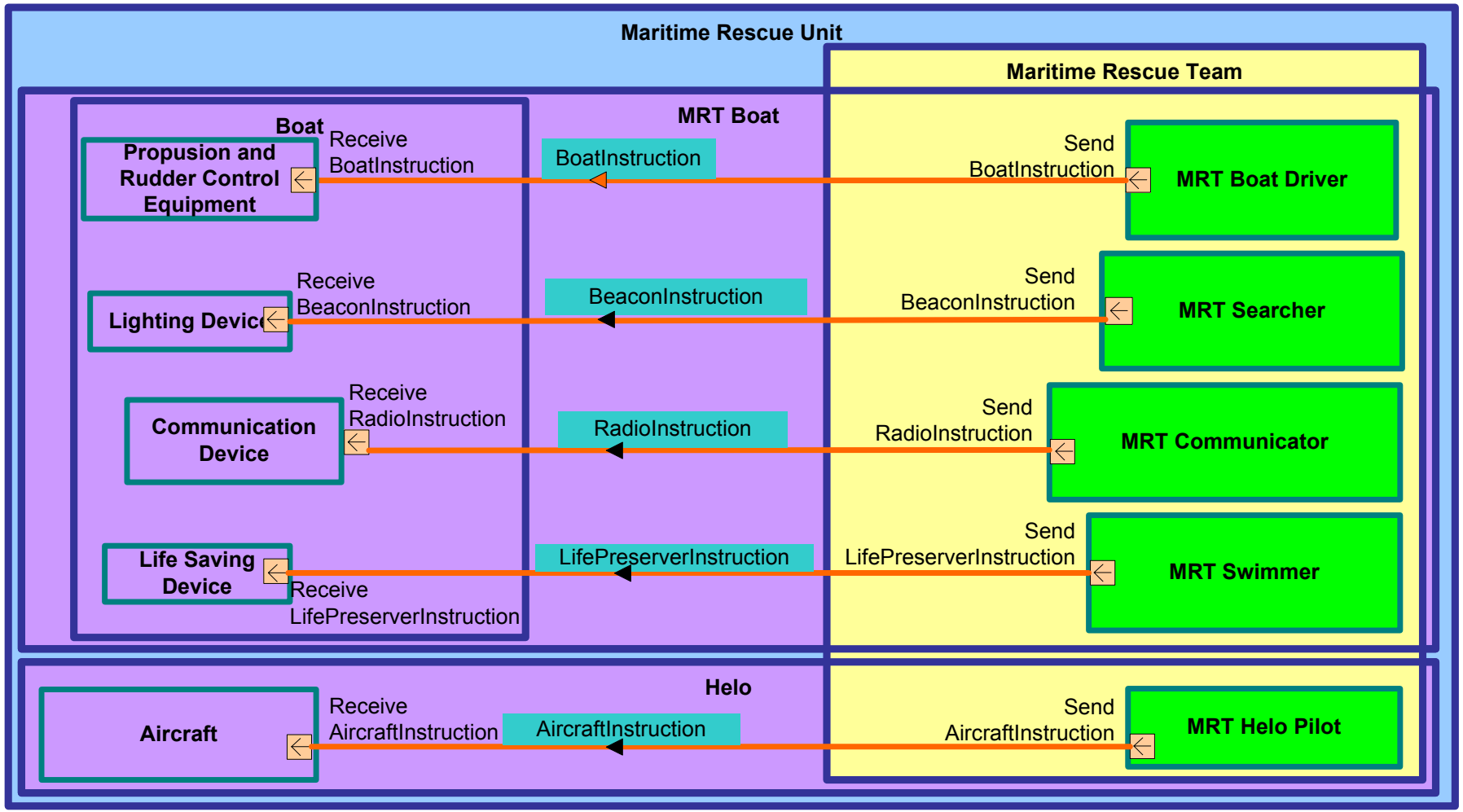
SV-1 Systems Interface Description	Identification of systems and system items and their interconnections

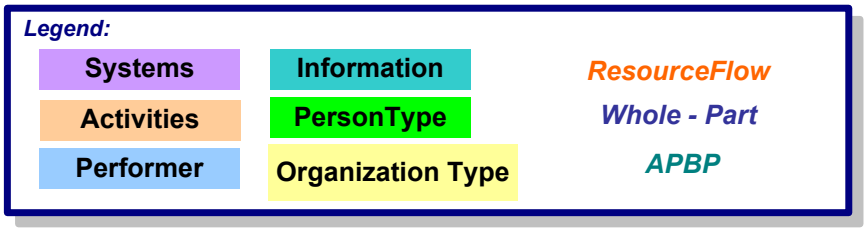


SV-1 with DM2 Markups

SV-1 Systems Interface Description	Identification of systems and system items and their interconnections

SV-1 [Performer] Maritime Rescue Unit





UPDM SAR SV-7

SV-7 Systems Performance Parameters Matrix	Performance characteristics of Systems Model elements for the appropriate time frame(s)

Parameter ID	System/Element	Performance Requirement	Metric	Measure
				Hardware
H 1.1	Voice Radio Transmitter	Transmission rate	2	GB
H 2.1	Voice Radio Receiver	Gain	60	dB
H 2.2		Signal to Noise Ratio	20	dB
H 3.1	Signal Processor	Comms Channel Bandwidth Support	2	GB
				Software
S 1.2	Status Alerting	Min. status change alert accuracy	500	meters
S 1.3		Min. alert response time	30	seconds

SV-7 with DM2 Markups

SV-7 Systems Performance Parameters Matrix	Performance characteristics of Systems Model elements for the appropriate time frame(s)

System – Measure association

Measure – Measure Type association

System – Measure Type – Measure association Name[3]	System	Measure Type	Measure	Measure Type units
				Hardware[1]
H 1.1	Voice Radio Transmitter	Transmission rate	2	GB
H 2.1	Voice Radio Receiver	Gain	60	dB
H 2.2		Signal to Noise Ratio	20	dB
H 3.1	Signal Processor	Comms Channel Bandwidth Support	2	GB
				Software[1]
S 1.2	Status Alerting (component)	Min. status change alert accuracy	500	meters
S 1.3		Min. alert response time	30	seconds

Header means Systems below principally consist of this Materiel type

Legend:

Measure Types

Measure Type units

Measures

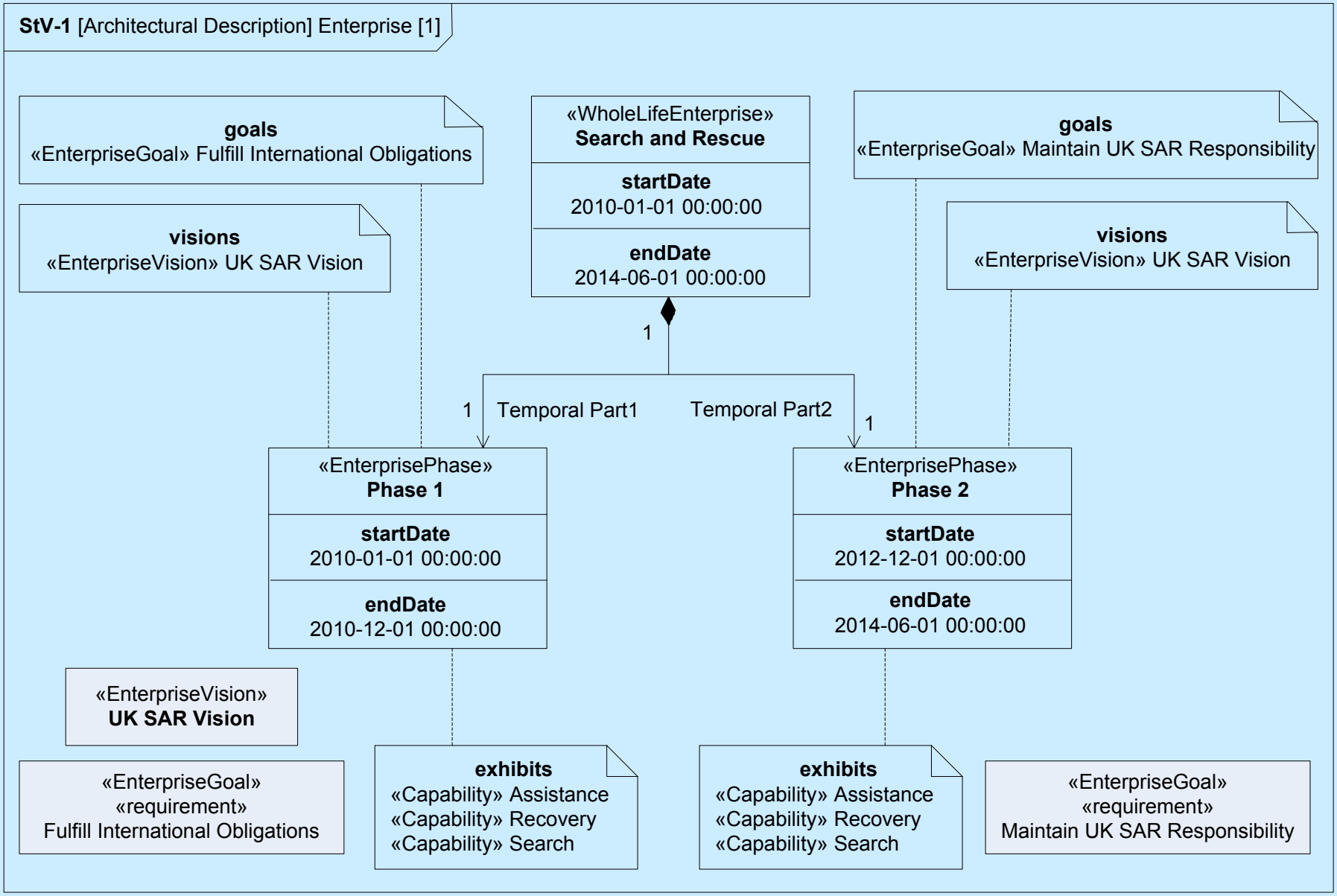
Systems

Materiel (type)[1]

NOTE 1: Not generally shown in SV-7
NOTE 2: Often it is necessary to relate the Activity (aka System Function) to which the metric applies within the System. Many, often most, System metrics relate to some Activity performed by the System.
NOTE 3: Not necessary.

UPDM SAR CV-1

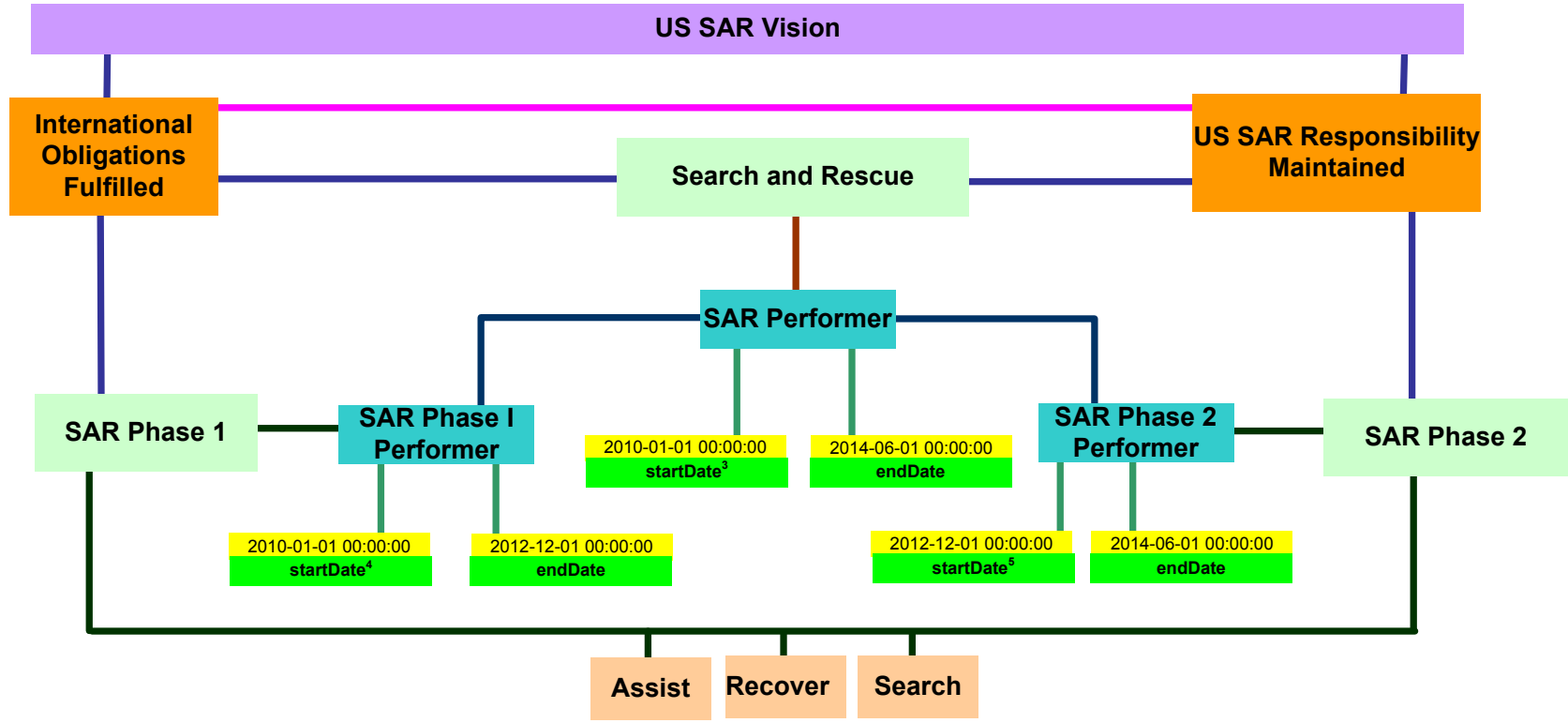
CV-1: Vision	Overall vision for transformational endeavors, provides a strategic context for the capabilities described, and provides a high-level scope.

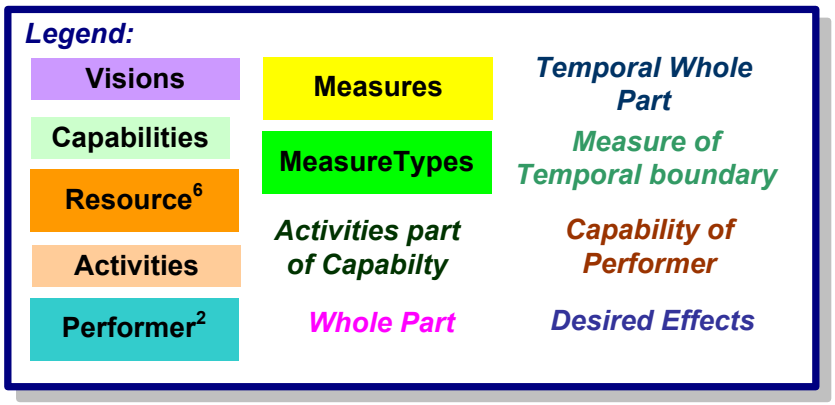


Partial[1] CV-1 with DM2 Markups

CV-1: Vision	Overall vision for transformational endeavors, provides a strategic context for the capabilities described, and provides a high-level scope.

CV-1 SAR Vision

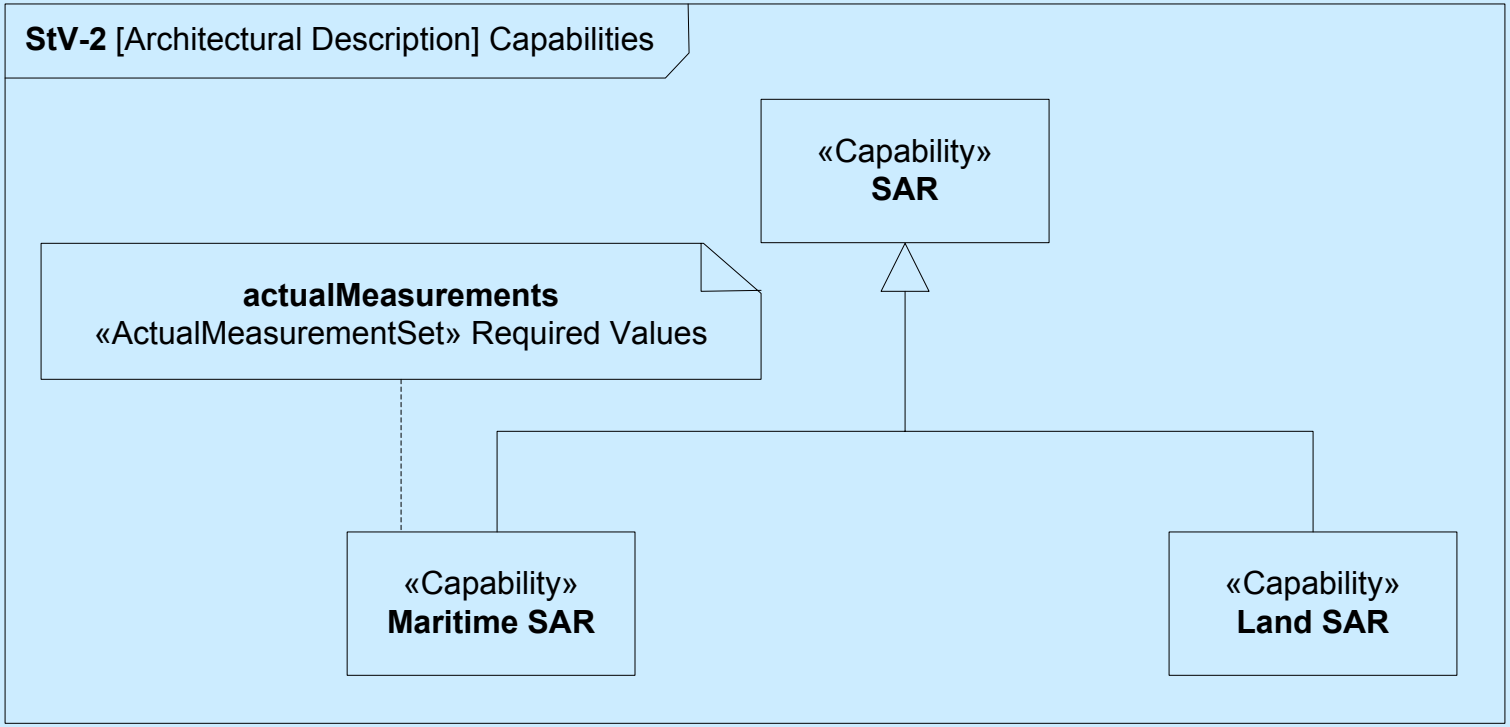




NOTE 1: "Partial" because any CV should contain the structural description of the Capabilities, in terms of Desired Effects and associated measures, Activities to be performed under conditions – and associated measures.
NOTE 2: Performer is probably an aggregate (whole-parts), aka "Capability Configuration"
NOTE 3: Whole Capability lasts 54 months
NOTE 4: Phase I lasts 35 months
NOTE 5: Phase II lasts 19 months
NOTE 6: Desired effects are states of Resources

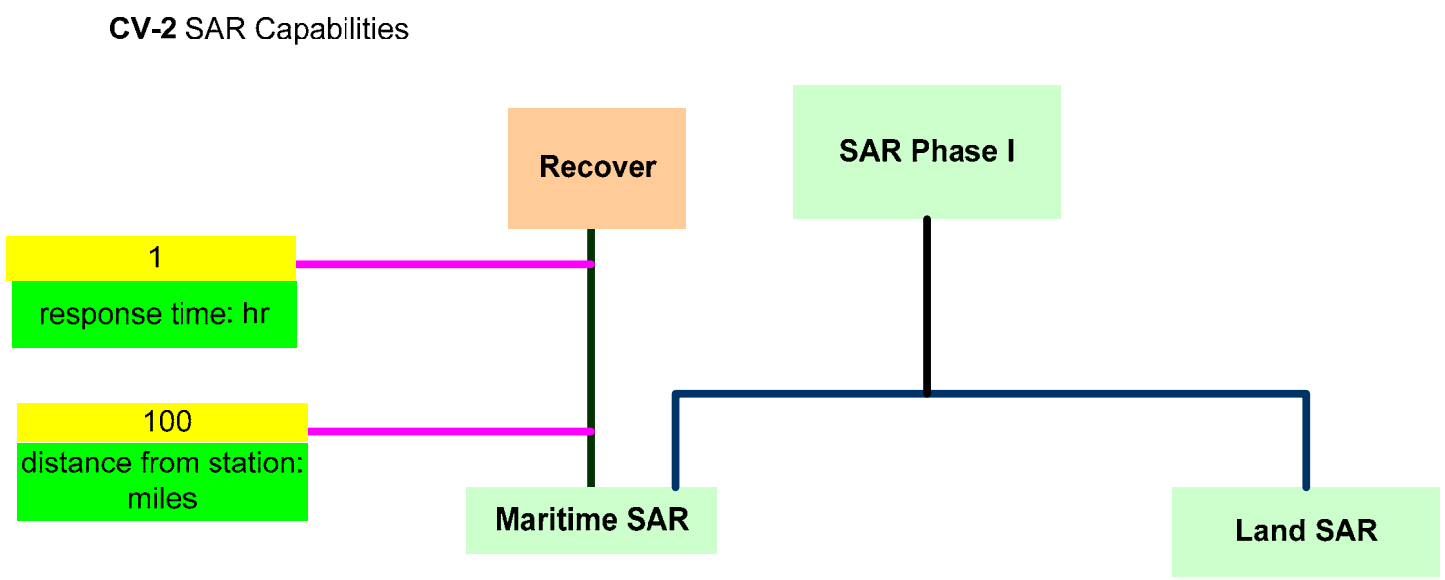
UPDM SAR CV-2

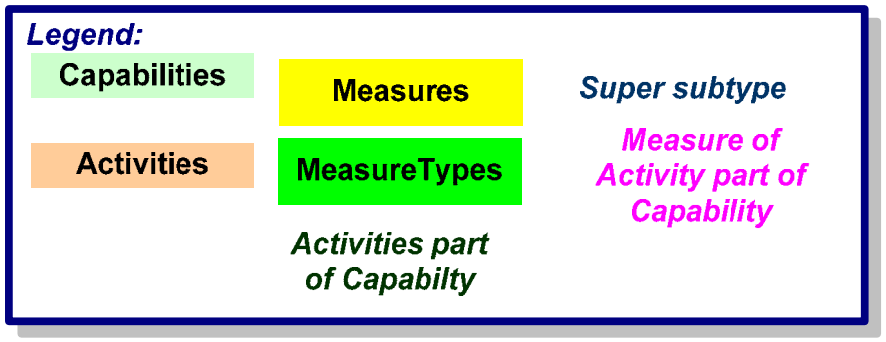
CV-2: Capability Taxonomy	A hierarchy of capabilities, specifies all the capabilities that are referenced throughout one or more architectures.



Partial[1] CV-2 with DM2 Markups

CV-2: Capability Taxonomy	A hierarchy of capabilities, specifies all the capabilities that are referenced throughout one or more architectures.

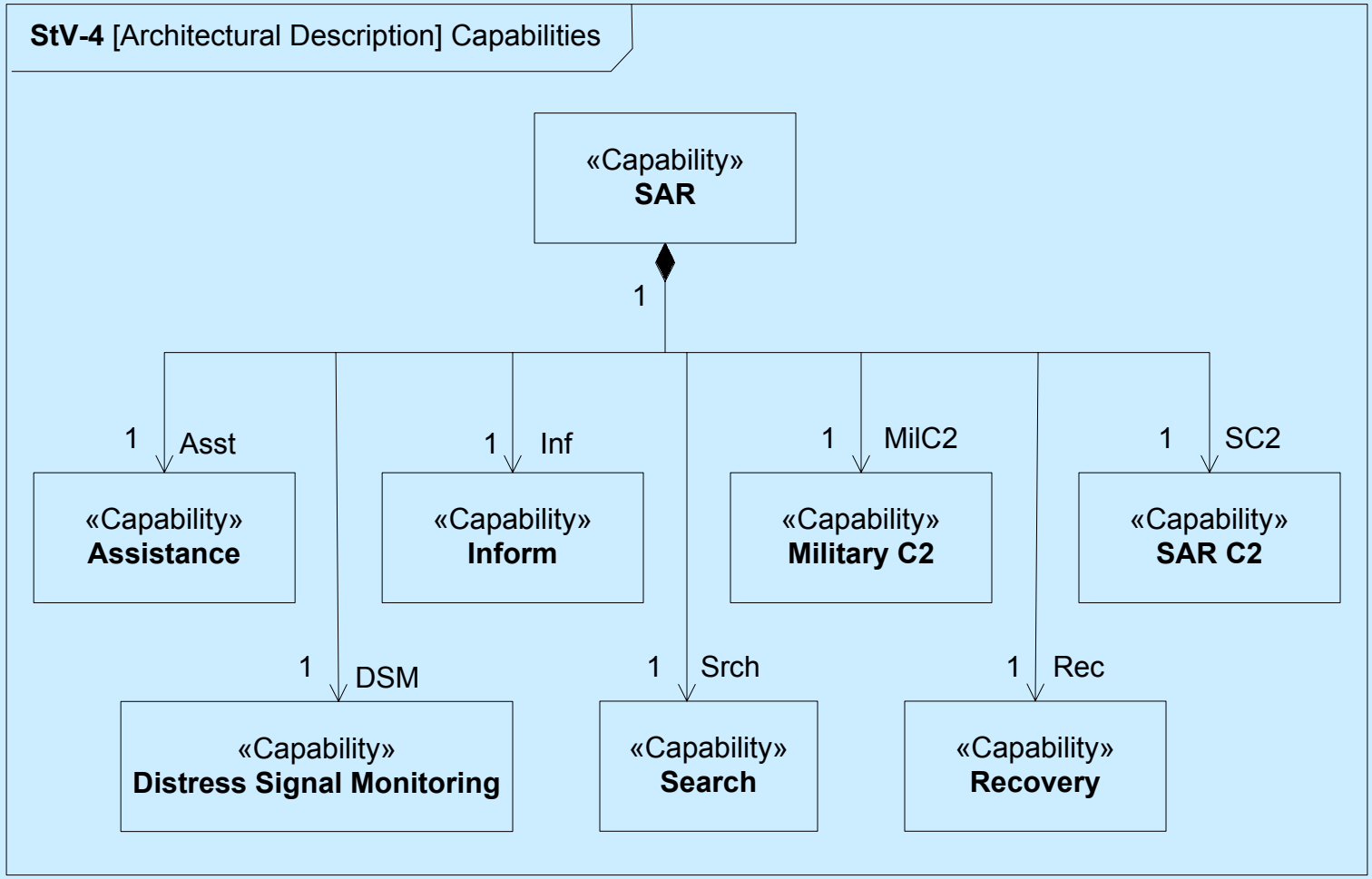




NOTE 1: "Partial" because any CV should contain the structural description of the Capabilities, in terms of Desired Effects and associated measures, Activities to be performed under conditions – and associated measures.

UPDM SAR CV-4

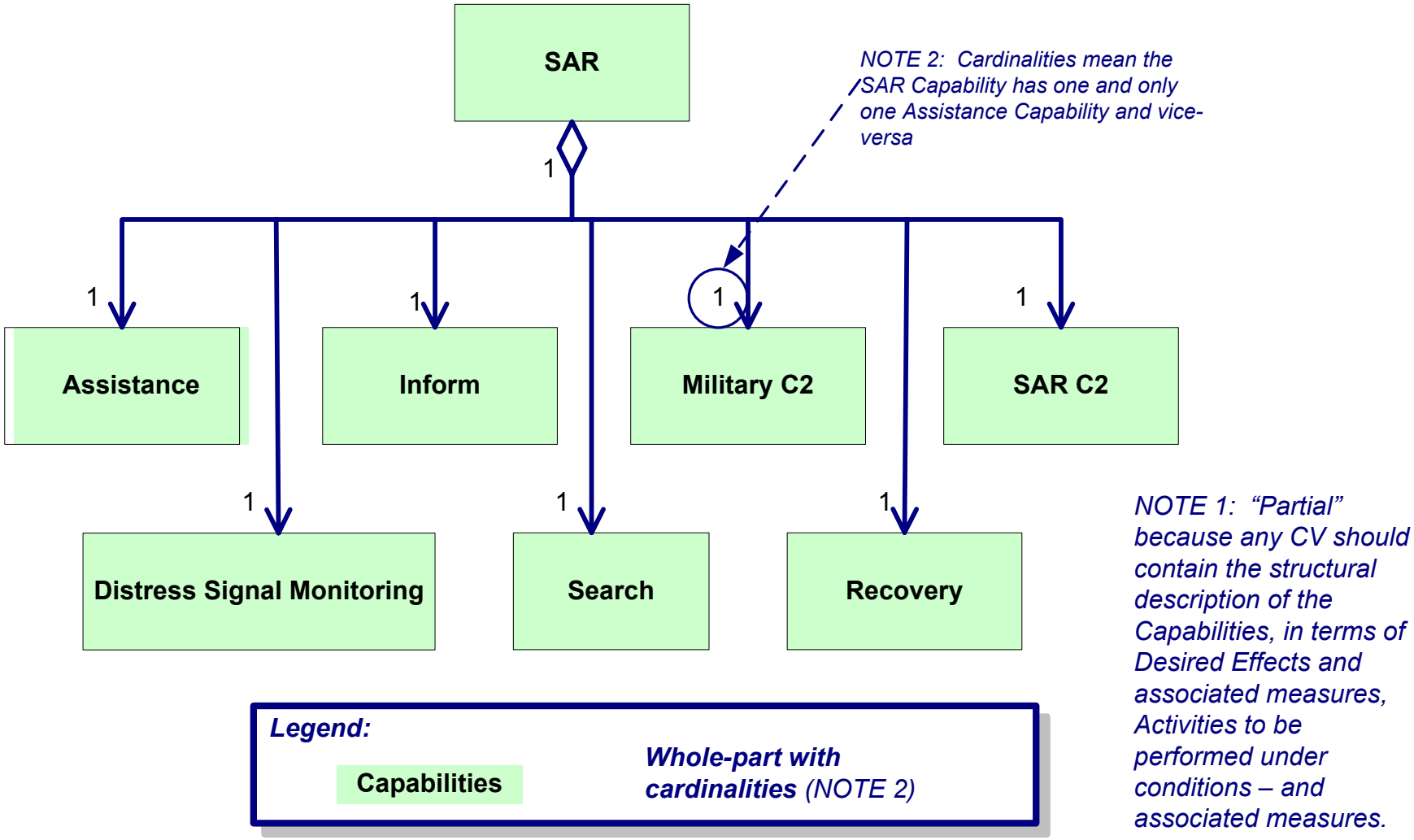
CV-4: Capability Dependencies	Dependencies between planned capabilities and defines logical groupings of capabilities.



Partial[1] CV-2 with DM2 Markups

CV-2: Capability Taxonomy	A hierarchy of capabilities, specifies all the capabilities that are referenced throughout one or more architectures.

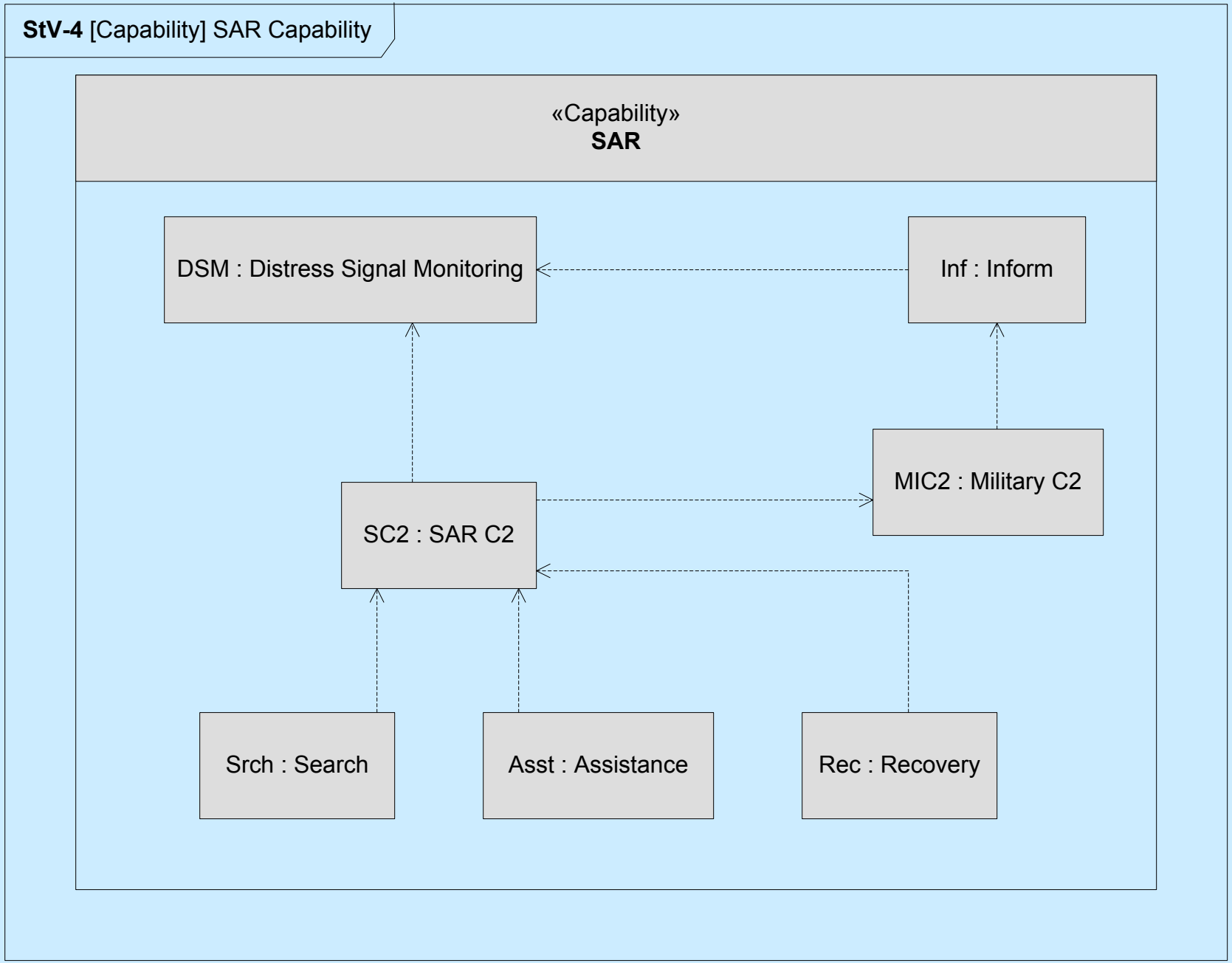
CV-2 [Architectural Description] Capabilities



NOTE 1: "Partial" because any CV should contain the structural description of the Capabilities, in terms of Desired Effects and associated measures, Activities to be performed under conditions – and associated measures.

UPDM SAR CV-4

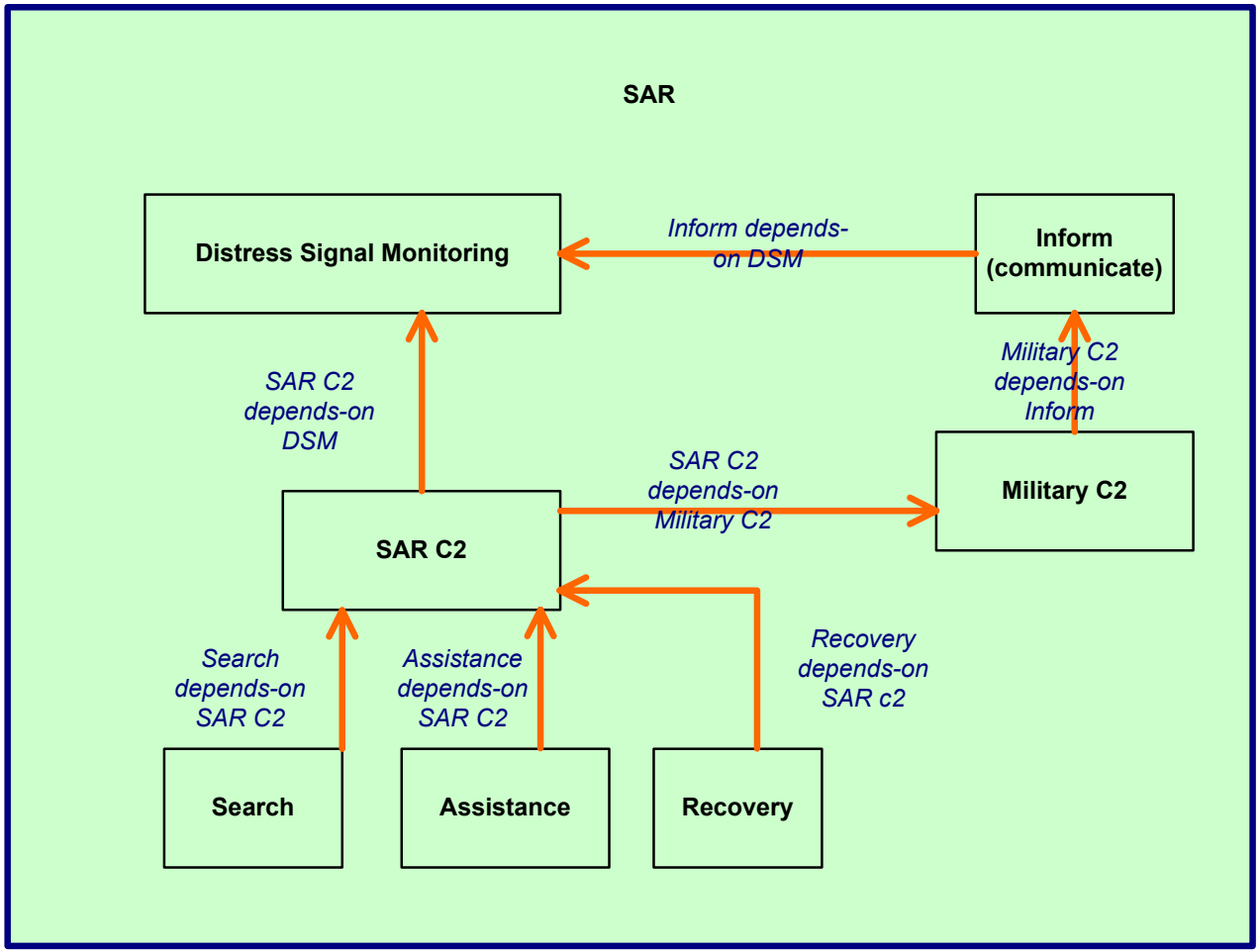
CV-4: Capability Dependencies	Dependencies between planned capabilities and defines logical groupings of capabilities.



Partial[1] CV-4 with DM2 Markups

CV-4: Capability Dependencies	Dependencies between planned capabilities and defines logical groupings of capabilities.

CV-4 [Capability] SAR Capability



Legend:

Capabilities ***Whole-part*** *(NOTE 2)*

Desired Effect Whole-part *(NOTE 3)*

NOTE 1: "Partial" because any CV should contain the structural description of the Capabilities, in terms of Desired Effects and associated measures, Activities to be performed under conditions – and associated measures.
NOTE 2: Bounding box shows DSM, SC2, Inf, MIC2, Srch, Asst, Rec are "grouped under" (part-of or overlap-with) SAR
NOTE 3: Means, the desired effect of the "whole" capability includes the desired effects of the "parts".

UPDM SAR CV-5

CV-5: Capability to Organizational Development Mapping	The fulfillment of capability requirements, shows the planned capability deployment and interconnection for a particular Capability Phase.

[Architectural Description] Capabilities [StV-5]

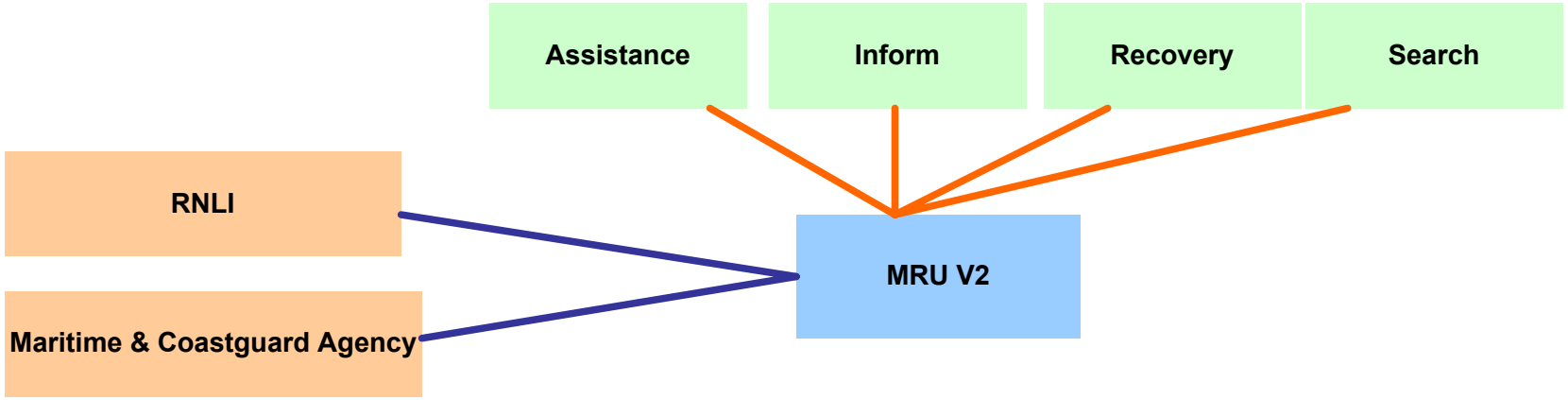
Capabilities

Organizational Resources	«Capability» Assistance	«Capability» Inform	«Capability» Recovery	«Capability» Search
«ActualOrganization» RNLI	Maritime Rescue Unit Maritime Rescue Unit V2	Maritime Rescue Unit Maritime Rescue Unit V2	Maritime Rescue Unit Maritime Rescue Unit V2	Maritime Rescue Unit Maritime Rescue Unit V2
«ActualOrganization» Maritime & Coastguard Agency	Maritime Rescue Unit Maritime Rescue Unit V2	Maritime Rescue Unit Maritime Rescue Unit V2	Maritime Rescue Unit Maritime Rescue Unit V2	Maritime Rescue Unit Maritime Rescue Unit V2

Partial[1] CV-5 with DM2 Markups

CV-5: Capability to Organizational Development Mapping	The fulfillment of capability requirements, shows the planned capability deployment and interconnection for a particular Capability Phase.

[Architectural Description] Capabilities [CV-5]



Legend:

Capabilities

Performer

Organizations

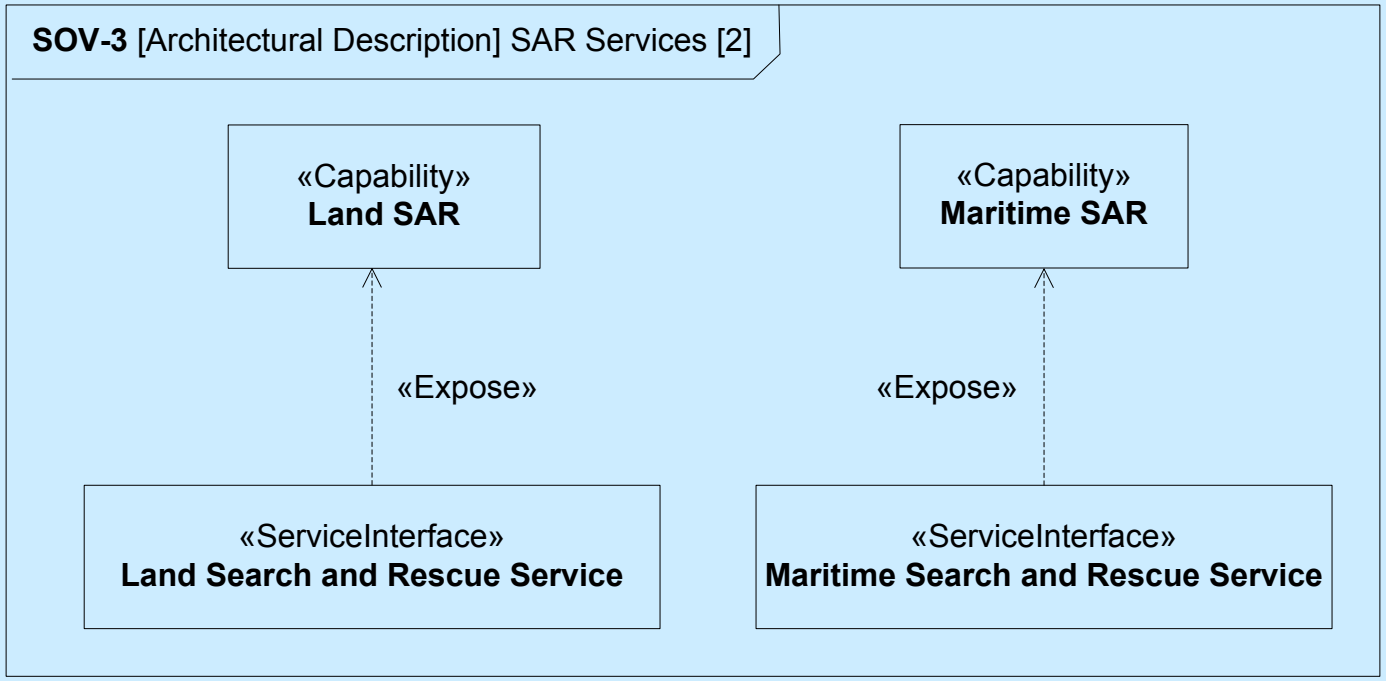
Performer that enables / supports the Capability

Organizations that perform the Activities that produce the Performers the realize the Capability Phases

NOTE 1: "Partial" because any CV should contain the structural description of the Capabilities, in terms of Desired Effects and associated measures, Activities to be performed under conditions – and associated measures.

UPDM SAR SvcV-3

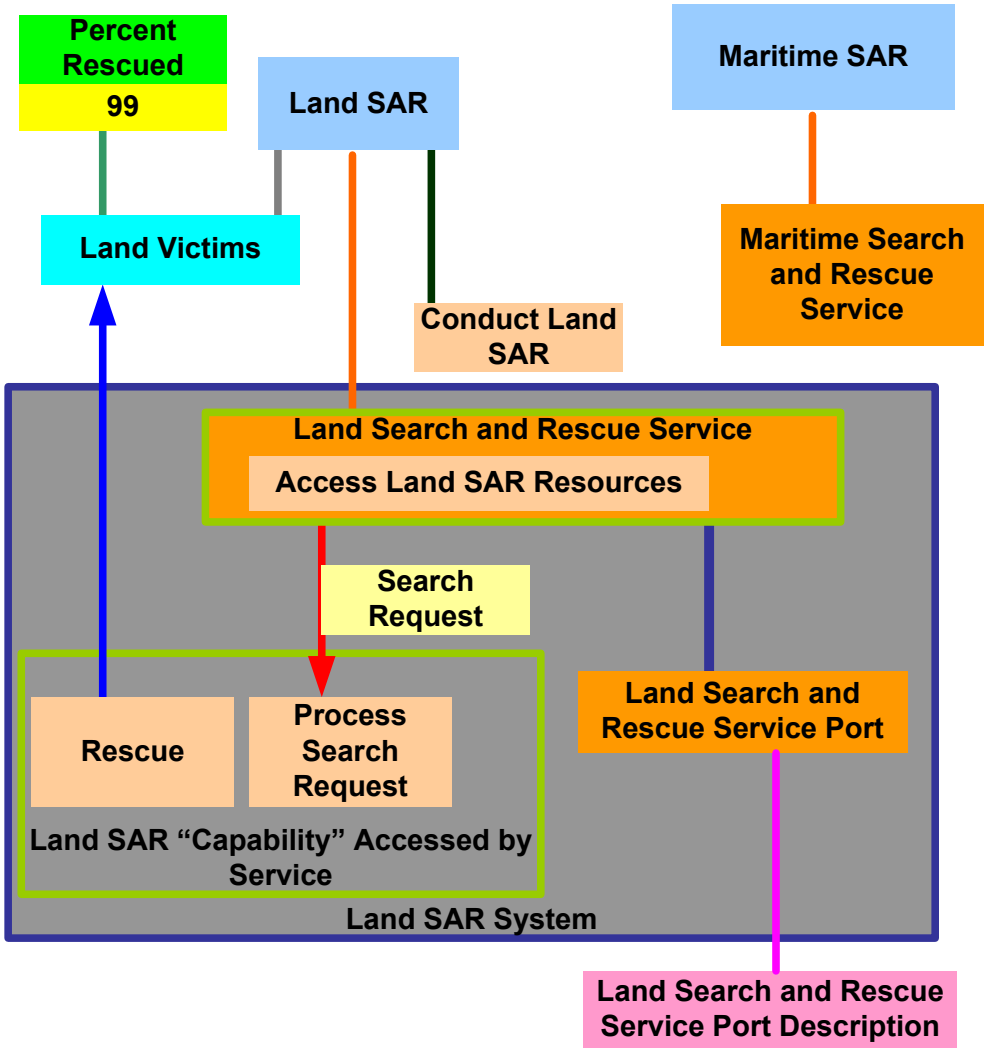
SvcV-3a Systems-Services Matrix	Relationships among between systems and services in a given architecture.
SvcV-3b Services-Services Matrix	Relationships among services in a given architecture; can be designed to show relationships of interest, e.g., service-type interfaces, planned vs. existing interfaces, etc.

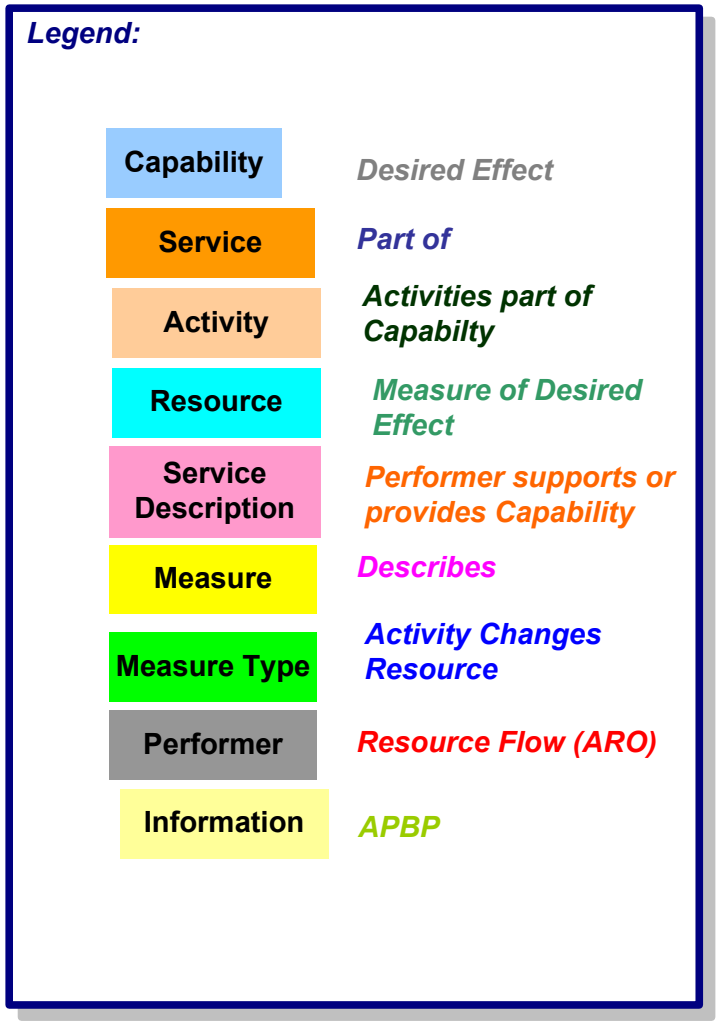


CV-7 with DM2 Markups

CV-7: Capability to Services Mapping	Mapping between capabilities and the services that these capabilities enable.

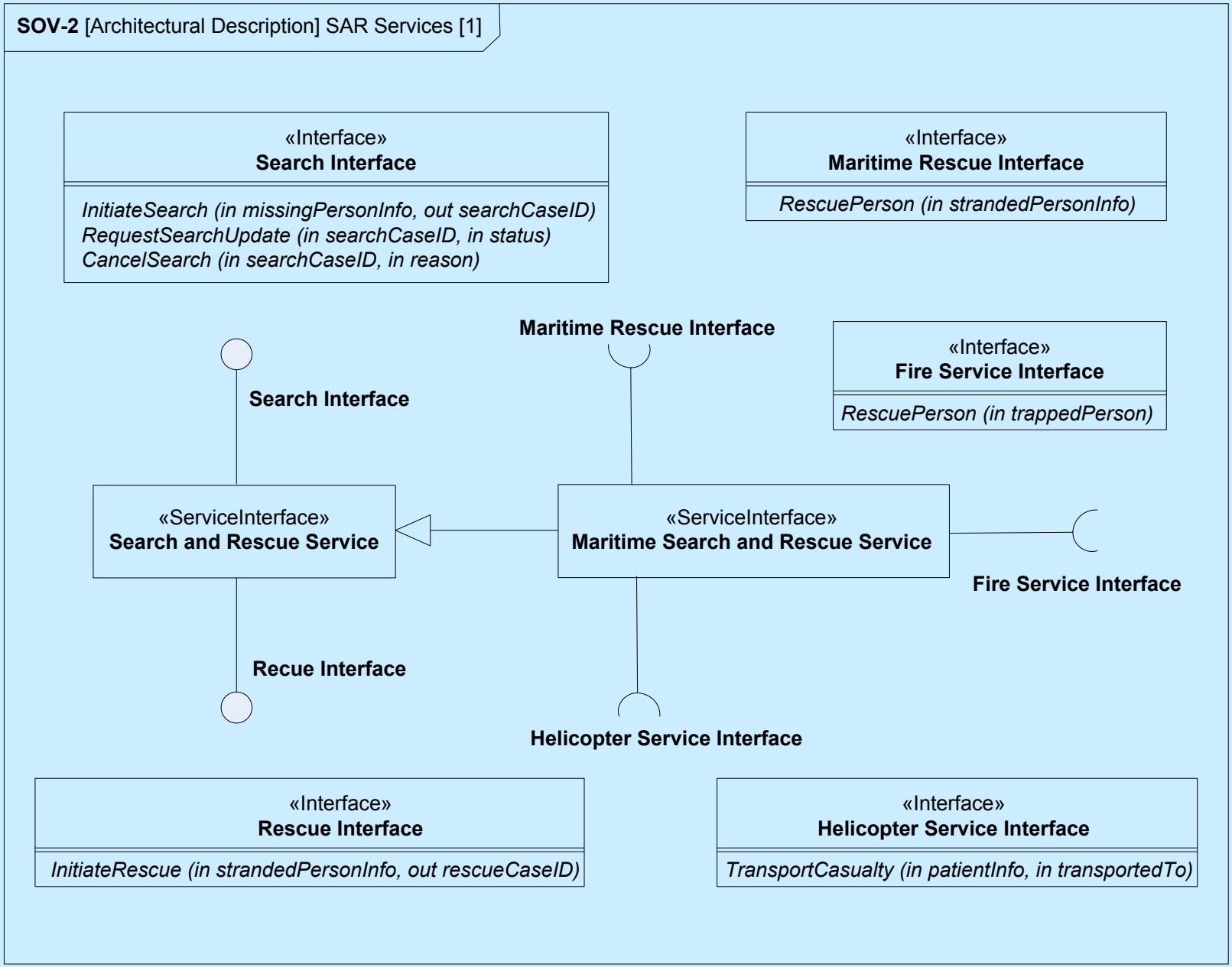
CV-7 [Architectural Description] SAR Services [2]





UPDM SAR SvcV-2

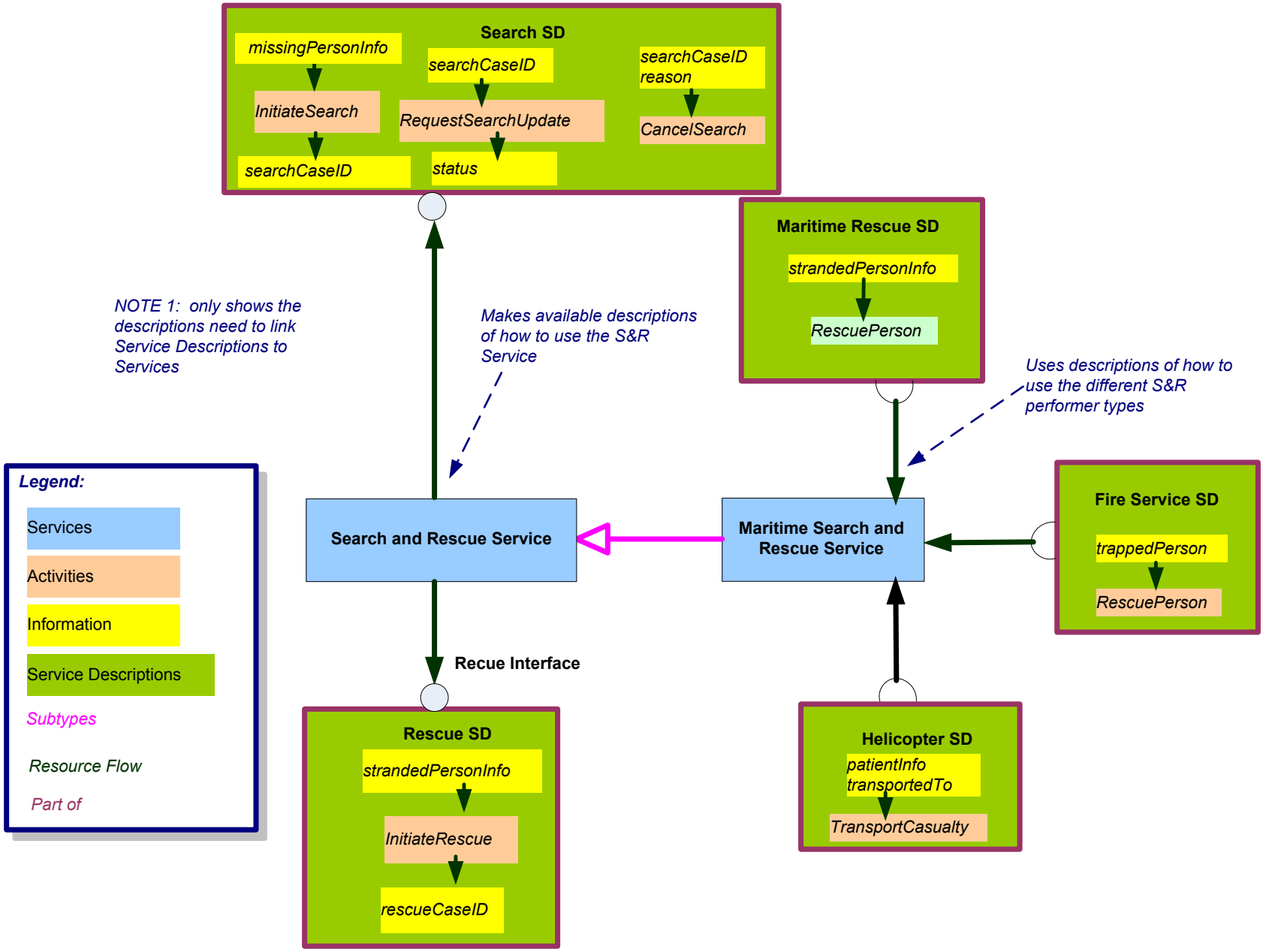
SvcV-2 Services Communications Description	Services and service items and their related communications laydowns



SvcV-2 with DM2 Markups

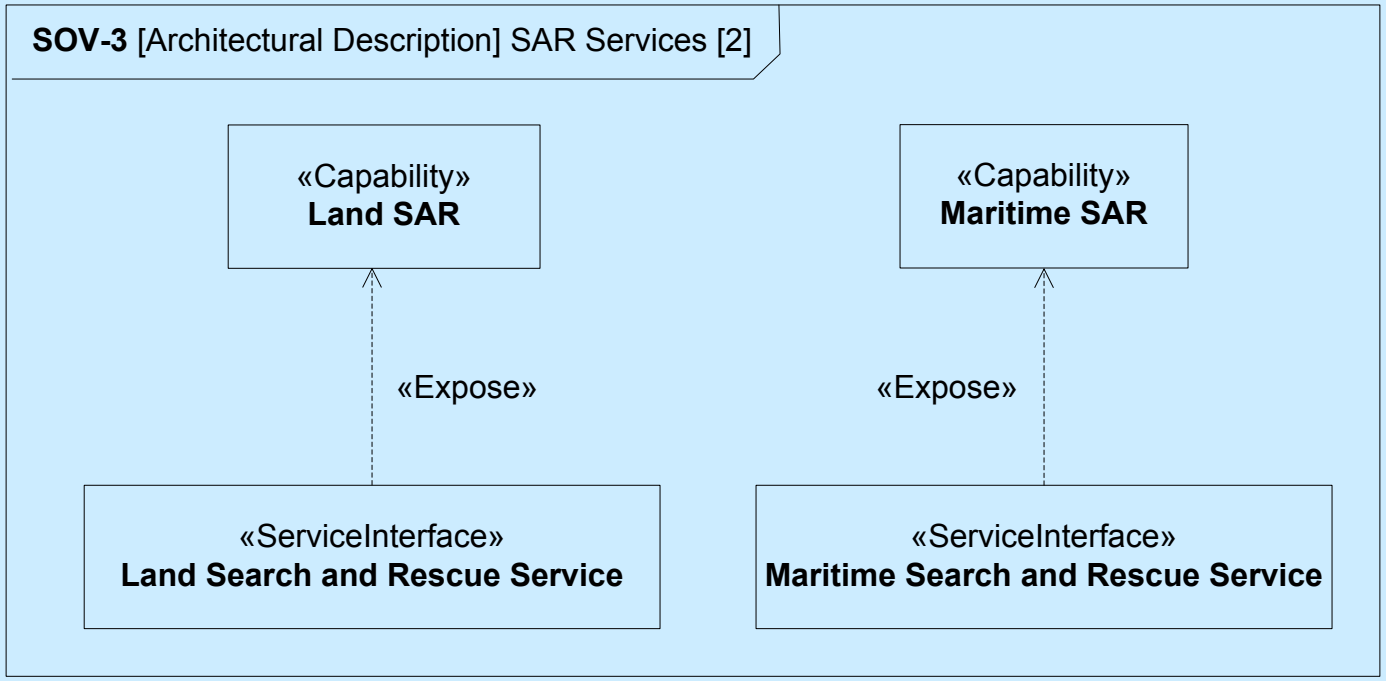
SvcV-2 Services Communications Description	Services and service items and their related communications laydowns

SvcV-2 [Architectural Description] SAR Services [1]



UPDM SAR SvcV-3

SvcV-3a Systems-Services Matrix	Relationships among between systems and services in a given architecture.
SvcV-3b Services-Services Matrix	Relationships among services in a given architecture; can be designed to show relationships of interest, e.g., service-type interfaces, planned vs. existing interfaces, etc.



SvcV-3b Services-Services Matrix with DM2 Markups

SvcV-3a Systems-Services Matrix	Relationships among between systems and services in a given architecture.
SvcV-3b Services-Services Matrix	Relationships among services in a given architecture; can be designed to show relationships of interest, e.g., service-type interfaces, planned vs. existing interfaces, etc.

	Maritime SAR Service	Land SAR Service	Helicopter Service	Maritime Rescue Service	Fire Service
Maritime SAR Service		1	3	3	1
Land SAR Service			3	1	2
Helicopter Service				3	1
Maritime Rescue Service					1
Fire Service					

Degree of interaction between services:
0 - none
1 - low
2 - moderate
3 - high
(symmetric matrix)

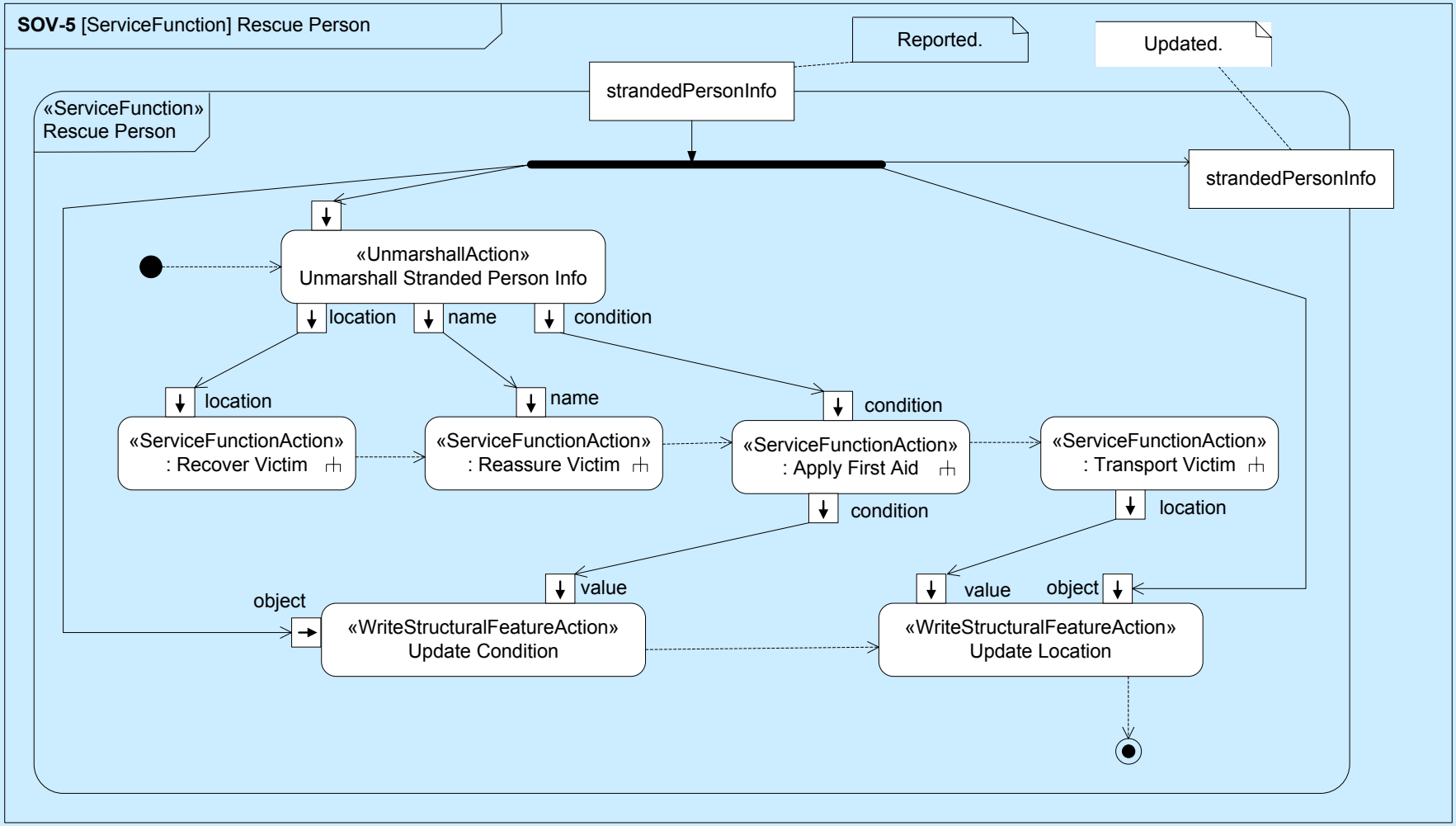
Partial list of services

Legend:

Services

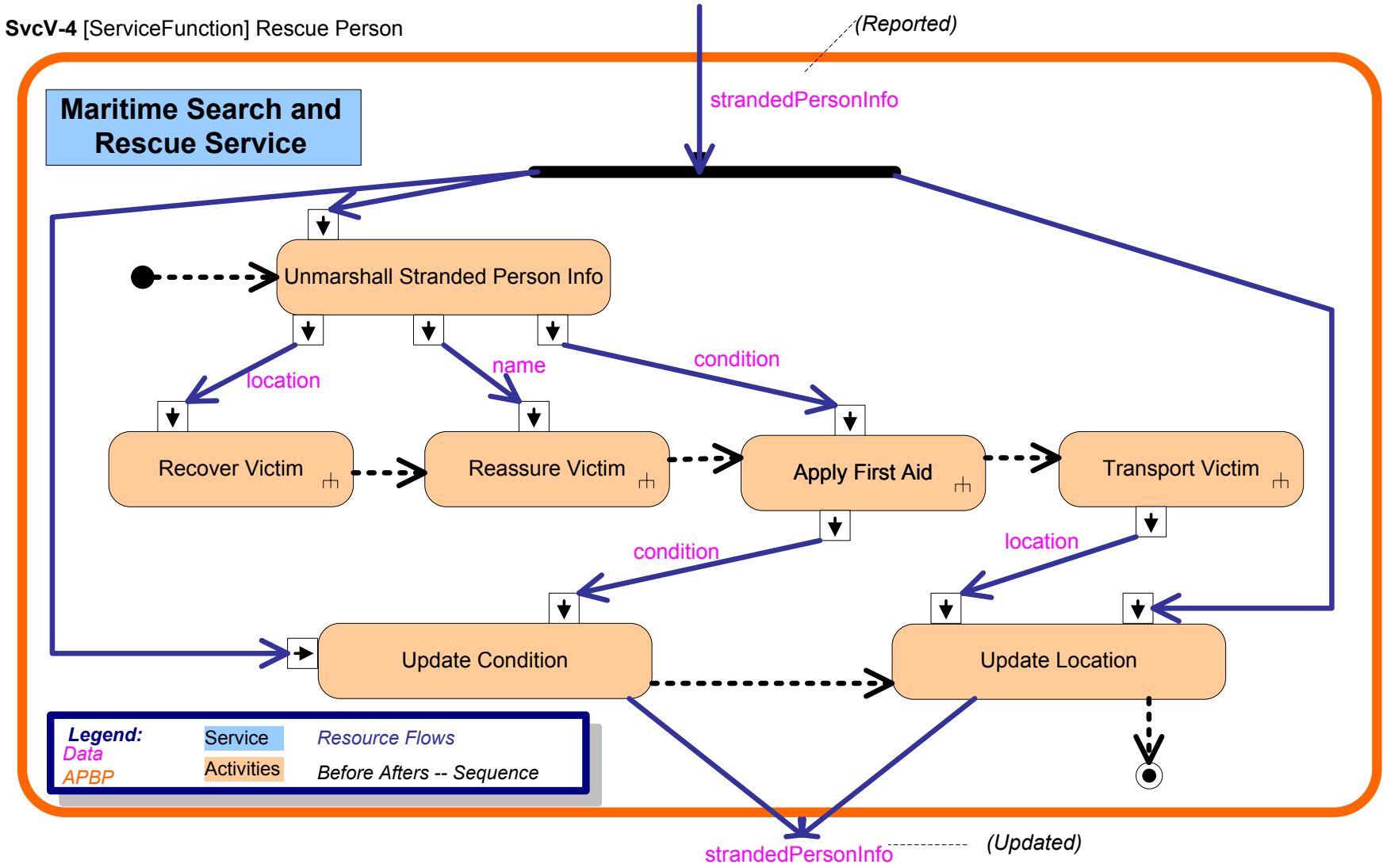
UPDM SAR SvcV-5

SvcV-5 Operational Activity to Services Traceability Matrix	Mapping of services (activities) back to operational activities (activities)



SvcV-4 Services Functionality Description with DM2 Markups

SvcV-4 Services Functionality Description	Functions performed by services and the service data flows among service functions (activities)



SvcV-5 with DM2 Markups

SvcV-5 Operational Activity to Services Traceability Matrix	Mapping of services (activities) back to operational activities (activities)

NOTE 1: Indentation means whole-part

Activities	**Activities Peformed by Services**					
	Unmarshall Stranded Person Info	Recover Victim	Reassure Victim	Apply First Aid	Transport Victim	Update Location
Rescue						
Recover Victim	x	x	x		x	x
Receive Distress Signal						
Provide Medical Assistance				x		
Search						
Receive Distress Signal						
Find Victim		x				x
Send Warning Order						
Monitor Health				x		

UPDM SAR SvcV-4a

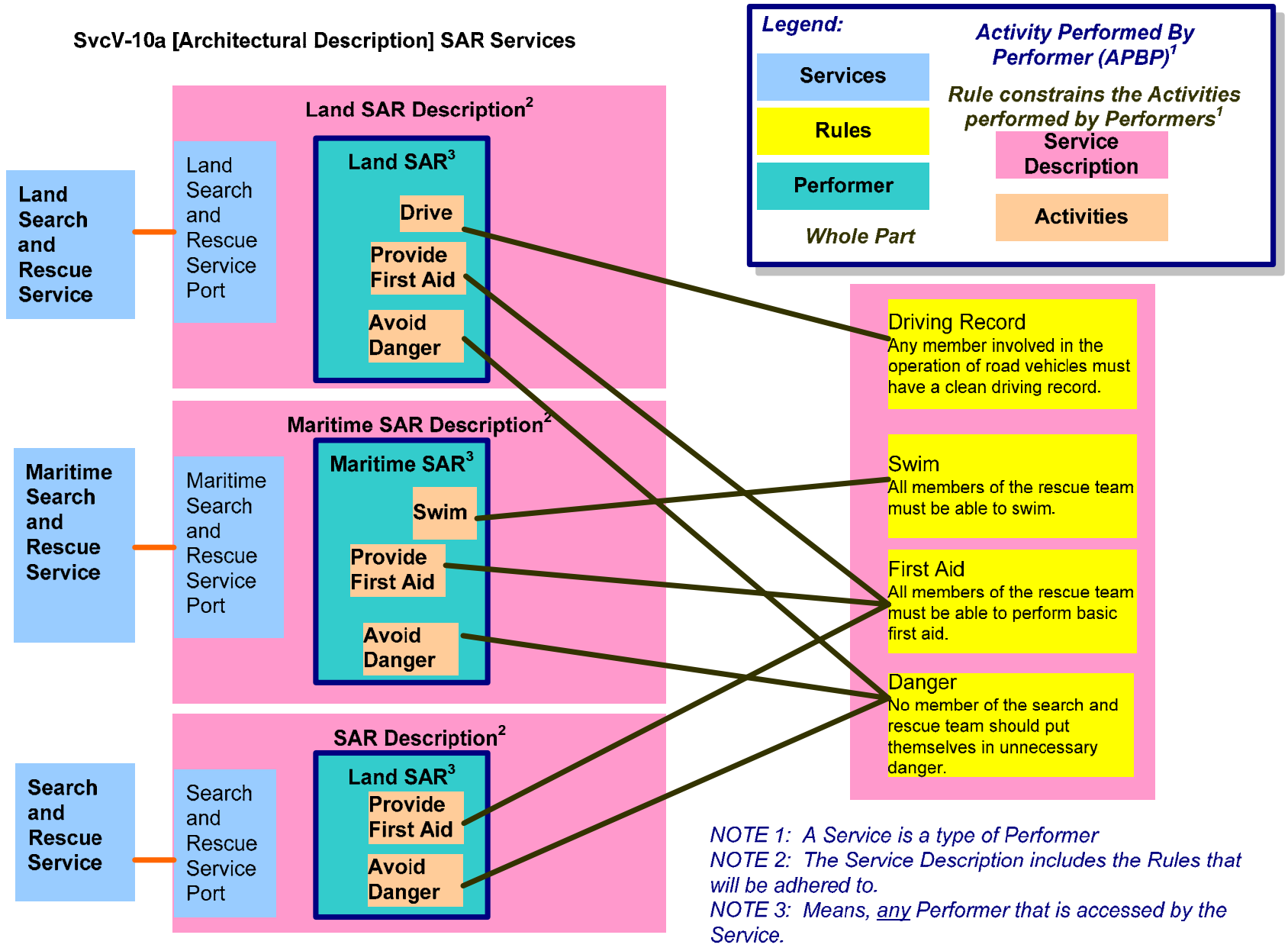
SvcV-4 Services Functionality Description	Functions performed by services and the service data flows among service functions (activities)

[Architectural Description] SAR Services [SOV-4a]

Service Interface	**Service Policy**	
Name	**Name**	**Text**
Land Search and Rescue Service	Driving Record	Any member involved in the operation of road vehicles must have a clean driving record.
Maritime Search and Rescue Service	Swim	All members of the rescue team must be able to swim.
Search and Rescue Service	First Aid	All members of the rescue team must be able to perform basic first aid.
	Danger	No member of the search and rescue team should put themselves in unnecessary danger.

SvcV-10a Services Rules Model with DM2 Markups

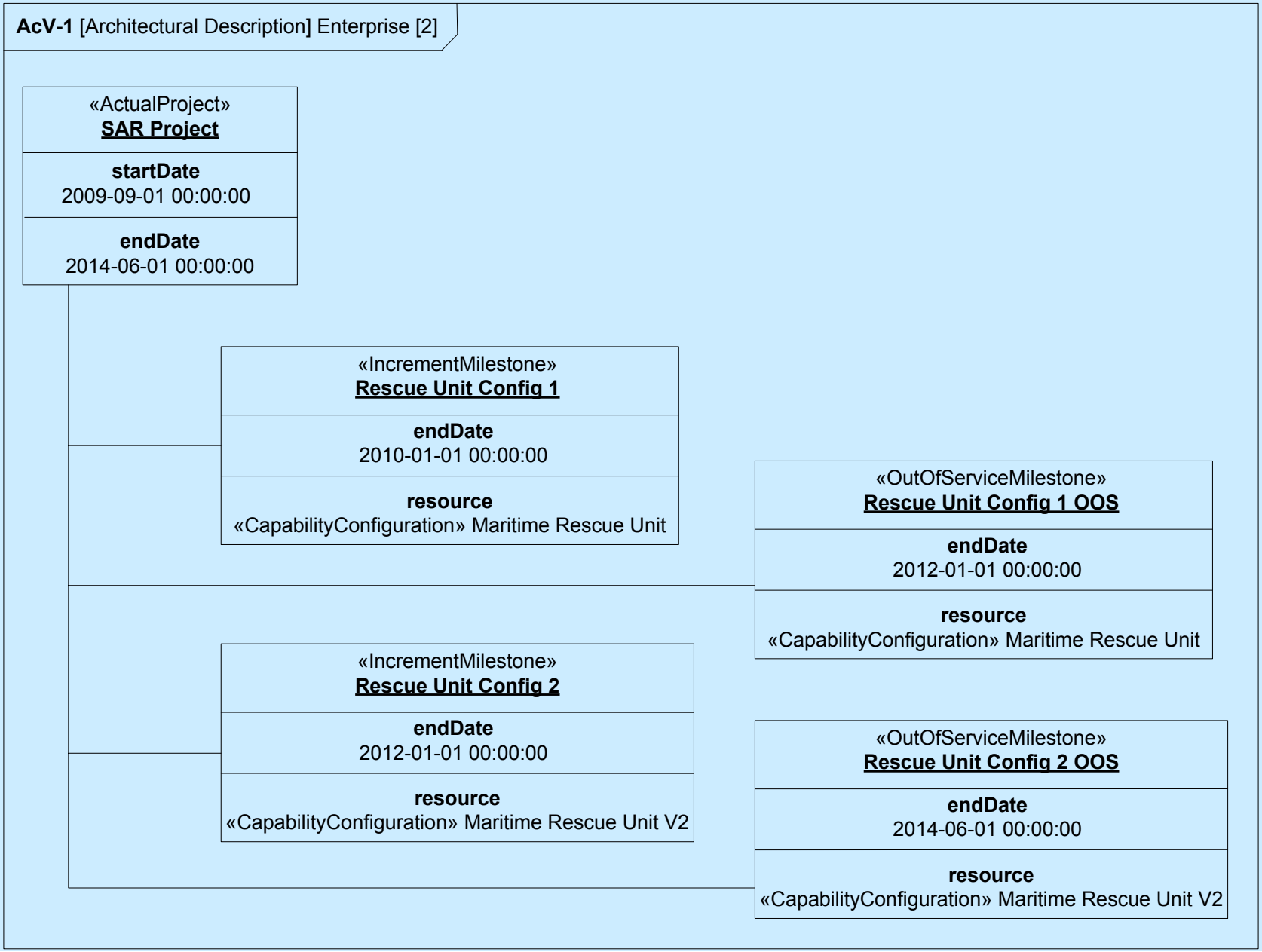
SvcV-10a Services Rules Model	One of three models used to describe service functionality - identifies constraints that are imposed on systems functionality due to some aspect of systems design or implementation



NOTE 1: A Service is a type of Performer
NOTE 2: The Service Description includes the Rules that will be adhered to.
NOTE 3: Means, any Performer that is accessed by the Service.

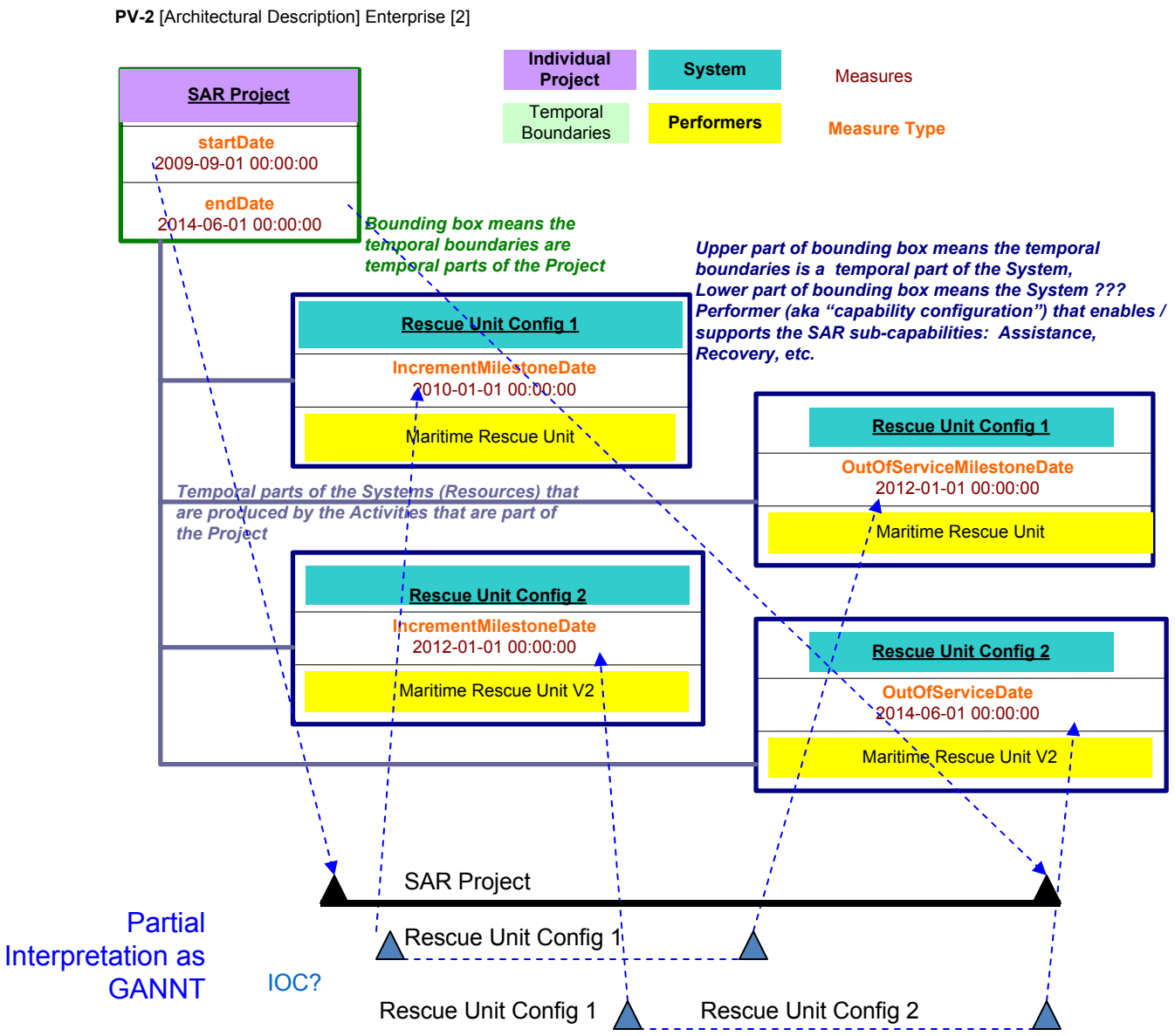
UPDM SAR PV-1

PV-1: Project Portfolio Relationships	Organizational structures needed to manage a portfolio of projects and shows dependency relationships between the organizations and projects.



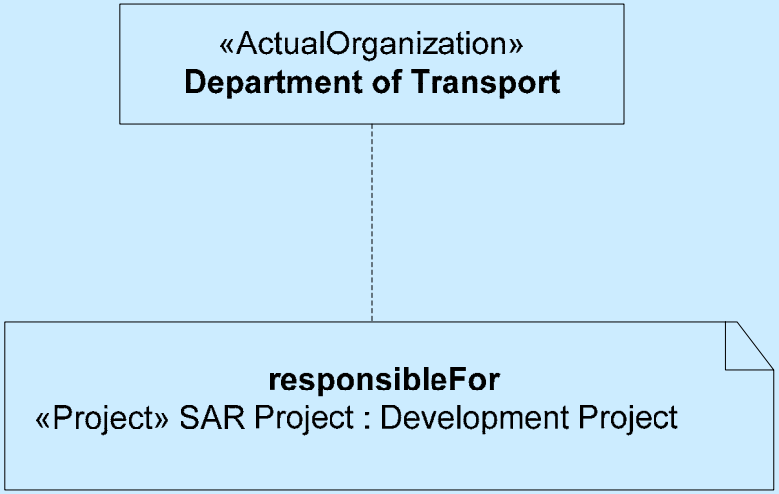
PV-2 with DM2 Markups

PV-2: Project Timelines	A timeline perspective on programs or projects, with the key milestones and interdependencies



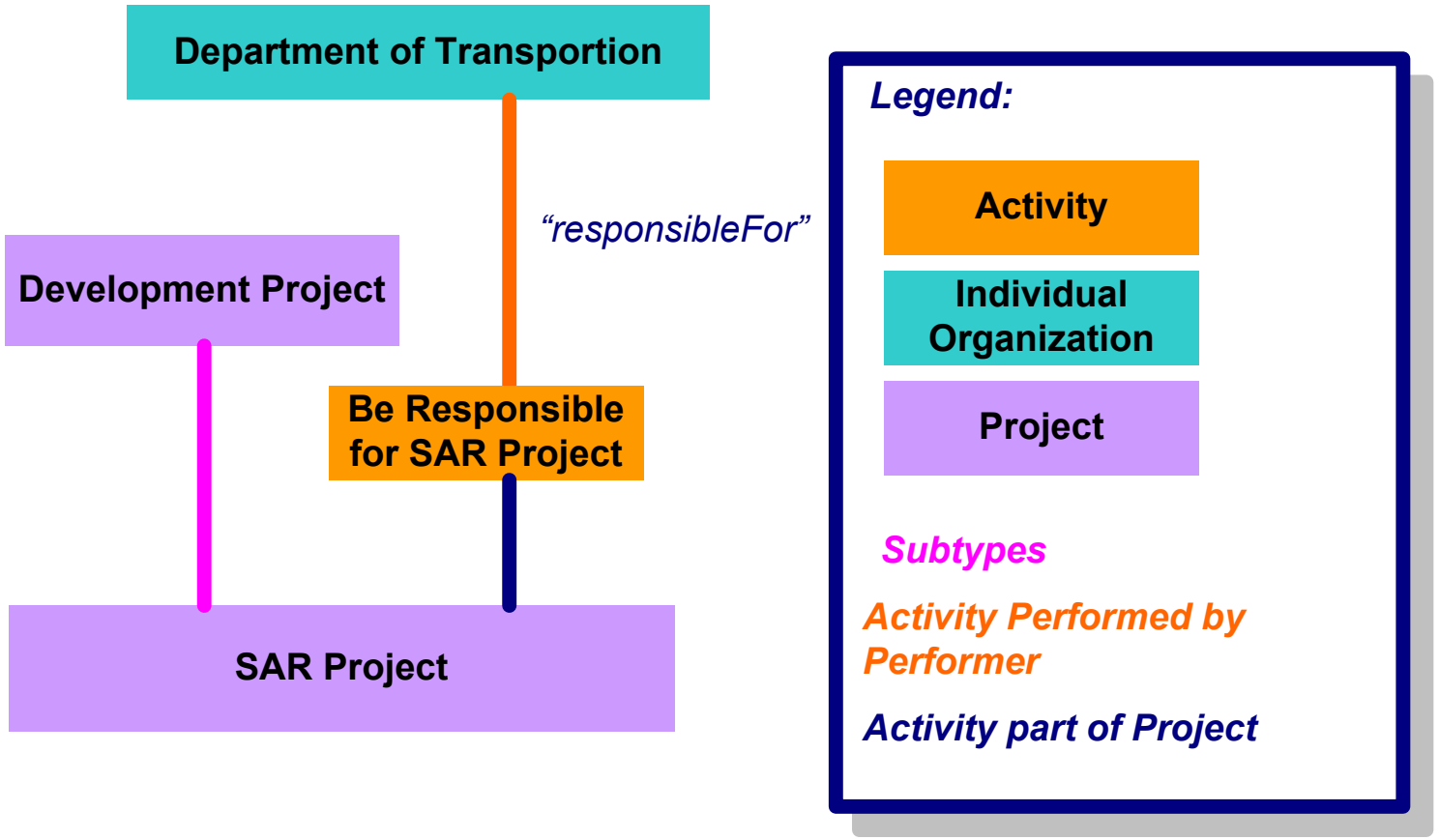
UPDM SAR PV-1

PV-1: Project Portfolio Relationships	Organizational structures needed to manage a portfolio of projects and shows dependency relationships between the organizations and projects.



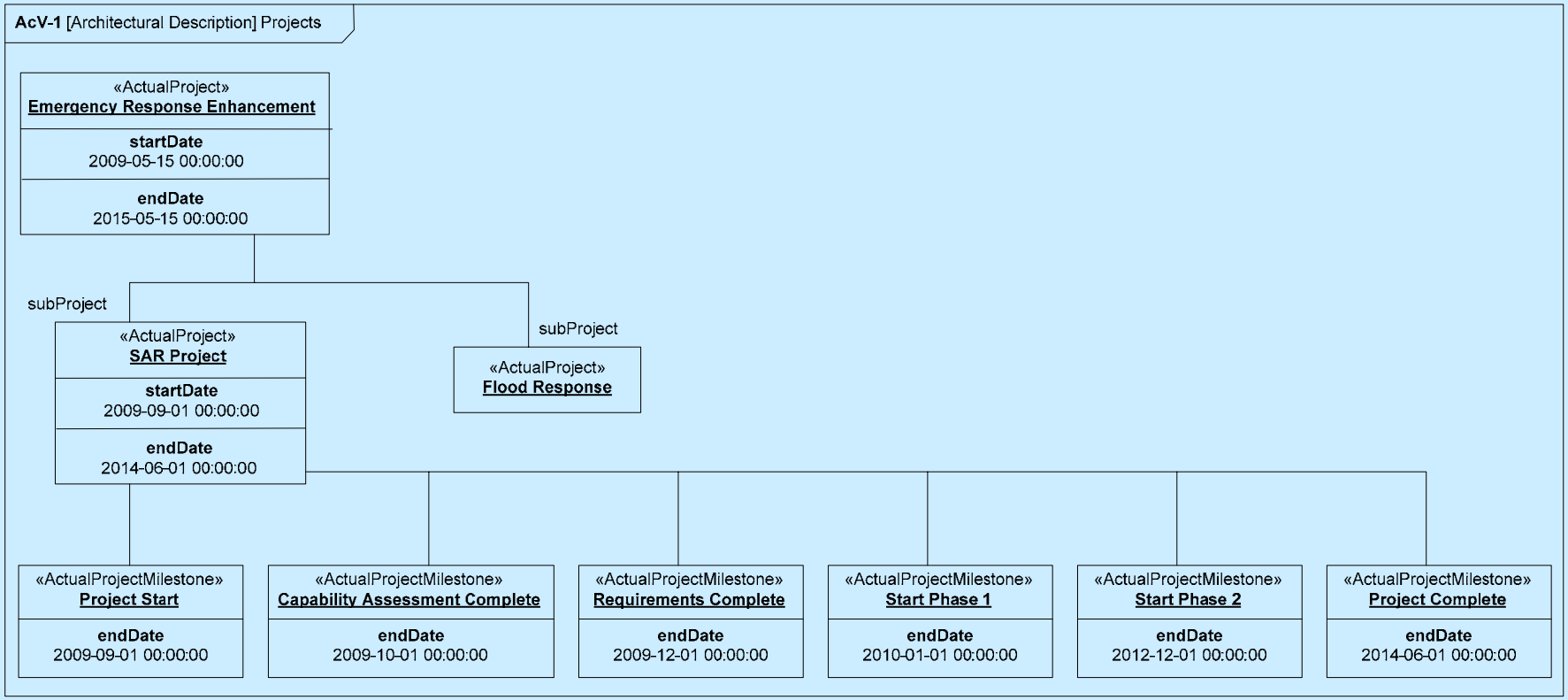
PV-1 with DM2 Markups

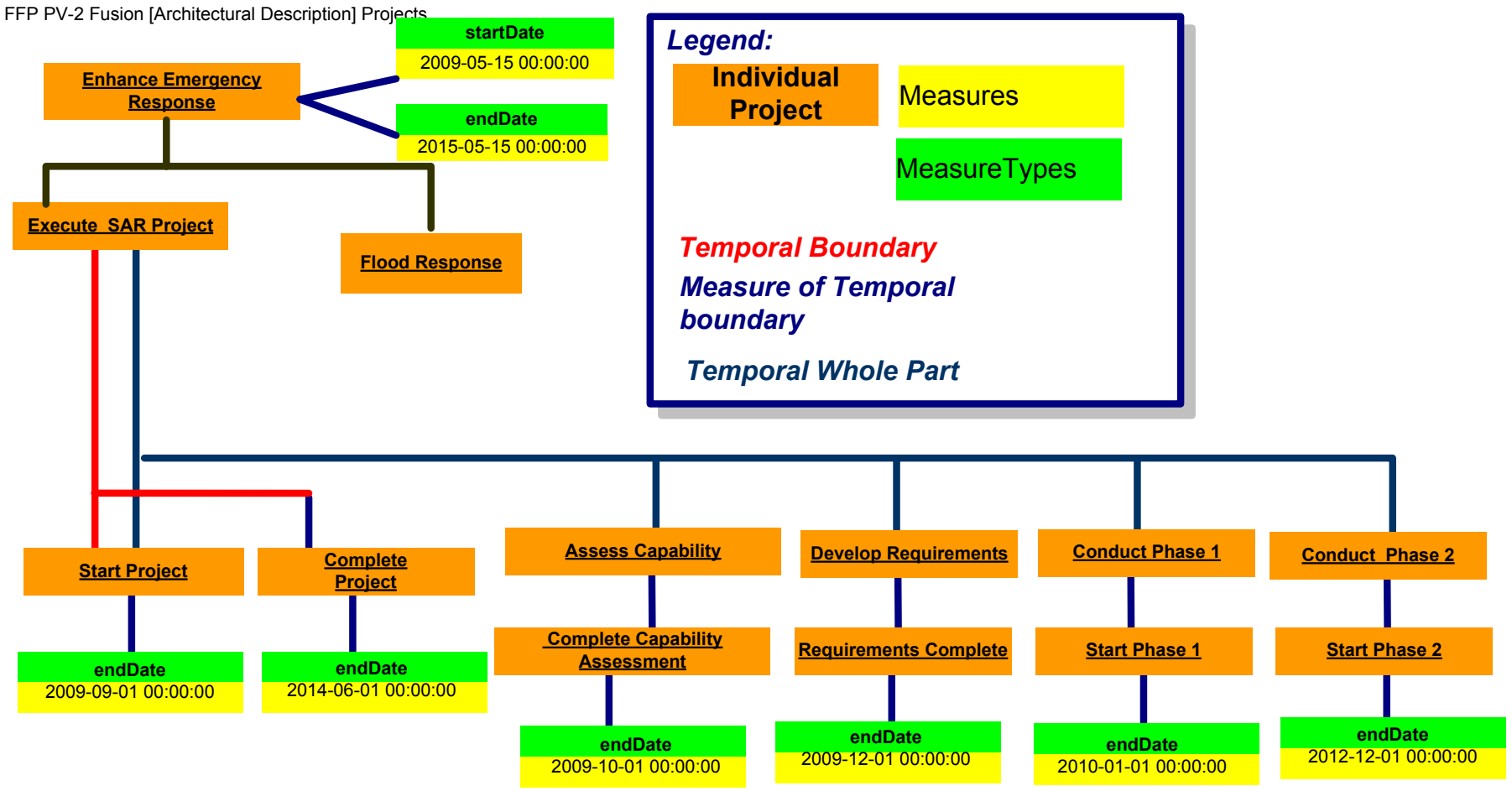
PV-1: Project Portfolio Relationships	Organizational structures needed to manage a portfolio of projects and shows dependency relationships between the organizations and projects.



UPDM SAR PV-1

PV-1: Project Portfolio Relationships	Organizational structures needed to manage a portfolio of projects and shows dependency relationships between the organizations and projects.



FFP PV-2 Fusion with Systems Engineering Plan (SEP) with DM2 Markups

PV-2: Project Timelines	A timeline perspective on programs or projects, with the key milestones and interdependencies