Architecting in the Fourth Dimension
Temporal Aspects of DoDAF 2.0
Matthew Hause – Atego, Lars-Olof Kihlstrom - Generic
Agenda

- DoDAF Background
- Ontologies
- The IDEAS Foundation
- Time and Architecture
- Examples
- Conclusion
Historical Development of AF’s.

C4ISR Architecture Framework v1.0

DoDAF v1.0

MODAF v1.0

NAF v1.0

2005

MODAF v1.1

2007

MODAF v1.2

2008

DoDAF v1.5

2007

DNDAF v1.7

2008

DoDAF V2.0

2009

Scope of UPDM 1.0
Approved Sept 2008

Scope of UPDM 2.0
ETC June 2011

MODAF Meta-Model (M3) expressed using UML Notation

1996

1997

2003

2005

2007

2008

2009

1997

1996

2003

2005

2007

2008

2009
Select the Viewpoints That Fit-the-Purpose

Architecture viewpoints are composed of data that has been organized to facilitate understanding.
Time is of the essence

- Previously, modeling time DoDAF was less explicitly specified.

- DoDAF 2.0 provides time-based concepts in many ways
  - BeforeAfter (IDEAS foundation element)
  - BeforeAfterType (IDEAS foundation element)
  - Desired Effect (DM2 element)
  - TemporalWholePart (IDEAS foundation element)
  - TemporalWholePartType (IDEAS foundation element)
  - Work Streams
  - Project activity sequence
  - State modeling
  - Etc.
IDEAS - Top-Level Foundation

- Developed by an international group of computer scientists, engineers, mathematicians, and philosophers under defense sponsorship.

An example of temporal element usage within DM2
WHAT!!!

The previous slide, apart from being unreadable looks extremely complicated, however:

– It is actually almost completely an explicit DoDAF 2 PV-2 slide.
– It contains almost all of the DoDAF defined necessary elements for a PV-2 slide (there are some missing mostly associated with measurements of various kinds).
– It also contains some elements defined as optional for the view and some that a modeler is actually not allowed to use (notably Individual and IndividualType, these are used here since to exclude them would make it difficult to see where different elements point to).
– The slide actually demonstrates a fairly large number of the temporal aspects of DoDAF 2 and it may therefore be of interest to look at them in slightly more detail.
Projects and activities

- A set of Individual projects are contained in the example model and a set of example activities.
- Since milestones are not a part of the DoDAF vocabulary activities have been chosen instead and there are a few different individual milestones as well as a completely different type of activity (testing) associated with each individual project.
The above shows project X with three different individual activities. Two of these are milestones and one is a testing activity.

All three activities are temporal parts of the X project and before after is used to indicate that milestone a is before milestone b, note that there is no indication of the time interval in between.
Activity handling

- Activity in DoDAF 2 is the set of all subsets of the set of all individual activities and therefore the four sets defined here are instances of the Activity subset.

- Testing Kind A activities contain: Project x testing and Project y testing.

- Testing Kind B activities contain: Project z testing

- Milestone Kind A activities contain: Milestone x_a, Milestone y_a and Milestone z_a

- Milestone Kind B activities contain: Milestone x_b, Milestone y_b and Milestone z_b
BeforeAfterType

Since all instances within Milestone Kind A activities occur (i.e. end) before all instances within Milestone Kind B activities an instance of BeforeAfterType can be created in the form of the element milestone Kind A before Milestone Kind B.

This element contains all of the before after relationships defined in the example.
As was shown previously, the testing activities can be combined into two distinct subsets that are instances of Activity (since it contains all possible subsets).

This also means that instances of TemporalWholePartType can be created that contain the relationships that deal with temporal whole parts for testing Kind A and testing kind B.

These in turn are instances of the DM2 element activityPartOfProjectType.
Project View in UPDM
The Unified Profile for DoDAF and MODAF (UPDM)

- UPDM is a standardized way of expressing DoDAF and MODAF artefacts using UML and SysML
  - UPDM is *NOT* a new Architectural Framework
  - UPDM is not a methodology or a process
  - UPDM implements DoDAF 2.0, MODAF & NAF

- UPDM was developed by members of the OMG with help from industry and government domain experts.

- UPDM is a DoD mandated standard and has been implemented by multiple tool vendors.
Time and Architecture
Time in DoDAF

- Sequence of events
- System changes over time
- Use of a system changing over time
- Different systems supporting a capability over time
- A system supporting different capabilities at different phases of its lifecycle
- System states showing time dependent behavior
- Time dependent activity sequences
- Modeling processing time, latency, transport time etc.
- Scheduling deployment of systems over time
- Personnel deployment and competency assessment
- Data Lifecycles
- Integrating system acquisition cost, deployment cost etc. to show total cost of ownership.
- Modeling product variants
- Showing cost vs. time vs. capability
- Etc.
Sequence of Events

- SV-10c Resource Event Trace Description
- Shows interactions in time order that have been created on SV-1 and SV-2 diagrams.
  - Dynamic (SV-10c) vs. Static View (SV-1, SV-2)
- Shows how resources interact
  - Exchange of information between resources
  - Elements on the diagram are parts of the owning element
  - Sequence of exchanges
  - Time
- Interaction between Systems Node Roles, Organization Roles, Post Roles, System Roles and Software Roles
- Also shows behavioral interactions such as events and operations
- Similar to OV-6c View
SV-2: Resource Interaction Specification

Owning Context

System

Materiel

Resource Connector

Defines how systems will interact to provide capabilities

Provides a static view of system interactions
SV-10c: System Event Trace Description

Maritime Rescue Architecture v1

Description

par Yacht broadcasts dsOut Distress Beacon

  MR Aircraft receives dsIn Distress Beacon from Yacht
  MR Boat receives dsIn Distress Beacon from Yacht

end par

par

also

par
to Monitor trkIn

d to 

end par

Until all victims are rescued

Do:

  MR Boat Digital Service link
  tdmTransmitter transmits to MR Aircraft
  MR Aircraft Digital Service link
  tdmTransmitter transmits to MR Boat
  MR Aircraft transmits radio instructions to Yacht
  Yacht transmitter radios instructions back to MR Aircraft

end loop

Owning Element.

System Interactions

Provides a dynamic view showing a time-based sequence.

System Sub-Elements from Context

Time progresses from top to bottom

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Modeling processing time, latency, transport time etc.

- Timing information can be added to enhance analysis
  - Processing duration
  - Transmission delay
  - Latency
  - Etc.

- Simulation can verify timing and behavior
SV-10c: System Event Trace Description
With added timing information

Maritime Rescue Architecture v1

Description

par Yacht brodcasts dsOut Distress Beacon
MR Aircraft receives dsln Distress Beacon from Yacht
MR Boat receives dsln Distress Beacon from Yacht
Process Message
end par
Process Message
par
ACK
MR Aircraft transmits radio instructions to Yacht
also par
Track
tdmTransmitter propagates trkOut to Monitor trkIn
Request Track
tdmTransmitter propagates trkOut to Monitor trkIn
end par
Until all victims are recue
Do:
Track Sync
MR Boat Digital Service link
tdmTransmitter transmits to MR Aircraft
MR Aircraft Digital Service link
tdmTransmitter transmits to MR Boat
Relay Instructions
MR Aircraft transmits radio instructions to Yacht
Yacht transmitter radios instructions back to MR Aircraft
end loop

Transmission Latency
Processing Duration
Timing Constraints
Systems Changing over Time

- **The paradox of the Ship of Theseus – Plutarch**
  - If you take all the parts of a system (Theseus’ ship) and replace them, is it the same ship?

- **Abe Lincoln's axe**
  - Lincoln was well known for his ability with an axe, and axes associated with his life are held in various museums.
  - Are they all “Abe Lincoln’s Axe”?

- **Systems change over time**
  - System lifecycle of design, manufacture, deployment, maintenance, retirement
  - Changes for mission-based configurations
  - Changes due to maintenance
  - Etc.
System Changes over Time

- SV-1/SV-2 Resource interaction specification are used to define system structure
- Shows how resources (systems, roles, posts and organizations) interact
- Created from systems, system nodes and organizations
- Defined system configurations can be linked to project deployments
SV-1: Resource Interaction Specification
Version 1: Intelligence Analysis

SV-1 [Capability Configuration] Intelligence Analysis (IA) [SV-1]

Owning Context

System

Interface

Person Role From OV-4

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SV-1: Resource Interaction Specification
V2: Multi-Source Intelligence Analysis

Addition of Data Fusion
SV-1: Resource InteractionSpecification

Real-Time Threat Analysis

Addition of Intelligence Coordinator
Modeling product variants

- No Replication of Work:
  - Common elements defined once and reused
    - Parts
    - Interfaces
    - Functions

- Similar model elements should be modeled only once, in the family model
  - Enforced re-use

- Maturing standards for variability modeling

- Compatibility with all views defined in SysML
  - Requirements, Structure, Behavior, Parametrics
  - Variability Methods are more then a combinatory re-use of structural components
Modeling Product Variants

Common Elements Modeled in Super-Class

Intelligence Systems Variants

IMP Systems Variants

Systems shown in previous slides
Project Views: Scheduling deployment of systems over time

- Contains information about programs, projects, portfolios, or initiatives and relating that information to capabilities and other programs, projects, portfolios, or initiatives.

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

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

- PV-3: Project to Capability Mapping
  - A mapping of programs and projects to capabilities to show how the specific projects and program elements help to achieve a capability.
Scheduling deployment of systems over time


- Links are created between the Project and its actual Milestones.

- Milestone sequences link Milestones

- Project sequences link Projects

- Specify responsible resources (people, organizations) for projects

- Specify resources to be deployed etc., and organizations that use the resource for milestones.
Scheduling deployment of systems over time PV-1

Definition of projects, sub-projects, milestones and dependencies

Actual Project

Actual Milestone

Milestone Dependency
### Scheduling deployment of systems over time PV-1 Detail

#### Project

<table>
<thead>
<tr>
<th>SAR Manual Project I : Development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>startDate</strong></td>
</tr>
<tr>
<td>2010-01-01 00:00:00</td>
</tr>
<tr>
<td><strong>endDate</strong></td>
</tr>
<tr>
<td>2010-12-01 00:00:00</td>
</tr>
<tr>
<td><strong>responsibleResource</strong></td>
</tr>
<tr>
<td>«Organization» Department Of Transport : Government Department</td>
</tr>
</tbody>
</table>

#### Resource

<table>
<thead>
<tr>
<th>Resource Used By</th>
</tr>
</thead>
<tbody>
<tr>
<td>«System» Maritime Rescue Unit v1</td>
</tr>
</tbody>
</table>

#### Resource Statuses

- Equipment = Complete
- Training = In Test
- Concepts & Doctrine = In Progress
- Personnel = Complete
- Information = In Progress
- Organization = Complete
- Infrastructure = Complete
- Logistics = Not Applicable
- Interoperability = In Progress

#### Milestone

<table>
<thead>
<tr>
<th>DeployedMilestone</th>
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<tbody>
<tr>
<td><strong>endDate</strong></td>
</tr>
<tr>
<td>2010-04-01 00:00:00</td>
</tr>
<tr>
<td><strong>resource</strong></td>
</tr>
<tr>
<td>«System» Maritime Rescue Unit v1</td>
</tr>
<tr>
<td><strong>usedBy</strong></td>
</tr>
<tr>
<td>«Organization» Maritime &amp; Coastguard Agency</td>
</tr>
<tr>
<td>«Organization» Volunteer Rescue Organization</td>
</tr>
</tbody>
</table>

#### Responsible Person

«Organization» Department Of Transport : Government Department

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Scheduling deployment of systems over time
PV-2 Project Timelines

- A PV-2 provides a timeline perspective on projects and their relationship to Systems.
  - There is no set format for this view. Each tool has implemented the PV-2 diagram in its own way.

- The PV-2 is populated using live data from the model.

- It contains project timelines, project milestones statuses, and project and milestone sequences.
Scheduling deployment of systems over time

PV-2 Project Timelines

Dashboard view provides project status at a glance: generated from model.
Different systems support the same capability over time (1)

Capability Views

- Defines capabilities, capability dependencies and relationships
- Provides high-level view of expected capability within each time frame
- Shows the intersection between capabilities, systems, system metrics, etc. over time

Used for:
- Capability overlap/gap analysis
- Identification of high-level capability issues
CV-1 Capability Vision

Whole Life Enterprise

Temporal Phases

High level view of enterprise goals and capability phasing

Measurements

Goals

Provided Capabilities

Vision

1

Enterprise

«WholeLifeEnterprise»

Search and Rescue

startDate
2010-01-01 00:00:00

date
2014-06-01 00:00:00

Phase 1

startDate
2010-01-01 00:00:00

date
2010-12-01 00:00:00

Phase 2

startDate
2012-12-01 00:00:00

date
2014-06-01 00:00:00

«EnterprisePhase»

«EnterpriseGoal» Fulfill International Obligations

visions
«Vision» SAR Vision

exhibits
«Capability» Assistance
«Capability» Recovery
«Capability» Search

«EnterpriseGoal» Maintain SAR Responsibility

visions
«Vision» SAR Vision

exhibits
«Capability» Assistance
«Capability» Recovery
«Capability» Search

actualMeasurements
«ActualMeasurementSet» Initial Values

actualMeasurements
«ActualMeasurementSet» Required Values

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CV-2 Capability Taxonomy

Inheritance

Capability Sub-Type

Associated Measurements

Realizing Resources

“Capability dictionary” helps prevent stovepipes and duplication
### CV-3 Capability Phasing (Fragment)

#### [Architectural Description] Capabilities (Coverage)

<table>
<thead>
<tr>
<th>Capabilities</th>
<th>Timeline</th>
<th>Coverage</th>
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<tbody>
<tr>
<td><strong>Assistance</strong></td>
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<td></td>
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<tr>
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<td></td>
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<tr>
<td>areaCoverage = 500</td>
<td></td>
<td></td>
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<tr>
<td>findTime = &lt;8 hours</td>
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<td></td>
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<tr>
<td>persistence = &gt;15 hours</td>
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<td></td>
</tr>
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<td>searchCoverage = 400</td>
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<td></td>
</tr>
<tr>
<td>weatherConditions = Heavy Rain</td>
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<td></td>
</tr>
<tr>
<td>[no measurements]</td>
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</tr>
</tbody>
</table>

**Maritime Rescue Unit v1**
(SAR Manual Project I)

**Distress Signal Monitoring**
(no measurements)

**Automated Rescue Unit v1**

<table>
<thead>
<tr>
<th>Realizing Resource</th>
</tr>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

**Maritime Rescue Unit v2**
(SAR Manual Project II)

- Summarizes how and when capabilities will be realized as well as metrics. Identifies capability gaps.
- Timing generated from Project Views.
Total Cost and Cost Over Time

- DoD AF/SysML provide a means to add value properties to model elements
  - Size, Weight, Power, Cost, etc.

- A system is an aggregation of its parts.
  - Therefore, the total number of each type of part can be calculated
  - If the cost of each part is known, the total cost of the system can be calculated
  - Running costs can also be defined for the system for sub-systems as well as people
  - Project views provide a means to show system deployment schedules, therefore running costs can be calculated as well.
System View Showing Individual System Costs

**SV-9/SvcV-9 [Architectural Description] System Costs**

- **Display Board SW**
  - Cost: USD = 12000

- **Emergency Services SW**
  - Cost: USD = 20000

- **Sensor Processing SW**
  - Cost: USD = 150000

- **Control Center**
  - Cost: USD = 1300000

- **Traffic Sensor**
  - Cost: USD = 110000

- **User Interface**
  - Cost: USD = 5000

Cost values added via SysML Value Properties.

 Defines systems, materiel and software.
## Summary of System Costs

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<tr>
<th>Name</th>
<th>Quantity</th>
<th>Estimate</th>
<th>No Margin</th>
<th>Cost (in USD)</th>
<th>Margin (%)</th>
<th>With Margin</th>
<th>Budget</th>
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<tr>
<td>Traffic Context (Autoville Traffic Management Architecture::System View)</td>
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<td>51799000</td>
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<td>58014880</td>
<td>60000000</td>
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<td>1000000</td>
<td>1649000</td>
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<td>1978800</td>
<td>1300000</td>
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<td>714300</td>
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<td>Control Room Operator (Autoville Traffic Management Architecture::System View)</td>
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<td>0</td>
<td>0</td>
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<td>10000</td>
<td>10000</td>
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<td>0.00%</td>
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<td>4400</td>
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</tr>
</tbody>
</table>

Generated report from system configuration.
Modeling Cost vs. Time vs. Capability (1)

- **Capability Goals**
  - How do individual projects contribute to capability outcomes?
  - Over what timeframes are the capability outcomes realized?
- **Maintenance of Capability**
  - When a platform or piece of equipment reaches its planned withdrawal date will there be a new platform/piece of equipment available to replace it?
- **Capability Over Time**
  - What capability is available at any given point in time?
  - What platforms/equipment/organizations provide the capability?
- **Tolerance**
  - How much can I move things before it starts to have an impact?
- **Committees and Approvals Schedule**
  - What impact do changes have on committees and approvals?
Custom Visualisation

- Cost vs Budget visualisation and analysis.
- Structured view of projects. High level views, with the ability to look into lower-level details.
- Project milestones visible.
- Dashboard area flags all issues:
  - dependency constraints broken
  - budget exceeded
  - risks in FWP schedule
  - capability and operational issues
- Dependency constraints between milestones, to verify the achievability of the schedule while shuffling occurs.

Note: Project names are from the public DCP. Schedules and costings are fictitious.
System states showing time dependent behavior
SV-10b Resource State Transition Description

- Shows states within a resource
  - Shows resource state changes
- One diagram per resource (System nodes and systems)
- Shows events passed to and from resources
SV-10b: System State Transition Description

State transitions occur based on events and time.
Data Lifecycles

- Data changes over time
  - Data transformation (Activities)
  - Data Fusion (Activities/Data modeling)
  - Data lifecycle (State Machines)
  - Case management (State machines/Activities/Sequence)
  - Data flow (Activities)
  - Data sequencing (Sequence/Structure)
  - Etc.
Data management lifecycles – Data Processing
Data management lifecycles – State Based

SV-10b/SvcV-10b [Materiel] Parcel [SV-10b]

Parcel

Requesting Pickup
- do: Request Pickup

[Complete]/

Awaiting Pickup

[Pickup Approved]/

Delivered

[Pickup Rejected]/

Destination Reached/

Processing Request
- do: Accept Waybill and Parcel
- do: Accept Payment
- do: Scan Waybill
- do: Authorize Credit Account

[Payment Rejected]/
Cancel Pickup

[Payment Accepted]/
Send Parcel Status

Delivering
- do: Provide Waybill and Parcel
- do: Send Parcel Status
- do: Send Vehicle Status

In Transit to Delivery
- do: Drive to Destination

[Vehicle Loaded]/
Send Parcel Status

At Distribution Center
- do: Unload Vehicle
- do: Scan Waybill
- do: Load Vehicle
- do: Calculate Route
- do: Send Parcel Status

In Transit to Distribution Center
- do: Drive to Destination

«Rationale»
This state assumes a local delivery. For air transport between distribution centers more detail would need to be added.
Time Dependent Activity Sequences
OV-5 Operational activity model

- Shows operational activities and their relationships
- Class diagrams
  - Activity hierarchies
  - Performing nodes
  - Created from an Architectural Description
- Activity diagrams
  - Activity sequence execution order
  - Swimlanes
  - Events
  - Interactions
  - Created from an operational activity
- Created from an Architectural Description
OV-5 Activity Hierarchy Diagram

Activity Decomposition

OV-5 [Architectural Description] Operational Activities

Activity Decomposition

«Activity(Operational)»
Search

Sub-Activity

«ActivityPerformedByPerformer»
«ActivityPerformedByPerformer»
«ActivityPerformedByPerformer»
«ActivityPerformedByPerformer»
«ActivityPerformedByPerformer»

«StandardOperationalActivity»
Find Victim

«Activity(Operational)»
Send Warning Order

«ActivityPerformedByPerformer»
«ActivityPerformedByPerformer»
«ActivityPerformedByPerformer»

«ActivityPerformedByPerformer»
«ActivityPerformedByPerformer»

Performer

«Activity(Operational)»
Receive Distress Signal

«StandardOperationalActivity»
Monitor Health

 Defines activities and performers who can perform them.
OV-5 Search Activity Diagram

Owning Activity

Input Parameter

Activity

Rate

Control Flow

Probability

Output Parameter

Shows the order in which sub-activities are executed.
Personnel deployment and competency assessment

- DoDAF 2.0 allows the definition of
  - People
  - Competencies/Skills
  - Competency Forecasts
  - Job Specifications
  - Competency Forecasts
  - Job Allocations
  - Job deployment report
  - Etc.
OV-4 Organizational Template

 OV-4 [Architectural Description] Typical Organizations

Sub Organization Type

Organization Type

Owned Organization

Person Role Type (Billet)

Organization Member

Person

Defines organizational template from which actual organizations can be created

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Personnel deployment and competency assessment
OV-4 Actual Organizations

OV-4 [Architectural Description] Actual Organizations

- «Organization» Department Of Transport
- «Organization» Maritime & Coastguard Agency
- «Organization» Department Of Defense
- «Organization» Volunteer Rescue Organization
- «Organization» Coastguard
- «IndividualPersonRole» Lifeboat Driver
- «IndividualPersonRole» Radio Operator
- «IndividualPersonRole» Rescue Swimmer
- «IndividualPersonRole» Rescue Helo Pilot
- «ActualPerson» Danny Driver
- «ActualPerson» Ron Radio
- «ActualPerson» Sam Swimmer
- «ActualPerson» Peter Pilot

Actual organization: conforms to template

Post Dates

Actual Person

Actual Organization

Owned Organization

Command Relationship

Organization Link

Actual Post

Actual organization: conforms to template
### Personnel deployment and competency assessment

**OV-4: Actual Organizations Report**

<table>
<thead>
<tr>
<th>Organization</th>
<th>Individual Person Role</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastguard</td>
<td>Rescue Helo Pilot</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volunteer Rescue Organization</td>
<td>Lifeboat Driver</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td></td>
<td>Radio Operator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rescue Swimmer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Post Dates**
  - Peter Pilot: Start = 2010-01-01, End = 2014-01-01
  - Danny Driver: Start = 2010-01-01, End = 2014-01-01
  - Ron Radio: Start = 2010-01-01, End = 2014-01-01
  - Sam Swimmer: Start = 2010-01-01, End = 2014-01-01

**Automatically generated from the model**

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Personnel deployment and competency assessment

Competency Forecasts

SV-9/SvcV-9 [Architectural Description] Competencies [Forecasts]

- «Skill» Management Skills
  - «Forecast» {span = Short Term}
  - «Forecast» {span = Mid Term}
  - «Forecast» {span = Long Term}

- «Skill» Manage Budget
- «Skill» Manage Requirements
- «Skill» Manage Projects
- «Skill» Manage People
Personnel deployment and competency assessment
Definition and Assignment of Competencies and Tasks

SV-9/SvcV-9 [Architectural Description] Competencies [SV-9]

PersonRoleType
«block»
Traffic Management Architect

providedCompetence
«Skill» Communicate Effectively
«Skill» Enterprise Architecture
«Skill» Manage Requirements

PersonRoleType
«block»
Traffic Management Project Manager

providedCompetence
«Skill» Manage People
«Skill» Manage Projects
«Skill» Communicate Effectively
«Skill» Manage Budget

PersonRoleType
«block»
City Mayor

providedCompetence
«Skill» Navigate Politics
«Skill» Procure Funding
«Skill» Manage Budget
«Skill» Manage People

PersonRoleType
«block»
Control Room Operator

providedCompetence
«Skill» Computer Control
«Skill» Communicate Effectively
«Skill» Traffic Management


Activity(System)
«activity»
Coordinate Accident Response

PersonRoleType
«block»
City Mayor

Activity(System)
«activity»
Evaluate Traffic Flows

PersonRoleType
«block»
Traffic Management Project Manager

Activity(System)
«activity»
Maintain Systems

PersonRoleType
«block»
Traffic Management Architect

Activity(System)
«activity»
Request Reports

PersonRoleType
«block»
Control Room Operator

Activity(System)
«activity»
Request Reports

[Architectural Description] Human Activities [SV-4]
Conclusion and Summary

- DoDAF has provided a significant improvement in the definition of time concepts
- Time is distributed throughout the architecture in the various views
- Interconnections between the views is essential to make use of these concepts.
Questions, Comments, Discussion