HOPEX DoDAF

User Guide

HOPEX V2R1

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INTRODUCTION TO HOPEX DODAF

The Department of Defense Architecture Framework (DoDAF) is the industry-standard Enterprise Architecture Framework for defense and aerospace applications defined by the US Department of Defense (DoD).

All major DoD weapon and information technology system procurements are required to document their enterprise architectures using the views prescribed by the DoDAF. It is however, not restricted to the U.S. sector; many international military-oriented companies use this framework as a basis to model enterprise architectures.

The DoDAF defines a standard way of organizing enterprise architectures into complementary and consistent views. It details all the viewpoints addressing the different aspects of enterprise architectures (the overall purpose, the operational perspective, the system perspective and the technical perspective).

HOPEX DoDAF is based on the DoDAF v.2.02 release. For detailed guidance about DoDAF 2.02, see the official DoDAF web site.

HOPEX DoDAF enables to generate DoDAF deliverables. It is based on the standard features of the **HOPEX** modeling tool, however, dedicated features have been introduced to guide the DoDAF expert to use the product with the vocabulary with which he/she is accustomed.

PRE-REQUISITES TO HOPEX DODAF

If you want to use the ***Projects Viewpoint***, you need to import the solution pack corresponding to project management.

> ☛ *The Solution Pack PPM.exe that you want to import needs to be decompressed (HOPEX installation folder > Utilities > Solution Pack, double-click the Solution Pack to extract it).*

To import the Solution Pack:

1. From **HOPEX Administration**, connect to the environment concerned.
2. Expand the **Repositories** folder.
3. Right-click the repository and select **Object Management > Import Solution Pack**.
   The Solution Pack Import dialog box appears.
4. Select the Solution Pack "PPM.exe".
5. Click **OK**.
   The Import MEGA Data XML dialog box displays import progress.
   The selected Solution Pack is imported into the repository.

CONNECTING TO HOPEX DODAF

To connect to your **HOPEX** desktop:

1. Start the **HOPEX** application using its HTTP address.

   ☛ *If you do not know this address, contact your administrator.*

   The connection page appears.
2. In the **Login** field, enter your identifier.
3. (If you have a password) In the **Password** field, enter your password.
4. In the drop-down menu for environments, select your work environment.

   ☛ *If you can access one environment only, this is automatically taken into account and the environment selection field does not appear.*
5. Click **SIGN IN**.
   When you have been authenticated, a new dialog box appears.
6. In the drop-down menu for repositories, select your work repository.

   ☛ *If you can access only one repository, this is automatically taken into account.*
7. In the profile drop-down menu, select the profile with which you want to work:
   - DoDAF Functional Administrator
   - DoDAF Architect
   - DoDAF Viewer

   For more information on profiles, see "HOPEX DoDAF Profiles", page 7.

   ☛ *If you can access only one profile, this is automatically taken into account.*
8. In the application pop-up menu, select the application to which you want to connect.

   ☛ *If you can access only one application with the selected profile, this is automatically taken into account and the application selection field does not appear.*
9. Click **Privacy Policy**, read the confidentiality policy, then select **I have read and accept the privacy policy**.
   The **LOGIN** button is active.

   ☛ *When you have read and accepted the confidentiality policy, a certificate is automatically linked to your person and this step is not required again.*
10. Click **LOGIN**.

    ☛ *Click **BACK** if you want to return to the authentication dialog box.*

    The home page of your desktop appears and a session is opened.

    ☛ *After a certain period of inactivity, you are disconnected from the desktop. To reconnect, repeat the steps of the procedure above. This inactivity period is configured by the portal administrator.*

ACCESSING YOUR WORK ENVIRONMENT

You are connected to **HOPEX**.

☛ *For more information see "Connecting to HOPEX DoDAF", page 5.*

To be able to start working with **HOPEX DoDAF**, you first need to select your work environment.

If you are a DoDAF Architect, your functional administrator must have already defined a work environment for you.

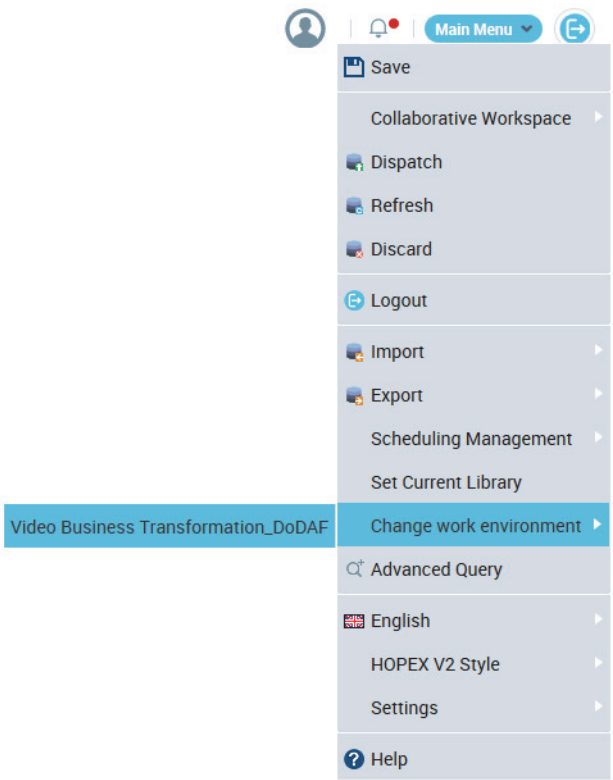
☛ *If not, please contact your functional administrator.*

For more information about work environment assignment, see "Defining a Working Environment", page 39.

To start working in the repository and access your work environment:

- From the **Main menu**, click **Change work environment** and select the work environment of interest to you.
  Your work environment will be memorized at later connections.

  ☛ *You may have one or several work environments. If you have several work environments, you may have to switch between them through this menu.*



HOPEX DoDAF Profiles

DoDAF Architect

The DoDAF Architect needs to define the set of viewpoints and models that best fit the specific project or mission objectives.

For more information, see "The DoDAF Architect workspace", page 10.

DoDAF Functional Administrator

The DoDAF Functional Administrator is in charge of the application administrative tasks. He owns rights on all objects. He manages user creation as well as profile assignments. He prepares the work environment and creates the necessary elements for information management.

He defines for each enterprise the set of viewpoints and models that best fit the specific project or mission objectives. He can also delegate the ability to define work environments to the DoDAF Architect.

☛ *Not all DoDAF viewpoints and models are needed for every stakeholder. Data needs to be collected at the appropriate level of detail to support the specific decisions or objectives.*

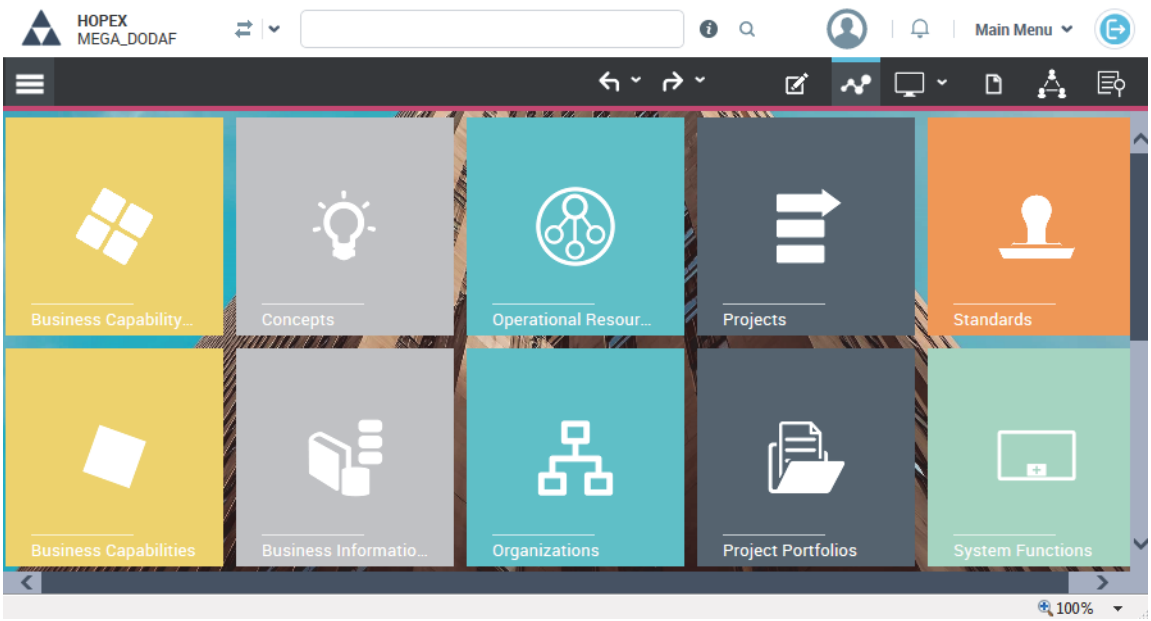
DoDAF Viewer

The DoDAF Viewer has access to all the views he has been assigned to but he cannot make any changes.

GUI PRESENTATION OF HOPEX DODAF

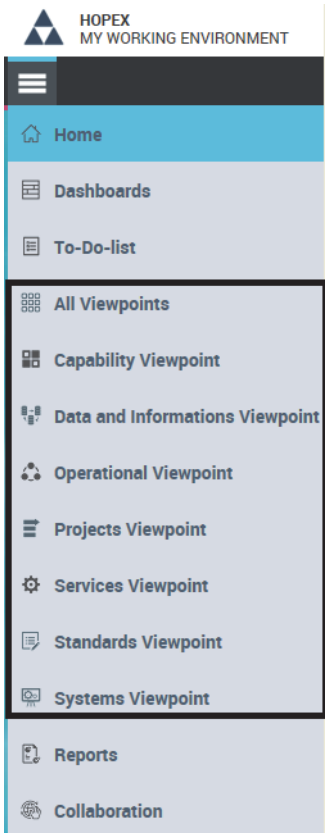
HOPEX DoDAF Home Page

The Home page of **HOPEX DoDAF** displays tiles which reference object types of the repository.



HOPEX DoDAF Home page

☛ *For general use of **HOPEX** see "The HOPEX Web Front-End desktop" in the Common Features section of this online documentation.*



Navigation panes available to the DoDAF functional administrator

HOPEX DoDAF Profiles

DoDAF Functional Administrator

The DoDAF Functional Administrator is in charge of the application administrative tasks. He owns rights on all objects and viewpoints. He prepares the work environment and creates the necessary elements for information management.

He defines for each enterprise the set of viewpoints and models that best fit the specific project or mission objectives. He can also delegate the ability to define work environments to the DoDAF Architect.

> ☛ *Not all DoDAF viewpoints and models are needed for every stakeholder. Data needs to be collected at the appropriate level of detail to support the specific decisions or objectives.*

For more information, see "HOPEX DoDAF Functional Administration", page 37

DoDAF Viewer

The DoDAF Viewer has access to all the views he has been assigned to but he cannot make any changes.

DoDAF Architect

The DoDAF Architect needs to define the set of viewpoints and models that best fit the specific project or mission objectives.

The DoDAF Architect workspace

The DoDAF architect workspace displays the navigation panes which correspond to viewpoints assigned by the functional administrator.

HOPEX IMPLEMENTATION OF DODAF V.2.02

This section deals with **HOPEX** implementation of DoDAF v.2.02. The aim is to present the main principles that govern this implementation and guide the user in his/her use of the **HOPEX** Modeling tool to create DoDAF 2.02 deliverables.

THE DODAF 2.02 VIEWPOINTS AND MODELS

DoDAF 2.02 is composed of a set of deliverables, called viewpoints, which address different parts of an enterprise. These viewpoints are grouped into models. Models that focus on the same perspective are placed in the same viewpoint.

DoDAF 2.02 organizes architectures into eight different viewpoints.

- "All Viewpoint (AV)", page 12
- "Capability Viewpoint (CV)", page 13
- "Data and Information Viewpoint (DIV)", page 13
- "Operational Viewpoint (OV)", page 13
- "Project Viewpoint (PV)", page 14
- "Services Viewpoint (SvcV)", page 14
- "Standards Viewpoint (StdV)", page 14
- "Systems Viewpoint (SV)", page 14

Each viewpoint portrays certain architecture features. Some features span several viewpoints and provide integrity, coherence, and consistency to architecture descriptions.

All the DoDAF-described models do not have to be created. DoDAF V2.0 is "Fit-for-Purpose", based on the decision-maker needs.

The DoDAF functional administrator decides which views need to be managed by whom. For more information, see "HOPEX DoDAF Functional Administration", page 37.

DoDAF 2.02 Viewpoints

All Viewpoint (AV)

There are some overarching aspects of an architecture that relate to all the viewpoints.

These overarching aspects are captured in the All Viewpoint (AV) models. The AV models provide information pertinent to the entire architecture, but do not represent a distinct viewpoint of the architecture. AV models provide an overview of the architecture, setting the scope and context of the architecture. The scope includes the subject area and time-frame for the architecture.

The setting in which the architecture exists comprises the interrelated conditions that compose the context for the architecture. These conditions include:

- Doctrine
- Tactics
- Techniques
- Procedures
- Relevant goals and vision statements
- Concepts of operations
- Scenarios
- Environmental conditions

The AV models also include such things as the rules, constraints, assumptions and derived vocabulary that pertains to the architecture. It captures the intent of the architecture to help ensure its continuity in the face of leadership, organizational, and other changes that can occur over a long development effort.

Capability Viewpoint (CV)

The Capability Viewpoint (CV) supports the process of analyzing and optimizing the delivery of capabilities in line with DoD's strategic intent. The CV achieves this by capturing essential elements of DoD's strategic vision and concepts and other capability planning processes, and decomposing this data into a capability taxonomy. The taxonomy is augmented with schedule data and measures of effectiveness to enable the analysis of capability gaps and overlaps. The CV also details the dependencies between capabilities, enabling capability options to be built in a more coherent manner.

Data and Information Viewpoint (DIV)

The Data and Information Viewpoint (DIV) portrays the operational and business information requirements and rules of the architecture. It describes the information that is associated with the information exchanges in the architecture, such as attributes, characteristics, and interrelationships.

Several levels of abstraction are necessary to accurately communicate the information needs of organizations and enterprises. The appropriate levels of abstraction for a given architecture depend on the use and the intended users of the architecture.

DoDAF V2.0 incorporates three levels of abstraction that correlate to the different levels associated with most data models developed in support of the operations or business. These levels are:

- Conceptual
- Logical
- Physical

Operational Viewpoint (OV)

The Operational Viewpoint (OV) is a description of activities, operational elements, and information exchanges required to accomplish DoD missions. DoD missions include both war-fighting missions and business processes. The OV contains graphical and textual content that comprise an identification of the operational

nodes and elements, assigned activities, and information flows required between nodes. It defines the types of information exchanged, the frequency of exchange, which activities are supported by the information exchanges, and the nature of information exchanges.

Project Viewpoint (PV)

The Project Viewpoint (PV) describe the relationships between capability requirements and the various programmes and projects being implemented. More precisely they describe how the programmes and projects deliver the capabilities, the organizations that contribute to them, and the dependencies between them.

Services Viewpoint (SvcV)

The Services Viewpoint (SvcV) describes services and their interconnections that provide or support DoD functions. The viewpoint also supports the description of service taxonomies, service orchestrations, a mapping of services to operational activities and a description of service behavior.

The Service Models associate service resources to the operational and capability requirements. These resources support the operational activities and facilitate the exchange of information. The relationship between architectural data elements across the Services Viewpoint to the Operational Viewpoint and Capability Viewpoint can be exemplified as services are procured and fielded to support the operations and capabilities of organizations.

A service within the SvcV is understood in its broadest sense, to be a unit of work through which a provider provides a useful result to a consumer. Services are not limited to internal system functions and can include Human Computer Interface (HCI) and Graphical User Interface (GUI) functions or functions that consume or produce service data to or from service functions. The external service data providers and consumers can be used to represent the human that interacts with the service.

Standards Viewpoint (StdV)

The Standards Viewpoint (StdV) is the minimal set of rules governing the arrangement, interaction, and interdependence of system parts or elements. Its purpose is to ensure that a system satisfies a specified set of operational requirements. The StdV provides the technical systems implementation guidelines upon which engineering specifications are based, common building blocks are established, and product lines are developed. The StdV includes a collection of the technical standards, implementation conventions, standards options, rules, and criteria organized into profile(s) that govern systems and system elements for a given architecture.

Systems Viewpoint (SV)

The Systems Viewpoint (SV) is a set of graphical and textual models that describes systems and system interconnections that provide for or support operational activities. The SV associates system resources to the OV. These system resources

support the operational activities and facilitate the exchange of information among operational nodes.

THE DODAF 2.02 MODELS

Each of the eight viewpoints defined above groups models. In DoDAF 2 vocabulary, a model is either a graphical, textual or tabular deliverable that describes the characteristics that are relevant to the architecture product. Each model is associated to a short name created from the abbreviation of the viewpoint to which it belongs (AV, CV, DIV, OV, PV, SvcV, StdV, SV) and suffixed by a number.

DoDAF 2.02 Viewpoint Models

Code	Model Name	Comment
AV-1	"AV-1 Overview and Summary Information"	Describes a Project's Visions, Goals, Objectives, Plans, Activities, Events, Conditions, Measures, Effects (Outcomes), and produced objects.
AV-2	"AV-2 Integrated Dictionary"	An architectural data repository with definitions of all terms used throughout the architectural data and presentations.

DoDAF 2 Capability Viewpoint Models

Code	Model Name	Comment
CV-1	"CV-1 Vision"	Addresses the enterprise concerns associated with the overall vision for transformational endeavors and thus defines the strategic context for a group of capabilities.
CV-2	"CV-2 Capability Taxonomy"	Captures capability taxonomies. The model presents a hierarchy of capabilities. These capabilities may be presented in context of a timeline - i.e., it can show the required capabilities for current and future capabilities.
CV-3	"CV-3 Capability Phasing"	The planned achievement of capability at different points in time or during specific periods of time. The CV-3 shows the capability phasing in terms of the activities, conditions, desired effects, rules complied with, resource consumption and production, and measures, without regard to the performer and location solutions
CV-4	"CV-4 Capability Dependencies"	The dependencies between planned capabilities and the definition of logical groupings of capabilities.
CV-5	"CV-5 Capability to Organizational Deployment Mapping"	The fulfillment of capability requirements shows the planned capability deployment and interconnection for a particular Capability Phase. The CV-5 shows the planned solution for the phase in terms of performers and locations and their associated concepts.
CV-6	"CV-6 Capability to Operational Activities Mapping"	A mapping between the capabilities required and the operational activities that those capabilities support.

DoDAF 2 Data and Information Viewpoint Models

Code	Model Name	Comment
DIV-1	"DIV-1 Conceptual Data Model"	The required high-level data concepts and their relationships.
DIV-2	"DIV-2 Logical data Model"	The documentation of the data requirements and structural business process (activity) rules. In DoDAF V1.5, this was the OV-7.
DIV-3	"DIV-3 Physical Data Model"	The physical implementation format of the Logical Data Model entities, e.g., message formats, file structures, physical schema. In DoDAF V1.5, this was the SV-11.

DoDAF 2 Operational Viewpoint Models

Code	Model Name	Comment
OV-1	"OV-1 High-Level Operational Concept Graphic"	The high-level graphical/textual description of the operational concept.
OV-2	"OV-2 Operational Resource Flow Description"	A description of the Resource Flows exchanged between operational activities.
OV-3	"OV-3 Operational Resource Flow Matrix"	A description of the resources exchanged and the relevant attributes of the exchanges.
OV-4	"OV-4 Organizational Relationships Chart"	The organizational context, role or other relationships among organizations.
OV-5a	"OV-5a Operational Activity Decomposition Tree"	The capabilities and activities (operational activities) organized in a hierarchal structure.

Code	Model Name	Comment
OV-5b	"OV-5b Operational Activity Model"	The context of capabilities and activities (operational activities) and their relationships among activities, inputs, and outputs; Additional data can show cost, performers or other pertinent information.
OV-6a	"OV-6a Operational Rules Model"	One of three models used to describe activity (operational activity). It identifies business rules that constrain operations.
OV-6b	"OV-6b Operational State Transition Description"	One of three models used to describe operational activity (activity). It identifies business process (activity) responses to events (usually, very short activities).
OV-6c	"OV-6c Operational Event-Trace Description"	One of three models used to describe activity (operational activity). It traces actions in a scenario or sequence of events.

DoDAF 2 Project Viewpoint Models

Code	Model Name	Comment
PV-1	"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	"PV-2 Project Timelines"	A timeline perspective on programs or projects, with the key milestones and interdependencies.
PV-3	"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.

DoDAF 2 Services Viewpoint Models

Code	Model Name	Comment
SvcV-1	"SvcV-1 Services Context Description"	The identification of services, service items, and their interconnections.
SvcV-2	"SvcV-2 Service Resource Flow Description"	A description of Resource Flows exchanged between services.
SvcV-3a	"SvcV-3a Systems-Service Matrix"	The relationships among or between systems and services in a given Architectural Description.
SvcV-3b	"SvcV-3b Services-Services Matrix"	The relationships among services in a given Architectural Description. It can be designed to show relationships of interest, (e.g., service-type interfaces, planned vs. existing interfaces).
SvcV-4	"SvcV-4 Services Functionality Description"	The functions performed by services and the service data flows among service functions (activities).
SvcV-5	"SvcV-5 Operational Activity to Services Traceability Matrix"	A mapping of services (activities) back to operational activities (activities).
SvcV-6	"SvcV-6 Services Resource Flow Matrix"	It provides details of service Resource Flow elements being exchanged between services and the attributes of that exchange.
SvcV-7	"SvcV-7 Services Measures Matrix"	The measures (metrics) of Services Model elements for the appropriate timeframe(s)
SvcV-8	"SvcV-8 Services Evolution Description"	The planned incremental steps toward migrating a suite of services to a more efficient suite or toward evolving current services to a future implementation.

Code	Model Name	Comment
SvcV-9	"SvcV-9 Services Technology & Skills Forecast"	The emerging technologies, software/hardware products, and skills that are expected to be available in a given set of time frames and that will affect future service development.
SvcV-10a	"SvcV-10a Services Rules Model"	One of three models used to describe service functionality. It identifies constraints that are imposed on systems functionality due to some aspect of system design or implementation.
SvcV-10b	"SvcV-10b Services State Transition Description"	One of three models used to describe service functionality. It identifies responses of services to events.
SvcV-10c	"SvcV-10c Services Event-Trace Description"	One of three models used to describe service functionality. It identifies service-specific refinements of critical sequences of events described in the Operational Viewpoint.

DoDAF 2 Standards Viewpoint Models

Code	Model Name	Comment
StdV-1	"StdV-1 - Standards Profile"	The listing of standards that apply to solution elements.
StdV-2	"StdV-2 Standards Forecast"	The description of emerging standards and potential impact on current solution elements, within a set of time frames.

DoDAF 2 Systems Viewpoint Models

Code	Model Name	Comment
SV-1	"SV-1 Systems Interface Description"	The identification of systems, system items, and their interconnections.
SV-2	"SV-2 Systems Resource Flow Description"	A description of Resource Flows exchanged between systems.
SV-3	"SV-3 Systems-Systems Matrix"	The relationships among systems in a given Architectural Description. It can be designed to show relationships of interest, (e.g., system-type interfaces, planned vs. existing interfaces).
SV-4	"SV-4 Systems Functionality"	The functions (activities) performed by systems and the system data flows among system functions (activities).
SV-5a	"SV-5a Operational Activity to Systems Function Traceability Matrix"	A mapping of system functions (activities) back to operational activities (activities).
SV-5b	"SV-5b Operational Activity to Systems Traceability Matrix"	A mapping of systems back to capabilities or operational activities (activities).
SV-6	"SV-6 Systems Data Exchange Matrix"	Provides details of system resource flow elements being exchanged between systems and the attributes of that exchange.
SV-7	"SV-7 Systems Measures Matrix"	The measures (metrics) of Systems Model elements for the appropriate time-frame(s).
SV-8	"SV-8 Systems Evolution Description"	The planned incremental steps toward migrating a suite of systems to a more efficient suite, or toward evolving a current system to a future implementation.

Code	Model Name	Comment
SV-9	"SV-9 Systems Technology and Skills Forecast"	The emerging technologies, software/hardware products, and skills that are expected to be available in a given set of time frames and that will affect future system development.
SV-10a	"SV-10a Systems Rules Model"	One of three models used to describe system functionality. It identifies constraints that are imposed on systems functionality due to some aspect of system design or implementation.
SV-10b	"SV-10b Systems State Transition Description"	One of three models used to describe system functionality. It identifies responses of systems to events.
SV-10c	"SV-10c Systems Event-Trace Description"	One of three models used to describe system functionality. It identifies system-specific refinements of critical sequences of events described in the Operational Viewpoint.

VIEWOINTS AND MODEL USE CASES

A critical part of defining an architecture is answering what is known as, the set of standard interrogatives, which are the set of questions, who, what, when, where, why, and how, that facilitate collection and usage of architecture-related data.

DoDAF provides a means of answering these interrogatives through the DoDAF Viewpoints and DoDAF-described Models.

Summary table of use cases

This matrix is useful in both data collection, and decisions on how to best represent the data in DoDAF-described Models that are appropriate to the purpose for which the architecture is created.

	What (Date)	**How (Function)**	**Where (Network)**	**Who (People)**	**When (Time)**	**Why (Moti-vation)**
Viewpoint	AV DIV	OV SV SvcV	OV SV SvcV	OV	CV OV PV SV SvcV	AV CV OV StdV SV SvcV
Model	AV-2 DIV-1 DIV-2 DIV-3	OV-5a OV-5b OV-6a, b, c SV-4 SV-10a, b, c SvcV-10a, b, c	Ov-2 SV-2 SvcV-2	OV2 OV-4	CV-2 CV-4 OV-6c PV-2 SV-8 SvcV-8 SV-10c SvcV-10c	AV-1 CV-1 OV-6a StdV-1 StdV-2 SV-10a SvcV-10a

Use case example

Let’s figure out a decision is required on changing a logistics transformation process. Here are the questions which needs to be investigated

Each interrogative impact on measures of performance and can be described by a DoDAF-described model.

WHAT	The process	Data description
HOW	Documentation of the process	Function description
WHERE	Place of process execution	Network description
WHO	Performers of the process	People description
WHEN	Time frame required	Time description
WHY	Rules, Goals and Expected Results	Motivation description

Dependencies Between Views

In **HOPEX DoDAF** there are many dependencies between viewpoints. Some viewpoints fill automatically as other viewpoints are filled in.

SUMMARY TABLE OF CONCEPTS AND REPORTS

Please note the following table is not exhaustive. It lists:

- the main concepts found in viewpoints
- the main tools at your disposal to implement DoDAF
  - diagrams
  - editors
- the reports displayed as tiles in each viewpoint.

☛ *Additional reports may be created. For more information, see* *"HOPEX DoDAF Reports", page 239*

Viewpoint/ View	Main Concepts	Main Tools	Reports
All Viewpoint			
AV-1 "AV-1 Overview and Summary Information"	Enterprise Enterprise stages Ends (Vision, Goal) Means (Mission, Strategy, Tactic) Exhibited Capabilities	"Enterprise Stage Strategy Diagram"	
AV-2 "AV-2 Integrated Dictionary"	Tags		
Operational Viewpoint			
OV-1 "OV-1 High-Level Operational Concept Graphic"	Sketching Item Sketching Link	Sketch Diagram	

Viewpoint/ View	Main Concepts	Main Tools	Reports
OV-2 "OV-2 Operational Resource Flow Description"	"Operational scenario environments" "Operational scenarios"	Organizational Communication Diagram "OV-2 Operational Scenario Environment Diagram"	"Operational Resource Flow Matrix"
OV-3 "OV-3 Operational Resource Flow Matrix"	Same as OV-2	"Operational Scenario Flow Editor" "Participant (lifeline) Editor" "OV-2 Operational Scenario Environment Diagram"	"OV-3 Operational Scenario Matrix" "OV-3 Operational Scenario Reports"
OV-4 "OV-4 Organizational Relationships Chart"	"Organization environments" "Organizations" "Position types"	"Organization Environment Diagram" "Scenario of Operational Environment Diagram" "OV-4 Operational Scenario Diagram" Operational Scenario Sequence Diagram "Organizational Unit Structure Diagram" "Organizational Unit Tree Diagram"	
OV-5a "OV-5a Operational Activity Decomposition Tree"	Operational Activities "Operations"	"Organizational process diagram" Operational Activity Decomposition Tree ("Organizational process tree diagram")	
OV-5b "OV-5b Operational Activity Model"	"Operational Activities"	"OV-5 Operational Activity Diagram"	
OV-6a "OV-6a Operational Rules Model"	"Operational rules"		"Operational rule matrix" (operational activities X operational rules)
OV-6b "OV-6b Operational State Transition Description"	"State machines"	"State diagrams"	

Viewpoint/ View	Main Concepts	Main Tools	Reports
OV-6c "OV-6c Operational Event-Trace Description"	"Operational Activities" (same as OV-5b)		
Capability Viewpoint			
CV-1 "CV-1 Vision"	"Enterprise Vision" Ends (goals and objectives Measures Capabilities	"Enterprise Stage Strategy Diagram"	
CV-2 "CV-2 Capability Taxonomy"	"Business Capability Maps" "Business Capabilities"	"Business capability map diagram" "Business Capability Decomposition Tree" Capability structure diagram	"Capability Taxonomy Report"
CV-3 "CV-3 Capability Phasing"	Enterprise Stages		Gantt Chart
CV-4 "CV-4 Capability Dependencies"	"Capability dependencies"		"Dependencies matrix"
CV-5 "CV-5 Capability to Organizational Deployment Mapping"	Organizations Capabilities		"Capability to Organizational Matrix"
CV-6 "CV-6 Capability to Operational Activities Mapping"	"Creating business service catalogs" "Defining business service catalog contents"		"Capability to service mapping" (Business capability / Organization Matrix)
Data and Information Viewpoint			
DIV-1 "DIV-1 Conceptual Data Model"	Subject Areas Business Information Areas Business Information Maps Concepts Concept Types "Concept Views"	Business Information Area Concept Diagram Business Information Area Structure Diagram	

Viewpoint/ View	Main Concepts	Main Tools	Reports
DIV-2 "DIV-2 Logical data Model"	Logical Data Map Physical Data Area Packages Data Views	"IDEF1X Data Area Diagram" "DIV-2 Logical Data Area Entity Diagram" ER Data Area Structure Diagram	
DIV-3 "DIV-3 Physical Data Model"	Databases Physical Data Map Physical Data Area	Relational Data Map Diagram "Relational Data Area Table Diagram"	
Project Viewpoint			
PV-1 "PV-1 Project Portfolio Relationships"	Projects Project Domains Project Categories		
PV-2 "PV-2 Project Timelines"	Project Risks Project (Arbitration) Portfolio		"Project Dependency Matrix"
PV-3 "PV-3 Project to Capability Mapping"	Projects Business Capabilities		"Project to Capability Mapping" (matrix) "Project to Capability Mapping Report"
Services Viewpoint			
SvcV-1 "SvcV-1 Services Context Description"	"SvcV-1 Service Catalogs" (Technical/Information/ Hardware Service Catalogs) Service Catalog Items (Functionalities) Functionality Maps	"Functionality Diagram" Functionality Map Diagram	
SvcV-2 "SvcV-2 Service Resource Flow Description"	"Functionality Dependencies" Information Service Catalog Service Points	Information Service Catalog editor	
SvcV-3a "SvcV-3a Systems-Service Matrix"	Realization of Functionalities		"Service Catalog Report"

Viewpoint/ View	Main Concepts	Main Tools	Reports
SvcV-3b "SvcV-3b Services-Services Matrix"	Realization of Functionalities		"Service Catalog Report"
SvcV-4 "SvcV-4 Services Functionality Description"	Information Services Technical Services Hardware Services		"Services Consumption Matrix" "Services Consumption Reports"
SvcV-5 "SvcV-5 Operational Activity to Services Traceability Matrix"			Operational activity to services traceability matrix report
SvcV-6 "SvcV-6 Services Resource Flow Matrix"	Functionalities / Technical Functionalities / Hardware functionalities		"System Resource Flow Matrix" "System Resource Flow Reports"
SvcV-7 "SvcV-7 Services Measures Matrix"	System KPI dimensions System Composite KPI dimensions		"System Element KPIs Matrix" "System Element Composite KPIs Matrix"
SvcV-8 "SvcV-8 Services Evolution Description"	Asset Catalogs (Hardware/Software/Other) Object Life (state Machines)	Asset catalog editor	Gantt chart
SvcV-9 "SvcV-9 Services Technology & Skills Forecast"	Position Type Catalog System Technology Catalog	Position type catalog editor System Technology cataog editor	
SvcV-10a "SvcV-10a Services Rules Model"	"System Rules" Systems Functions		"System Rules Matrix"
SvcV-10b "SvcV-10b Services State Transition Description"	State Machines	"State machine diagrams"	

Viewpoint/ View	Main Concepts	Main Tools	Reports
SvcV-10c "SvcV-10c Services Event-Trace Description"	Scenarios of: - system of resource systems - System environment flows - Application system environment flows - System flows - Application system flows - System of resources	"SVcV-10c System Flow Scenario Diagram" Scenario editors	Application Flow Environment Diagram Application Environment Flow Sequence Diagram
Standards Viewpoint			
StdV-1 "StdV-1 - Standards Profile"	Standards Standard Components		
StdV-2 "StdV-2 Standards Forecast"	Standard Asset Catalogs Object life		
Systems Viewpoint			
SV-1 "SV-1 Systems Interface Description"	Application Systems Application System Environments Exchange Contracts Systems Facilities Hardware IOT Devices IT Devices IT Infrastructures IT Networks IT Peripherical Devices IT Servers Resource Architecture Environments Resource Architectures Resource Configurations	See "SV-1 Concepts and Diagrams"	
SV-2 "SV-2 Systems Resource Flow Description"	System Technical Architecture System Technical Area Application System Technical Architecture	"Technical Architecture Diagrams"	

Viewpoint/ View	Main Concepts	Main Tools	Reports
SV-3 "SV-3 Systems-Systems Matrix"	Agent		External Content Matrices (Structure and Scenario) External Exchange Contract Matrix Impact (Scenario and Structure) "SV-3 interactions between a list of agents" "SV-3 interactions between the agents of an enterprise" "SV-3 interactions between the agents of an enterprise undertaking" "SV-3 interactions between the children of an agent"
SV-4 "SV-4 Systems Functionality"	System Functions	"System Process Diagrams" System Process Tree Diagram	
SV-5a "SV-5a Operational Activity to Systems Function Traceability Matrix"			System and Operational Activity Matrix
SV-5b"SV-5b Operational Activity to Systems Traceability Matrix"	Systems, Application Systems, Functionalities, Operational activities		Matrices
SV-6 "SV-6 Systems Data Exchange Matrix"	Application Sytem Flow Environment, System of resources, Scenario of System Flow, System Flow Environment	Scenario editor	"System Resource Flow Matrix" "System Resource Flow Reports"
SV-7 "SV-7 Systems Measures Matrix"	KPI dimensions Composite KPI dimensions		System Element KPI Matrix System Element Composite KPI Matrix
SV-8 "SV-8 Systems Evolution Description"	Voir SvcV-8 "SvcV-8 Services Evolution Description"		

Viewpoint/ View	Main Concepts	Main Tools	Reports
SV-9 "SV-9 Systems Technology and Skills Forecast"	Voir SvcV-9 "SvcV-9 Services Technology & Skills Forecast"		
SV-10a "SV-10a Systems Rules Model"	Voir SvcV-10a "SvcV-10a Services Rules Model"		
SV-10b "SV-10b Systems State Transition Description"	Voir SvcV-10b "SvcV-10b Services State Transition Description"		
SV-10c "SV-10c Systems Event-Trace Description"	Voir SvcV-10c "SvcV-10c Services Event-Trace Description"		

THE DODAF TERMINOLOGY

As an enterprise architecture tool, **HOPEX** can be used to implement a DoDAF project.

Many different frameworks have been designed to help implement enterprise architecture projects. Even though common concepts can be retrieved in each framework, vocabularies may differ and sometimes the same words can be used with slight variations.

HOPEX has its own history and the vocabulary contained in the **HOPEX** Modeling tool metamodel reflects **HOPEX** vision. The tool also supplies a rich set of diagrams that are dedicated to modeling the different levels of enterprise architecture, however, because of the history, the diagrams are either not named or are not exactly equivalent to those described in the DoDAF V2.02 standard.

This section details the mapping made between the **HOPEX** and DoDAF concepts used. The aim of this renaming is to make the mapping between the DoDAF 2.02 concepts and the **HOPEX** concepts as invisible as possible for the user.

HOPEX Concept	DoDAF Concept
Task	Activity
Application	System
Enterprise Goal	Goal
Operational Flow Channel	Operational Needline
Org-Unit	Organization
Organization Environment	Operational Environment
Organizational Process	Operational Activity
Organizational Scenario Mapping	Operational Scenario Mapping
Scenario of System of Resource Systems	Scenario of Systems of Systems
System Process	System Function

HOPEX DoDAF Functional Administration

So that users can work in **HOPEX DoDAF**, the DoDAF functional administrator has to create an enterprise and give users the possibility to work on all or some of the viewpoints.

> *An Enterprise is a purposeful undertaking, conducted by one or more organizations, aiming at delivering goods and services, in accordance with the enterprise mission in its changing environment. During its development over time, an enterprise has to adapt to its environment and sets up transformation goals and objectives along with course of action to achieve these objectives. The design and realization of the resulting transformation stages may transcend organizational boundaries and consequently require an integrated team working under the direction of a governing body to involve stakeholders in transformation initiatives.*

THE FUNCTIONAL ADMINISTRATOR WORKSPACE

By default, the **DoDAF** functional administrator workspace displays the following navigation panes:

- **Dashboards**: shows a collection a tiles for easy access to repository objects
- **To-Do List**: shows reports, history and favorites
- **Environment**: this is where the functional administrator creates enterprises and dispatches work among stakeholders. For more information see "Defining a Working Environment", page 39.
- All the DoDAF Viewpoints
- **Reports**
- **Administration**
- **Collaboration**

For more information about HOPEX standard features, see the Common Features documentation, especially the following sections:

- "The HOPEX Web Front-End desktop"
- **"Communicating in HOPEX"**

DEFINING A WORKING ENVIRONMENT

To allow architects to start working with **HOPEX DoDAF**, the functional administrator needs to create an enterprise together with a working environment (the latter being created automatically).

To create and initialize an *enterprise*:

1. From the **Environment** navigation pane, select **Standard Navigation > Enterprises**.
   The list of enterprises appears in the edit area.
2. Click **New**.
   An enterprise creation dialog box opens.
3. Specify the name of the enterprise.
4. Select the type of transformation you are interested in:
   - **IT Transformation**
   - **Business Transformation**
   - **Other**.
5. Specify the types of **Sub-Containers** to be create automatically.
   Sub-containers enable to regroup information.
   - Data Area

     A data area is subset of the enterprise data that is meant to be manipulated together in the context of business operations.
   - Project Domain

     A project is defined upon a given domain (e.g. Business, Information Technology). A domain gathers all the projects managed from the same perspective in terms of portfolio management decisions. Project Portfolios are therefore also attached to Project Domains; by default, one portfolio of each portfolio type is created when creating a new domain.

     ☛ *For more information, see "PV-1 HOPEX Implementation".*
   - Service Catalog

     A Service Catalog is a list of key service offerings for which a set of recommended solutions are proposed.

     ☛ *For more information, see "SvcV-1 HOPEX Implementation".*

     A Service Catalog is a list of key service offerings for which a set of recommended solutions are proposed.
   - Asset Catalog

     ☛ *For more information, see "SV-9 Implementation".*
6. Click **Next**.
7. Enter the **Working Environment Name.**
8. Select the "DoDAF" **Working Environment Template** if it is not already selected.
9. Click **OK**.

A working environment for the enterprise is automatically created.

Defining Enterprise Stages

The DoDAF functional administrator can create enterprise stages (apart from the as-is and to-be stages which are created by default). He can also allow DoDAF architects to create some, depending on the organization you want to set up.

☛ *For DoDAF architects to create enterprise stages, go to "CV-3 HOPEX Implementation".*

Type of Transformation Stages

En enterprise stage is a past, current or future stage of an enterprise. It is connected to a *business transformation stage* or to an *IT transformation stage*.

📖 *A business transformation stage is a kind of enterprise transformation stage aiming at the alignment of the enterprise operating model to its strategy and corresponding exhibited business capabilities.*

📖 *An IT transformation stage is an enterprise transformation stage aimed at aligning the enterprise IT system with the functionalities expected by the operations.*

The type of the transformation stage that characterizes the enterprise stage is defined during creation of the enterprise stage.

Creating Enterprise Stages

To create enterprise stages:

1. In the navigation menu, click **Environment > Standard Navigation > Stages**.

   ☛ *You can also create enterprise stages from the CV-3 viewpoint. For more information, see "CV-3 HOPEX Implementation".*

For more information, search the following section in the **HOPEX Business Architecture** documentation: "Enterprise stage properties".

MANAGING METRICS (KPI DIMENSIONS)

KPIs are used to define the performance constraints that must be complied with by the building blocks making up the enterprise, at the forefront of which are the business capabilities and the exhibited business capabilities in an enterprise stage. KPIs are defined through *KPI dimensions*.

You need to set up the KPI dimensions before using them in the SV-7 viewpoint for example.

☛ *For an example of KPI dimension use, see "SV-7 Systems Measures Matrix", page 232. KPI dimensions are also used in Svc-V7.*

About KPIs

📖 *A KPI (key indicator) defines how much of something that can be quantified, either as a singular value or as range of values, according to a KPI Dimension. KPI are valued KPIs. Example: Time to deliver [10-20] minutes.*

KPIs can be connected to exhibited business capabilities; that is, a capability highlighted within the context of an enterprise stage.

For example, the KPIs of the "Delivery of pizzas" exhibition of the business capability (exhibited business capability) in a given enterprise stage (existing or future) can be "Deliver a pizza in less than 20mn" or "Take the order in less than 3mn".

About KPI dimensions

📖 *KPI dimensions express the nature of KPIs (Time, Mass, Cost, ..) and define the units used for KPI (minutes, kg, euros, etc.). Example: Time to deliver in minutes, Delivery cost in kilo Euros.*

KPI dimensions can be connected to the following objects:

- business capabilities,
- architecture building blocks (business function, application system, etc.).

A KPI dimension for the "Delivery of pizzas" business capability is "Delivery time".

Grouping KPIs and KPI dimensions

KPIs or *KPI dimensions* can be grouped to define *composite KPIs* and *composite KPI dimensions*.

📖 *A composite KPI defines the grouping of elementary KPIs that should be examined together in order to appreciate the performance of an item with KPI. E.g.: a delivery must take place in less than 20 minutes and cost less than 5 euros.*

📖 *A Composite KPI Dimension defines the grouping of elementary KPIs that should be examined together in order to appreciate the actual performance of a KPIed item. E.g. a delivery should be achieved in a defined target timeframe AND at a target cost.*

Describing a KPI dimension

Accessing KPI dimensions

To access the list of *KPI dimensions*:

- In the navigation menu select **Environment > Metrics** and select **KPI dimensions**.
  The list of KPI dimensions appears.

Creating a KPI dimension

To create a *KPI dimension*:

1. Access the list of KPI dimensions.
2. Click **New**.
   The new KPI dimension appears in the list.
3. Open its property pages and enter:
   - its **Name**,
   - the text that describes its **Unit**.
   - the text of its **Description**.

KPI dimension properties

In the KPI dimension properties, select the Usage page to provide:

- the list of KPIs that are based on this KPI dimension.
- the list of composite KPI dimensions that use the KPI dimension.

Describing a composite KPI dimension

Accessing composite KPI dimensions

To access the list of *KPI dimensions*:

- In the navigation menu select **Environment > Metrics** and select **Composite KPI dimensions**.
  The list of KPI dimensions appears.

Creating a composite KPI dimension

At creation of a composite KPI dimension, you can reuse a KPI dimension, or a composite KPI dimension that already exists.

To create a *Composite KPI Dimension*:

1. Access the list of composite KPI dimensions.
2. Click **New**. The new composite KPI dimension appears in the list.
3. In the properties of the composite KIP dimension select the **Structure** page.

4. In the **Owned dimension component section**, click **New** to create a sub-dimension.
   You can create the sub-dimension by re-using:
   - a composite KPI dimension
   - a KPI dimension

ALL VIEWPOINT MODELS

The AV DoDAF-described Models provide a global description of an architecture description. They provide information pertinent to the entire Architectural Description rather than representing a distinct viewpoint.

AV DoDAF-described Models provide an overview of the architectural effort including such things as the scope, context, rules, constraints, assumptions, and the derived vocabulary that pertains to the Architectural Description. It captures the intent of the Architectural Description to help ensure its continuity in the face of leadership, organizational, and other changes that can occur over a long development effort.

AV-1 Overview and Summary Information

AV-1- Description and Implementation

AV-1 Overview and Summary Information	Describes a Project's Visions, Goals, Objectives, Plans, Activities, Events, Conditions, Measures, Effects (Outcomes), and produced objects.

☛ *For more information see the DoDAF web site: AV-1 Overview and Summary Information.*

The AV-1 gives an overview of the enterprise. You can also fill in enterprise properties and elements of the Architecture description.

Standard navigation

This tile displays the hierarchy view of enterprises and libraries and enables to navigate in the content of the repository.

Overview and Summary Information

Here you can define stages, ends and means as well as exhibited capabilities.

To get an overview of your enterprise:

1. In the navigation menu, select **All Viewpoint > AV-1 Overview and Summary Information**.

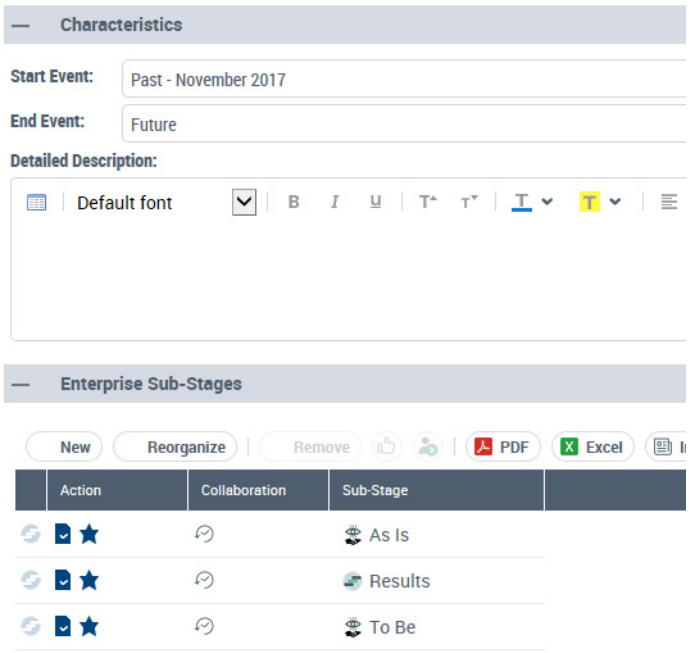
The page that opens displays the following sections:

- possible sub-stages of your enterprise
- ends:
  - visions
  - goals
- means
  - missions
  - strategies
  - tactics
- exhibited business capabilities

Sub-stages

An enterprise stage is a past, current or future stage of an enterprise plan.

Stages can be divided into sub-stages.



Ends

Ends are about what an enterprise wants to be. Ends can be about changing what the enterprise is (e.g., developing new lines of business, moving into new markets) or about maintaining its current position relative its market and competition. The definition of an end does not say how it will be achieved. Ends are categorized as Vision, Goals and Objectives.

Visions

A Vision is the ultimate, possibly unattainable, state the enterprise would like to achieve. A Vision is often compound, rather than focused toward one particular aspect of the business problem. A Vision is supported or made operative by Missions. It is amplified by Goals.

Goals

A Goal tends to be longer term, and defined qualitatively rather than quantitatively. It should be sufficiently narrow-focused that Objectives can be defined for it.

Means

A Means is some capability, regime, technique, restriction, agency, instrument, device or method that may be called upon, activated, or enforced to achieve Ends. It does not include either the tasks (business processes and workflow) necessary to exploit it, nor responsibility for such tasks.

Mission

A Mission indicates the ongoing operational activity of the enterprise. The Mission describes what the business is or will be doing on a day-to-day basis.

A Mission makes a Vision operative; that is, it indicates the ongoing activity that makes the Vision a reality. A Mission is planned by means of Strategies.

Strategy

A Strategy is one component of the plan for the Mission. A Strategy represents the essential Course of Action to achieve Ends (Goals in particular). A Strategy usually channels efforts towards those Goals.

A Strategy is accepted by the enterprise as the right approach to achieve its Goals, given the environmental constraints and risks.

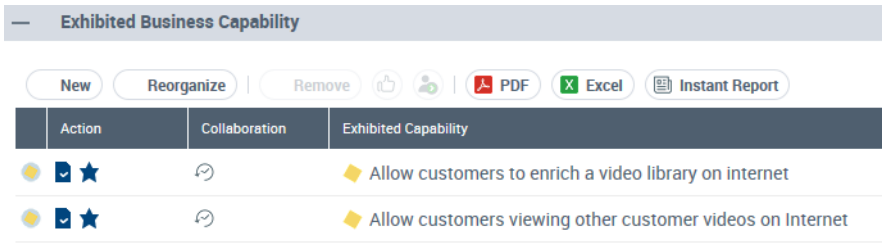
Tactic

A Tactic is a Course of Action that implements part of a Strategy. Tactics generally channel efforts towards Objectives.

Exhibited business capabilities

A Business Capability is a set of features that can be made available by an enterprise.

An exhibited business capability is a business Capability that is exhibited by an Enterprise Stage with quantified measure (KPI) and potential geopolitical scope (Site) for a defined market segment (Business Partner).



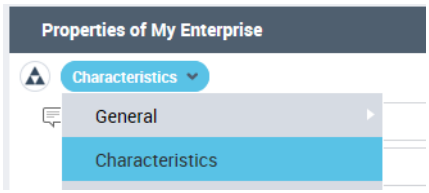
Contents and Properties of an Enterprise

To display the properties of an enterprise:

1. In the navigation menu, click **All Viewpoint > AV-1 Overview and Summary Information > Standard Navigation**.
2. Select the enterprise and click the **Properties** button in the desktop upper tool-bar.
   The property window will remain open at all times from now on.

Enterprise properties

From the enterprise property window, select the **Characteristics** page from the available drop-down list.



A basic *enterprise* is made up of the following elements:

The **Characteristics** properties page of an enterprise provides access to:

- its **Local Name**
- its **Owner**, which is a library.

  Libraries are collections of objects used to split HOPEX repository content into several independent parts. They allows virtual partition of the repository. In particular, objects owned by different libraries can have the same name.
- its **Enterprise Operating Model**, which can be of one of the following types:

- the events of the enterprise

  An enterprise event is something that happens at a given place and time and that marks the end of one enterprise stage and possibly the

beginning of another.

☛ *A "past" event and a "future" event are provided by default.*

- the **Start Event**.

  ☛ *The start event can be positioned arbitrarily at the beginning of the current year, for example.*

- the **End Event**.

  ☛ *The end event can be positioned with an analysis time frame (e.g.: year n+ 5, year n+10)*

- **Begin Date**
- **End Date**

An *enterprise* is described in the same way as an enterprise stage.

Enterprise Stage Strategy Diagram

The enterprise stage strategy diagram describes the links between missions, goals, strategies, tactics and exhibited business capabilities.

To draw this diagram:

❱ Right-click the enterprise and select **Enterprise Stage Strategy Diagram**.

☛ *You can also create this type of diagram from enterprise stages.*

☛ *For more information, see "Enterprise Stage Strategy Diagram", page 59 or the corresponding documentation in the HOPEX Business Architecture section.*

Architecture Description

To define the architecture of your enterprise:

❱ In the navigation menu, click **All Viewpoint > AV-1 Overview and Summary Information > Architecture Description**.

Here you can specify information regarding:

- capability architecture
- operating architecture
- information architecture

Capability architecture

You can specify:

- the enterprise capability map
- the enterprise resource capability maps
  - Business skill map
  - Functionality map
  - Harware functionality map
  - Technical functionality map

Operating Architecture

You can specify:

- the enterprise operating model
- the enterprise operating architectures
  - Application system environment
  - Operational environment
  - Resource architecture environment
- the business operating scenarios
  - Global application flow map
  - Scenario of application system environment flows
  - Scenario of operational environment
  - Scenario of system environment flows

Information Architecture

You can specify:

- the enterprise business information domain
- the enterprise IT data maps
  - logical data map
  - relational data map

AV-2 INTEGRATED DICTIONARY

AV-2 Description

AV-2 Integrated Dictionary	An architectural data repository with definitions of all terms used throughout the architectural data and presentations.

☛ *For more information, see the DoDAF web site: AV-2: Integrated Dictionary*

An information model should be based on the AV-2 model, which actually forms the operational domain object model and which contains the definitions of all the concepts that are relevant for the architecture effort.

AV-2 Implementation

AV-2 enables to associate objects with tags to build a dictionary.

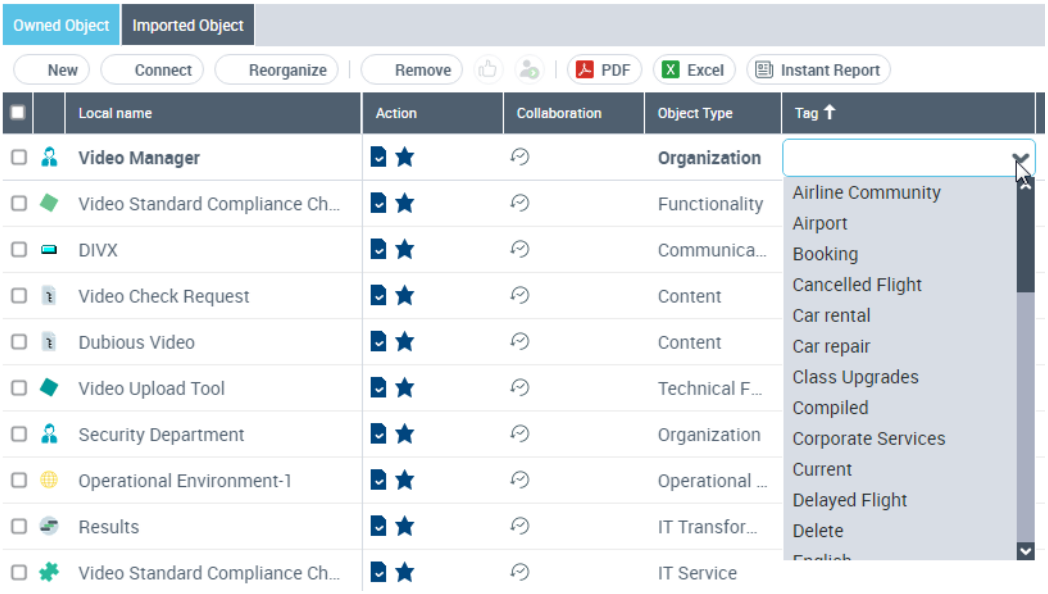
📖 *A tag is a classifying description which permits characterization of objects.*

To connect an object to a tag:

1. From the navigation menu select **All Viewpoint > AV-2 Integrated Dictionary**.
   In the same page two lists enable you to access:
   - owned enterprise objects
   - imported objects from other enterprises or libraries (this list is intended for reuse purposes in the event there is no current enterprise)

     ☛ *The list of imported objects is available in all viewpoints.*

2. Select one or several objects and from the **Tag** column, select a tag from the available drop-down list.



☛ *To create tags, see the corresponding documentation in the Common Features section: "Managing Tags".*

CAPABILITY VIEWPOINT MODELS

The capability models describe capability taxonomy and evolutions. They address the concern of Capacity portfolio managers.

To manage the risks of complex procurements, there is a need to provide visualizations of the evolving capabilities so that Portfolio managers can synchronize the introduction of capability increments across a portfolio of projects.

Another justification for the capability viewpoint is the increasing importance of transformational programs within the DoD.

The concept of capability allows one to answer several questions such as:

- How does a particular capability or capabilities support the overall mission/vision?
- What outcomes are expected to be achieved by a particular capability or set of capabilities?
- What services are required to support a capability?
- What is the functional scope and organizational span of a capability or set of capabilities?
- What is our current set of capabilities that we are managing as part of a portfolio?

CV-1 VISION

CV-1 Description

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

Purpose of a CV-1

The purpose of a CV-1 is to:

- provide a strategic context for the capabilities described in the Architectural Description.
- provides a high-level scope for the Architectural Description which is more general than the scenario-based scope defined in an OV-1.
- communicate the strategic vision regarding capability development.

Detailed Description of CV-1

The CV-1 defines the strategic context for a group of capabilities described in the Architectural Description by outlining the vision for a capability area over a bounded period of time.

It describes how high-level goals and strategy are to be delivered in capability terms.

A CV-1 may provide the blueprint for a transformational initiative. The CV-1 may be primarily textual descriptions of the global objectives of the transformation or change program that the Enterprise is engaged in. Of key importance is the identification of Goals, together with the desired outcomes and measurable benefits associated with these.

☛ *CV-2 provides metrics against each capability which may be used to successfully measure fielded capabilities. For more information, see "CV-2 Description", page 62.*

The main items dealt with in this model are goals/objectives and the enterprise vision.

CV-1 HOPEX Implementation

Goals can be described through the **HOPEX** objectives. The purpose of the CV-1 in **HOPEX** is to create links between goals and capabilities.

A Goal tends to be longer term, and defined qualitatively rather than quantitatively. It should be sufficiently narrow-focused that Objectives can be defined for it.

A Business Capability is a set of features that can be made available by an enterprise.

Enterprise Vision

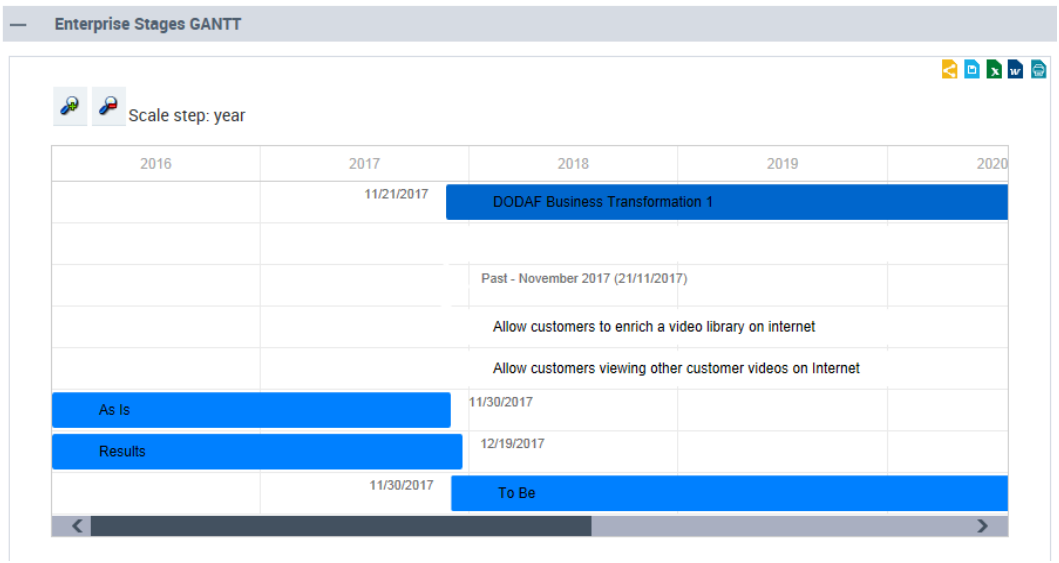
From an enterprise or an enterprise stage, you can define enterprise sub-stages. Each enterprise sub-stage is positioned in the main enterprise according to the main enterprise events, in order to define the transformation roadmap for the enterprise underway.

Viewing the enterprise through a Gantt chart

To have a global view of your enterprise:

- In the navigation menu, click **Capability Viewpoint > CV-1 Vision**.
  The transformation schedule is presented in the form of a Gantt chart.

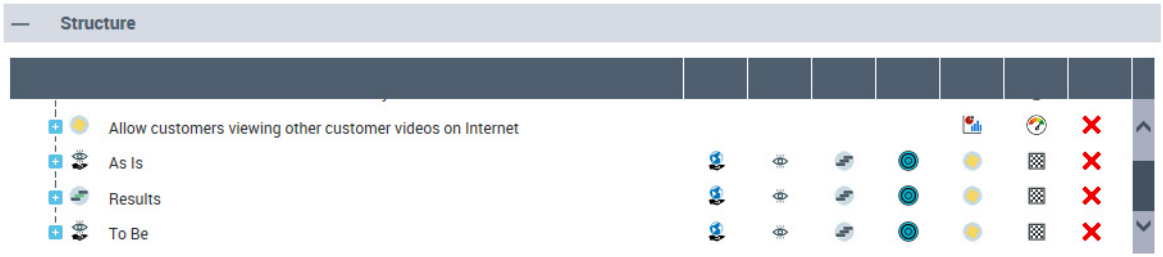
It enables strategists to plan business and IT capabilities in regards to strategic objectives.



Completing information on enterprise stages

To complete information on stages:

1. Expand the **Structure** section.
   The enterprise, the enterprise stages and enterprise sub-stages appear in the form of a tree. Buttons are available in a column to manage the strategic elements consistently.



You can add or assign:

- missions

  A Mission indicates the ongoing operational activity of the enterprise. The Mission describes what the business is or will be doing on a day-to-day basis.

  A Mission makes a Vision operative; that is, it indicates the ongoing activity that makes the Vision a reality. A Mission is planned by means of Strategies.

- transformation stages, whether IT or business

  An IT Transformation Stage is a type of Enterprise Transformation Stage aiming at the alignment of its IT System to expected functionalities required for the business to operate effectively at the right cost.

  A business transformation stage is a type of enterprise transformation stage aiming at the alignment of the enterprise operating model to its strategy and corresponding exhibited business capabilities.

- enterprise goals (which are transformation objectives)

  A Goal tends to be longer term, and defined qualitatively rather than quantitatively. It should be sufficiently narrow-focused that Objectives can be defined for it.

- exhibited capabilities

  An exhibited business capability is a business Capability that is exhibited by an Enterprise Stage with quantified measure (KPI) and potential geopolitical scope (Site) for a defined market segment (Business Partner).

- strategies

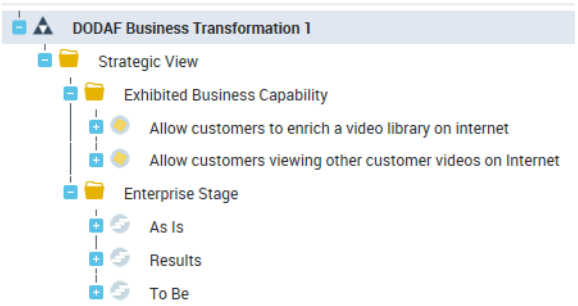
  A Strategy is one component of the plan for the Mission. A Strategy represents the essential Course of Action to achieve Ends (Goals in particular). A Strategy usually channels efforts towards those Goals.

  A Strategy is accepted by the enterprise as the right approach to achieve its Goals, given the environmental constraints and risks.

Viewing the enterprise through a hierarchy

To view the enterprise through a hierarchy and or/complete it:

1. In the navigation menu, click **Capability Viewpoint > CV-1 Vision > Enterprise Vision Hierarchy**.
2. Expand the Strategic View folder of your enterprise.
   You can view / create:
   - desired capabilities
   - enterprise stage components



Enterprise Stage Strategy Diagram

Accessing the diagram

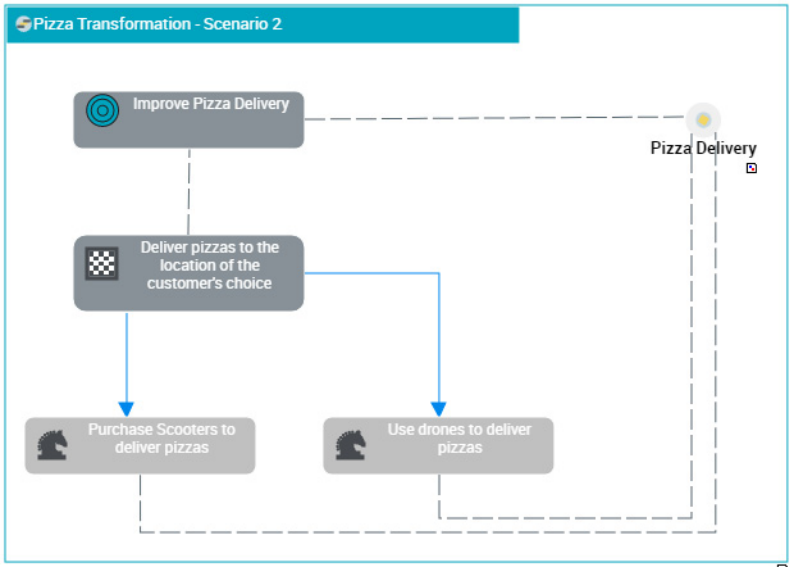
To access the enterprise stage strategy diagram:

- In the navigation menu, click **Capability Viewpoint > CV-1 Vision > Enterprise Stage Strategy Diagram**.
  - ☛ *A diagram is created if it does not already exist.*

About the diagram

This diagram is the diagram of the current architecture stage strategy.

Use the enterprise stage strategy diagram to describe the links between missions, goals, strategies, tactics and exhibited business capabilities.



The components represented in an enterprise stage strategy diagram are strategic elements.

The strategic elements presented are ranked by category.

- The ends

  A vision is the ultimate, possibly unattainable, state the enterprise would like to achieve. A vision is often compound, rather than focused toward one particular aspect of the business problem. A vision is supported or made operative by missions. It is amplified by goals.

  A goal tends to be longer term, and defined qualitatively rather than quantitatively. It should be narrow-focused enough that goals can be defined for it.

- The means of the enterprise, which are divided into *strategies*, which themselves are broken down into *tactics* to be implemented.

  A strategy is a component of a mission. It represents a means of action essential to achievement of ends of the enterprise, and more practically its goals. A strategy channels enterprise efforts towards these goals. A strategy is the approach considered by the enterprise as being the best suited to achieving its goals, taking account of constraints imposed by the environment and by risks.

  A tactic is a course of action that implements part of the detailing of strategy. A tactic contributes to a strategy implementation.

- The exhibited capabilities.

  An exhibited business capability is measurable objectively within the framework of an enterprise stage, on a defined geopolitical scope (site), and focused on a given market segment (business partner).

To add a strategic element in the enterprise stage strategy diagram:

1. In the diagram object toolbar, click **Strategy**, for example.

2. Click the enterprise stage frame.
   A strategy creation window opens.
3. Click on the arrow associated with the **Name** field and select the strategy that interests you.
4. Click **OK**.
   The strategy component appears in the diagram.

Defining the dependencies between the diagram strategies

A dependency link between one capability composition and another is used to specify the elements on which this dependency is based.

```
For example, for "Delivery of pizzas" use "Prepare the
pizzas". Note that the expected result (business effect) of
"Delivery of pizzas" is a "Pizza delivered" and the expected
result (business effect) of "Preparation of pizzas" is a
"Cooked pizza"
```

Dependent Business Effect and **Desired Business Effect** are the business capability results.

To create dependency links between two strategic elements:

1. In the insert toolbar, click **Business Capability Dependency**.
2. Click the user component, and keeping the left mouse button pressed, move the cursor to the assembly used.
3. Release the mouse button.
   The capability composition appears in the diagram.

To enter the results concerned by a dependency between two business capability components:

1. Open the **Characteristics** properties dialog box.
2. Enter the user component result in the **Dependent Business Effect** field.

   ```
   For example, "Pizza delivered".
   ```
3. Enter the user assembly result in the **Desired Business Effect** field.

   ```
   For example, "Pizza cooked".
   ```

   ☛ *A single capability composition can have more than one dependency within a single diagram.*

CV-2 CAPABILITY TAXONOMY

CV-2 Description

Model	Description
CV-2 - Capability Taxonomy	Captures capability taxonomies. The model presents a hierarchy of capabilities. These capabilities may be presented in context of a timeline - i.e., it can show the required capabilities for current and future capabilities.

The CV-2 model provides a structured list of the capabilities and sub-capabilities required for the vision established in the CV-1 model. This list of capabilities is to be delivered for a particular timeframe. It has a hierarchical structure where capabilities are sometimes subdivided into sub capabilities and/or functions in order to provide clarity and the appropriate level of granularity required by subsequent processes in the capability management process.

For a detailed description, see the DoDAF web site: CV-2: Capability Taxonomy.

CV-2 HOPEX Implementation

The enterprise is connected to a business capability map.

HOPEX DoDAF provides:

- Business Capabilities Maps to capture and organize capabilities
- Diagram descriptions, and hierarchy navigation.
- A tree to display the hierarchy of capabilities.

Business Capabilities

A Business Capability is a set of features that can be made available by an enterprise.

For example, to respond to a customer satisfaction objective, the organization must be able to provide services conforming to contractual commitments.

All capabilities are displayed with their capability map. You may group capabilities by capability map.

From business capabilities, you can create the following diagrams:

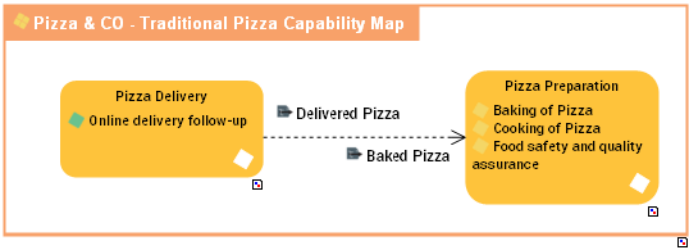
- capability structure diagram
- business capability decomposition tree

Business Capability Taxonomy Model

A capability map describes what the enterprise is capable of producing for its internal needs or for meeting the needs of its clients. It is thus based on the main business capabilities of its activity at a given moment.

> *A Business Capability Map is an assembly of Business Capabilities and their Dependencies that, together, provide a capability scope for an Enterprise Stage.*

For example, the standard capability to provide pizzas is based on the "Preparation of pizzas" and "Delivery of pizzas" business capabilities.



Capability Hierarchy

This tree contains various folders and enables you to:

- create your own ***business capability*** hierarchy
- navigate from a ***business capability map*** and view its business capabilities.

> *The tree does not show the capability components.*

Capability Taxonomy Report

This report displays the description of capabilities owned and used by the enterprise.

Business Capability Maps

Accessing business capability maps

To access business capability maps:

1. In the navigation menu, click **Capability Viewpoint > CV-2 Capability Taxonomy > Business Capability Taxonomy Models**.

Business capability map properties

The **Characteristics** properties page of the business capability map provides access to:

- its **Owner**, by default on creation of the business capability map, the current enterprise.
- its **Name**,
- the text of its **Description**.

You can describe a business capability map as follows:

- the **Structure** page is used to specify
  - the list of business capability components (compositions) that constitute the business capability map described.

    ☛ *You can only create capability components. You cannot reuse them.*
  - the dependencies between these components,

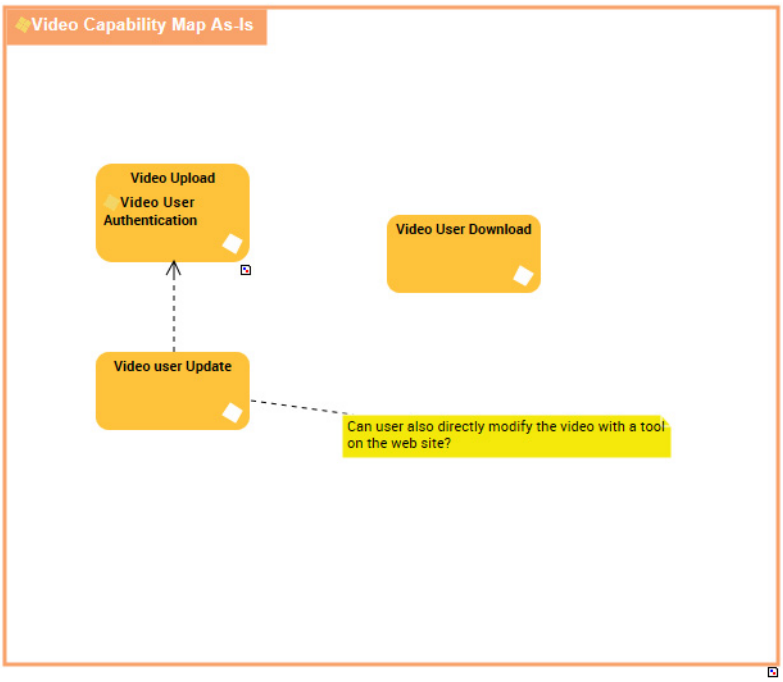
    ☛ *For more details on business capacity structure, see "Using capability compositions", page 65 and "Defining business capability dependencies", page 66.*
- The **Usage** page provides access to the enterprise stages that use the capability map.

Business capability map diagram

To create a business capability map diagram:

1. Access a business capability map as indicated in "Accessing business capability maps", page 63.

2. Right-click the business capability map that interests you and select **New > Business Capability Map Diagram**.
   The diagram opens in the edit area. The frame of the business capability map described appears in the diagram.
   You can construct this diagram in tabular input mode.



Example of Business Capability Map (CV-2)

☛ *For more details on the use of tabular input, see "Constructing a diagram in easy diagramming mode".*

Using capability compositions

The components represented in a business capability map diagram are **Capability Compositions**. Each capability composition is associated with a business capability.

📖 *A Business Capability Composition is the involvement of a business capability in the context of a business capability map (one and only one) linked to an enterprise.*

To add a capability composition to a business capability map diagram:

1. In the diagram insert toolbar, click **Capability Composition**.
2. Click in the frame of the business capability map.
   The creation window for a capability composition opens.
3. Click on the arrow associated with the **Name** field and select the business capability that interests you.

4. Click **OK**.
   The capability composition appears in the diagram.

> ☛ *If the business capability is associated with functionalities, they also appear. For more details on the capabilities and functionalities associated with business capabilities, see "Defining business skills and functionalities associated with business capabilities", page 69.*

Defining business capability dependencies

A dependency link between one capability composition and another is used to specify the elements on which this dependency is based.

```
For example, for "Delivery of pizzas" use "Prepare the
pizzas". Note that the expected result (business effect) of
"Delivery of pizzas" is a "Pizza delivered" and the expected
result (business effect) of "Preparation of pizzas" is a
"Cooked pizza"
```

Dependent Business Effect and **Desired Business Effect** are the business capability results.

> ☛ *A capability composition can have more than one dependency within a diagram.*

To create dependency links between two capability compositions:

1. In the Insert toolbar, click **Business Capability Dependency**.
2. Click a composition, and keeping the left mouse button pressed, move the cursor to the other composition.
3. Release the mouse button.
   The capability composition dependency appears in the diagram.

To enter the results concerned by a dependency between two business capability compositions:

1. Open the **Characteristics** properties dialog box of the dependency.
2. Enter the composition result in the **Dependent Business Effect** field.

   ```
   For example, "Pizza delivered".
   ```

3. Enter the composition result in the **Desired Business Effect** field.

   ```
   For example, "Pizza cooked".
   ```

> ☛ *See also "CV-4 Capability Dependencies", page 73.*

Business Capability Decomposition Tree

You may need to create a diagram to illustrate the decomposition of business capabilities from a business capability map.

To do so:

1. Access a business capability map as indicated in "Accessing business capability maps", page 63.
2. Righ-click the business capability map and select **New > Business Capability Decomposition Tree**.

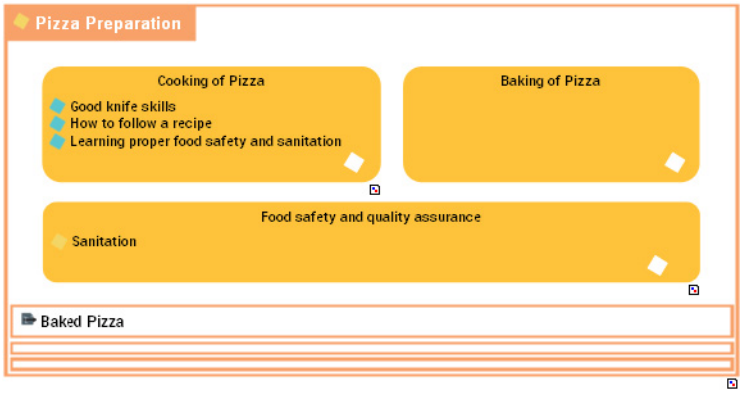
Business Capabilities

Describing a business capability

A business capability can be based on business sub-capabilities. The capabilities expected by the business capabilities described are the capabilities associated with each business sub-capability.

```
The business capability that consists of preparing pizzas
is broken down into a number of business capabilities: "Cook
pizzas", for example.
```

With **HOPEX DoDAF,** the capability structure diagram describes the composition of a business capability.



Business capability properties

With **HOPEX DoDAF** you can describe a business capability through the following property pages:

Characteristics page

The **Identification** section of the **Characteristics** properties page of the business capability provides access to the following:

- its **Owner**, by default on creation of the business capability, the current enterprise.
- its **Name**,
- the text of its description.

You can use the following sections of the **Characteristics** page to connect the business capability to:

- **Sub-capabilities**
- **Capability dependencies**
- **Organizations**
- **Operational activities**
- **Systems**

Structure page

The **Structure** page specifies a part of the list of components (compositions) that constitute the business capability described, as well as the dependencies between these components,

☛ *For more details on the structures of a business capability, see "Defining the structure of a business capability", page 68.*

Usage page

The **Capability Component** section provides access to the capacity maps that use the described capability.

☛ *For more details on the components of a business capability, see "Using capability compositions", page 65.*

The **Capability Exhibition** section provides access to the enterprise stages for which the capability described becomes an exhibited capability.

🕮 *An exhibited business capability is measurable objectively within the framework of an enterprise stage, on a defined geopolitical scope (site), and focused on a given market segment (business partner).*

Expected Capabilities page

This property page is used to specify a list of business skills and functionalities that are expected from the business capability.

☛ *For more details on the skills and functionalities associated with a business capability, see "Defining business skills and functionalities associated with business capabilities", page 69.*

Creating a business capability structure diagram

To create a business capability structure diagram:

1. Right-click the business capability that interests you and click **New > Capability Structure Diagram**.
   The diagram opens in the edit area. The frame of the business capability described appears in the diagram.

Defining the structure of a business capability

The components represented in a business capability structure diagram are **Capability Compositions**. Each capability composition is associated with a business capability.

☛ *For more details on how to use business components in a diagram, see "Using capability compositions", page 65.*

A dependency link between one capability composition and another is used to specify the elements on which this dependency is based, that is, the effect of one required by the effect of the other.

☛ *For more details on creating dependency links between two capability compositions, see "Using capability compositions", page 65:*

The capability compositions and their dependencies appear in the **Structure** property page of the business capability described.

Defining business skills and functionalities associated with business capabilities

> 🕮 *A functionality is a capability expected from an equipment item (hardware or software) to ensure the operation of a business function or an organization.*
>
> 🕮 *A business skill is a capability acquired by a person or an organization through a specific training.*

Each business capability is associated with functionalities that it is able to provide and that it needs to ensure its functionalities.

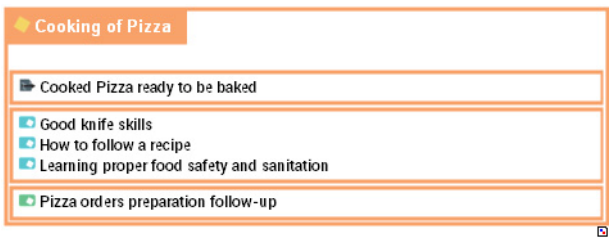
To associate a *skill* with a business capability:

1. Open the **Expected Capabilities** properties window of the business capability.
2. In the **Expected Business Skill** section, click **New**.
3. Specify the name of the skill and click **OK**.
   The expected business skill appears in the list of skills associated with the business capability.

To associate a *functionality* with a business capability:

1. Open the property pages of the business capability concerned and select the **Expected Capabilities** page.
2. In the **Expected Functionality** section, click **New**.
3. Specify the name of the functionality and click **OK**.
   The expected functionality appears in the list of functionalities associated with the business capability.

The use of skills, functionalities and the expected effects appear in the diagrams, at the bottom of the frame of the capability described.



Capability Taxonomy Report

CV-2 offers you the possibility to view a component report detailing business capability maps and capabilities.

1. Component Report

Name	Comment
Video Capability Map As-Is	
Allow customers viewing other customer videos on Internet	
Video User Authentication	
Video Search	
Video test	
toto	
tata	
Video Upload	
Video User Download	
Video User Update	

1. Video Capability Map As-Is

Video Capability Map As-Is (Business Transformation::Video Business Transformation) - Business Capability Decomposition Tree

Video Capability Map As-Is (Business Transformation::Video Business Transformation) - Business Capability Map Diagram

Name	Comment
Basic Maritime Search and Rescue	
Video Upload	
Video User Download	
Video User Update	

1.2. Video Upload

Video Upload (Business Transformation::Video Business Transformation) - Capability Structure Diagram

Name	Comment
Video User Authentication	

Name	Comment
Promote our brandmark through happy customer videos	

CV-3 CAPABILITY PHASING

CV-3 Description

Model	Description
CV-3 - Capability Phasing	The planned achievement of capability at different points in time or during specific periods of time. The CV-3 shows the capability phasing in terms of the activities, conditions, desired effects, rules complied with, resource consumption and production, and measures, without regard to the performer and location solutions

For a detailed description, see the DoDAF web site: CV-3: Capability Phasing.

CV-3 HOPEX Implementation

The CV-3 is used to define transformation stages.

Enterprise stages

En enterprise stage is a past, current or future stage of an enterprise.

Enterprise stages can also be specified in the enterprise / environment. For more information, see "Defining Enterprise Stages".

To define enterprise stages:

1. In the navigation menu, click **Capability Viewpoint > CV-3 Capability Phasing > Enterprise Stages**.
2. Select an enterprise stage and click **Properties** to specify it more precisely.

For more information, you can also search the following section in the **HOPEX Business Architecture** documentation: "Enterprise stage properties".

Capability planning

This tile is equivalent to what is found in CV-1 regarding stages. For more information, see "Viewing the enterprise through a Gantt chart".

It shows the planned achievement of enterprise Objectives at different points in time or during specific periods of time and by Enterprise Stages.

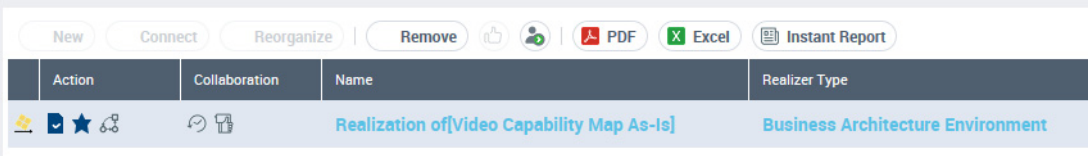
You need to enter dates on the events for the report to work.

Capability realizations

This list displays the realizations of business capabilities by an agent type environment (e.g. Business Architecture Environment or Application Environment).

For each object which fulfills a business capability, the list of its owned realizations is displayed. A column displays the type of object which performs the realization.

☛ *To create a realization and associate its realizer, select the **Implementation** page of a business capability. Also, you can use the realization matrix from a capability map if you have many business capability realizations to specify.*



CV-4 Capability Dependencies

Dependencies between planned capabilities and the definition of logical groupings of capabilities. Independent of diagrams.

The CV-4 model shows the dependencies between capabilities (or capability functions) which are of interest to the architecture and groups these capabilities into logical groupings based on the need for these elements to be integrated. These groupings are used to inform the acquisition process and the Capability Phasing (CV-3) model.

CV-4 Description

Model	Description
CV-2 - Capability Dependencies	The dependencies between planned capabilities and the definition of logical groupings of capabilities.

For a detailed description, see the DoDAF web site: CV-4: Capability Dependencies.

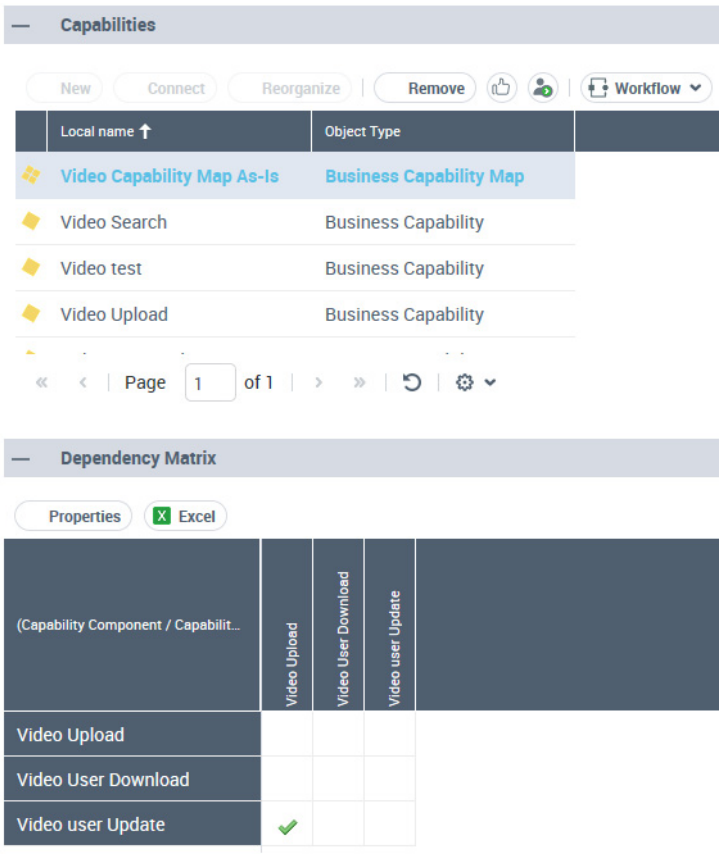
CV-4 HOPEX Implementation

CV-4 uses capability dependencies. For more information, see "Defining business capability dependencies", page 66.

Dependencies matrix

This matrix shows dependencies between planned capabilities and the definition of logical groupings of capabilities withing the context of an enterprise stage.

Dependencies between capability components are represented by checkmarks in the lower part of the matrix.



Capability dependencies

A Business Capability Dependency is a relationship which asserts that a dependent Capability depends upon a needed capability in the context of a capability dependency owner, with respect to its needed effect (business outcome).

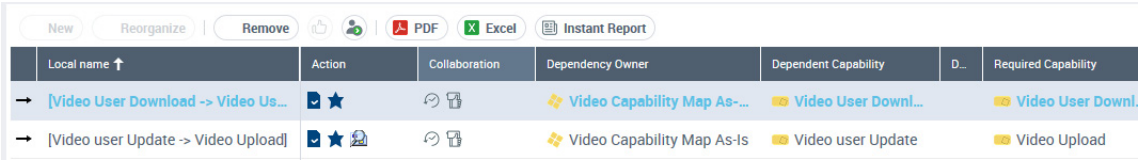
This page lists capability dependencies together with the following information:

- dependency owner

  ☛ *The dependency owner corresponds to the parent capability (as opposed to the capability components of this capability). It can be a business capability map.*

- capabilities
  - dependent capability
  - required capability
- effects
  - dependent effect
  - required effect

    📖 *The effect is the business outcome required or desired by a capability.*



The name of the dependency is a combination of the name of the dependent capability and of the required capability. For example, [Detection -> Observation]. You cannot change it.

CV-5 Capability to Organizational Deployment Mapping

CV-5 Description

Model	Description
CV-5 - Capability to Organizational Deployment Mapping	The fulfillment of capability requirements shows the planned capability deployment and interconnection for a particular Capability Phase. The CV-5 shows the planned solution for the phase in terms of performers and locations and their associated concepts.

For a detailed description, see the DoDAF web site: CV-5: Capability to organizational deployment mapping.

CV-5 HOPEX Implementation

The CV-5 capability to organizational deployment mapping model describes the mapping between capabilities and organizational resources that enable these capabilities.

This viewpoint provides a matrix tool to create realizations between organizations and capabilities.

The information used to create the CV-5 model is drawn from other models (CV-2 for example) and includes capabilities, organizational structures.

Capability to Organizational Matrix

To create a Capability/Organizational matrix:

- In the navigation menu, click **Capability Viewpoint / CV-5 Capability to Organizational Development Mapping**.

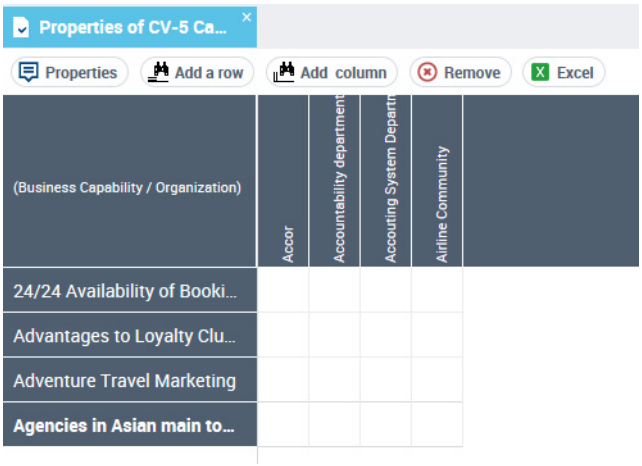
Matrix enabling creation of realization between organizations and capabilities.

- capabilities in rows

  A Business Capability is a set of features that can be made available by an enterprise.

- organizations in columns

  An organization represents a person or a group of persons that intervenes in the enterprise business processes or information system. An organization can be internal or external to the enterprise.



CV-6 Capability to Operational Activities Mapping

The CV-6 Capability to Operational Activities Mapping model describes the mappings that exist between capabilities and the operational activities that they support.

This model is used to show which capabilities support which operational activities. It can also be used to show which capabilities are supported (or not), to reveal gaps in service provisions as well as to see if there are any redundancies, where a capability is supported by more than one operational activity.

CV-6 Description

Model	Description
Capability to Operational Activities Mapping	A mapping between the capabilities required and the operational activities that those capabilities support.

CV-6 HOPEX Implementation

The CV-6 enables to create a matrix involving business capabilities.

To access this matrix:

1. From the navigation menu click **Capability Viewpoint > CV-6 Capability to Operational Activities Mapping**.
2. Create **New** to create a matrix.
3. Add business capabilities in rows.

   A Business Capability is a set of features that can be made available by an enterprise.
4. Add operational activities in columns.

   An operational activity is a set of operations performed by organizations within a company or organization, to produce a result. It is depicted as a sequence of operations, controlled by events and conditions.

CV-7: Capability to Services Mapping

CV-7 Description

Model	Description
Capability to Services Mapping	A mapping between the capabilities and the services that these capabilities enable.

CV-7 HOPEX Implementation

HOPEX DoDAF enables to map capabilities and services that these capabilities enable through service catalogs.

Creating business service catalogs

A business service catalog is a set of functionalities. The functionalities of the catalog can be fulfilled by systems, application systems, etc. They can also be realized by operational activities.

> 🕮 *A business service catalog provides a centralized information source for the business services offered by the service provider organization. It contains a customer-oriented view of the business services used, how they are supposed to be used, the processes that they support as well as the expected service quality level. The business service catalog presents a list of functionalities mentioned as well as implementation recommendations.*

To access business service catalogs:

- In the navigation menu, click **Capability Viewpoint > CV-7 Capability to Services Mapping > Business Service Catalogs**.

Defining business service catalog contents

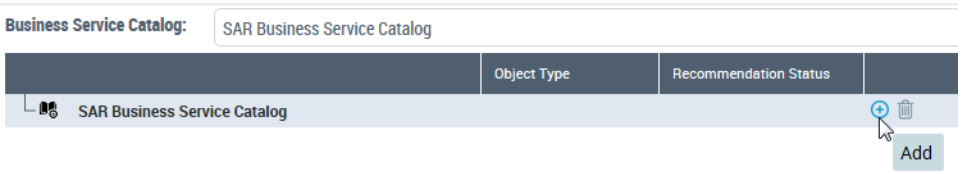
The **Business service catalog item** tile in CV-7 helps define the catalog contents.

> 🕮 *A business service catalog item defines which business functionality is part of the catalog and which agents are fulfilling the business functionality.*

To populate your business service catalog:

1. In the navigation menu, click **Capability Viewpoint > CV-7 Capability to Services Mapping > Business Service Catalog Items**.
2. Select a business catalog from the drop-down list.

3. From the right end of the interface, click **Add** to add a capability.



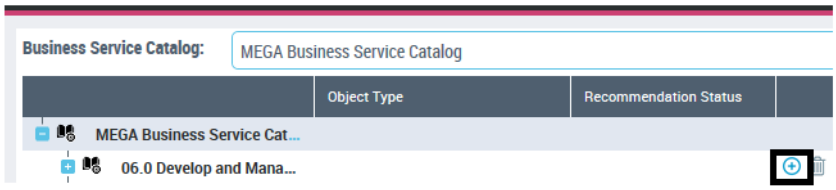
The capability you selected gave birth to a business catalog item which has the same name as the capability.

Defining how capabilities are fulfilled

Once you have created a capability/functionality, you need to specify how it is fulfilled. Note that several agents can fulfill the same business capability.

In the business service catalog editor:

1. Next to the catalog item click the **Add** button.



2. In the **Add Capability Fulfillment** dialog box, select:
   - "Business Capability Process Realization" if you want your capability to be fulfilled by an operational activity.
   - "Business Capability Fulfillment" for other types of agents.

To indicate which agent it is best to use whithin the framework of a specific business service catalog:

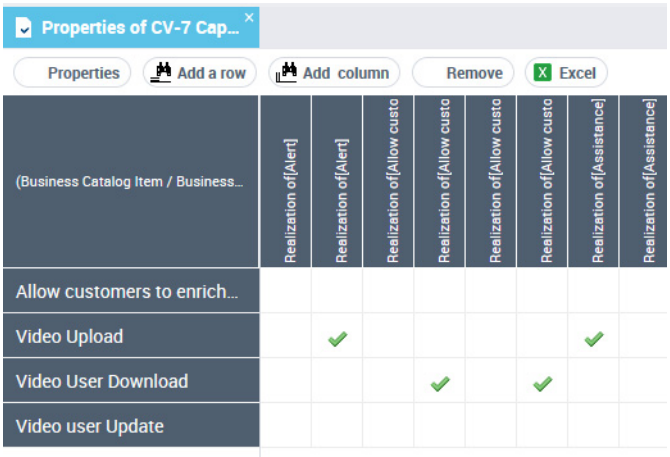
- In the row corresponding to the desired agent, select the **Recommendation status** check box.

Capability to service mapping

The Capability to service mapping matrix describes the mapping between the capabilities required and the services which fulfill those capabilities.

To view how business capabilities are fulfilled (with which objects they are mapped):

- In the navigation menu, click **Capability Viewpoint > CV-7 Capability to Services Mapping > CV-7 Capability to Services Mapping**.



7

DATA AND INFORMATION VIEWPOINT MODELS

INTRODUCTION TO THE DATA AND INFORMATION VIEWPOINT

Data and Information Layers of Abstraction

There are three levels of abstraction that correlate to the different levels associated with most data developed in support of the operations or business:

- conceptual: see "DIV-1 Conceptual Data Model", page 86
- logical: see "DIV-2 Logical data Model", page 90
- physical: see "DIV-3 Physical Data Model", page 96

When building an architecture using a structured analysis approach, the items captured as part of the data model can be derived from the inputs and outputs associated to the organizations activities.

Building the data model in this manner ties the data being managed within the architecture to the activities that necessitate that data. This provides a valuable construct enabling the information to be traceable to the strategic drivers of the architecture. This also enables the data to be used to map services and systems to the business operations.

Conceptual Data Model

The conceptual data model would be a good tool to use when discussing this traceability with executive decision-makers and persons at that level.

Logical Data Model

The logical data model bridges the gap between the conceptual and physical-levels. The logical data model introduces attributes and structural rules that form the data structure. As evidenced by the content, this model provides more detail than the conceptual model and communicates more to the architects and systems analysts types of stakeholders. This is one model that helps bridge the gap between architecture and system development. It provides a valuable tool for generating requirements and test scripts against which services and systems can be tested.

Physical Data Model

The physical data model is the actual data schema representative of the database that provides data to the services and applications using the data. This schema is usually a de-normalized data structure optimized to meet performance parameters. The physical data model usually can be generated from a well-defined logical data model then used by database developers and system developers or it can be developed separately from the logical data model (not the optimum method of development) and optimized by the database and system developers. This model can be used to develop XML message sets and other physical exchange specifications enabling the exchange of architecture information.

DIV Implementation

Data maps

 *A data map enables to define the scope of the data areas to be used in a project or enterprise.*

Data maps exist at the business, logical and physical (relational) layers.

Layer	View	Type of data map
Business	DIV-1	"Business Information Maps", page 87
Logical	DIV-2	"Logical Data Maps", page 91
Relational	DIV-3	"Physical Data Maps", page 97

Diagrams are available for the different layers:

- business map diagram
- logical data map diagram
- relational data map diagram

In all these diagrams you can specify the internal and external data areas within the scope of the data map.

A derived link is automatically displayed between components if there is a relationship between the components of the data area.

Data area structure diagrams

Data area structure diagrams enable you to describe the internal structure of a data area. They focus mainly on data area components and their dependencies.

They can be created in DIV-1 and DIV-2 from a data area.

DIV-1 Conceptual Data Model

DIV-1 Description

Purpose of DIV-1

Model	Description
DIV-1 Conceptual Data Model	The required high-level data concepts and their relationships.

Detailed Description of DIV-1

DIV-1 describes the structure of an architecture domain's system data types and the structural business process rules (defined in the architecture's OV models) that govern the system data. It provides a definition of architecture domain data types, their attributes or characteristics, and their interrelationships.

See the DoDAF web site: DIV-1: Conceptual Data Model

Links with Other Viewpoints

DIV-1 should be used as an input to DIV-2 and DIV-3, which capture logical and physical data models.

See "DIV-2 Logical data Model" and "DIV-3 Physical Data Model".

DIV-1 HOPEX Implementation

HOPEX DoDAF offers the possibility to model your data through packages and classes.

Subject area hierarchy

This hierarchy view displays the required high-level data concepts and their relationships. The tree contains a sub-folder with the subject area created when initializing the enterprise.

A subject area is a branch of knowledge, a discipline or a field of study. It is used to describe all the elements defining your information architecture.

Subject areas

A subject area is a branch of knowledge, a discipline or a field of study. It is used to describe all the elements defining your information architecture.

This tile displays two lists:

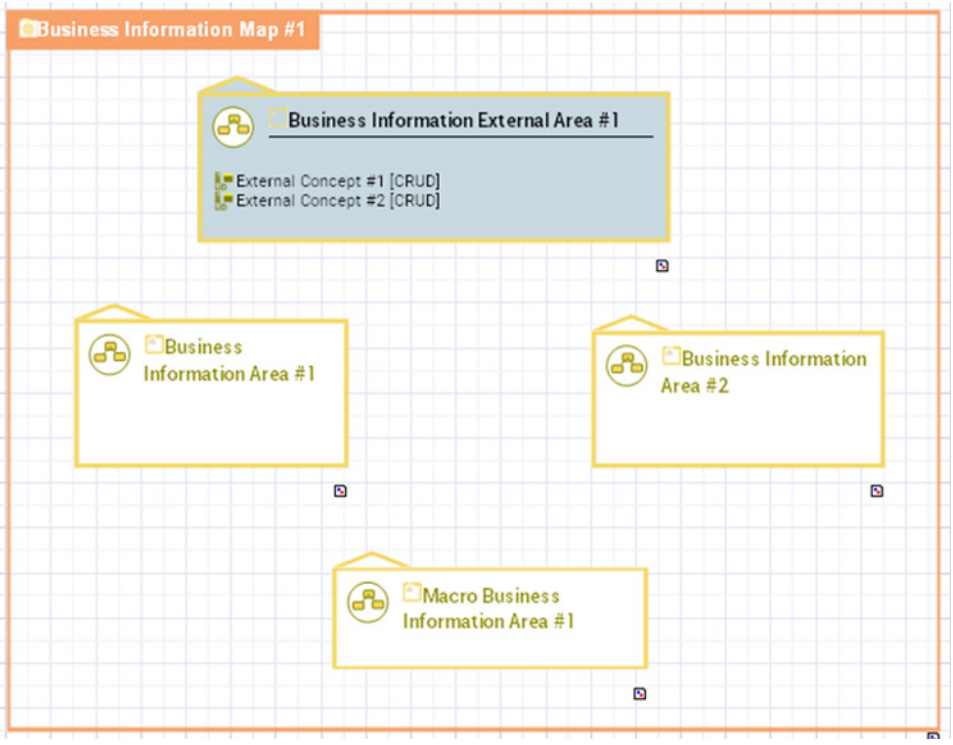
- **Owned Subject Areas**
  This list displays the subject areas of the enterprise as well as those which do not have any owner.
- **Imported Subject Areas**
  This list enables to connect subject areas from other enterprises.

Business Information Maps

A business information map enables to define the scope of Business Information Areas for a studied concern.

The business information map diagram enables to display business information map components and their dependencies.

When creating the corresponding diagram, you can specify the default subject area or select another one.



Example of business information map with internal and external business areas

Business Information Areas

A business information area is a sub-set of elements of a subject area that reduces the scope of a field.

Concepts

A concept is a statement expressing the essential nature of a being, an object, a word through its essential properties and characteristics or its specific qualities.

Concept Types

A concept type enables classification of concepts. Relationships between concept types are represented by concept type components.

Concept Views

A concept view enables representation of the semantic scope covered by a business object. A concept view is based on the selection of several concepts specific to the view.

HOPEX DoDAF provides a tool enabling creation and simple display of concept views and their components.

See "Describing Concept Views in DIV-1", page 88.

Describing Concept Views in DIV-1

Creating a concept view

To create a concept view:

1. In the navigation menu click **DIV-1 Conceptual Data Model > Concept Views**.
   The list of concept views appears.
2. Click **New**.
   The concept view creation wizard appears.
3. Specify the Local Name.
   In the **Term** section, the Existing Terms table lists terms with the same name as the view.

   📖 *A term is a word or group of words that is used for a specific meaning in a specific context.*
4. Under **Definition Text** space, enter the text of the definition of the view and click **Next**.
5. In the **Owned View Specification** section, click **New**.
   The concept view specification creation wizard opens.
6. Select the MetaClass among "Concept", Event Concept" and "State concept".

   ☛ *A business object can have a life cycle during which it takes different states according to events. If a concept is connected to a business object, other concepts can be connected to different states of*

*the business object and to events at the causing changes of state. In **HOPEX** it is possible to associate a life cycle with a concept, as well as state concepts and event concepts.*

For example, the same subscription holder can pass from "Child" state to "Adolescent" state, then to "Adult" state and finally "Senior". Passage from one state to another can be connected to an event, a "Birthday".

7. Select the **Mapped business concept** concerned by the view, then click **Add** and **OK**.
The new concept view appears in the list.

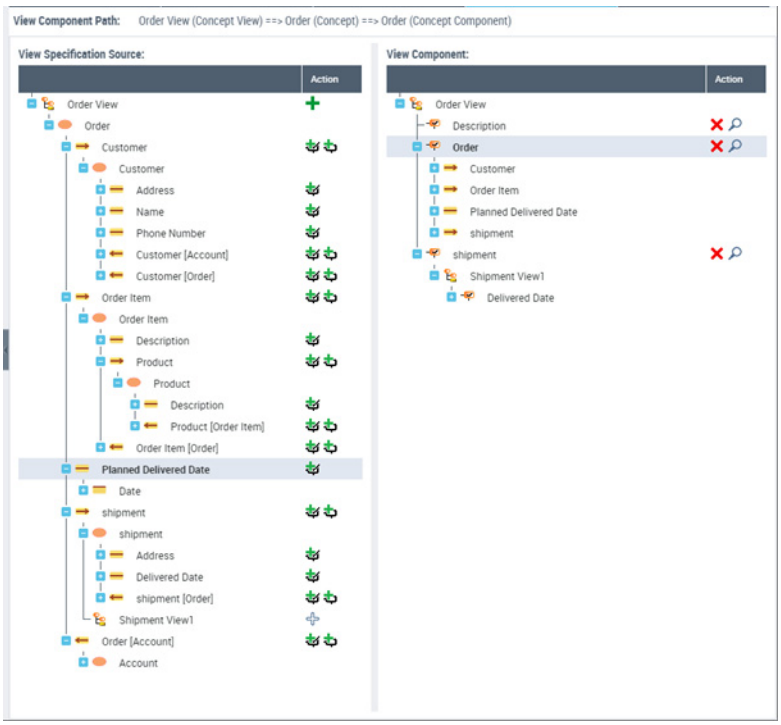
Editing a concept view

To edit concept views:

- Right-click a concept view and select **New > Open**.
An editor opens on the right. It enables to describe the view in detail.

The view editor is made up of a number of parts:

- the left part that presents all the concept components held by the view, as defined in the subject area.
- the right part that presents the concept components that will be kept for the view created,
- the buttons in the **Action** toolbar that is used to define the components of the view created



DIV-2 Logical data Model

DIV-2 Description

Purpose of DIV-2

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

Detailed Description of DIV-2

See the DoDAF web site: DIV-2: Logical Data Model

DIV-2 consists of the documentation of data requirements and structural business process (activity) rules.

Links with Other Viewpoints

DIV-1 is used as an input to DIV-2. For more information, see "DIV-1 Conceptual Data Model", page 86

DIV-2 HOPEX Implementation

Packages Hierarchy View

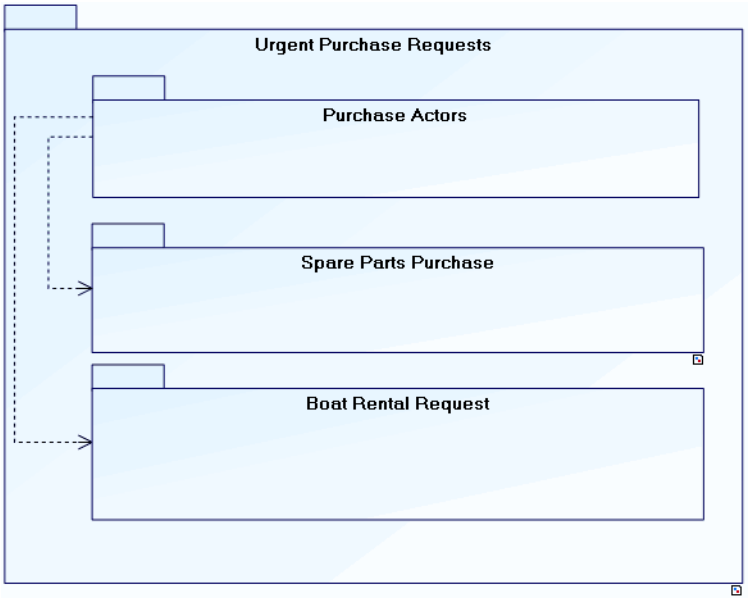
This tree view displays subject areas owned and imported by the current enterprise.

Packages

To clearly organize information relating to logical data, **HOPEX** uses *package* mechanisms.

> 🕮 *A package partitions the domain studied and the associated work. It enables grouping of various elements, in particular use cases and classes. A package can also contain other packages. Packages are interconnected through contractual reports defining their interface.*

The package allows you to classify elements referenced in a project. You can create sub-packages in a package to classify objects in finer detail, for example actors of a project.

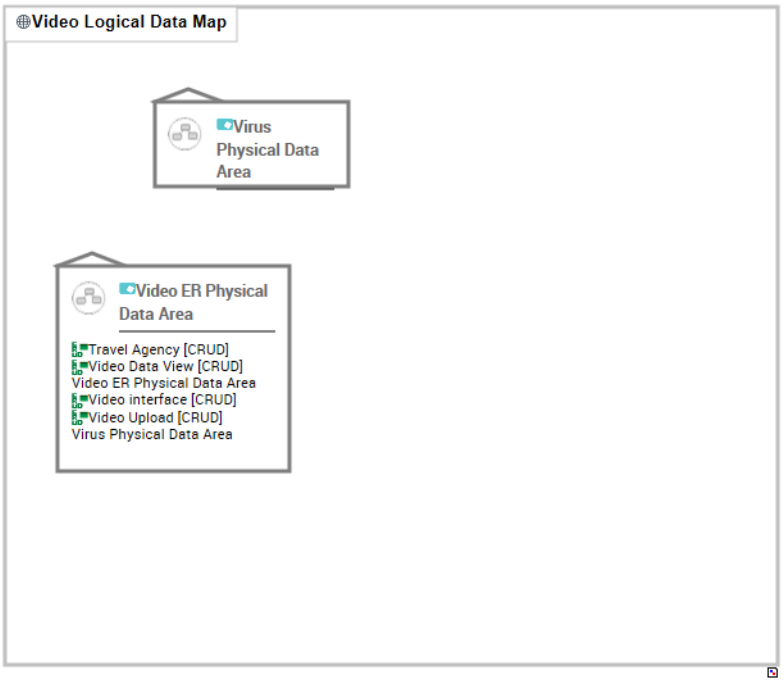



```
Urgent purchase requests are provided to process purchase
of spare parts and boat rental requests. In both of these
cases, users are actors of the purchasing domain.
```

Logical Data Maps

This tile displays logical data maps which contain logical data map components.

When creating the (logical) data map diagram, you can specify the default package or select another one. In the diagram you can specify the internal and external data areas included in the scope of the data map.



Example of a Data Map Diagram

Logical Data Areas

You can create two types of diagrams from logical data areas:

- Logical Data Area Entity Diagram: see "DIV-2 Logical Data Area Entity Diagram", page 94
- IDEF1X diagram: see "IDEF1X Data Area Diagram", page 93

Data Views

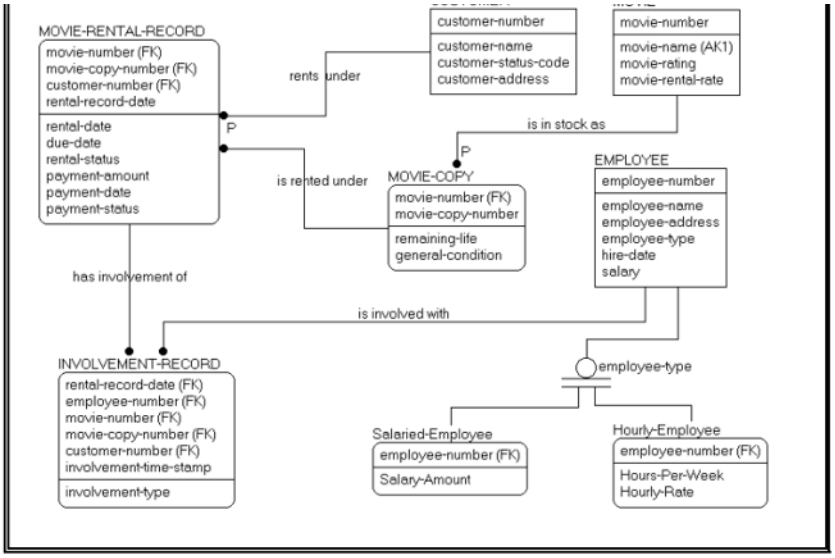
A data view enables representation of the scope covered by a package element. A data view is based on the selection of several classes connected in the specific context of the view.

```
For Order management, you must retrieve the delivery
address available for each Client. To take into account only
this information, you will create a view of the Client class
that uses only the delivery address.
```

☛ *For more information, see "Data views" in the following section: "HOPEX Information Architecture : IA Logical Layer : Logical Data Architecture : Data views".*

IDEF1X Data Area Diagram

HOPEX DoDAF enables you to create a diagram supporting the same modeling as in the Logical Data Area Entity diagram but with the IDEF1X notation.



Creating an IDEF1X data area diagram

To create this type of diagram:

1. In the navigation menu, click **Data and Information Viewpoint > DIV-2 Logical Data Model > Data Areas**.
2. Right-click a data area and select **IDEF Data Area Diagram**.

The diagram can be described with the following object types:

Entity

📖 *An entity represents any person, place, thing, event or concept about which information is kept.*

The IDEF1X notation displays entities as rectangles with squared or rounded corners:

- square corners by default for independent identities

  📖 *An independent entity does not depend upon any other entity in a model for its identification.*

- rounded corners for dependent entities

  📖 *A dependent entity depend for its existence an its identification upon another entity in the model.*

Relationship

Relationships represent associations between entities.

Relationships are shown as lines between the entities:

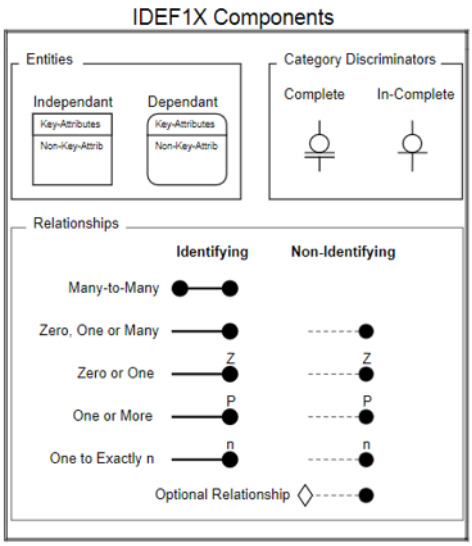
- Solid lines for identifying relationships

  ☛ *In the case of an identifying relationship, the keys from the parent form part of the key for the child entity.*

- Dashed lines for non-identifying relationships

  ☛ *In the case of a non-identifying relationship, the keys of the parent entity become foreign keys in the child entity.*

Summary of IDEF1X Notation



DIV-2 Logical Data Area Entity Diagram

A logical data area can be described by a logical data area entity diagram.

It is a structure diagram which defines classes and their relationships in a Whole/Part formalism in connection with the subject of the data area described.

Creating a Logical Data Area Entity diagram

To create this type of diagram:

1. In the navigation menu, click **Data and Information Viewpoint > DIV-2 Logical Data Model > Data Areas**.
2. Right-click a data area and select the corresponding menu.

   ☛ *You can connect one or more logical data area entity diagrams to a logical data area, according to what you want to describe.*

In this diagram you can create classes and data views.

> *A data view enables representation of the scope covered by a package element. A data view is based on the selection of several classes connected in the specific context of the view.*
>
> ☛ *For more information, see "Data views" in the following section: "HOPEX Information Architecture : IA Logical Layer : Logical Data Architecture : Data views".*

Creating a component

You can connect objects to a data area through components that reference the objects in question. Components enable you to define the access mode to the referenced objects (classes or class views).

The data area is attached to the package; objects directly created from components are automatically connected to the package of the data area.

You can create a component from an object in the diagram or in the properties window of the data area.

To create a component from an object of the data area diagram:

- In the diagram, right-click the object in question and select **Add to (name of the data area)**.
  The name of the component created appears in the properties of the data area. By default it has the name of the object that it references.

DIV-3 Physical Data Model

DIV-3 Description

Model	Description
DIV-3 Physical Data Model	The physical implementation format of the Logical Data Model entities, e.g., message formats, file structures, physical schema. In DoDAF V1.5, this was the SV-11.

Detailed description of DIV-3

See the DoDAF web site: DIV-3: Physical Data Model

Links with Other Viewpoints

DIV-1 is used as an input to DIV-3. For more information, see "DIV-1 Conceptual Data Model", page 86.

DIV-3 HOPEX Implementation

Database Physical Hierarchy View

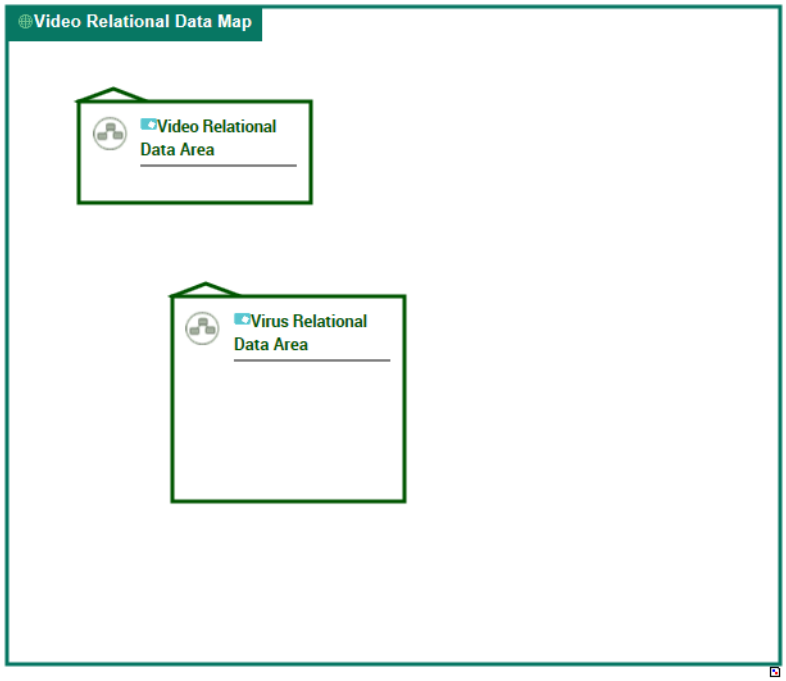
This tree displays the hierarchy of databases.

Databases

A database stores data physically or logically.

Physical Data Maps

This list displays relational data maps which contain relational data map components.



Example of a Relational Data Map Diagram

Physical Data Areas (RDB)

A data area is subset of the enterprise data that is meant to be manipulated together in the context of business operations.

For instance, a "Sales" Data Area contains at least the following entities: Customers, Orders, Products.

Data Areas define functional data boundaries used both for Data Allocation to systems (see Data Stores) and Data Governance for data stewardship.

Relational Data Area Table Diagram

To create a relational data area table diagram in DIV-3:

1. In the navigation menu, click **Data and Information Viewpoint > DIV-3 Physical Data Model > Physical Data Areas (RDB)**.
2. Right-click a physical data area (RDB) and select the corresponding menu.

This type of diagram enables you to display tables and keys.

OPERATIONAL VIEWPOINT MODELS

DoDAF-described Models in the Operational Viewpoint describe the activities, operational elements, and resource flow exchanges required to conduct operations.

A pure operational model is material independent. However, operations and their relationships may be influenced by new technologies, such as collaboration technology, where process improvements are in practice before policy can reflect the new procedures. There may be some cases, as well, in which it is necessary to document the way activities are performed, given the restrictions of current systems, to examine ways in which new systems could facilitate streamlining the activities. In such cases, operational models may have material constraints and requirements that need to be addressed. For this reason, it may be necessary to include some high-level system architectural data to augment information onto the operational models.

INTRODUCTION TO THE OPERATIONAL VIEWPOINT MODELS

The OV DoDAF-described Models may be used to describe a requirement for a "To-Be" architecture in logical terms, or as a simplified description of the key behavioral and information aspects of an "As-Is" architecture.

The OV DoDAF-described Models re-use the capabilities defined in the Capability Viewpoint and put them in the context of an operation or scenario.

☛ *For more information about capabilities, see "Capability Viewpoint Models", page 55.*

The OV DoDAF-described Models can be used in a number of ways, including:

- the development of user requirements

  ☛ *Use of Operational Viewpoint DoDAF-described Models should improve the quality of requirements definitions.*

- capability boundary definition

  ☛ *When performing analysis of requirements relative to a particular capability or capabilities, it is important to know the specific functionality intended to be delivered by the capability. It is also important to know the limits of that functionality, to be able to determine necessary interfaces to other capabilities and organizations.*

  The use of OV-2 and OV-5b supports identification of the boundaries of capabilities. See:

  - *"OV-2 Operational Resource Flow Description", page 104*
  - *"OV-5b Operational Activity Model", page 126.*

- interoperability analysis
- capturing future concepts
- and supporting operational planning processes.

OV-1 High-Level Operational Concept Graphic

OV-1 Description

Model	Description
OV-1	The high-level graphical/textual description of the operational concept.

For more information see the DoDAF web site OV-1: High Level Operational Concept Graphic

OV-1 HOPEX implementation

HOPEX enables you to draw diagrams freehand and connect the shapes to objects of the repository.

The OV-1 uses sketch diagrams.

Creating a Sketch Diagram for OV-1

To create a sketch diagram:

1. Click **Operational Viewpoint > OV-1 High-Level Operational Concept Graphic > Operational Concept Graphic**.
2. In the workspace click **New**.
3. Right-click the object created and click **New > Sketching**.
   A sketch diagram appears.

Shapes available in sketching diagrams

Sketching diagrams consist of the following:

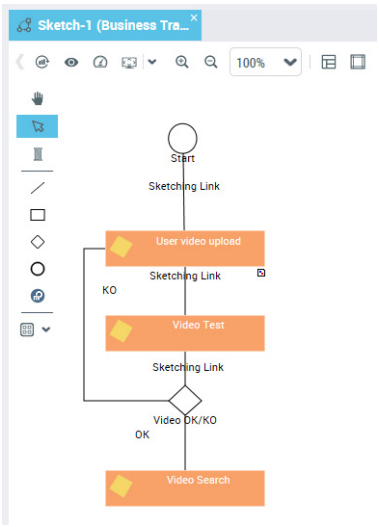
- Sketching items
  - Rectangle
  - Rombus
  - Circle
- Sketching links

Mapping a sketching item with a repository object

You may associate items of sketch diagrams with repository objects representing elements of the architecture.

To map sketching items with repository objects:

1. Open the properties of a sketching item.
2. Under **Characteristics**, from the **Enterprise Model Element** field, connect a repository object.
   The sketching item appears in the form of the object type selected.



☛ *To associate a sketching item with a repository object, you can also drag-and-drop an object from a navigation tree.*

Attaching business documents

You may need to attach an external document to the sketching diagram (for example a Powerpoint file).

To do this:

1. In the properties of the sketch unfold the **Documentation** section.
2. In the **Business Document** tab, click **New**.
3. Indicate the location of your file, select a business document pattern among those available and click **OK**.

☛ *You can choose to create business documents directly in the corresponding tile of the OV-1 Viewpoint. Then you can connect them to the different sketches as appropriate.*

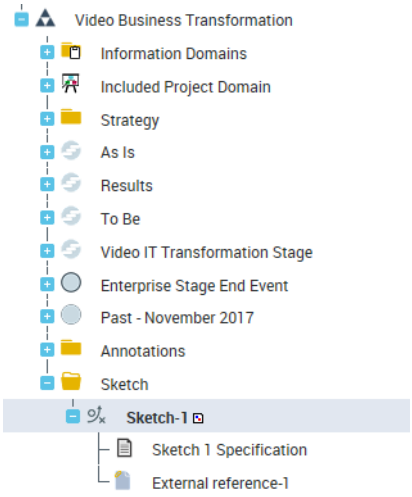
☛ *Note you can also create external references in the sketch property page (for instance to specify a useful URL) or to use MS Word reports already available in HOPEX).*

Viewing business documents in a hierarchy

You can view the business documents you have associated to a sketching diagram (as well as external references and MS Word Reports) in a tree.

To view business documents associated to sketching diagrams:

1. In the navigation menu, click **Operational Viewpoint > OV-1 High-Level Operational Concept Graphic > Operational Concept Hierarchy**.
2. Expand "the Sketch folder".



OV-2 Operational Resource Flow Description

OV-2 Description

Model	Description
OV-2	A description of the Resource Flows exchanged between operational activities.

☛ *For more information see the DoDAF web site: OV-2: Operational Resource Flow Description*

The primary purpose of the OV-2 is to define capability requirements within an operational context. The use of OV-2 is intended to be logical. It describes who or what (not how).

OV-2 is a description of the Resource Flows exchanged between operational activities (from an instance point of view). Information is exchanged with the aim of answering a use case.

OV-2 Implementation

Thee OV-2 relies on scenarios. For more information, see "The Scenario Concept".

Operational resource hierarchy view

This tree enables you to navigate in the repository and view or create operational resource objects.

Operational scenario environments

An operational scenario environment represents communications between organizations and their partners. You can use it to describe the external use of an organization.

☛ *You can also create an operational scenario environment directly from an environment pop-up menu.*

See "OV-2 Operational Scenario Environment Diagram", page 109.

Operational scenarios

An operational scenario presents flows exchanged between organizations. A scenario can represent a specific use case or, globally, the set of all flow exchanges at the operational level.

> ☛ *You can also create an operational scenario directly from the pop-up menu of an organization.*

It can be mapped to an organization and optionally to an operational activity. For more information see "Defining the Subject of an OV-2 Scenario".

It can be described in several ways:

- through an operational scenario diagram

  > ☛ *To create the diagram, see "Creating OV-2 Operational Scenario Diagrams", page 108.*

- through an operational sequence diagram (this is the same as the operational scenario diagram except that the operational participants are placed in columns, like swimlanes)
- through the operational scenario editor (which consists of a flow editor and a lifeline/participant editor)

  > ☛ *For more information see "Editing an Operational Scenario".*

Object Types describing an OV-2 Operational Scenario

Below are the object types used in operational scenario diagrams.

Operational Participants

Participants are resources which represent the participation of a component in a scenario of another component. They may be represented in the form of a lifeline. The represented agent need to be specified (organization or position type).

> 🕮 *A lifeline represents the participation of a software or organizational component in a scenario of another software component (application, IT Service, …).It represents an individual participant in the Interaction.*

Organizations

An organization represents a person or a group of persons that intervenes in the enterprise business processes or information system. An organization can be internal or external to the enterprise.

- An internal organization is an organizational element of the enterprise structure such as a department, a service, or a workstation. An internal organization is defined based on how detailed you require your view of the enterprise to be (cf org-unit-type). Example: financial management, sales management, marketing department, account manager.

- An external organization is an organization that exchanges flows with the enterprise. Example: Customer, Supplier, Government Office.

Position Types

A position type is a type of status assigned to an individual or group of individuals which defines a job in an organization or hierarchy. It helps define human roles.

To describe that an operational resource such as a call center uses operators to take calls and handle requests, you may create a position type component.

Operational Gates

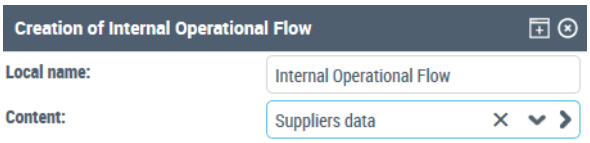
Input/Output Gates are identified through incoming and outgoing flows.

Flow gates can be of Input or Output type.

☛ *A gate is a connection point between a message outside an interaction fragment with a message inside the interaction fragment.*

Internal Operational Flows

When you create an internal operation flow between two operational participants, you need to specify the content.



The following properties are available in the **Flow properties** section of the international operational flow **Characteristics**.

☛ *You can also fill these properties through the flow and lifeline editors. For more information, see "Operational Scenario Flow Editor", page 113 and "Participant (lifeline) Editor", page 114.*

Classification

- No classification
- Unclassified
- FOUO
- Sensitive but Unclassified
- Confidential
- Secret
- Secret Restricted
- Top Secret
- Above Top Secret

Classification Caveat

- Admin or Operational use data
- Critical technology
- Contractor performance evaluation
- Direct military support
- Foreign government information
- Preclude premature dissemination
- Software documentation
- Specific authority
- Test and evaluation
- Not specified
- Not known

Protection

- None
- Encrypted for Transmission Only (EFTO)
- Originating Agency Determination Required (OADR)
- Until Specified date (state the date)
- Until End of Mission
- For specified duration (state the # days)

Timeliness

- RT = Real-Time
- NRT = Near-Real-Time (Less Than 1 Second)
- M = Moderate (1-10 Seconds)
- S = Slow (10 Seconds -10 Minutes)
- 1H = Up to one hour (10 minutes - 1 hour)
- 8H = Up to 8 Hours (1 Hour -8 Hours)
- LG = Large (Greater Than 30 Days)
- GM = Greater than One Month
- NK = Not Known
- NS = Not Specified

Triggering Event

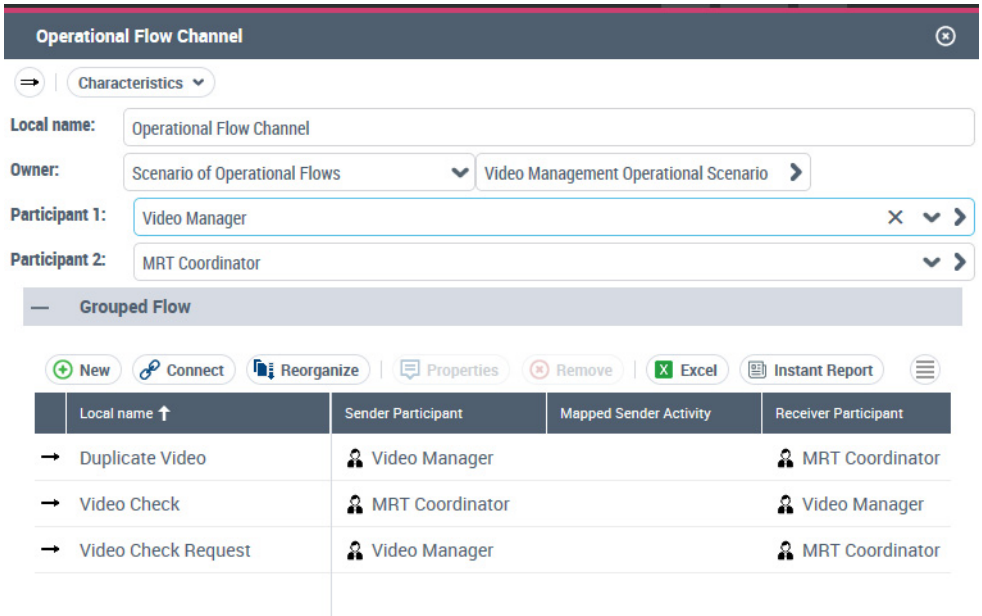
You can enter free text here.

Operational needlines

Operational needlines enable to group together internal operational flows.

When you create a needline, you need to specify two participants.

The properties are as follows:



To include internal operational flows in a needline:

1. In the property page of the needline, expand the **Grouped Flow** section and click **Connect**.
2. Select the concerned internal operational flows and click **OK**.

It is no longer possible to display the operational flows in the diagram as they are now grouped to be part of the needline.

Creating OV-2 Operational Scenario Diagrams

Scenario Diagrams describe dynamic behaviors of an object use case and are focused on showing the collaborations between objects.

To create an operational scenario diagram:

1. In the Operational Viewpoint, select **OV2 Operational Resource Flow Description**.
2. Click **Scenarios of Operational Flows**.
3. Click **New**.
4. From the pop-up menu of the operational scenario created, click **New**:
   - **Operational Scenario Diagram**, or
   - **Operational Scenario Sequence diagram**

These diagrams enable you to describe the exchange of flows between organizations.

For more information on the object types to use, see "Object Types describing an OV-2 Operational Scenario", page 105.

To hide the internal operational flows that are part of a needline:

- Click the **Refresh needline** button in the diagram toolbar.
  Only the needline is displayed in the diagram.

  ☛ *For more details about operational flow grouping, see "Operational needlines", page 107.*

See also "Defining the Subject of an OV-2 Scenario", page 109.

Defining the Subject of an OV-2 Scenario

☛ *See "Creating OV-2 Operational Scenario Diagrams", page 108.*

Once you have defined a scenario to model flows between participants, it is important that you map it to an actual object type of the repository.

You need to define an organization subject of the scenario. You may also choose to define a subject organizational process for processing purposes.

To map an operational scenario to an organization:

1. In the operational scenario diagram, click the shape of the operational scenario.
2. Display the operational scenario properties and select the **Mapping** page from the drop-down list.
3. In the **Owned Scenario Mapping** section click **New**.
4. Select the **Mapped Org-Unit**, which is the actual organization represented.

(Optional) You can also choose to map the operational scenario to an operational activity, which is the description of the activity / processing concerned by the scenario.

To map the operational scenario to an operational activity:

- In the Creation of Scenario Mapping dialog box select a **Mapped Organizational Process**, which is the description of the activity concerned.

OV-2 Operational Scenario Environment Diagram

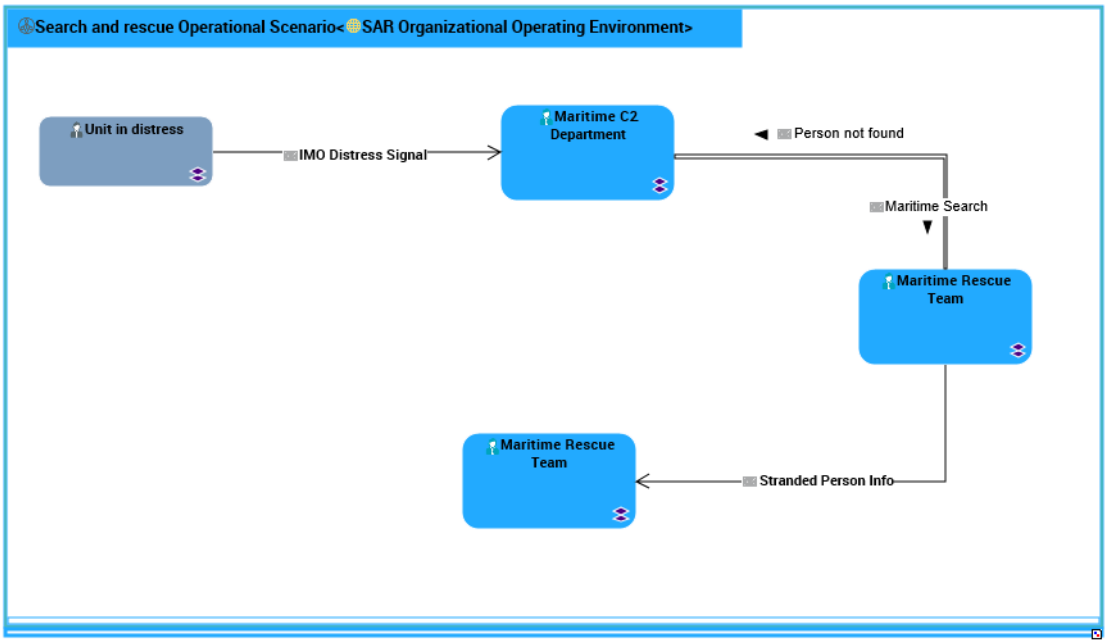
To create an operation scenario environment diagram:

1. In the navigation menu, click **Operational Viewpoint > OV-2 Operational Resource Flow Description > Scenario of operational environments**.
2. Right-click on an operational scenario environment and select **New > Operational scenario environment diagram**.

In the diagram you can specify:

- Organization and Position type participants
- Operational Partners (organizations or position types)
- Resource flows exchanged between the participants
  - Internal operational flows
  - Operational needlines

Needlines group together internal operational flows.



Example of Operational Scenario Environment Diagram

Operational Resource Flow Matrix

For each scenario the OV-2 report enables you to display:

- **Needlines** and **Resource flows**.
- **Information Elements** exchanged (contents)
- Information on the sender and receiver
  - **Sending Participants / Receiving Participants** (organizations)
  - **Sending Activities / Receiving Activities** (operational activities)
- Classification
- Classification Caveat
- Protection
- Timeliness
- Triggering Event

> ☛ *For more information on these specific attributes, see "Internal Operational Flows".*

1. Operational Resource Flow Matrix

Flow Scenarios	Needline	Resource Flows	Information Elements	Sending Participants	Sending Activities	Receiving Participants	Receiving Activities
Video Management Operational Scenario (EN)	Operational Flow Channel	Video Check Request (EN)	Video Check Request (EN)	Video Manager (EN)		MRT Coordinator (EN)	
		Video Check (EN)	Video Check (EN)	MRT Coordinator (EN)		Video Manager (EN)	
		Duplicate Video (EN)	Duplicate Video (EN)	Video Manager (EN)		MRT Coordinator (EN)	
		Video Upload (EN)	Video Upload (EN)	Client		Video Manager (EN)	
		Video Upload (EN)	Video Upload (EN)	Client		Video Upload Controller (EN)	
		Video Rights Issue (EN)	Video Rights Issue (EN)	Author Rights Compliance Department (EN)		Client	
		Video Check Request (EN)	Video Check Request (EN)	Video Upload Controller (EN)		Video Manager (EN)	
		Dubious Video (EN)	Dubious Video (EN)	Video Manager (EN)		Dubious Video (EN)	
Video Management Environment Scenario (EN)		Dubious Video (EN)	Dubious Video (EN)	Video Management Department (EN)		Security Department (EN)	

OV-2 Operational Scenario Report

OV-3 Operational Resource Flow Matrix

OV-3 Description

Model	Description
OV-3	A description of the resources exchanged and the relevant attributes of the exchanges.

For more information, see the DoDAF web site OV-3 Operational Resource Flow Matrix

The OV-3 identifies the resource transfers that are necessary to support operations to achieve a specific operational activity.

OV-3 Implementation

OV-3 is a representation of operational scenarios defined in OV-2 without a diagram. It offers an interaction scenario editor.

☛ *For more information on OV-2, see "OV-2 Operational Resource Flow Description", page 104.*

This model is displayed as lists. It consists of the description of exchanged resources and the relevant exchange attributes.

A description of the resources exchanged and the relevant attributes of the exchanges. The OV-3 identifies the resource flows that are necessary to support operations to achieve a specific operational activity. This model is initially constructed from the information contained in the OV-2 Operational Resource Flow Description model. But the OV-3 provides a more detailed definition of the Resource Flows for operations within a community of anticipated users.

- ✓ "Editing an Operational Scenario"
- ✓ "OV-3 Operational Scenario Environment Diagram"
- ✓ "OV-3 Operational Scenario Reports"

Editing an Operational Scenario

The OV-3 offers you editors to be able to define operational scenarios without using diagrams. It details resource flow exchanges and enables to identify which operational activity and locations exchange which resources.

☛ *To use the editor, you need to have already created an operational scenario in the OV-2 view. For more information, see "Creating OV-2*

Operational Scenario Diagrams", page 108.

To edit an operational scenario:

1. In the navigation menu click **Operational Viewpoint > OV-3 Operational Resource Flow Matrix > Operational Scenario Editor**.
2. Select the operational scenario you wish to edit and select an editor depending on how you want to proceed:
   - **Flow Editor:** "Operational Scenario Flow Editor", page 113
   - **Lifeline Editor:** **"Participant (lifeline) Editor", page 114**

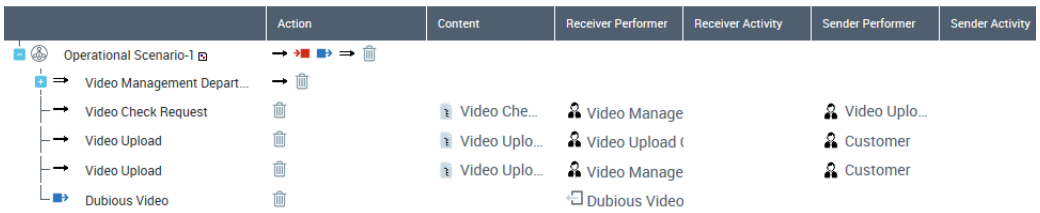
☛ *It is possible to use both editors at the same time.*

Operational Scenario Flow Editor

The flow editor displays a tree which lists the flows of the scenario. You can define the flow participants (sender and receiver) for each flow.

The scenario maps exchanged flows with the operational activities of the sender and receiver.

The columns corresponding to the different properties of internal operational flows. are displayed. For more details see "Internal Operational Flows", page 106.



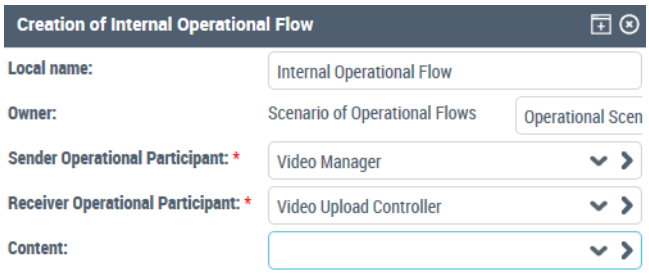
Creating an Internal Operational Flow

You can create Internal Operational Flows on needlines.

When you create an operational flow , you need to specify:

- the sender operational participant
- the receiver operational participant
- the content exchanged

☛ *Internal operational flows are hidden when grouped in a needline.*



Creating an Input Flow

When creating an operational input flow , a wizard asks you to select:

- a sender operational input gate
- a receiver operational participant
- a content

Creating on Output Flow

When creating on operation output flow , select:

- a sender operational participant
- a receiver operational output gate
- a content

Creating an Operational Needline

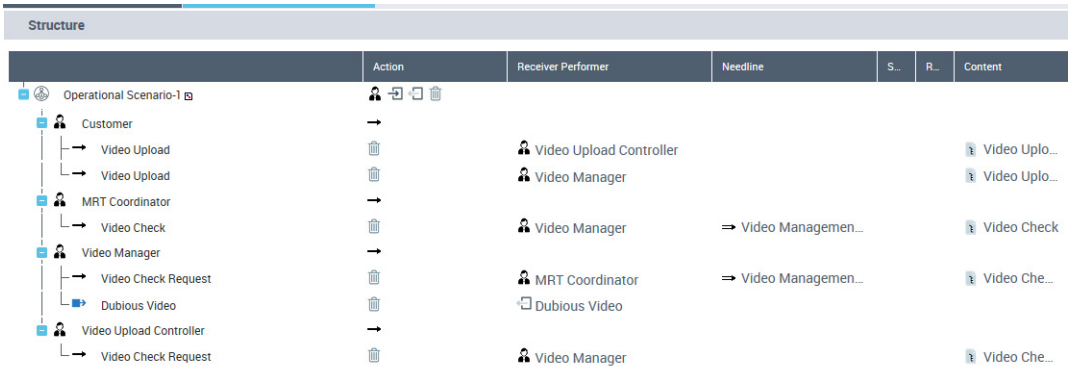
For more information about See "Operational needlines".

Participant (lifeline) Editor

The operational scenario lifeline editor displays a tree in which you can group flows by participant.

The following columns are displayed:

- An action toolbar which enables you to create objects:
  - For example you can create lifelines at the first level, then depending on where you stand in the hierarchy other buttons are available
- Receiver performer
- Needline
- Sender activity
- Receiver activity
- Content

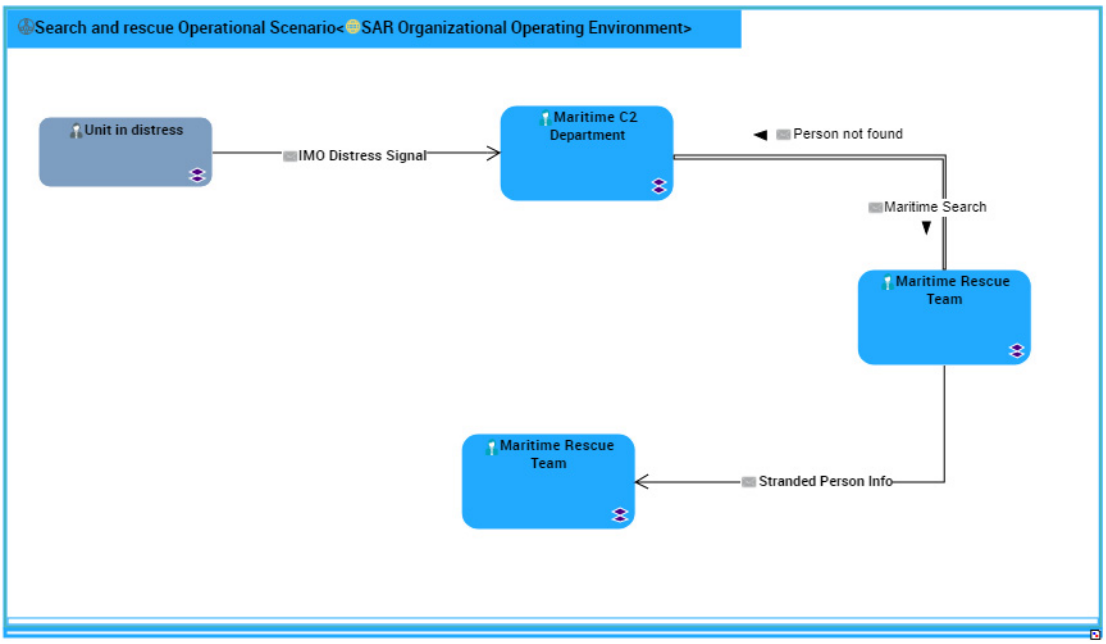


OV-3 Operational Scenario Environment Diagram

To create an Operational Scenario Environment Diagram:

1. In the navigation menu, click **Operational Viewpoint > OV-3 Operational Resource Flow Matrix > Scenario of Operational Environment**.

2. Create an operational scenario environment and create a diagram from its pop-up menu.



Example of Operational Scenario Environment Diagram

✓ "OV-3 Description"
✓ "Editing an Operational Scenario"
✓ "OV-3 Operational Scenario Reports"

OV-3 Operational Scenario Matrix

The OV-3 operational scenario matrix displays in the form of a table all the operational scenarios of the repository (operational scenarios or environment operational scenarios).

To launch the operational scenario matrix:

- In the navigation menu, click **Operational Viewpoint > OV-3 Operational Resource Flow Matrix > Operational Resource Flow Matrix**.

The matrix describes the operational resource flows (internal operational flows and operational needlines) described in the OV-2 and OV-3 scenarios.

1. Operational Resource Flow Matrix

Flow Scenarios	Needline	Resource Flows	Information Elements	Sending Participants	Sending Activities	Receiving Participants	Receiving Activities
Video Management Operational Scenario	Operational Flow Channel	Video Check Request	Video Check Request	Video Manager		MRT Coordinator	
		Video Check	Video Check	MRT Coordinator		Video Manager	
		Duplicate Video	Duplicate Video	Video Manager		MRT Coordinator	
		Video Upload	Video Upload	Customer		Video Manager	
		Video Upload	Video Upload	Customer		Video Upload Controller	
		Video Rights Issue	Video Rights Issue	Author Rights Compliance Department		Customer	
		Video Check Request	Video Check Request	Video Upload Controller		Video Manager	
		Dubious Video	Dubious Video	Video Manager		Dubious Video	
Video Management Environment Scenario		Dubious Video	Dubious Video	Video Management Department		Security Department	

☛ *To create your own report, see "OV-3 Operational Scenario Reports".*

OV-3 Operational Scenario Reports

You can create your own scenario report, and customize it by selecting the scenarios and environment scenarios of interest to you and modifying the default parameters.

To create your scenario report:

1. In the navigation menu, click **Operational Viewpoint > OV-3 Operational Resource Flow Matrix > Operational Resource Flow Reports**.
2. Click **New**.
3. In the wizard select the scenarios of interest to you.

   ☛ *You can also choose to include system scenarios in this report.*

4. Modify the default parameters if needed and click **Next**.

Flow Scenarios	Needline	Resource Flows	Information Elements	Sending Participants	Sending Activities	Receiving Participants	Receiving Activities
Video Scenario of System of Systems		Video to be stored	Video to be stored	Video Resource Architecture		Video IT Infrastructure	
		Video to be checked	Video to be checked	Video Resource Architecture		Video Upload Controller	
		Video Test	Video Test	Video IT Infrastructure		Video Upload Controller	
		Video reception	Video reception	BGAN Antenna		Video Resource Architecture	
Video Scenario of System of Resources		Video Drone Real Time Control	Video Drone Real Time Control	Video IT Infrastructure		SAR Drone	
		Drone Real Time Video	Drone Real Time Video	SAR Drone		Video Upload Controller	
Video Management Operational Scenario	Operational Flow Channel	Video Check Request	Video Check Request	Video Manager		MRT Coordinator	
		Video Check	Video Check	MRT Coordinator		Video Manager	
		Duplicate Video	Duplicate Video	Video Manager		MRT Coordinator	
		Video Upload	Video Upload	Customer		Video Manager	
		Video Upload	Video Upload	Customer		Video Upload Controller	
		Video Rights Issue	Video Rights Issue	Author Rights Compliance Department		Customer	

- ✓ "OV-3 Description"
- ✓ "Editing an Operational Scenario"
- ✓ "OV-3 Operational Scenario Environment Diagram"

OV-4 ORGANIZATIONAL RELATIONSHIPS CHART

OV-4 Description

Model	Description
OV-4	The organizational context, role or other relationships among organizations.

The intended usage of the OV-4 includes:

- Identify architecture stakeholders.
- Identify process owners.
- Illustrate current or future organization structure

This model clarifies the various relationships that can exist between organizations and sub-organizations within the enterprise as well as between internal and external organizations.

For more information, see the DoDAF web site: OV-4: Organizational Relationships Chart.

OV-4 HOPEX Implementation

📖 *An organization represents a person or a group of persons that intervenes in the enterprise business processes or information system. An organization can be internal or external to the enterprise.*

📖 *A position type is a type of status assigned to an individual or group of individuals which defines a job in an organization or hierarchy. It helps define human roles.*

Organizational tree

This hierarchy displays organizations, position types and enables to navigate withing the organization environment.

☛ *This tree does not display the organization components. It displays only first-level organizations.*

Organization environments

This list displays organization environments that are owned by the enterprise stage and enables to create new ones.

📖 *An organization environment defines the organizational context, roles and relationships among organizations.*

From an organization environment, you can create:

- an organization environment diagram in which you represent partner organizations and their interactions.

  For more information see "Organization Environment Diagram".

- an operational environment scenario

  For more information, see "Scenario of Operational Environment Diagram"

Organizations

This list displays the organizations that are owned by the enterprise or imported from other containers.

An organization represents a person or a group of persons that intervenes in the enterprise business processes or information system. An organization can be internal or external to the enterprise.

Organizations enable to display the possible relationships between organizational resources.

Diagrams involving organizations

Several diagrams are available from an organization:

- Operational Scenario Diagram

  See "OV-4 Operational Scenario Diagram"

- Organization Unit Structure Diagram

  See "Organizational Unit Structure Diagram", page 122.

- Organization Unit Tree diagram
  This is the equivalent of an organization chart. It displays the decomposition of an organization into several sub-organizations.

  See "Organizational Unit Tree Diagram", page 122.

Organization properties

In the property page of an organization you can connect:

- operational activities
- capabilities

Position types

A position type is a type of status assigned to an individual or group of individuals which defines a job in an organization or hierarchy. It helps define human roles.

You can define the equipment needed for the individual or a group of individuals to perform the tasks he is required to perform.

To specify the equipment need by a position type:

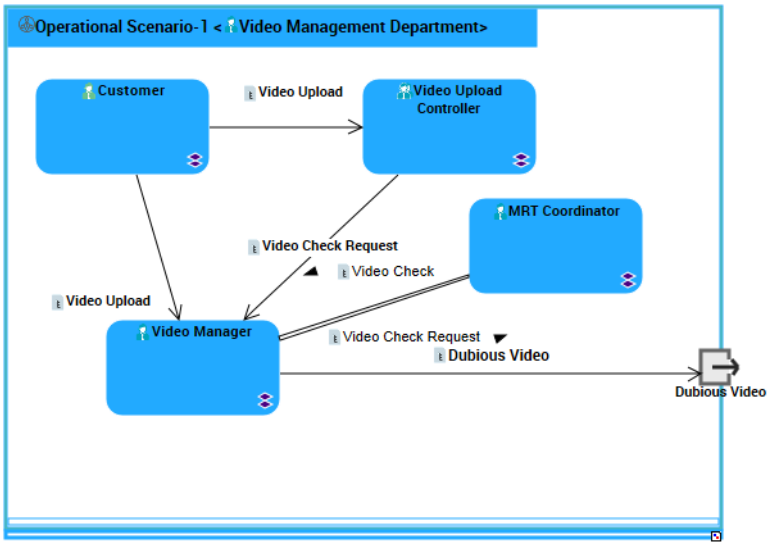
1. In the property page of a position type select the **Organizational Resources > HR Equipment** page.
2. Click **New** and select the object type / object needed.
3. Click **OK**.

OV-4 Operational Scenario Diagram

You can create an operational for an organization to describe how operational participants (internal participants of this organization) exchange resource flows for this specific scenario.

To create an operational flow for an organization:

1. In the navigation menu click **Operational Viewpoint >OV-4 Organizational Relationships Chart > Organizations**.
2. Right-click an organization and select **New > Scenario of operational flows**.



Example of Operational Scenario Diagram

Scenario of Operational Environment Diagram

You can create a scenario of operational environment to describe the external use of an organization. You can specify:

- organization/position type participants
- organization partner participants
- resource flows exchanged

To create operational environment scenario diagram:

1. In the navigation menu click **Operational Viewpoint > OV-4 Organizational Relationships Chart > Organization Environments**.
2. Right-click and organization environment and select **Scenario of Operational Environment**.

Organization Environment Diagram

To create on organization environment diagram:

1. In the navigation menu click **Operational Viewpoint > OV-4 Organizational Relationships Chart > Organization Environments**.
2. Right-click an environment and select **New > Organization Environment Diagram**.
   This diagram enables you to display partner organizations and their interactions as well as position types.

   > *An Interaction represents a contract between entities in a specific context inside or outside a company. These entities can be organizations, activities, or processes. The content of this contract is described in a protocol.*

   > *An interacting element endpoint is a connection point between an exchange channel and an interacting component.*

Organizational Unit Structure Diagram

To create an organizational unit structure diagram:

1. In the navigation menu click **Operational Viewpoint >OV-4 Organizational Relationships Chart > Organizations**.
2. Right-click an organizaton and select **New Organizational Unit Structure Diagram**.

You can insert the following objects in this diagram:

- Org-Unit component
- Position-Type component
- Interactions and endpoints

> *An Interaction represents a contract between entities in a specific context inside or outside a company. These entities can be organizations, activities, or processes. The content of this contract is described in a protocol.*

> *An interacting element endpoint is a connection point between an exchange channel and an interacting component.*

Organizational Unit Tree Diagram

HOPEX DoDAF offers you the possibility to view and draw organization composition tree diagrams.

To create an organization structure diagram:

1. In the navigation menu click **Operational Viewpoint >OV-4 Organizational Relationships Chart > Organizations**.
2. Right-click an organizaton and select **New Organizational Unit Tree Diagram**.

You can insert the following objects in this diagram:

- Organizations
- Position Types

> *An organization represents a person or a group of persons that intervenes in the enterprise business processes or information system. An organization can be internal or external to the enterprise.*
>
> *A position type is a type of status assigned to an individual or group of individuals which defines a job in an organization or hierarchy. It helps define human roles.*

OV-5a Operational Activity Decomposition Tree

OV-5-a Description

Model	Description
OV-5-a	The capabilities and operational activities organized in a hierarchical structure.

Detailed Description

For more information, see the DoDAF web site: OV-5a: Operational Activity Decomposition Tree and OV-5b: Operational Activity Model.

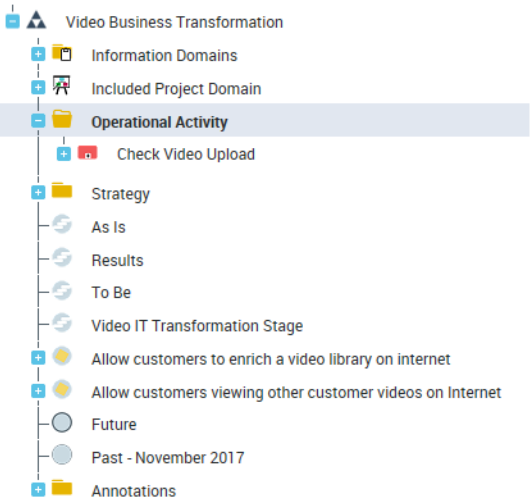
Links with other viewpoints

OV-5a is tightly coupled with OV-2. For more information, see "OV-2 Implementation", page 104.

OV-5a Implementation

An operational activity is a set of operations performed by organizations within a company or organization, to produce a result. It is depicted as a sequence of operations, controlled by events and conditions.

Operational activities are organized in a hierarchical structure.



Operations

To create an operation as a component of an operational activity:

1. In the navigation menu click **Operational Viewpoint > OV-5a Operational Activity Decomposition Tree**.
2. Expand the" Operational activity" folder.
3. Right-click an operational activity and select **New > Operation**.

Organizational process diagram

To create an operational process diagram:

1. In the navigation menu click **Operational Viewpoint > OV-5a Operational Activity Decomposition Tree**.
2. Right-click an operational activity and select **New > Organizational Process Diagram**.
   You can draw a diagram with the BPMN notation.

For more information, see "OV-5b Operational Activity Model", page 126.

Organizational process tree diagram

HOPEX DoDAF offers you the possility to draw operational activity composition tree diagrams. From on operational activity you can create an organization process tree diagram which aims at showing the hierarchy of operational activities.

To create an organizational process tree diagram:

1. In the navigation menu click **Operational Viewpoint > OV-5a Operational Activity Decomposition Tree**.
2. Right-click an operational activity in the tree provided and select **New > Organizational Process Tree Diagram**.

OV-5b Operational Activity Model

OV-5-b Description

Model	Description
OV-5-b	The context of capabilities and activities (operational activities) and their relationships among activities, inputs, and outputs; Additional data can show cost, performers or other pertinent information.

For more information see the DoDAF web site: OV-5a: Operational Activity Decomposition Tree and OV-5b: Operational Activity Model.

OV-5b HOPEX Implementation

To access OV-5b:

- From the navigation menu click **Operational Viewpoint > OV-5b**.

Operational Activity Hierarchy View

Here you can view a tree of operational activities.

Operational Activities

Here you can view and create operational activities.

> 🕮 *An operational activity is a set of operations performed by organizations within a company or organization, to produce a result. It is depicted as a sequence of operations, controlled by events and conditions.*

See "Operational Activity Properties".

See "OV-5 Operational Activity Diagram", page 127.

See also:"Organizational process tree diagram", page 125.

Operational Activity Properties

To access operational activities:

- From the navigation menu click **Operational Viewpoint > OV-5b > Operational Activities**.

In the property page, you can find the following information under different sections:

- **Identification**: name and comment
- **Capability**: business capabilities realized by the operational activity

  ☛ *In the property page of a businees capability, on the contrary, **the Operational activity** section displays the activities which realize the capability.*
- **Responsibility**
  - Organizational process designer: creator of the operational activity
  - Organizational process contributor
- **Organization**
- **Sub-operational activities**
  - Owned operational activities
  - Operations
- **Systems** (systems used)
- **System Functions**
- **Rules**
- **Details**
  - Task type
  - Transaction
  - Multiple
  - Loop condition
  - Compensation
  - Triggered by event
- **Risks**
- **Strategy and decisions**
  - Constraints
  - Request for Changes
  - Action Plans
  - Issues
- **Attachments**
- **Reports**

OV-5 Operational Activity Diagram

To create an organizational process diagram:

1. In the navigation menu, click **Operational Viewpoint > OV-5b Operational Activity Model > Operational Activities**.
2. Right-click an operational activity and select **New > Operational Process Diagram**.

The diagram is initialized: the current operational activity, represented by a frame, is placed in the diagram.

Defining participants

A participant enables:

- Assignment of a group of operations to one or to several enterprise organizations.
- Representation of a unit external to the operational activity with which the process communicates by means of message flows.

You can create a participant representing:

- an organization
- a system
- an operational activity
- a position type

Creating operational activities

An operational activity is a set of operations performed by organizations within a company or organization, to produce a result. It is depicted as a sequence of operations, controlled by events and conditions.

Within the framework of the BPMN notation, you may insert an operational activity directly in another if it is not used elsewhere. In this context, the two operational activities share the same data.

If an operational activity is to be used elsewhere you need to use an operation as an intermediate object. See "Calling an operational activity in an operation", page 129.

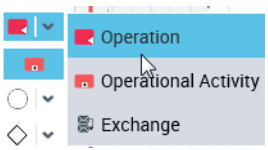
Creating operations

An operation is an elementary step in an operational activity executed by an organization. It cannot be broken down.

Creating an operation on a participant

To create an operation and connect it to the participant responsible for its execution:

1. Click the **Operation** button in the insert toolbar and click in the diagram within the frame of the participant concerned.



   The operation creation dialog box appears.
2. Enter the name of the operation.
3. Click **OK**.

To assign an operation to another participant:

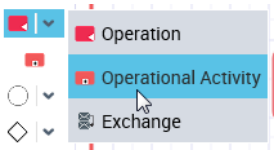
- Select the operation and move it from one participant to the other.
  The frame of the destination participant is highlighted.

  ☛ *When positioned, the operation is disconnected from the initial participant and reconnected to the new participant executing the operation.*

Calling an operational activity in an operation

You can create an operation that calls another operational activity.

You need to follow this procedure when an operational activity needs to be reused by other operational activities. In this case, the two operational activities do not necessarily share the same data.



Other object types used in the operational activity diagram

You can also use:

- Events

  🕮 *Events enable representation of facts occurring during operational activity execution*

- Sequence flows between operations

  🕮 *A sequence flow is used to show the order in which steps of an operational activity will be performed. Each sequence flow has only one source and only one target.*

- Message flows with or without contents

  🕮 *A message flow is information flowing within an enterprise or exchanged between the enterprise and its business environment. A message flow can carry a content.*

- Data objects

  🕮 *A data object is used to explain how documents, data, and other objects are used and updated during the operational activity. A data*

object can represent an electronic document, or any other type of object, electronic or physical.

- Gateways
  To specify that several processing steps are accessible following a particular processing step, you can use a gateway.

  📖 *Gateways are modeling elements that are used to control how sequence flows interact as they converge and diverge within an operational activity.*

- Systems Used
  - Application system used
  - System used
  - Service used
  - Functionality used
  - Resource used

    📖 *A system used during the execution of a step of an operational activity represents what is necessary to realize this step. It can be a service or any other non IT resource, or more generally a functionality.*

OV-6a Operational Rules Model

OV-6a Description

Purpose of OV-6a

Model	Description
OV-6a	One of three models used to describe activity (operational activity). It identifies business rules that constrain operations.

Detailed Description of OV-6a

For more information see the DoDAF web site: OV-6a: Operational Rules Model

Operational rules are assigned to a particular organization.

OV-6a specifies the operational or business rules that are constraints to an enterprise, a mission, operation, business, or an architecture. While other OV models (OV-1, OV-2, and OV-5) describe the structure of a business (what the business can do, for the most part) they do not describe what the business must do, or what it cannot do.

Rules are modeled in relation to the constraining objects. A rule can be potentially linked to any object of the architecture. This is done within the different diagrams showing the objects to be constrained or by adding new rules via the property pages.

OV-6a HOPEX Implementation

To access OV-6a:

- From the navigation menu click **Operational Viewpoint > OV-6a**.

Operational rule hierarchy view

Here you can view a tree displaying organizational processes, business transformations stages and operational rules.

Operational rules

Here you can find a list of operational rules and create new ones.

Operational Rules are explicit constraints on operational activities and/or provide support for conducting them. Operational Rules are derived from Business Policies.

In their property page you can find the following sections:

- **Identification**: name, owner and comment
- **Operational activities**: displays the operational activities concerned by the operational rule.

Operational rule matrix

Here you can find a matrix displaying:

- operational activities in rows

  An operational activity is a value chain providing results as goods or services, to an internal or external client of the enterprise or organization. This value chain is described as a sequence of operational activities.

  ☛ *Operational activities enable you to define the scope of targeted data.*

- operational rules in columns

  A rule is a constraint represented by a control or a business rule that must be applied during processing.

OV-6b Operational State Transition Description

OV-6b Description

Purpose of OV-6b

Model	Description
OV-6b	One of three models used to describe operational activity (activity). It identifies business process (activity) responses to events (usually, very short activities).

Detailed description of OV-6b

See the DoDAF web site: OV-6b: State Transition Description

OV-6b HOPEX Implementation

OV-6b is a graphical method used to describe how an operational node or activity responds to various events while changing its state. The associated diagram shows the sets of events to which the architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

The **HOPEX DoDAF** is used to describe the specific behaviors (state machines) attached to activities. A behavior is a specific concept used to describe how an activity reacts to different events from start points to end points.

> *A state machine is a set of states and transitions governing the state changes that can match any time-dependent object.*
>
> *The terms "state machine" and "behavior" are used interchangeably in this section.*

State machines

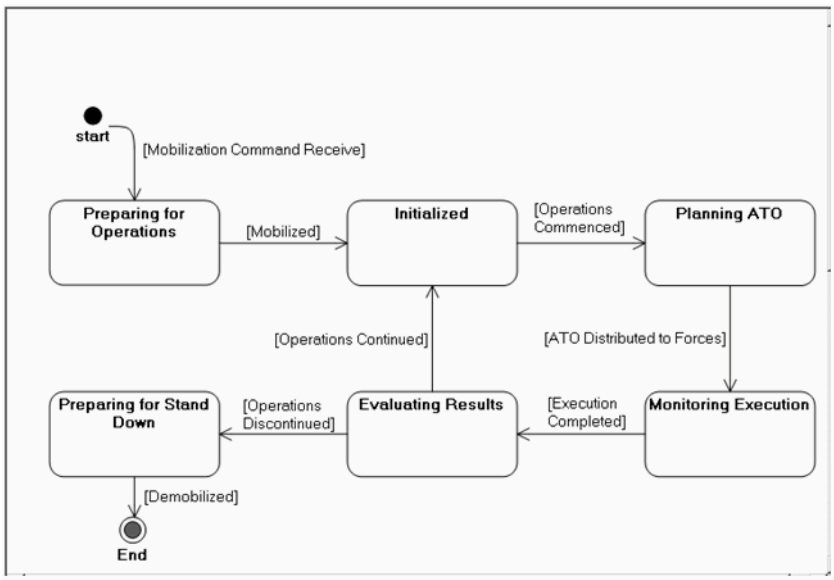
To create an operational state machine:

1. From the navigation menu, click **Operational Viewpoint > OV-6b - Operational State transition Description**.
   A list of state machines is displayed.

State diagrams

Once a state machine has been created it can be described using state diagrams. These diagrams contain events and successions from event to event.

The figure below is an illustration of a state diagram.



Example of a State Diagram (Conduct Joint Force Targeting States)

An event relates to a point in time while the succession matches what happens between two events. To create a state diagram the user must remember that each arrow corresponds to a state and each graphical circle corresponds to the transition.

If a state can be reached from two or more previous states, then a synchronization object must be used.

If a state can reach two or more following states then a decision object must be used (for example the Execution Completed state in the previous figure).

OV-6c Operational Event-Trace Description

OV-6c Description

Purpose of OV-6c

Model	Description
OV-6c	One of three models used to describe activity (operational activity). It traces actions in a scenario or sequence of events.

Detailed description of OV-6c

See the DoDAF web site: OV-6c: Event-Trace Description

OV-6c HOPEX Implementation

OV-6c offers the same functionalities as OV-5b.

☛ *See "OV-5b Operational Activity Model", page 126.*

PROJECT VIEWPOINT MODELS

The DoDAF-described models within the Project Viewpoint describe how projects, portfolios deliver capabilities, the organizations contributing to them and dependencies between them.

The Project Models can be used to answer questions such as:

- What capabilities are delivered as part of this project?
- Are there other projects that either affect or are affected by this project?
- To what portfolios do the projects or projects belong?
- What are the important milestones relative to this project? When can I expect capabilities to be rendered by this project to be in place?

> ☛ *For a complete description of projects in **HOPEX**, see "Introduction to Project Portfolio Management" and "Submitting and evaluating ideas" in the HOPEX Common Features documentation.*

If you want to use the ***Projects Viewpoint***, you first need to import the solution pack corresponding to project management.

> ☛ *The Solution Pack PPM.exe that you want to import needs to be decompressed (HOPEX installation folder > Utilities > Solution Pack, double-click the Solution Pack to extract it).*
>
> *To import the PPM Solution Pack, see "Pre-Requisites to HOPEX DoDAF", page 4.*

DEFINING THE ENVIRONMENT FOR YOUR ENTERPRISE PROJECTS

The Environment navigation pane enables you to define the possible data types for Ideation and Projects.

To define these data types:

❱ From the navigation menu click **Environment > Ideation & Projects Data Types**.

Here you can access or define:

- Idea categories

  An Idea can be related to one or several Idea Categories.

- Criteria weighting models

  A Criteria Weighting Model defines, for a selection of criteria, the relative weight of each criteria in the computation of a weighted scoring criteria, and therefore the ranking of projects assessed against these criteria.

  For more information, see "Defining Portfolio Assessment Criteria" in the "Common Features" section.

- Project categories

  A Project may fit into one or several categories, depending on its purpose and breadth or depth of coverage regarding the architectural landscape (e.g. Strategic Business Initiatives, Maintenance-driven activities, Technology initiatives, IT management initiatives, etc.).

- Project portfolio types

  A Portfolio can be of several types depending on the project state. When going through the workflow transition, a project is moved from portfolio to portfolio (e.g. a validated demand will be moved automatically from the Demand Portfolio to the Candidate Project Portfolio automatically from the Demand Portfolio to the Candidate Project Portfolio).

- Project risk types

  A Project Risk Type is a kind of risk which can be faced by a project (e.g. delays, budgeted costs increase, inadequate deliverables quality).

- Project state models

  A Project State Model is a composite state transition graph which defines the states of a project and the possible transitions between these states.

PV-1 PROJECT PORTFOLIO RELATIONSHIPS

PV-1 Description

PV-1	"PV-1 Project Portfolio Relationships", page 139	It describes the dependency relationships between the organizations and projects and the organizational structures needed to manage a portfolio of projects.

For more information see the DoDAF web site PV-1: Project Portfolio Relationships

PV-1 HOPEX Implementation

Project Domains

A project can be defined in a given project domain. The project domain defines the sector and the application scope of the project (for example: business function, IT, search and development).

This tile displays a list of project domains.

> *A project is defined upon a given domain (e.g. Business, Information Technology). A domain gathers all the projects managed from the same perspective in terms of portfolio management decisions. Project Portfolios are therefore also attached to Project Domains; by default, one portfolio of each portfolio type is created when creating a new domain.*

To create a project domain:

1. In the navigation menu, click **Projects Viewpoint >PV-1 Project Portfolio Relationships > Project Domains**.
   The list of project domains appears.
2. Click **New**.
   The **Create a project domain** window appears.
3. Enter the name of the domain.
4. Click **OK**.

> *It is possible to define particular roles for users on a domain; these roles are then valid for all the projects in the domain. To assign domain to persons, in the project domain properties select the **Assignment** page.*

Projects

Displays the list of current projects owned by the current enterprise.

A Project is a temporary endeavor undertaken by a specific team, to create a unique product, service or result It serves a purpose which can be expressed in terms of capability that is acquired (new), extended (improvement) or decommissioned (rationalization). It generates Project deliverables. It can be attached to one or several Project Categories.

See "PV-1 Project Properties", page 140.

PV-1 Project Properties

Within projects, you can define costs, benefits, risks, create a business case, set a timeline, define deliverables, and more. You can group projects by portfolios.

To access project properties:

1. In the navigation menu, click **Projects Viewpoint > PV-1 Project Portfolio Relationships > Projects**.
2. Select a project and open its properties.

Defining the Project Charter

To define the charter for a project:

1. Select the project concerned and display its properties.
2. In the properties window, click the drop down-list and select **Project Charter**.

The definition of the project charter includes:

- The **identification**:
  - project name
  - project owner domain
  - project code (optional)
  - project manager
  - state (life cycle status) Defined automatically.
  - status (workflow step). Defined automatically.
  - description (comment)
- The project **category or categories**. See "Idea category", page 547.
- The **initiating ideas**: ideas that have inspired the project.

Defining the Business Case of a Project

To define the business case for a project:

1. Select the project concerned and display its properties.
2. In the properties window, click the drop down-list and select **Business Case**.

Transformation purpose

A project has a purpose with respect to the capabilities of the enterprise (as defined in a capability map); it can:

- deliver the means to acquire a new capability (innovation)
- extend the coverage of a capability already held (improvement)
- restrict or abandon the coverage of an existing capability (rationalization).

To add a transformation objective to the project:

1. In the **Transformation Purpose** section, click **New**.
   The creation dialog box for a transformation purpose opens.
2. Specify:
   - its name
   - the transformation type (Innovation, Improvement, Rationalization)
   - the capability transformed
3. Click **OK**.

> ☛ *To obtain a report of transformed capabilities by project, see "Project to Transformed Capability Mapping", page 149.*

Project Deliverables

A *project deliverable* defines the result of a project and its impact or its contribution to the architectural solution landscape of the enterprise.

It is defined by an *architecture block* (example: an organization, an application, an infrastructure element) delivered by the project in the target architectural landscape. Within the framework of a project deliverable, a block can be:

- New: the project delivers a new block to the target architectural landscape.
- Updated: the project modifies an existing block in the current landscape, for example by extending its lifecycle, and delivers the updated version to the target architectural landscape.
- Deleted: the project deletes an existing target architectural block, which will therefore not be part of the target landscape.

To add a deliverable to the project:

1. In the **Deliverables** section, click **New**.
   The window for creating a deliverable appears.
2. Specify if you want to:
   - create a new block
   - update an existing block
   - decommission an existing block
3. Click **Next**.
4. Specify:
   - the deliverable name
   - the deliverable type
   - the deliverable production dates
5. Click **OK**.

Project Dependencies

A project can depend on other projects:

- In a "positive" sense: a project can have another project as a prerequisite, of which one of the deliverables is necessary to build a deliverable of the dependent project (this is the equivalent of an AND logic: both projects must be conducted jointly to reach the final result).
- In a "negative" sense: two projects can be concurrent and mutually exclusive (this is the equivalent of the OR logic: only one of the projects must be managed, not both).

To associate a dependency with the project:

1. In the **Project Dependencies** section, click **New**.
2. Specify:
   - The name of the dependency
   - The project required
   - The type of dependency: "Exclusive" or "Prerequisite".
3. Click **OK**.

Benefits

You can specify:

- the **Qualitative Benefits**: to be entered as a comment.
- the **Financial Value** of the project: in currency = project NPV (net present value), calculated outside the tool according to the standards of the enterprise.
- the **Return on Investment**: calculated attribute, as a %
  (Financial value - Budget) / budget
- the **Forecast Return on Investment**: calculated attribute, as a %
  (Financial value - Estimated total cost) / Estimated total cost
- the **Actual Return on Investment**: calculated attribute, as a %
  (Financial value - Real total cost) / Real total cost

Risks

You can identify the risks linked to a project. Each risk is associated with a single project.

To create a project risk:

1. Expand the **Risk** section.
2. Click **New**.
   The risk creation dialog box appears.
3. Enter the name of the risk and the type of risk (cost, deadline, quality).
4. Click **OK**.

PV-1 Assessing Projects

A first assessment of a project takes place with the definition of the business case of the project; you can specify the deliverables, the dependencies with other ideas or risks, the costs, the benefits, the risks.

Once the project characteristics are defined, an evaluation tool facilitates the selection of projects and helps define priorities.

You can assess the projects:

- At the level of the project, via:
  - the qualitative review of the project (business value, level of strategic alignment, etc.)
  - the assessment of the project risks

Assessing the Project

To assess a project:

1. Display the project properties.
2. Click the drop-down list then **Project Assessment**.
3. In the **Assessment** section, click **New Assessment**.
   An assessment line appears.
4. In each corresponding column, specify:
   - the business value level
   - the strategic alignment level
   - the cost level
   - the global risk level

To validate the assessment, select the assessment line and click **Validate Assessment**.

Assessing Project Risks

Project risk assessment can take place globally on the project (in the Project Assessment page) or for each risk associated with the project (in Risk Assessment).

To assess the risks of a project:

1. Select the project concerned and display its properties.
2. In the properties, click the drop down-list and select **Risk Assessment**.
3. Click **New Assessment**.
4. In the window that appears, select the risks to be assessed.
   - Some
   - All
5. Click **OK**.
   The assessment appears in the properties window.
   You can define:
   - The **Impact**: characterizes the impact of the risk when it occurs.
   - The **Likelihood**: characterizes the probability that the risk will occur.
   - The **Inherent Risk Level**: The inherent (or gross) risk indicates the risk to which the organization is exposed in the absence of measures taken to modify the likelihood of occurrence or impact of this risk. This is the result of multiplying the impact value and the likelihood value before taking account of risk prevention or reduction measures.

In summary, an inherent risk = impact x likelihood
It is calculated automatically.

- The **Control Level**: The Control level characterizes the efficiency level of control elements deployed (controls) to assess the risk.
- The **Net Risk Level**: the residual (or net) risk indicates the risk to which the organization remains exposed after management has processed the risk. This is the difference between the Inherent Risk and the Control Level. It is calculated automatically.

PV-2 PROJECT TIMELINES

PV-2 Description

PV-2	"PV-2 Project Timelines", page 145	A timeline perspective on programs or projects, with the key milestones and interdependencies.

For more information see the DoDAF web site: PV-2: Project Timelines

The PV-2 gives a timeline perspective of programmes. It shows how projects are grouped together to form a coherent acquisition programme and summarizes the interdependencies among projects and the links between project phases.

The intended usage of the PV-2 includes:

- Project management and control (including delivery timescales)
- Project dependency risk identification
- Management of dependencies
- Portfolio management

PV-2 HOPEX Implementation

Project Portfolios

This tile displays a list of portfolios.

A Project Portfolio gathers all the projects of a given Project Domain.

It is used to assess the project in the context of a portfolio. It is linked to assessment criteria and provides the global note of the project in the context of the portfolio.

To add projects to a portfolio:

1. In the navigation menu, click P**rojects Viewpoint > PV-2 Project Timelines > Projects Portfolios**.
2. Select a project portfolio and in the property page select **Projects** from the drop-down list.
3. In the **Portfolio Lines** section, click **New**.
4. Create a new project or reuse an existing project.
   For each project added to a portfolio, a portfolio line is created.

Project Dependency Matrix

This matrix enables you to display projects in rows and columns.

You can view and create dependencies between projects.

Project Risks

A project risk is a potential issue faced by the project team when carrying out the project or concerning the project outcomes. It may face risks of various kinds (e.g. delays, budgeted costs increase, inadequate deliverables quality); the kinds of risk can be defined through project risk types. The Project Risks are not to be confused with operational risks, and concern only the project endeavor itself, not the operation of its deliverables after the end of project.

☛ *A project risk cannot be shared between different projects. It is specific to a project.*

This tile lists the project risks and gives indication of the project they are associated with.

It is possible to assess project risks. You can assess the risks:

- globally on the project (in the Project Assessment page)
- for each risk associated with the project.

☛ *For more information, see "PV-1 Assessing Projects"*

PV-3 Project to Capability Mapping

PV-3 Description

PV-3	"PV-3 Project to Capability Mapping", page 147	A mapping of programs and projects to capabilities to show how the specific projects and program elements help to achieve a capability.

For more information see the DoDAF web site: PV-3: Project to Capability m Mapping

The intended usage of the PV-3 includes:

- Tracing capability requirements to projects.
- Capability audit.

PV-3 HOPEX Implementation

Here you can display a matrix mapping:

- exhibited capabilities / projects of the current enterprise

You can also build your own matrix mapping:

- exhibited capabilities / projects
- transformed capabilities / projects

Project to Capability Mapping Report

In this view, a matrix that presents:

- (in rows) Exhibited capabilities of the enterprise and those not connected to any enterprise
- (in columns) the projects of the ***current enterprise***

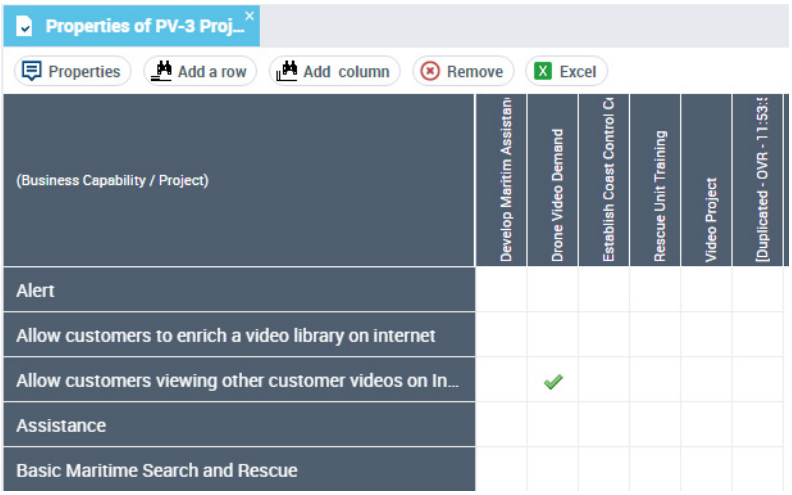
Project to Exhibited Capability Mapping

Exhibited Business Capability	Enterprise Project Drone Video Demand
Alert	
Allow customers to enrich a video library on internet	
Allow customers viewing other customer videos on Internet	✓
Assistance	
Basic Maritime Search and Rescue	

Example of exhibited capabilities / enterprise projects matrix

Project to Capability Mapping

In this view, you can build a matrix showing the capabilities and projects of interest to you.



Project to Transformed Capability Mapping

In this view you can build a matrix showing the transformed capabilities and projects of interest to you.

For more information, see "Transformation purpose", page 141.

SERVICE VIEWPOINT MODELS

In **HOPEX DoDAF**, the Service Viewpoint enables to:

- ✓ identify and describe services through catalogs ("SvcV-1 Service Catalogs")
- ✓ define dependencies between services ("Functionality Dependencies")
- ✓ build functionality maps for a specific project ("Functionality Maps")
- ✓ describe how services are fulfilled (see "Service Point Fulfillment")
- ✓ specify through which contract the functionality is fulfilled ("Service Point Fulfillment")

The DoDAF-described Models within the Services Viewpoint describe services and their interconnections providing or supporting DoD functions.

DoD functions include both war fighting and business functions. The Service Models associate service resources to the operational and capability requirements. These resources support the operational activities and facilitate the exchange of information. The relationship between architectural data elements across the Services Viewpoint to the Operational Viewpoint and Capability Viewpoint can be exemplified as services are procured and fielded to support the operations and capabilities of organizations. The structural and behavioral models in the OVs and SvcVs allow architects and stakeholders to quickly ascertain which functions are carried out by humans and which by Services for each alternative specification and so carry out trade analysis based on risk, cost, reliability, etc.

Services are not limited to internal system functions and can include Graphical User Interface (GUI) functions or functions that consume or produce service data to or from service functions. The external service data providers and consumers can be used to represent the human that interacts with the services.

SvcV-1 Services Context Description

SvcV-1 Description

SvcV-1	SvcV-1 Services Context Description	The identification of services, service items, and their interconnections.

For a more detailed description see the DoDAF web site: SvcV-1: Services Context Description.

SvcV-1 HOPEX Implementation

Service Catalogs

A service catalog describes the list of functionalities covered by a service as well as the technical or functional items that implement these functionalities.

> *Service Catalogs provide a central source of information on the services delivered by the service provider organization. It contains a customer-facing view of the services in use, how they are intended to be used, the process they enable and the levels and quality of service the customer can expect from each service. The service catalog provides the list of reference functionalities and their recommended implementation.*

See "SvcV-1 Service Catalogs", page 153.

Service Catalog Items

A service catalog is made up of service catalog items. Each service catalog item is connected to one or more functionalities.

You therefore need to populate your service catalog with functionalities and specify how they are fulfilled.

> *A service catalog item defines which functionality is part of the catalog and which artifacts are fulfilling the functionality.*

See "Populating service catalogs and specify functionality fulfillment", page 154.

The fulfillment of a functionality is represented by a *realization*.

> *A realization describes the relationship between a logical entity and a physical entity that implements it. The physical entity gives the list of logical entities that it implements.*

Functionality Maps

A functionality map is an assembly of functionalities and their dependencies that, together, define the scope of a hardware or software architecture.

There are three types of functionality maps:

- Functionality maps,
- Technical Functionality maps
- Hardware Functionality maps

You can create functionality map diagrams in which you can insert:

- functionality components
- functionality dependencies

Functionalities

A functionality is a service required by an organization in order to perform its work. This functionality is generally necessary within an activity in order to execute a specific operation. If it is a software functionality, it can be provided by a system.

> 🕮 *A technical functionality is the ability to deliver a technical information which is required by a technical artifact in order to function properly. This technical functionality is generally required within a technical process handled by the technical artifact.*
>
> 🕮 *A hardware functionality is the ability to deliver a physical outcome which is required by an organizational resource in order to perform its work. This hardware functionality is generally necessary within an operational activity in order to execute a specific operation.*

See "Functionality Diagram", page 155.

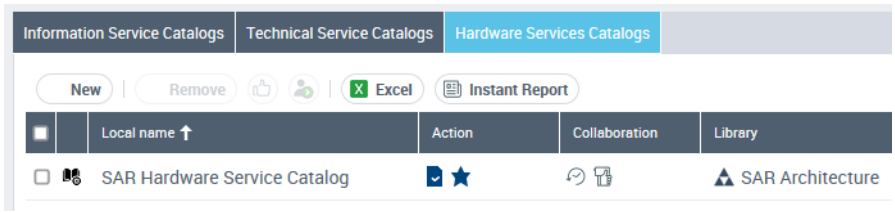
SvcV-1 Service Catalogs

Accessing service catalogs

To access service catalogs:

1. From the navigation menu, click **Services Viewpoint > SvcV-1 > Services Catalogs**.
   Three tabs correspond to the different types of service catalogs.
   - Technical Service Catalog
   - Information Service Catalog
   - Hardware Service Catalog

   > 🕮 *The Technical Service Catalog provides a central source of information on the technical services delivered by the service provider organization. It contains a customer-facing view of the Technical services in use, how they are intended to be used, the process they enable, and the levels and quality of service the customer can expect from each service. The Technical Service Catalog provides the list of reference IT functionalities and their recommended implementation.*



Once you have created the service catalog you need to specify the service catalog items, which are functionalities.

A service catalog item defines which functionality is part of the catalog and which artifacts are fulfilling the functionality.

☛ *You can create catalog items from the service catalog properties or from the "Service Catalog Items" tile.*

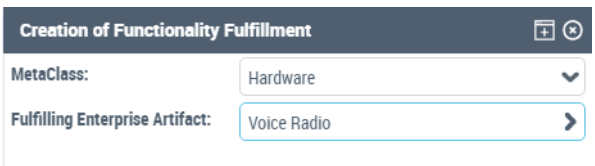
Populating service catalogs and specify functionality fulfillment

Now you need to:

- populate your service catalog with service catalog items (linked to functionalities)
- specify how the functionality is fulfilled.

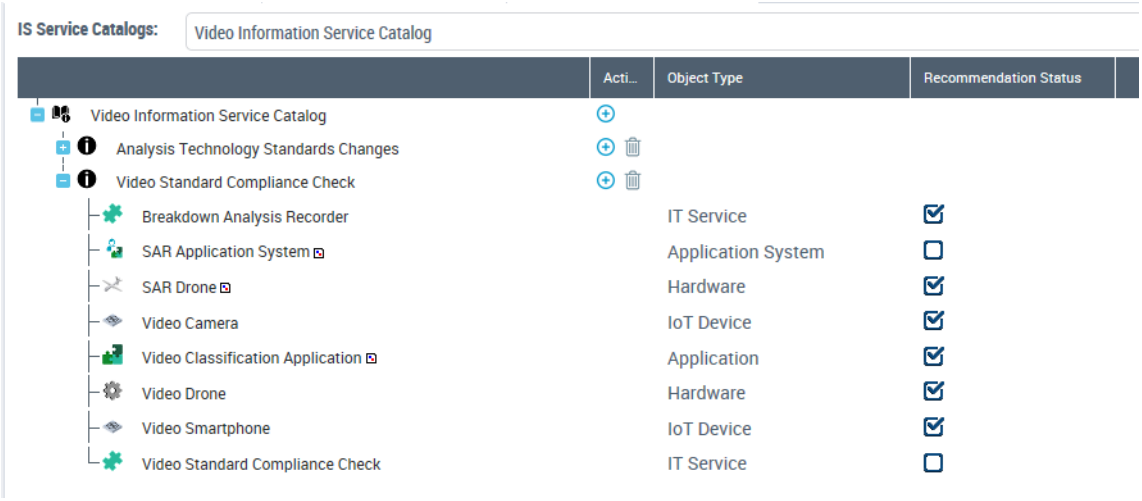
To populate your service catalog:

1. In the navigation menu click **Services Viewpoint > SvcV-1 Services Context Description > Service Catalog Items**.
2. Select one of the tabs corresponding to the type of service catalog of interest to you.
   - Technical service catalog item
   - Information service catalog item
   - Hardware service catalog item
3. Select a service catalog from the drop-down list and create catalog items (which are functionalities).
   You are now going to specify which object fulfills each functionality.
4. Position your cursor at the right end of the interface at the catalog item level and click the ⊕ sign which appears.
   A dialog box enables you to specify how the functionality is fulfilled.



☛ *A functionality can be fulfilled by several objects (called also agents or artifacts).*

5. In the **Recommendation Status** column, select the objects you actually want to include in your service catalog.

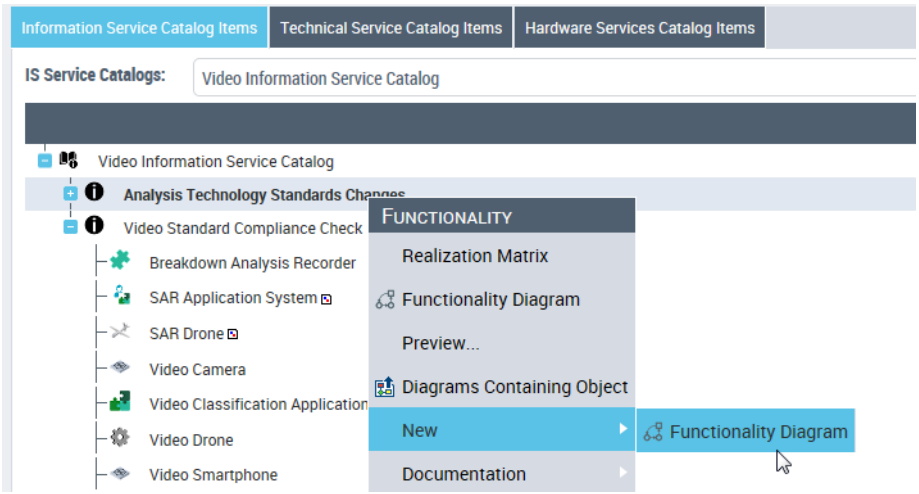


☛ *The realizations can be accessed from the property page of service catalog items.*

Functionality Diagram

To create a functionality diagram:

1. In the navigation menu click **Services Viewpoint > SvcV-1 Services Context Description > Service Catalog Items**.
2. Right-click a service catalog item from your asset catalog and select **New Functionality Diagram**.



You can display the following in this type of diagram:

- Technical functionalities

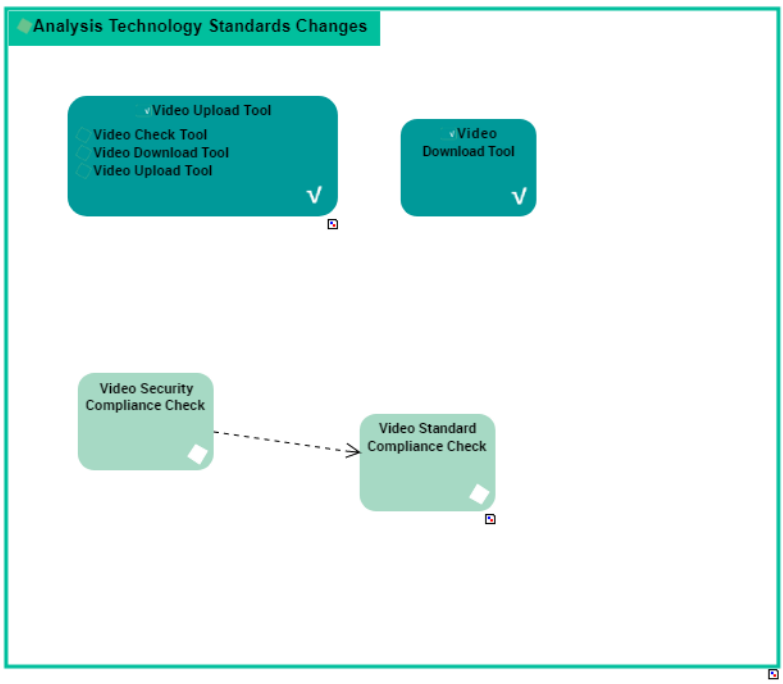
  ☛ *A technical functionality is the ability to deliver a technical information which is required by a technical artifact in order to function properly. This technical functionality is generally required within a technical process handled by the technical artifact.*

- Functionality components

  🕮 *A functionality component represents a sub-functionality in a functionality map or a functionality.*

- Functionality dependencies

  🕮 *A functionality dependency is a relationship which asserts that a functionality is dependent on another (required functionality), in the context of a Functionality Building Block (owner), with respect to its desired effect.*



Example of functionality diagram

SvcV-2 Service Resource Flow Description

SvcV-2 Description

Purpose of SvcV-2

SvcV-2	SvcV-2 Service Resource Flow Description	A description of Resource Flows exchanged between services.

The SvcV-2 Service Resource Flow Description model describes Resource Flows exchanged between Services. Service definition includes, among other things, the definition of interfaces, and connecting the interfaces to service definition components.

Detailed Description

See the DoDAF web site: SvcV-2: Service Resource Flow Description.

SVcV-2 HOPEX Implementation

Services Hierarchy

This is a hierarchical description of services (functionalities, technical functionalities, hardware functionalities).

> 🕮 *A functionality is a service required by an organization in order to perform its work. This functionality is generally necessary within an activity in order to execute a specific operation. If it is a software functionality, it can be provided by a system.*

Service Point Fulfillment

An editor enables you to specify how services are fulfilled.

In this tile you only see the functionalities which have been selected in SVcV-1.

> 🕮 *The Information Service Catalog provides a central source of information on the Information services delivered by the service provider organization. It provides the list of reference functionalities and their recommended implementation.*

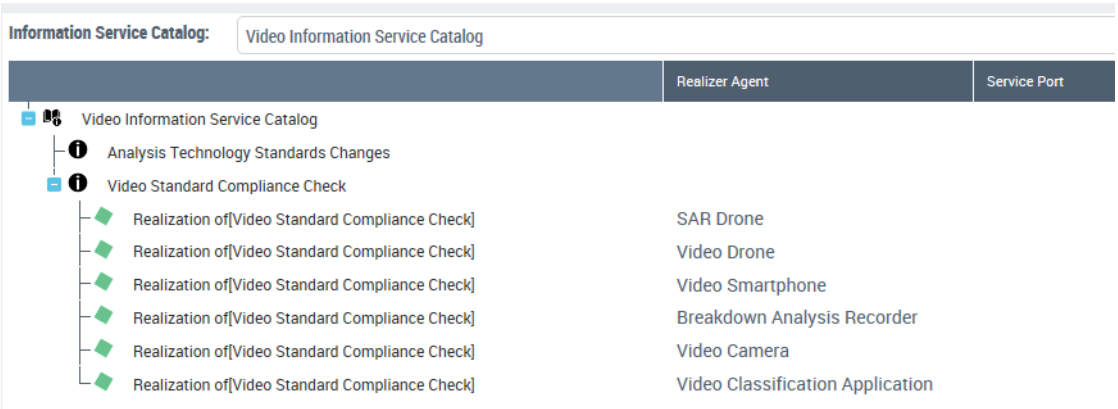
Here you can specify:

- which system(s) fulfill(s) a functionality (**Realizer Agent** column).

  ☛ *Only the objects/systems which have been selected in SVcV-1 appear here. For more information see "Populating service catalogs and specify functionality fulfillment", page 154.*

- through which exchange contract the functionality is realized (**Service Port** column).

  ☛ *The Service port is an exchange contract specified in the application structure diagram. For more information see "SV1- Defining Systems", page 200.*



Functionality Dependencies

This list displays functionality dependencies, together with the dependent and desired application effects.

📖 *A functionality dependency is a relationship which asserts that a functionality is dependent on another (required functionality), in the context of a Functionality Building Block (owner), with respect to its desired effect.*

Functionality dependencies naming

You cannot change the name of a functionality dependency. The name is built as follows:

[Name of the dependent functionality] -> [Name of the required functionality]

Desired Effect

A desired application effect is the effect (or applicative outcome) desired by a functionality.

It can be required by another functionality through a functionality dependency.

SvcV-3a Systems-Service Matrix

SvcV-3a Description

Purpose of SvcV-3a

SvcV-3a	SvcV-3a Systems-Service Matrix	The relationships among or between systems and services in a given Architectural Description.

Detailed description of SvcV-3a

See SvcV-3a: Systems-Services Matrix

SvcV-3a HOPEX Implementation

A matrix helps create Resource flows between systems, application systems and organizations without using diagram.

The SvcV-3a Systems-Services Matrix describes the relationships among or between systems and services in a given Architectural Description. A SvcV-3a enables a quick overview of all the system-to-service resource interactions specified in one or more SvcV-1 Services Context Description models.

Services Hierarchy

Services hierarchy offers a hierarchical description of services (functionalities, technical functionalities and hardware functionalities).

Service Catalog Report

To access the SvcV-3a report:

- From the navigation menu, select **Services Viewpoint > SvcV-3a Systems-Services Matrix > Service catalog report**.

This report consists of a table displaying:

- service catalogs and service catalog items together with realizers and service points

  A Service Catalog is a list of key service offerings for which a set of recommended solutions are proposed.

  A service point is a point from which a system receives a request from another system and provides the requested service.

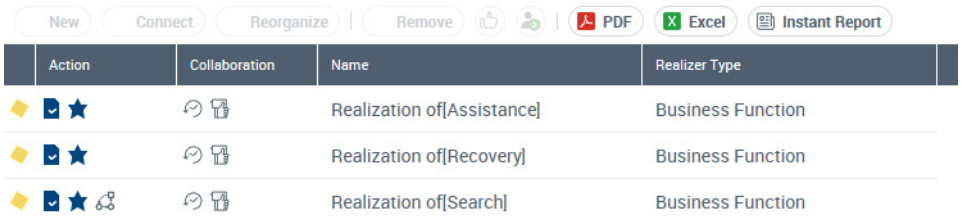
- interactions with their context.

Service Catalog	Service Catalog Item	Agent Realizer	Service Point	Interact with	Context of Interaction
SAR Business Service Catalog					
SAR Technical Service Catalog					
SAR Hardware Service Catalog	Lifejacket Functionalities				
Video Information Service Catalog	Analysis Technology Standards Changes				
Video Technical Service Catalog	Video Upload Tool				
DODAF Business Transformation 1	Video User Authentication	Medical Assistance			
Video Hardware Service Catalog	Video Luminosity Measurement	Luminosity Measurement Tool			
Video Information Service Catalog	Video Standard Compliance Check	Breakdown Analysis Recorder			
		Video Camera			
		SAR Drone			
		Video Drone			
		Video Smartphone			
Video Hardware Service Catalog	Hardware Service Catalog Item	Tracking System		ESM System	Lifeboat
Video Information Service Catalog	Video Standard Compliance Check	Video Classification Application		Video Check Application	Video Management Application Environment

Functionality realizations

This tile lists functionalities with their realizer.

Realization refers to compliance to an operating model.



SvcV-3b Services-Services Matrix

SvcV-3b Description

SvcV-3b	SvcV-3b Services-Services Matrix	The relationships among services in a given Architectural Description. It can be designed to show relationships of interest, (e.g., service-type interfaces, planned vs. existing interfaces).

The SvcV-3b Services-Services Matrix describes the relationships among services in a given Architectural Description. It can be designed to show relationships of interest, (e.g., service-type interfaces, planned vs. existing interfaces).

Detailed Description

For more information see the DoDAF web site: SVcV-3b Services-Services Matrix.

Links with other viewpoints

A SvcV-3b enables a quick overview of all the services resource interactions specified in one or more SvcV-1 Services Context Description models.

See "SvcV-1 Services Context Description".

SvcV-3b HOPEX Implementation

SvcV-3b implementation is identical to SvcV-3a implementation.

See "SvcV-3a HOPEX Implementation", page 159.

SvcV-4 Services Functionality Description

SvcV-4 Description

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

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

For a detailed description see the DoDAF web site: SVcV-4 Services Functionality Description.

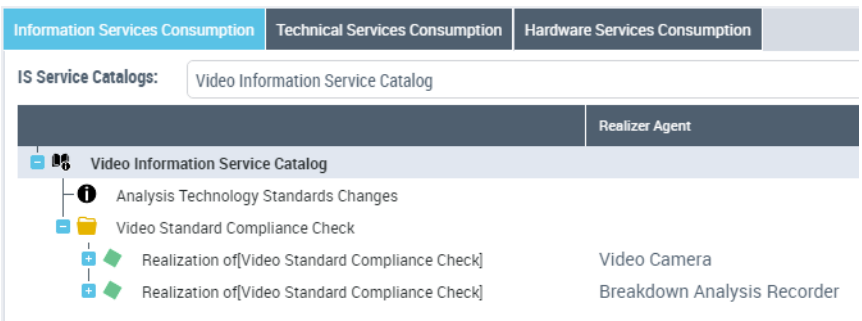
SvcV-4 HOPEX Implementation

Services Consumption

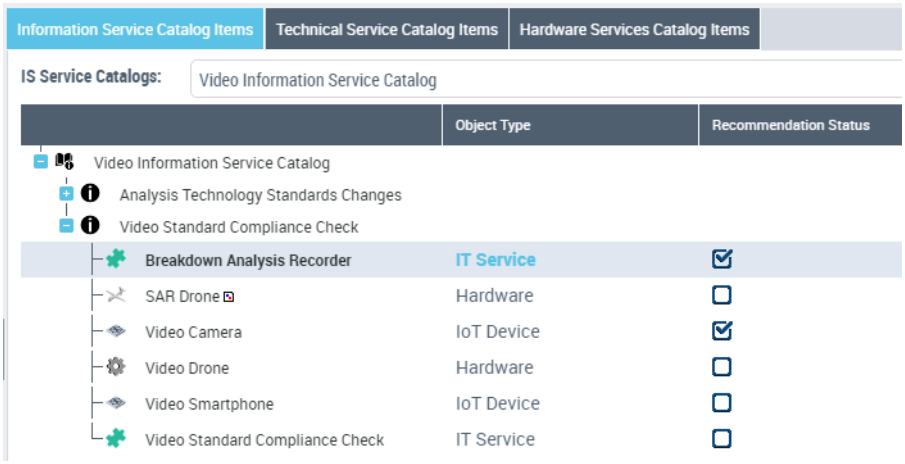
This tile gives access to:

- Information Services Consumption
- Technical Services Consumption
- Hardware Services Consumption

From here you can view the realizations concerning a specific service catalog item:



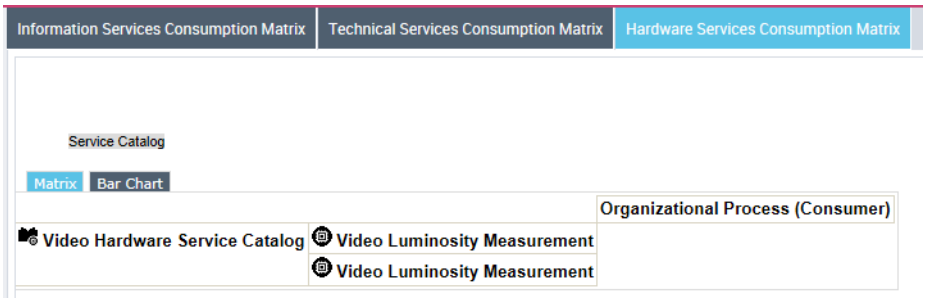
The functionalities (realizer agents) correspond to what has been checked in the SvCV-1 (see "Service Catalog Items"):



Services Consumption Matrix

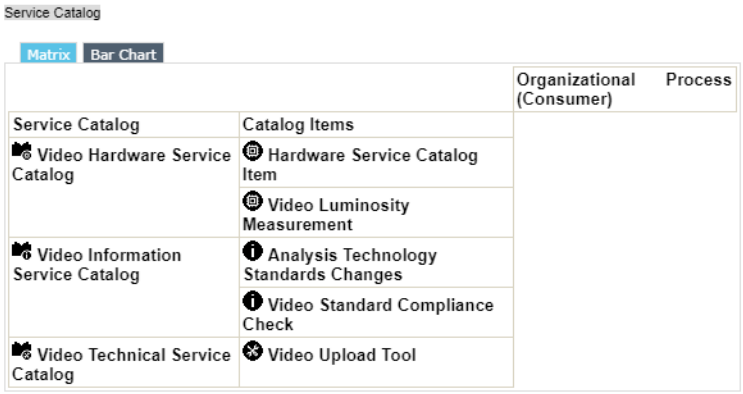
A services consumption matrix is made available for:

- Information Services
- Technical Services
- Hardware Services



Services Consumption Reports

When creating this report, you need to specify the list of services catalogs you need to use.


Service Catalog

Matrix Bar Chart

		Organizational Process (Consumer)
Service Catalog	Catalog Items	
Video Hardware Service Catalog	Hardware Service Catalog Item	
	Video Luminosity Measurement	
Video Information Service Catalog	Analysis Technology Standards Changes	
	Video Standard Compliance Check	
Video Technical Service Catalog	Video Upload Tool	

SvcV-5 Operational Activity to Services Traceability Matrix

SvcV-5 Description

The SvcV-5 Operational Activity to Services Traceability Matrix presents a mapping of services (activities) back to operational activities (activities).

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

For a detailed description see the DoDAF web site: SVcV-5 Operational Activity to Services Traceability Matrix.

SvcV-5 HOPEX Implementation

The SvcV-5 offers an operational activity to services traceability matrix report.

You need to specify service catalogs as an input parameter.

A Service Catalog is a list of key service offerings for which a set of recommended solutions are proposed.

		Agent Realizer							
		Breakdown Analysis Recorder		Medical Assistance		Tracking System		Video Camera	
Service Catalog	Service Catalog Item	Activity	Service Point	Activity	Service Point	Activity	Service Point	Activity	Service Point
DODAF Business Transformation 1	Video Upload								
	Video User Authentication								
	Video User Download								
	Video user Update								
SAR Hardware Service Catalog	Lifejacket Functionalities								
Video Hardware Service Catalog	Hardware Service Catalog Item								
	Video Luminosity Measurement								
Video Information Service Catalog	Analysis Technology Standards Changes								
	Video Standard Compliance Check								
Video Technical Service Catalog	Video Upload Tool								

SvcV-6 Services Resource Flow Matrix

The SvcV-6 Services Resource Flow Matrix provides details of service Resource Flow elements being exchanged between services and the attributes of that exchange.

SvcV-6 Description

SvcV-6	SvcV-6 Services Resource Flow Matrix	It provides details of service Resource Flow elements being exchanged between services and the attributes of that exchange.

For a detailed description see the DoDAF web site: SVcV-6 Services Resource Flow Matrix.

SvcV-6 HOPEX Implementation

The SvcV-6 consists of:

- the Services hierarchy which enables navigating between functionalities
- the matrix and reports found in SV-6, which describe system scenarios and the exchanged flows between resource participants.

For more information, see:

- "System Resource Flow Matrix"
- "System Resource Flow Reports"

SvcV-7 Services Measures Matrix

SvcV-7 Description

SvcV-7	SvcV-7 Services Measures Matrix	The measures (metrics) of Services Model elements for the appropriate timeframe(s)

For a detailed description see the DoDAF web site: SVcV-7 Services Measures Matrix.

SvcV-7 HOPEX Implementation

For more information on KPIs and KPI dimensions see "Managing Metrics (KPI dimensions)".

See also "SV-7 HOPEX Implementation".

SvcV-8 Services Evolution Description

SvcV-8 Description

SvcV-8	SvcV-8 Services Evolution Description	The planned incremental steps toward migrating a suite of services to a more efficient suite or toward evolving current services to a future implementation.

For a detailed description see the DoDAF web site: SVcV- Services Evolution Description.

SvcV-8 Implementation

HOPEX enables you to create an asset catalog and manage object life cycles.

You can specify system availability dates and indicates which system supersedes the previous one. Only the production state is taken into account here.

Systems Evolution Hierarchy

This displays the hierarchical description of software and hardware asset catalogs.

Asset Catalog Description

The SvcV-8 enables you to view and create asset catalogs. They can be of the following types:

Type of asset catalog	Related Object Types
Hardware Catalog	Hardware
Software Catalog	System Application System
Other	Other IT-related Object Types

Managing SvcV-8 Asset Catalogs

Asset catalogs enable to define the sequence of system object lives.

Creating an asset catalog

To create a system or hardware asset catalog:

1. In the navigation menu, click **Systems Viewpoint > SV-8 Systems Evolution Description > Catalog Description**.
2. Click **New** to create a catalog.
3. In the dialog box that appears, the type of catalog you need:
   - **Hardware Catalog**
   - **Software Catalog**
   - **Other** (System, Application system, IT Device, ...)

Specifying the object life of asset catalog items

An editor enables you to create asset catalog items and to specify their object life at the same time.

To create asset catalog items:

1. Select an asset catalog.
   A catalog editor is displayed in the lower part of the window. It enables you to add an object life to catalog items.
2. Position your cursor at the catalog level and click **Add** in the **Action** column.
   A dialog box appears so that you could create an object life.

   An object life is the set of time periods representing the current schedule of states for an object.

   The Action toolbar enables you to create or remove object lives.
3. Select a **Catalogued asset** and a **Lifecycle to follow**:
   - Application Development Lifecycle

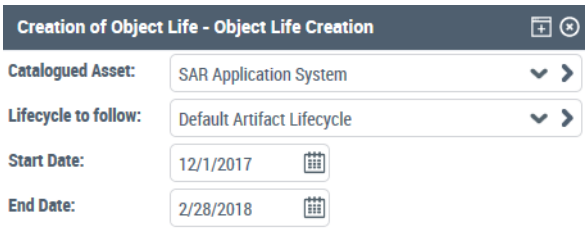
     This lifecycle is dedicated to software applications.
   - Default Artifact Lifecycle

     This lifecycle has to be used for physical assets (servers for example).

     A lifecycle consists of a state machine.

     A state machine is a set of states and transitions governing the state changes that can match any time-dependent object.

4. Select a time period by specifying a start and end date.



5. Click **OK**.
   You can create as many catalog items as needed.

Creating a catalog item between items

You may also need to create catalog items between two items.

To do so:

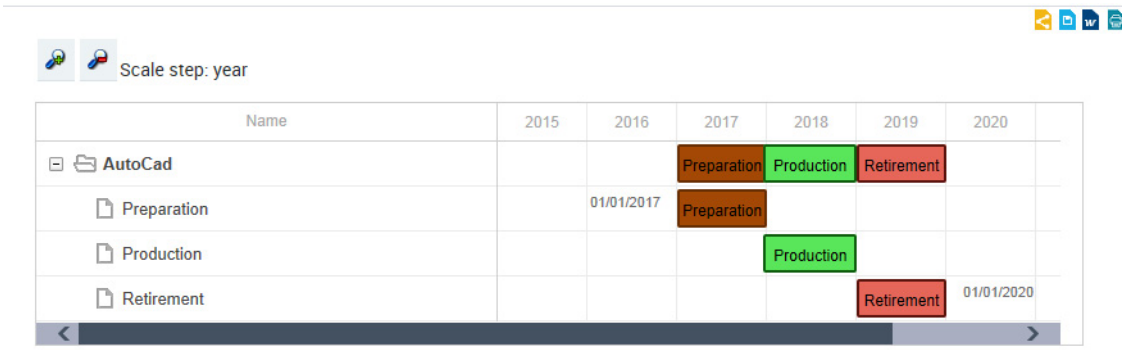
- Use the **Insert** button to add an item above the selected item.

This way, you can specify how items replace one another within a specific time frame. It gives you the possibility to create a time sequence for object use.

Viewing lifecycles in the form of a Gantt chart

To view the lifecycle of an asset catalog in the form of a Gantt chart:

1. Click a software catalog and select the **Open Gantt chart** button.
   A Gantt chart appears.
   You can slide the horizontal bar charts of the Gantt diagram to modify dates easily.



SvcV-9 Services Technology & Skills Forecast

SVcV-9 Description

SvcV-9	SvcV-9 Services Technology & Skills Forecast"	The emerging technologies, software/hardware products, and skills that are expected to be available in a given set of time frames and that will affect future service development.

For a detailed description see the DoDAF web site: SVcV-9 Services technology & Skills Forecast.

SVcV-9 HOPEX Implementation

The SVcV-9 enables you to define the life of position types and system technologies. After entering the relevant periods for each catalog item, you can view and modify them through a Gantt chart.

Systems Technology Hierarchy View

This tree displays a hierarchical description of system technology asset catalogs.

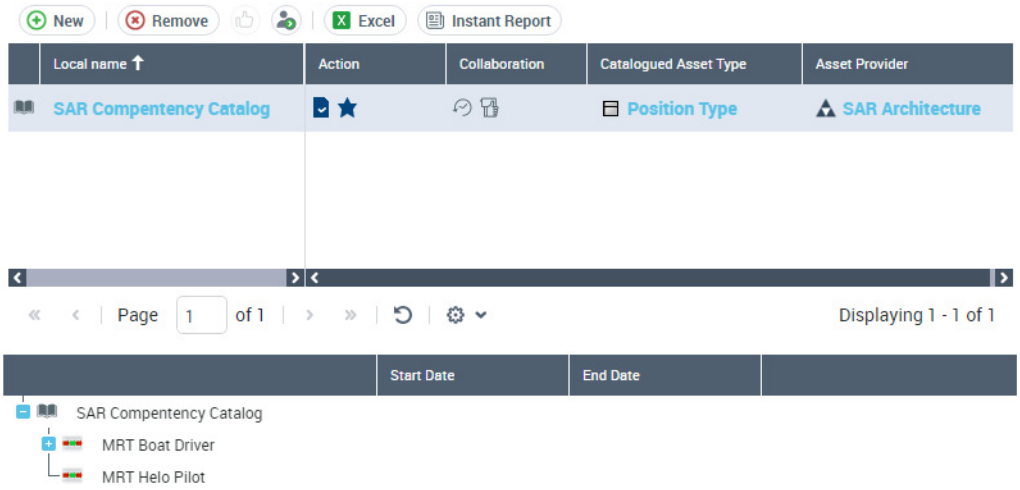
Skill Forecast Catalog

This tile displays the list of position type catalogs. You can define an object life for each catalog item (position type) and allocate different periods of time for each of them.

For more information on how to use a catalog editor, see "Specifying the object life of asset catalog items", page 170.

To plan the skills required concerning service technologies:

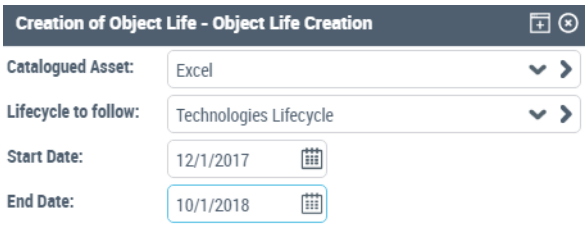
- In the navigation menu, click **Services Viewpoint > SvcV-9 Services Technology & Skills Forecast > Skills Forecast**.
  Here you need to use an asset catalog which contains position types.



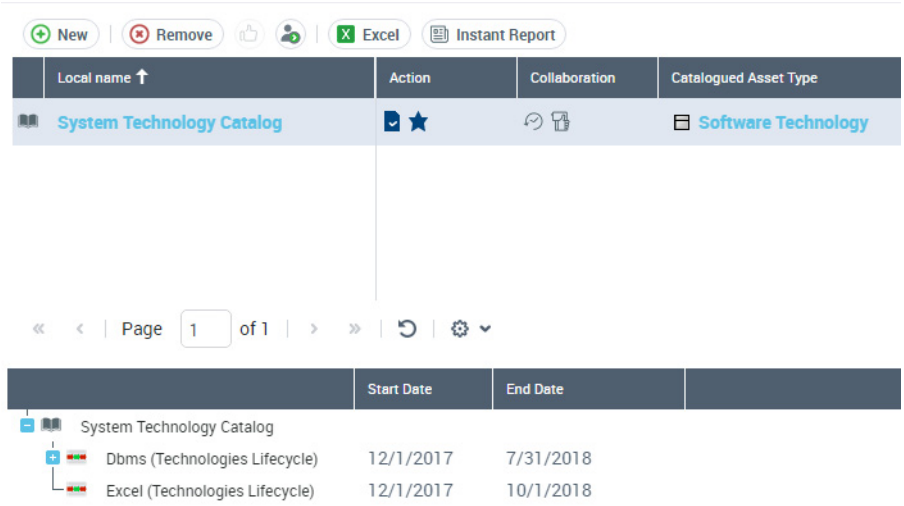
System Technology Catalog

This tile enables you to create a system technology catalog for your system technology objects.

After creating your system technology catalog you need to create object lives for your technologies. This enables you to specify applicability dates.



You obtain a catalog as follows:



SvcV-10a Services Rules Model

SvcV-10a Description

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

For a detailed description see the DoDAF web site: SVcV-10a Services Rules Model.

SvcV-10a HOPEX Implementation

System Rules

A rule is a constraint represented by a control or a business rule that must be applied during processing.

The same way your operational rules can apply to capabilities, system rules can apply to system functions.

You can connect system functions in the **Characteristics** property page of a system rule.

System Rules Matrix

This matrix enables matrix creation of System Functions and Rule Enforcement.

It displays:

- System functions in rows

  📖 *A system function is the executable representation of an operational activity.*

- System rules in columns to illustrate law enforcement

  📖 *A rule is a constraint represented by a control or a business rule that must be applied during processing.*

SvcV-10b Services State Transition Description

SvcV-10b Description

SvcV-10b	SvcV-10b Services State Transition Description"	One of three models used to describe service functionality. It identifies responses of services to events.

The SvcV-10b Services State Transition Description is one of the three models used to describe service functionality. It identifies responses of services to events.

For a detailed description see the DoDAF web site: SVcV-10b Services State Transition Description.

SvcV-10b HOPEX Implementation

With **HOPEX DoDAF**, this viewpoint describes the specific behaviors (state machines) attached to services. A behavior is a specific concept used to describe how a service reacts to different events from start points to end points.

State Machines

A state machine is a set of states and transitions governing the state changes that can match any time-dependent object. It is used to describe how a service reacts to different events from the start points to the end points.

State machine diagrams

A state machine diagram basically represents the sets of events to which the systems in the architecture will respond (by taking an action to move to a new state) as a function of its current state. Each transition specifies an event and an action.

A state machine diagram enables description of possible behaviors of an object, depending on the events it experiences during its life cycle.

See "SvcV-10b State Machine Diagrams", page 177.

SvcV-10b State Machine Diagrams

To create a state machine and its associated diagram:

1. In the navigation menu, click **Services Viewpoint > SvcV-10b Services State Transition Description**.
2. Create a state machine.
   From its pop-up menu you can create a state machine diagram.

In the diagram object toolbar, the following ***state kinds*** are available:

- Normal
- Initial

  ☛ *The initial state is used at the time of creation.*
- Final
- Deep History

  ☛ *Deep History represents the most recent active configuration of the composite state that directly contains this pseudostate; that is, the state configuration that was active when the composite state was last exited.*
- Shallow History

  ☛ *Shallow History object state represents the most recent active substate of its containing state.*
- Activity

  ☛ *Activity object state means it executes a series of non-atomic steps of a certain duration.*
- Action

  ☛ *Action object state represents the execution of an atomic action. The outgoing transition is triggered as soon as the action has completed its execution.*
- Fork

  ☛ *Fork is used when several activities are launched simultaneously.*
- Join

  ☛ *Join is used when several activities merge into one.*
- Choice

  ☛ *Choice allows selection between several possible transitions.*
- Junction

  ☛ *Junction is used when,there are several transitions from orthogonal regions.*
- Synchronization

  ☛ *Synchronisation is used in the event of several concurrent regions of a state machine.*
- Object flow

  ☛ *Object flow that is in the process of circulation. This kind of state terminates when the object flow reaches its destination. Example: an order in the 'Delivery in progress' state. In this case, it is possible to specify the corresponding class and its state. These are then displayed instead of the state name.*

In the diagram object toolbar, the following ***pseudo-state kinds*** are available:

- Initial

  ☛ *An initial pseudostate represents a default vertex that is the source for a single transition to the default state of a composite state.*

- Deep History

  ☛ *deepHistory represents the most recent active configuration of the composite state that directly contains this pseudostate (e.g., the state configuration that was active when the composite state was last exited).*

- Shallow History

  ☛ *Shallow history represents the most recent active substate of its containing state (but not the substates of that substate).*

- Fork

  ☛ *Forks is used to split an incoming transition into two or more parallel transitions.*

- Join

  ☛ *Join is used to merge several transitions into one transition.*

- Choice

  ☛ *A choice splits transitions into multiple outgoing paths.*

- Junction

  ☛ *Junctions are used to construct compound transition paths between states.*

- Entry point

  ☛ *An entry point pseudostate is an entry point of a state machine or composite state.*

- Exit point

  ☛ *An exit point pseudostate is an exit point of a state machine or composite state.*

- Reference

  ☛ *It is a reference to an entry or an exit of a state machine or composite state.*

- Terminate

  ☛ *Entering a terminate pseudostate implies that the execution of this state machine by means is terminated.*

SvcV-10c Services Event-Trace Description

SVcV-10c Description

The SvcV-10c Services Event-Trace Description is used to describe service functionality. It identifies service-specific refinements of critical sequences of events described in System Services.

SvcV-10c	SvcV-10c Services Event-Trace Description	One of three models used to describe service functionality. It identifies service-specific refinements of critical sequences of events described in the Operational Viewpoint.

For a detailed description see the DoDAF web site: SVcV-10c Services Event-Trace Description.

SVcV-10c Implementation

Hierarchy of system scenarios

This displays the hierarchical description of system scenarios and application system scenarios.

Scenarios for application system flow environments

An application system flow environment presents globally the flows exchanged between this application system and other application systems, systems, micro-services or organizations.

To create a scenario for an application system flow environment:

1. In the navigation menu, click **Services Viewpoint > SvcV-10c Services Event-Trace Description > Application System Flow Environments**.
2. Click **New**.
3. Right-click the object created and select **New > Application System Environment Scenario**.
   A diagram for the scenario opens.

Scenarios of application system flows

A scenario of application system flows presents the flow exchanged between the other application systems, systems or the micro-services used by this application system. A scenario can represent a specific use case of this application system or, globally, the set of all flows exchanged inside this application system.

For more information search for "Creating an application system structure diagram" in the **HOPEX IT Architecture** documentation.

Scenarios of system flows

A system flow represents an information flow between systems or inside a system. It can carry content.

> *Content designates the content of a message or a message flow, independently of its structure. Content may be used by several messages or message flows, since it is not associated with an sender and a destination.*

A scenario of system flows presents the flow exchanged between the IT services or the micro-services used by this system.

See "SVcV-10c System Flow Scenario Diagram", page 183.

See "Defining the Subject of a Scenario", page 186.

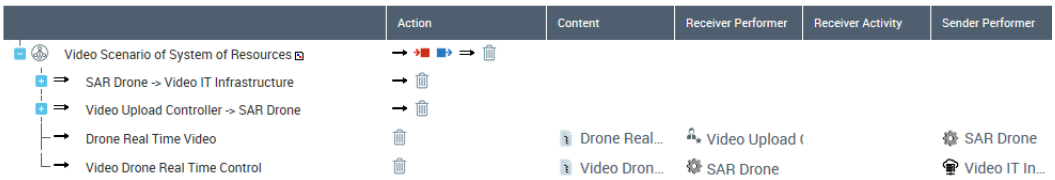
Scenarios of systems of resources

There are different ways to edit a scenario of system of resources.

From the scenario pop-up menu you can use:

- the flow editor
- the lifeline editor
- the diagram editor

Flow editor



Lifeline editor

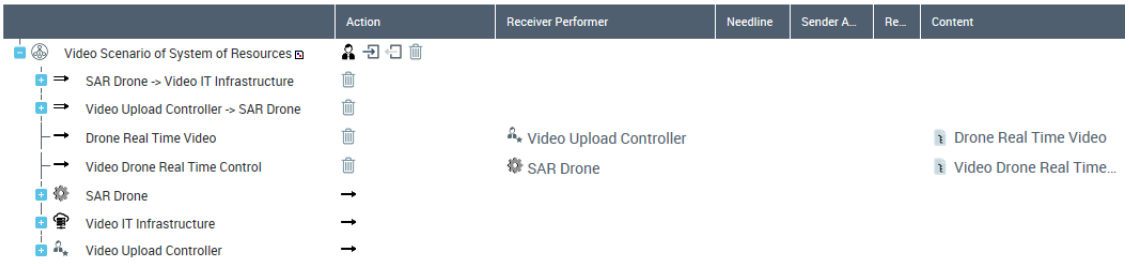
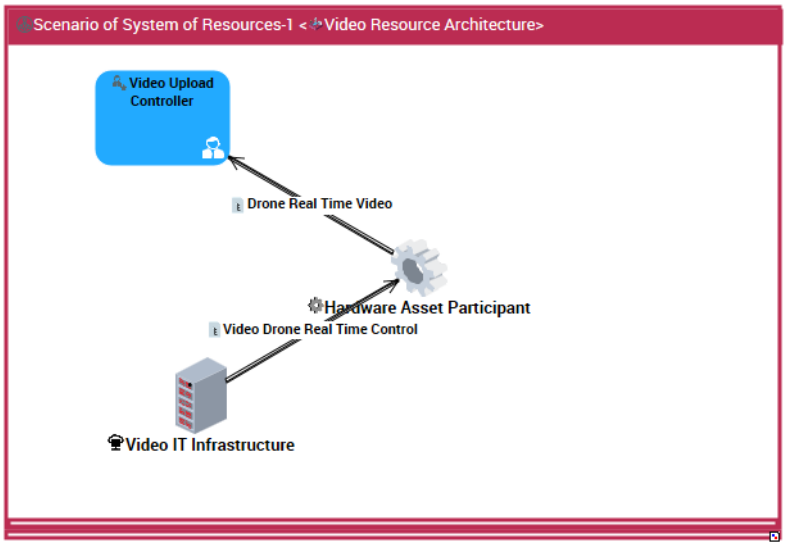


Diagram editor

In this scenario diagram, apart from the usual application input/output gates and application flow channels, you can find:

- IT infrastructure participants
- Hardware asset participants



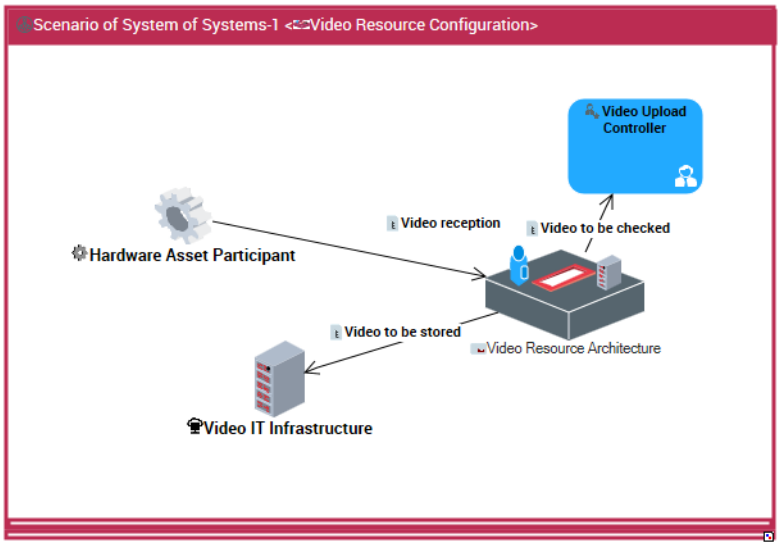
System flow environments

You can create an application flow environment diagram from the system flow environment.

Scenarios of system of resources system

In this scenario diagram, apart from the usual application input/output gates and application flow channels, you can find:

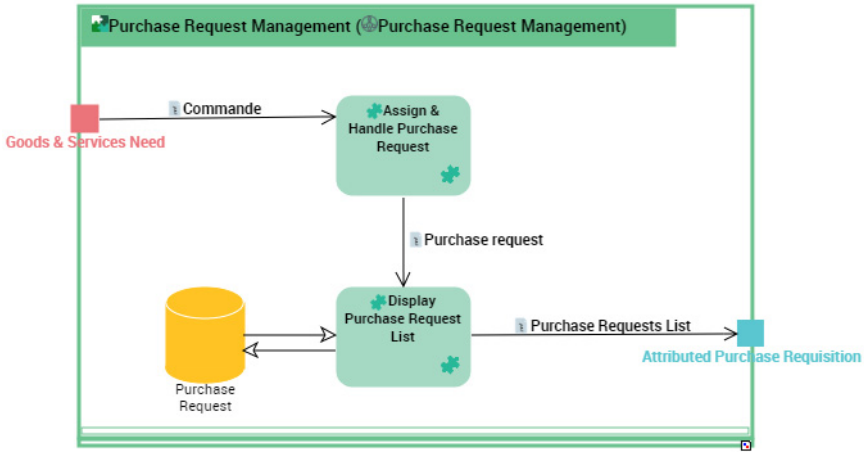
- Human Asset Participants
- Hardware Asset Participants
- IT Infrastructure Participants
- System Interaction Roles



☛ *You can also edit the scenario with the flow or lifeline editor available from the scenario pop-up menu.*

SVcV-10c System Flow Scenario Diagram

A system flow scenario represents the flows exchanged between the elements of the system in a given context.



Example of "eCommerce Purchasing" system flow scenario

The Application Flow Scenario above describes the exchanges between the "Purchase request management" and the other purchase services.

Creating a system flow scenario diagram

To create a system flow scenario diagram:

1. In the navigation menu, click **Systems Viewpoint > SV-10c Systems Event-Trace Description > Scenarios of System Flows**.
2. Create a system flow scenario and from its pop-up menu select **New > Scenario of Application Flows**.

Object types used is a system flow scenario diagram

Object Type	Definition
IT Service	An IT service is a software component of a system. It cannot be deployed alone.
Micro-Service	A micro-service is a software component that can be deployed autonomously, but it does not directly provide a service to the end user.
System Flow	A system flow represents an information flow between systems or inside a system. It can carry content.

Object Type	Definition
Application Flow Channel	An application flow channel allows grouping graphically several system flows into a single flow.
Application Data Store	An application data store materializes the usage of data in the context of a software component (for instance a system). It provides a mechanism to retrieve or update information stored inside or outside the current software component. It can be local or external.
Application Data Channel	Application data channels represent the interactions between application data stores.
Application Input Gate	An application input gate represents the entry point which allows to receive a piece of information inside a system.
Application Output Gate	An application output gate represents the exit point which allows to send a piece of information outside a system.

Adding an IT service

An IT service is a software component of a system. It cannot be deployed alone.

An IT Service realizes a sub-set of the functionalities of this system either for end users of this system or inside the system (or another system). It includes batch programs.

To add an IT Service:

1. In the objects toolbar of the system flow scenario, click **IT Service**.
2. Click the described IT Service frame in the diagram edit area.
   A window box prompts you to choose the **IT service** implemented (for example "Customer management").
3. Select the IT service required and click **OK**.
   The IT service appears in the diagram.

Adding a micro-service

A micro-service is a software component that can be deployed autonomously, but it does not directly provide a service to the end user.

It can interact with other IT Services, Systems or Application systems. It uses software technologies. Examples: Authentication service, PDF Printing service.

You can add a micro-service the same way as described above.

Managing system flows

Creating a system flow with content

A system flow represents an information flow between systems or inside a system. It can carry content.

The system flows exchanged between the application systems, the micro-services or the organizations of an application flow scenario are associated with a *content*.

> 🕮 *The content designates the content of a message or an event, independent of its structure. This structure is represented by an XML schema linked to the content. A content may be used by several messages, since it is not associated with a sender and a destination. There can be only one content per message or event, but the same content can be used by several messages or events.*

You must specify the *content* of a system flow directly at flow creation.

To create the *system flow*:

1. Click the reel in the objects toolbar of a system flow scenario.
2. Click the first object representing the sender of the flow and, holding the mouse button pressed, draw a link to the object receiving the flow.
   The **Application Flow Creation** dialog box opens.
3. In the **Content** drop-down list, select the content you wish to associate with the flow.
   The application flow is displayed with its content in the diagram.

Creating an application flow channel

> 🕮 *An application flow channel is used to graphically group a number of application flows into a single flow.*

To create an application flow channel, you must first create the channel and then link the system flows that it groups together.

To create an *application flow channel*:

1. In the objects toolbar of the system flow scenario, click **Application Flow Channel**.
2. Click the first object in communication and, holding the mouse button pressed, draw a link to the other object.
   The application flow channel appears in the diagram.

Connecting system flows to an application flow channel

To connect the system flows to the *application flow channel*:

1. Open the **Characteristics** properties page of the application flow channel.
2. In the **Grouped Flows** section, click **Connect**.
   A selection dialog box opens and presents the list of the ungrouped system flows of the system flow scenario.
3. Select the flows that you want to group and click **OK**.
   The system flow content appears with an arrow that marks the direction of the flow.

To avoid overcrowding your diagram, you can choose to hide the system flows which are part of the application flow channel.

To refresh the diagram:

- Click the **Refresh needlines** button in the upper diagram toolbar.

Adding an application data store to the system flow scenario

A data store provides a mechanism to update or consult data that will persist beyond the scope of the current process. It enables storage of input message flows, and their retransmission via one or several output message flows.

This data store can be local or external to the system.

To add, for example, a local application data store to a system flow scenario:

1. In the scenario objects toolbar, click **Local Application Data Store**.
2. Click the described system frame in the diagram edit area.
   A window prompts you to choose the **Object Type** that represents the physical structure that will concretely support the application data store.
3. Click **OK**.
   The local application data store appears in the diagram with the name of the physical data area selected.

Creating an application data channel

The systems, the application systems and the micro-services can have read or write access to a local or external application data store.

> 🕮 *Application data channels represent the interactions between application data stores.*

To create an application data channel that represents a reading access:

1. In the diagram objects toolbar, click **Application Data Channel**.
2. Draw a link between the application data store and the object that reads the data.
   An application data channel automatically appears in the scenario.

   > ☛ *To create a link with write access, you must draw a link between the object that writes and the application data store.*

Defining the Subject of a Scenario

Once you have defined a scenario to model flows between participants, it is important that you map it to an actual object type of the repository.

You need to define a system which is subject of the scenario. You may also choose to define a subject system process as far as the processing is concerned.

To map an operational scenario:

1. In the operational scenario diagram, click the shape of the operational scenario.
2. Display the operational scenario properties and select the **Mapping** page from the drop-down list.
3. In the **Owned Scenario Mapping** section click **New**.
4. Select the **Mapped System**, which is the actual system represented.

(Optional) You can also choose to map the scenario to a system process, which is the description of the activity / processing concerned by the scenario.

To map the operational scenario to a system process:

- (optional) In the Creation of Scenario Mapping dialog box select a **Mapped System Process**, which is the description of the activity concerned.

STANDARDS VIEWPOINT MODELS

The DoDAF-described Models within the Standards Viewpoint is the set of rules governing the arrangement, interaction, and interdependence of parts or elements of the Architectural Description.

These sets of rules can be captured at the enterprise level and applied to each solution, while each solution's architectural description depicts only those rules pertinent to architecture described.

Its purpose is to ensure that a solution satisfies a specified set of operational or capability requirements. The Standards Models capture the doctrinal, operational, business, technical, or industry implementation guidelines upon which engineering specifications are based, common building blocks are established, and solutions are developed. It includes a collection of the doctrinal, operational, business, technical, or industry standards, implementation conventions, standards options, rules, and criteria that can be organized into profiles that govern solution elements for a given architecture.

Current DoD guidance requires the Technical Standards portions of models be produced from DISR to determine the minimum set of standards and guidelines for the acquisition of all DoD systems that produce, use, or exchange information.

- ✓ "StdV-1 - Standards Profile", page 190
- ✓ "StdV-2 Standards Forecast", page 192

StdV-1 - Standards Profile

StdV-1 Description

Model	Description
StdV-1 - Standards Profile	The listing of standards that apply to solution elements.

For a more detailed description see the DoDAF web site: StdV-1: Standards Profile.

StdV-1 HOPEX Implementation

The Standards Profile model (StdV-1) provides a list of the technical, operational and business standards that guide and constrain the implementation of systems as defined in the various models of the System Viewpoint.

In **HOPEX DoDAF** the standard notion encompasses all the technical and non technical items that are recommended by the company for designing the architecture.

> 🕮 *A standard is a definition or format that has been approved by a recognized standards organization or is accepted as a de facto standard by the industry.*

Accessing standards

HOPEX DoDAF helps you define standards in a list or in a navigation tree.

To access the list of standards:

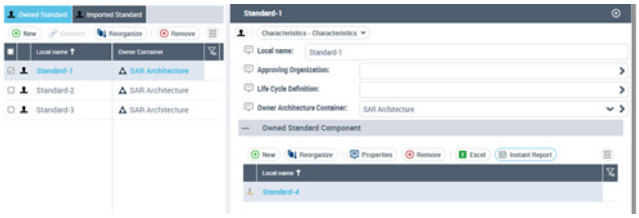
1. In the navigation menu click **Standards viewpoint > StdV-1 Standards Profile > Standards**.
2. Select a standard to open its property page.
   You can describe the standard in more detail. See below for more information.

Specifying standard components

A standard can be decomposed into sub-parts. Each part is called a Standard Component.

To specify the components of the standard:

- In the **Characteristics** page of the standard, specify components in the **Owned Standard Components** section.



Specifying approving organizations

A standard is approved by an organization.

To specify approvers:

1. From the drop-down menu of the standard property page select the **Approval** page.
2. Connect approving organizations.

Completing the definition of the standard

Connecting objects of the repository may help provide a more accurate definition of the standard.

To specify the objects which contribute to the definition of the standard:

1. From the drop-down menu of the standard property page select the **Defining Items** page.
2. Connect the objects which are part of the definition of the standard.

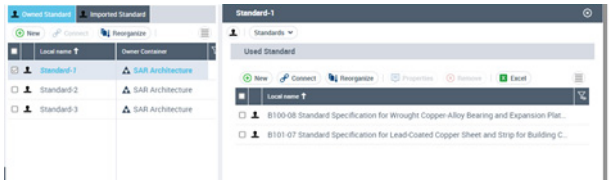
   For example, a system can be considered a defining item for a standard.

Specifying the standards used

You can specify which standards are used in the standard being defined.

To do so:

1. From the drop-down menu of the standard property page select the **Standards** page
2. Specify what other standards are used in the standard.



StdV-2 Standards Forecast

StdV-2 Description

Model	Description
StdV-2 Standards Forecast	The description of emerging standards and potential impact on current solution elements, within a set of time frames.

For a more detailed description see the DoDAF web site: StdV-2: Standards Forecast.

The purpose of the Standards Forecast model (StdV-2) is to identify emerging, obsolete and fragile standards, and to assess their impact on the architecture and its constituent elements. A forecast that addresses emerging standards gives insight into the direction that the project will take.

StdV-2 Implementation

In the StdV-2 you can select a standard asset catalog and create the object life of each catalog item.

An object life is the set of time periods representing the current schedule of states for an object.

Specifying object lives for asset catalog items

To create the object life of asset catalog items:

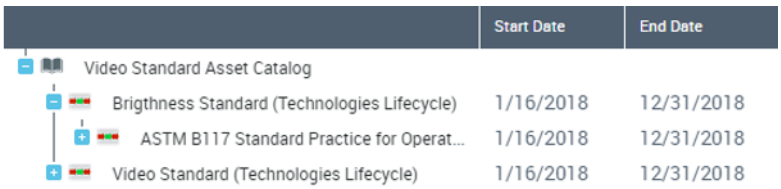
1. Select an asset catalog.
   A catalog editor displays in the lower part of the window.
2. Position your cursor at the right end of the interface at the catalog level and click the ⊕ sign which appears.
   A dialog box appears so that you could create an object life.
3. Select a catalogued asset and the technologies lifecycle.

   A lifecycle consists of a state machine.

   A state machine is a set of states and transitions governing the state changes that can match any time-dependent object.
4. Select a start and end date and click **OK**.

Two different buttons are at your disposal:

- The **Add** button enables you to create an item below the item selected.
- The **Insert** button enables you to insert an item above the selected item. It inserts an item between the previous item and the one selected, which enables you to create a sequence in lifecycles.



Viewing lifecycles in the form of a Gantt chart

To view the lifecycle in the form of a Gantt chart:

1. Click a standard catalog item for example and open its properties.
2. Select the **Object Life** page from the drop-down menu.
   A Gantt chart appears.
   You can slide the horizontal bar charts of the Gantt diagram to modify dates.

SYSTEM VIEWPOINT MODELS

SV-1 Systems Interface Description

SV-1 Description

SV-1	SV-1 Systems Interface Description	The identification of systems, system items, and their interconnections.

For a more detailed description see the DoDAF web site: SV-1: Systems Interface Description.

SV-1 HOPEX Implementation

The SV-1 lists object types used for systems interface description.

System Hierarchy

This tile displays the hierarchical description of systems, application systems and hardware.

Flow Scenarios and Environments

This tile enables you to access all the scenarios available in SV-6.

Several tabs offer you to access:

- application system flow environments
- scenarios of application system flows
- scenarios of systems flows
- scenarios of system of resources
- system flow environments

☛ *For more information, see "SV-6 Systems Data Exchange Matrix", page 226.*

Application Systems

An application system is an assembly of other application systems, systems and end users, in order to realize one or more functionalities (e.g.Payroll System).

It can be decomposed (which is not the case of systems). It can be deployed through the deployment of the systems.

To define application systems, see "SV-1 Defining Application Systems", page 206.

It is possible to design the environment of an application system. See "Application System Environments", page 197.

Application System Environments

An application system environment presents an application system use context. It describes the interactions, between the application system and its external partners, which enables it to fulfill its mission and ensure the expected functionalities.

It shows how all application systems are used.

System users can be of the following types:

- organization (for example the Accounting department)
- position type (for example, sales representative)

It shows interactions between system users and partners.

Systems

A system is a software component that can be deployed and provides users with a set of functionalities.

> ☛ *It is not possible to draw the environment of a system in **HOPEX DoDAF**. You need **HOPEX Application Design** for this. See the corresponding documentation.*

Several types of diagrams are available for systems. See "SV1- Defining Systems".

Exchange contracts

An exchange contract is a model of a contract between organizational entities. This contract is described by exchanges between an initiator role and one or several contributor roles.

For more information, see the corresponding documentation in **HOPEX IT Architecture**, section "Describing data exchanges".

There are different types of exchange contracts:

- system exchange contracts
- business exchange contracts
- infrastructure exchange contracts

An exchange contract diagram displays the following objects:

- An exchange use represents the usage of an exchange in another exchange contract.
- An exchange contract use represents the usage of an exchange contract in another exchange contract.

Facilities

A facility is a model of location of interest for the enterprise. Examples: Data Center, Factory, Outlet.

Hardware

Hardware consists of non-IT equipment.

Non-IT Hardware can embed Computers. Together with their embedded computers, they provide information and IS services. Examples: Connected Truck with Delivery Calendar App, Connected Drone with Online Payment App.

Hardware device can also provide hardware functionalities. Example:- Connected fridge providing ordering functionalities and of course a freezing hardware functionality, connected drones fly and provide Online Payment.

IoT Devices

An IoT Device is both a hardware device and a computing device which provides combined hardware and information services to the users using it directly. As a hardware device, it embeds sensors - e.g. accelerometer - which provide data to the embedded computing device. As a computing device, it can host data stores or run systems.

Examples:

- on-line surveillance video camera with live IP video feed
- connected weighting scale with weight history management

IT Devices

An IT Device is a computing device which provides end-users with a service. This computing device can host data stores or run systems. Examples: workstation, laptop computer, smart phone.

IT Infrastructures

An IT Infrastructure consists of several connected IT Devices (IT Technical Devices or Computing Devices) and IT Networks.

IT Networks

An IT Network is an assembly of IT Technical Devices (e.g. routers, switches, firewalls) enabling remote communications between IT Devices (e.g. IT Servers). An IT Network may breakdown into sub-networks.

IT Peripherical Devices

An IT Peripheral Device can host and run Software Technology. Together with its hosted Software Technologies, it provides Technical Services. Examples:- Wifi Access Point, Firewall, Router, Switch, Printer, Hard Drive, etc.

IT Servers

An IT Server is a computing device which provides a service to the users connected to it via an IT network. This computing device can host data stores or run systems (applications).

Resource Architecture Environments

A Resource architecture environment is an environment context for a Resource Architecture or Facility and its interacting partners.

Resource Architectures

A resource architecture is a combination of used material and organizations configured to provide a capability.

You can create a resource architecture assembly diagram.

For more information, see the corresponding documentation in **HOPEX IT Architecture**. Search the following section: "Adding a Resource Architecture"

Resource Configurations

A Resource Configuration is a set of physical and human resources configured to provide a Business Capability. Example: Soldier with its communication device

SV-1 Concepts and Diagrams

Object Type	Example	Diagram available
"Application Systems"	Payroll System	Application System Environment Diagram Application System Flow Environment Application System Structure Diagram Scenario of Application System Flows Application System Technical Infrastructure
"Systems"	Payroll, Accounting	Application Structure Diagram Scenario of System Flows Application Technical Architecture
"Exchange contracts"		Exchange Contract Diagram
"Facilities"	Data center, factory	Resource Configuration Diagram
"Hardware"	Power generator	Hardware Assembly Structure Diagram
"IoT Devices"	Smart watch with GPS	IoT Device Assembly Diagram
"IT Devices"	Workstation, Laptop	Computing Device Assembly Diagram
"IT Infrastructures"	'Secured high availability sales web platform'	Infrastructure Assembly Structure Diagram
"IT Networks"	Internet, WAN, LAN	Infrastructure Assembly Structure Diagram
"IT Peripherical Devices"	Switch, Router	IT Technical Device Diagram
"IT Servers"		Computing Device Assembly Diagram
"Resource Architecture Environments"		Resource Architecture Environment Diagram
"Resource Architectures"		Resource Architecture Assembly diagram
"Resource Configurations"	Soldier with its communication device	Resource Configuration diagram

SV1- Defining Systems

A project for describing the functional architecture of an information system is used to inventory the existing *systems* and their interactions.

> 🕮 *A system is a software component that can be deployed and provides users with a set of functionalities.*

To create a system:

1. In the navigation menu, click **Systems Viewpoint > SV-1 Systems Interface Description > Systems**.
2. Click **New**.
   The new system appears in the list.

You can describe a system with several types of diagrams:

- a **scenario of system flows** presents the flows exchanged between the services or the micro-services used by the system. A scenario can represent a particular system use case or more globally all the flows exchanged within this system.
- an **application structure diagram** is used to represent the interactions between the service components in the form of exchange contracts.
- an **application technical architecture** is used to represent the technical elements that support the system.

Application technical architecture

An application technical architecture describes one of the configurations possible for system deployment. It describes how the different technical areas of the system are connected to each other and the technologies and the communication protocols that they use. A system can have a number of possible technical architectures (E.g.: autonomous installation, horizontal or vertical deployment, etc.)

The elements represented are:

- application technical areas,

  > 🕮 *An application technical area represents an organizational element of a system according to technical criteria. For example, this can be the user interface or a process. Each application technical area is associated with one or more technologies. The deployment of several application technical areas is necessary for the system to be operational.*

- data technical areas

  > 🕮 *A data technical area represents an organizational element of a system used to access the data necessary for the operation of this system. Each application technical area is associated with one or more technologies (E.g.: Oracle 12, SQL Server 2012, etc.). A data technical area can allow access to one or more data stores.*

- technical input and output ports,

  > 🕮 *An input technical port is a point used to open communications with a technical architecture or an application technical area in compliance with a particular communication protocol (SMTP, HTTP, etc.).*

- technical communication lines.

  > 🕮 *A technical communication line represents a technical connection between application technical architectures or areas through input to output communication ports. The output technical port of a technical area or architecture asks the input technical port of the other technical architecture or area to open the communication line.*

Application structure diagram

An application structure diagram graphically shows first level components of a system, the access points (service point and request point) and the connections between components.

The diagram includes:

- IT services used and deployed with the system.

  📖 *An IT service is a software component of a system. It cannot be deployed alone.*

- micro-services which represent the services used independently of the system.

  📖 *A micro-service is a software component that can be deployed autonomously, but it does not directly provide a service to the end user.*

- access, request and service points
- interactions between components.

  📖 *An Interaction represents a contract between entities in a specific context inside or outside a company. These entities can be organizations, activities, or processes. The content of this contract is described in a protocol.*

Scenario of sytem flows

When creating a scenario of system flows, you have the choice between:

- Application Scenario Sequence Diagram
- Scenario of Application Flows Diagram

Application scenario sequence diagram

For each context of use, you can create a scenario of flow sequence diagram. It presents the same exchanges between system elements, highlighting their chronology. The elements in the scenario are represented in the diagram through lines.

A scenario of flow sequence diagram contains:

- Lines which define IT service participants
- Different types of messages exchanged between participants.

Scenario of Application Flows diagram

An application flow scenario represents the flows exchanged between the elements of the system in a given context. The elements represented are:

- application services,
- micro services,
- stores of internal or external application data,
- input or output application ports.

The interactions offered between these elements:

- application flows that carry a content,
- application flow channels that group a number of application flows on a single link,
- application data channels that represent the interactions between the application data stores.

SV1- System Properties

To access systems:

1. In the navigation menu, click **Systems Viewpoint > SV-1 Systems Interface Description > Systems**.
2. In the list of systems, select a system to open its property pages.
3. In the drop-down menu select one of the pages as follows.

System Characteristics

The **Characteristics** page of a system provides different sections. Besides the ***Identification*** section, you can connect use the following to create:

- Capabilities
- System Functions
- Operational Activities
- Measures (KPIs)

This section ena

System Components

Provides access to the list of system components described in the various diagrams as well as the communications between them.

Structure

Provides access to the list of system components described in its application structure diagram.

For more information, see "Application structure diagram", page 201.

Scenario

Provides access to the list of system components described in the system flow scenarios.

For more information see "Scenario of sytem flows", page 201.

Technical Architecture

Provides access to the list of system components described in the application technical architecture diagrams.

For more information, see "Application technical architecture", page 200.

System Usage

Usage > Scenario

Provides access to the list of system components described in its system flow scenarios.

For more information, see "Scenario of sytem flows", page 201

Usage > Structure

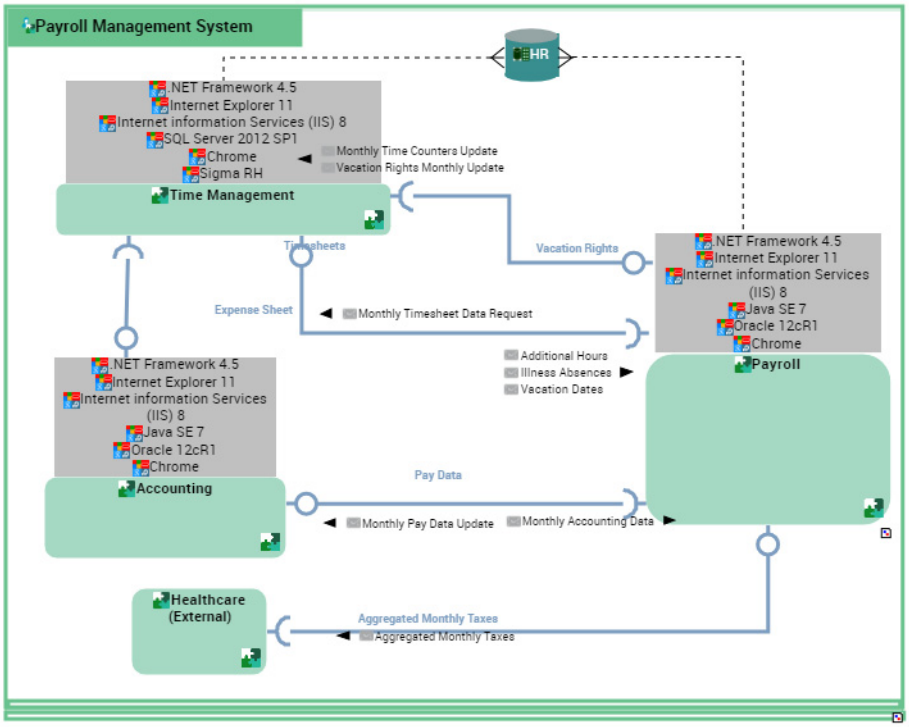
Provides access to the list of application components described in its application structure diagram.

For more information, see "Application structure diagram", page 201.

Usage > Impact Report (Structure)

Used to analyze the impact of a failure of a system on the application systems that use it or the other systems or application systems as described in its structure diagrams that use the system.

```
In the "Time Management" system used in the context of the structure
diagram below.
```



The report presents the list of components with which the system interacts using the exchange contracts.

1. Impact (Structure)

Time Management

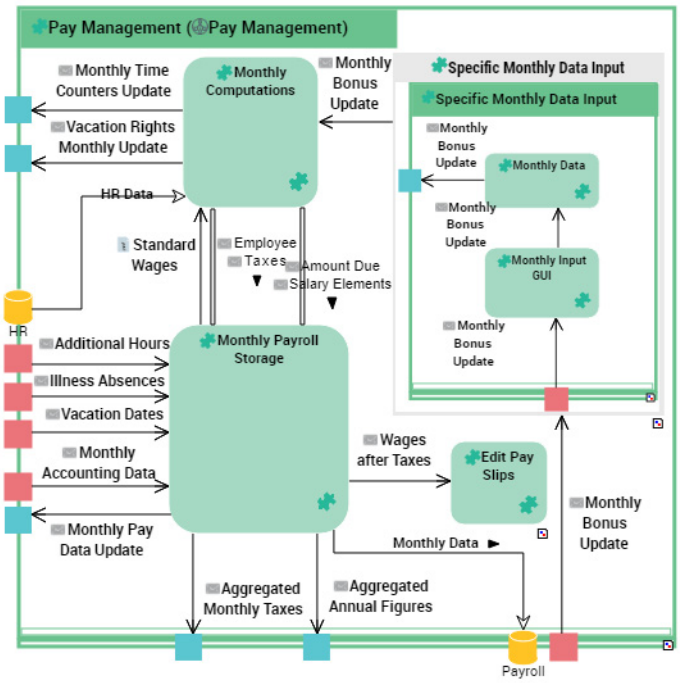
Time Management	
Payroll Management System	Time Management
Payroll Management System Environment	Payroll Management System
Payroll	Timesheets Timesheets Payroll Management System
Payroll Management System	Payroll
Payroll Management System Environment	Payroll Management System
Accounting	Expense Sheet Expense Sheet Payroll Management System
Payroll Management System	Accounting
Payroll Management System Environment	Payroll Management System

Usage > Impact Report (Scenario)

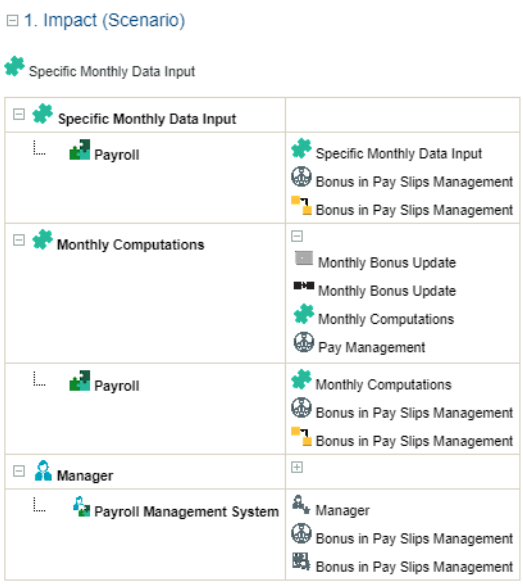
Used to analyze the impact of the failure of:

- a system on the application systems that use it
- or the other systems or application systems with which it exchanges application flows in the use scenario contexts of this system.

In the example of the "Specific Monthly Data Input" application service used in the context of the flow diagram context below.



The report presents the list of application flows exchanged with the flow scenario components presented below.



Usage > System Used

To display the systems used by the selected system:

- Select the **Usage > System Used** page on a system.
  The owner operational activity is displayed in a column.

  A system used during the execution of a step of an operational activity represents what is necessary to realize this step. It can be a service or any other non IT resource, or more generally a functionality.

  *The **Usage > System used** page is also available on the following object types :*

  - application systems
  - *IT services*
  - *functionalities*

To display the operational activities which are using a particular system:

- In the **Usage > System used** property page of a system, select a system used.
  The operational activities, activities, system functions or operations which are actually using this system appear in the **Element Using a System** section.

SV-1 Defining Application Systems

Application System Structure Diagram

This diagram describes the internal structure of an application system. It contains:

- services offered or required
- the application components and their interactions; these are application systems, applications and micro-services,
- end users interacting with the application components

Scenario of Application System Flows

An application system flow scenario represents the flows exchanged between certain elements of the application system in a given context. The elements represented are:

- application systems,
- systems,
- micro services,
- operator participants (organization units or position types),
- stores of internal or external application data,
- input or output application ports.

The interactions offered between these elements:

- application flow channels that group a number of system flows on a single link,
- application data channels that represent the interactions between the application data stores.

Application System Technical Architecture

An application system technical architecture describes one of the configurations possible for deploying the systems of a system application. It describes which technical architecture is chosen for each of the systems that it contains and the communication protocols that they use to communicate with each other.

The elements represented are:

- technical architectures,
- data technical areas,
- technical communication lines.

SV-2 Systems Resource Flow Description

SV-2 Description

SV-2	SV-2 Systems Resource Flow Description	A description of Resource Flows exchanged between systems.

For a more detailed description see the DoDAF web site: SV-2: Systems Resource Flow Description.

The SV-2 model specifies the system resource flows that exist between systems and may also list the protocol stacks used in connections.

The purpose of this model is to define the connectivity requirements between nodes. This model is then used to estimate the requirements for physical routing and bandwidth. An SV-2 model provides a different viewpoint of information already specified in the OV-2, OV-3 and SV-1.

The SV-2 is useful when planning physical connections and routings between nodes. It is also intended to assist with the analysis of the connectivity between systems within or between nodes.

SV-2 HOPEX Implementation

System Interaction Scenarios describe communications between System objects. They enable to exchange flows involving contents.

Simple flows facilitate exchange of contents between resources. There is no need to go into the details with exchange contracts.

From the various objects present in this viewpoint you can create a technical architecture diagram. For more information, see "Technical Architecture Diagrams".

Application Technical Hierarchy View

Displays the hierarchical description of application technical areas and architectures.

System Technical Architectures

A technical Architecture describes one possible configuration of the deployment of a system. It describes how the different system technical areas are connected to each other and the technologies and communication protocols they use. A system can have multiple possible technical architectures (Ex: stand-alone installation, horizontal or vertical deployment, etc.).

System Technical Areas

A system technical area is a split of a system according to technical criteria. For example, it may be GUI, process and data. Each technical area is associated with one or several technologies. Several system technical areas need to be deployed to get the system operational.

Application System Technical Architectures

A technical architecture of an application system describes one possible configuration of the deployment of the system of this application system. It describes which technical architecture is chosen for each of the systems involved and the communication protocol they use to communicate with each other.

Technical Architecture Diagrams

From the various objects of this viewpoint you can create a technical architecture diagram. In this diagram you can display:

- application technical architectures

  > 🕮 *A technical Architecture describes one possible configuration of the deployment of a system. It describes how the different application technical areas are connected to each other and the technologies and communication protocols they use.*

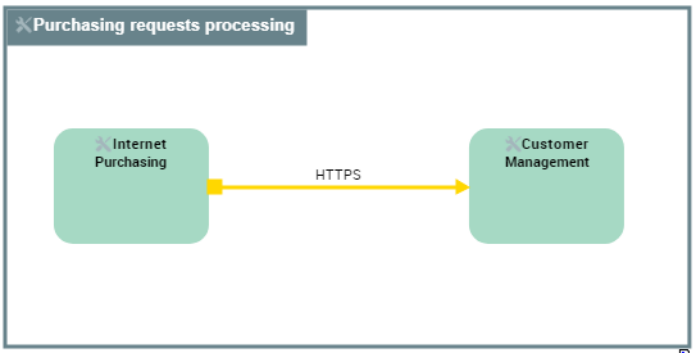
- technical communication lines

  > 🕮 *A technical communication line represents a technical connection between application technical architectures or areas through input to output communication ports. The output technical port of a technical area or architecture asks the input technical port of the other technical architecture or area to open the communication line.*

- technical data areas

  > 🕮 *A technical data area is a split of a system allowing access to the data required for the operation of this system. Each technical data area is associated to one or several technologies (Ex: Oracle 12, SQL Server 2012, Windows file system, etc.). A technical data area can allow access to one of several data stores.*

```
The application system technical architecture below presents the
eCommerce application technical architecture as well as the technical
architecture for the customer management micro-system. The technical
communication line between these two components is based on https.
```



Example of an application system technical architecture for "Purchasing Request Processing".

SV-3 SYSTEMS-SYSTEMS MATRIX

SV-3 Description

SV-3	SV-3 Systems-Systems Matrix	The relationships among systems in a given Architectural Description. It can be designed to show relationships of interest, (e.g., system-type interfaces, planned vs. existing interfaces).

For a more detailed description see the DoDAF web site: SV-3: Systems Systems Matrix.

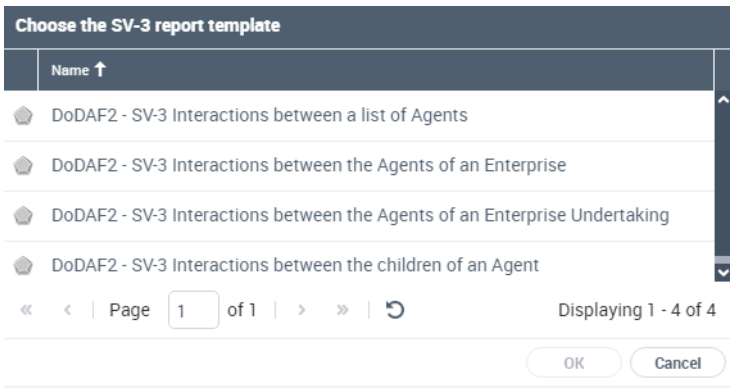
SV-3 HOPEX Implementation

Several types of reports are available for this viewpoint.

A SV-3 enables a quick overview of all the system resource interactions specified in one or more SV-1 Systems Interface Description models.

To create an SV-3 report:

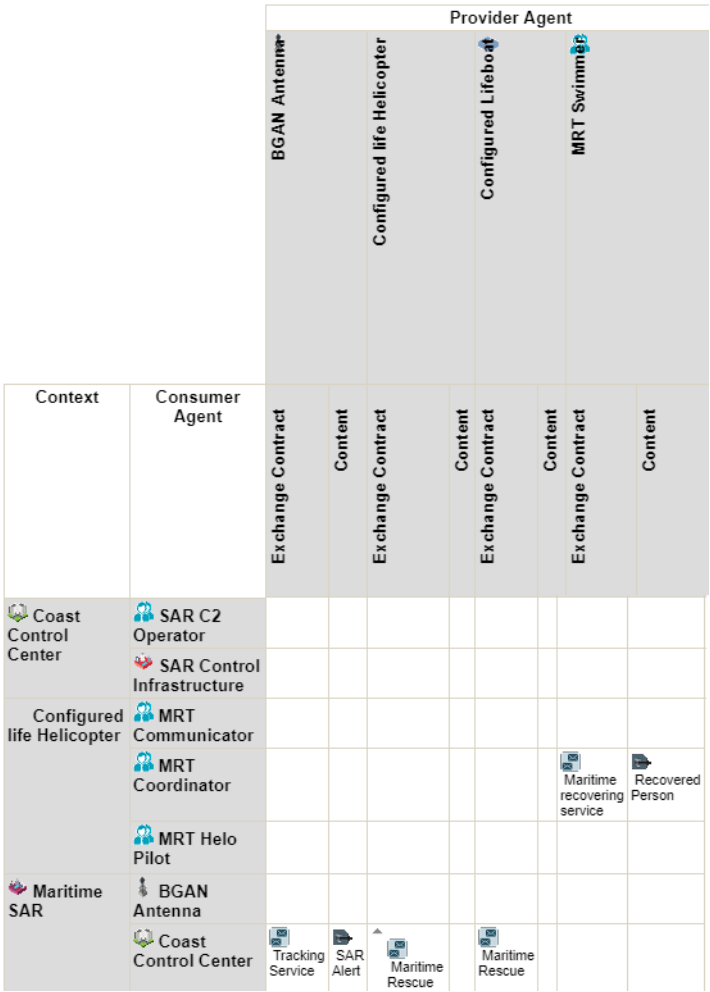
1. In the navigation menu, click **Systems Viewpoint > SV-3 Systems-Systems Matrix**.
2. Click **New** to create a report.
3. In the dialog box that appears, select one of the report templates available:



SV-3 interactions between a list of agents

- Select from the agent list an object type and connect the objects of interest.

This matrix shows the different interactions between the selected objects.



Context	Consumer Agent	Provider Agent: BGAN Antenna – Exchange Contract	BGAN Antenna – Content	Configured life Helicopter – Exchange Contract	Configured life Helicopter – Content	Configured Lifeboat – Exchange Contract	Configured Lifeboat – Content	MRT Swimmer – Exchange Contract	MRT Swimmer – Content
Coast Control Center	SAR C2 Operator								
	SAR Control Infrastructure								
Configured life Helicopter	MRT Communicator								
	MRT Coordinator							Maritime recovering service	Recovered Person
	MRT Helo Pilot								
Maritime SAR	BGAN Antenna								
	Coast Control Center	Tracking Service	SAR Alert	Maritime Rescue		Maritime Rescue			

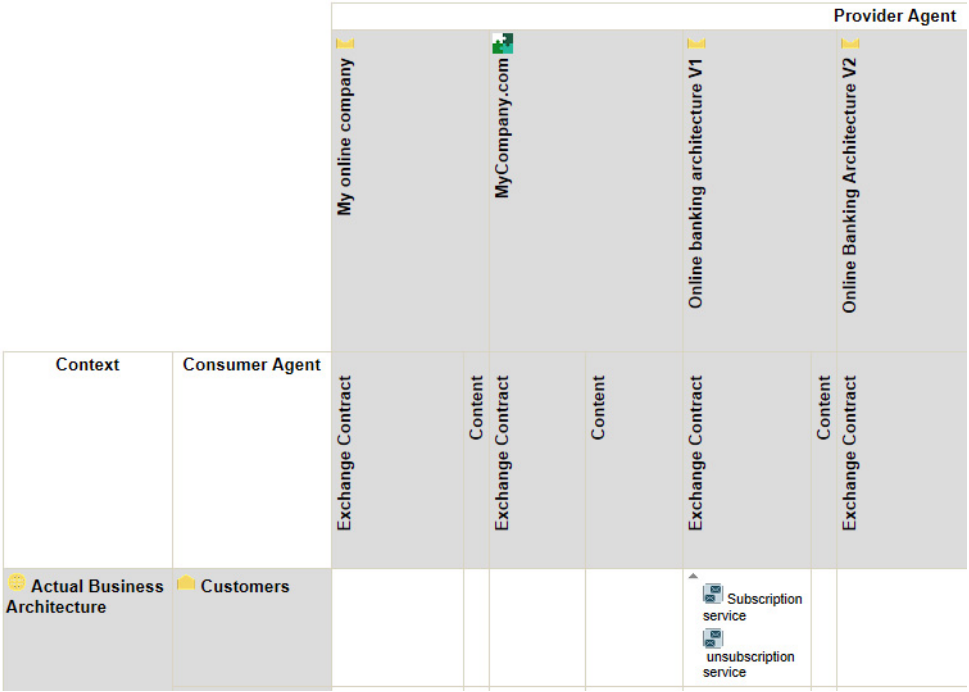
SV-3 interactions between the agents of an enterprise

This matrix shows the interactions between object types of a specific enterprise.

You may find:

- The context and consumer agent in rows
- The provider agent in columns.

The intersection displays the type of content exchanged (content, exchange contract).



SV-3 interactions between the agents of an enterprise undertaking

An enterprise undertaking is a supertype of Enterprise and Enterprise Stage, defining that subtypes may have components (sub-Enterprise Stages), an ability map and logical

environment, as well as physical implementations.

SV-3 interactions between the children of an agent

This matrix shows the interactions between the children of a specific agent (for example a system).

You need to select the agent in the creation wizard.

SV-3 Impact (Scenario)

This report looks for the contents sent by the IT System/Application System with their target and context (through scenarios).

SV-3 Impact (Structure)

This report looks for the contents sent by the System/Application System with their target and context (through structures).

SV-3 External Contents Matrix (Scenario)

This matrix presents:

- contents in rows
- agents in columns

Each cell indicates whether the corresponding agent is the source or the target of the flow.

SV-3 External Contents Matrix (Structure)

Same as above but for structure diagrams

SV-3 External Exchange Contents Matrix

This matrix presents:

- exchange contracts in rows
- agents in columns

Each cell indicates whether the corresponding agent is the source or the target of the flow.

SV-4 SYSTEMS FUNCTIONALITY

SV-4 Description

SV-4	SV-4 Systems Functionality	The functions (activities) performed by systems and the system data flows among system functions (activities).

For a more detailed description see the DoDAF web site: SV-4: Systems Functionality.

A system function is the executable representation of an operational activity.

The SV-4 model documents system functional hierarchies and system functions, and the system data flows between them. While SV-1 products describe the available interface between systems, they do not explain how these interfaces are used to exchange information or how data flows between the systems. The SV-4 model shows how data is transferred through system functions and binds these system functions to the system. Similarly, data transferred by functions can be described in a service perspective.

SV-4 HOPEX Implementation

The **HOPEX DoDAF** models ***system functions*** and their flow of data. System functions are the system counterpart to operational activities. A system function describes a set of system functions performed by the IT system. The system functions are linked to each other by messages that transport data.

System function modeling is similar to OV-5b and OV-6a process modeling (BPMN-based).

See "System Function Properties".

For more information, see:

- "OV-5b Operational Activity Model", page 126
- "OV-6a Operational Rules Model", page 131

> 🕮 *A system function is the executable representation of an operational activity.*

From a system function you can create:

- a system process diagram.
- a system process (decomposition) tree diagram

System Function Properties

The **Characteristics** page of system function properties contains the following information:

- **Identification**: name, owner and comment

You can also connect the following objects to the system function in the corresponding sections:

- **Operational Activities**
- **Systems**
- **Rules** (system rules)
- **Sub-system functions**
  - Owned tasks
  - Systems used

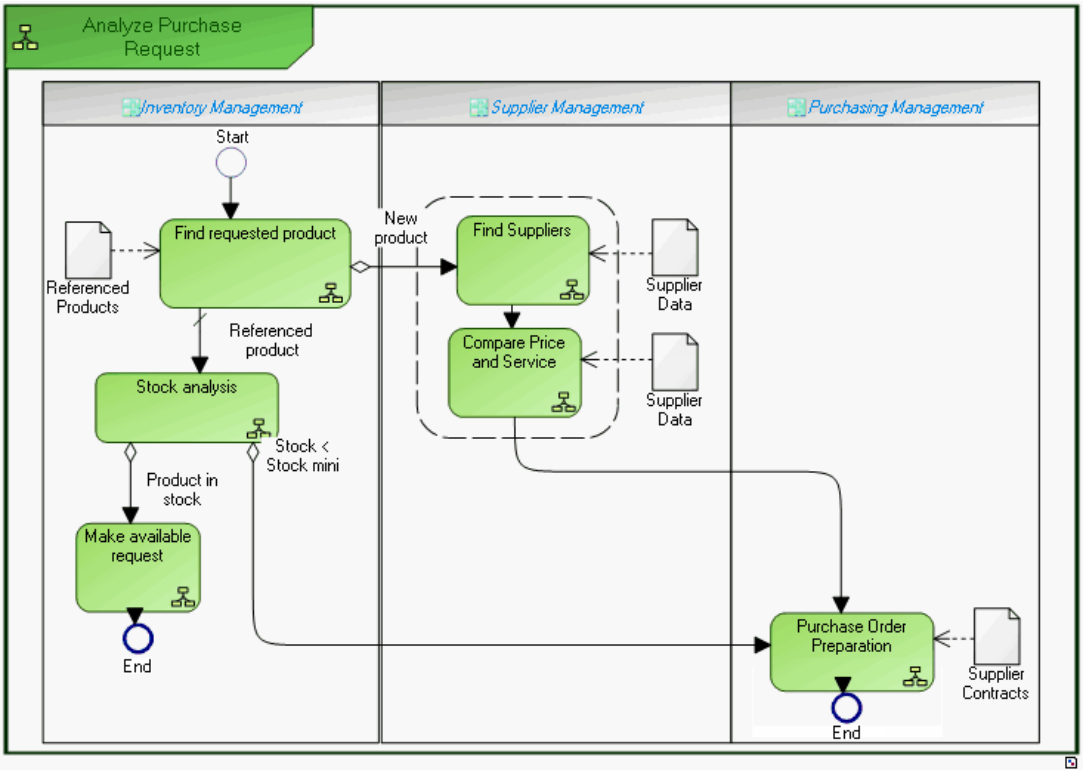
System Process Diagrams

The system process (system function) diagram uses the notation proposed by BPMN standard.

To create a system process diagram:

1. In the navigation menu, select **Systems Viewpoint > SV-4 Systems Functionality Description > System Functions**.

2. Right-click the system function and select **System Process Diagram**.



Example of system function diagram

Tasks

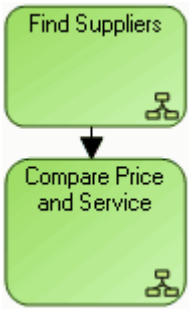
A task is an elementary step that is included within a system function. A task is used when the work in the system function is not broken down to a finer level. Generally, an end-user and/or an IT service are used to perform the task when it is executed.

Sequence Flows, Events and Message Flows

Sequence flows

Organization of system functions is represented by *sequence flows* between system functions.

> 🕮 *A sequence flow is used to show the order in which the steps of a function will be performed. It has only one source and one target.*



Events

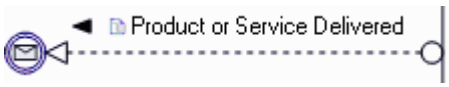
Events represent facts occurring during system function execution. An example is the start or end of the system function.

Message flows

> 🕮 *An event represents a fact occurring during execution of a process, for example a new contract concluded with a supplier. An event marks the impact on process progress of a phenomenon internal or external to the process. There are different natures of events: start events, catch events, throw events and end events.*

Message flows represent exchanges between the system function and the outside.

> 🕮 *A message flow is information flowing within an enterprise or exchanged between the enterprise and its business environment. A message flow can carry a content.*



> ☛ *A message flow can be linked to an event of message type.*

Gateways

In compliance with the BPMN standard, in the object toolbar, several *gateway* types are available to you.

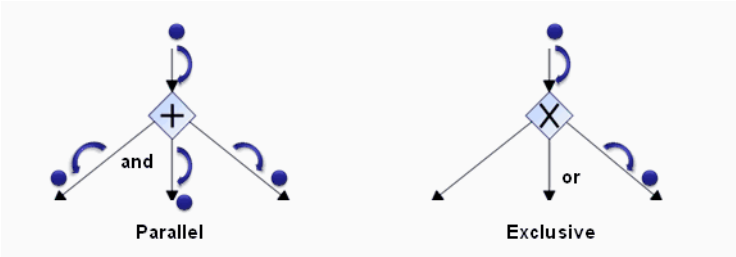
> 🕮 *Gateways are modeling elements that are used to control how sequence flows interact as they converge and diverge within a system function.*

To better understand the main use cases, we distinguish output gateways of a processing step from input gateways.

Processing Step Output Gateways

In the case of an **Exclusive** gateway, only one output branch can be selected from those available. The branch can be selected as a function of the **Data** available for the function, or of the **Events** occurring during its execution.

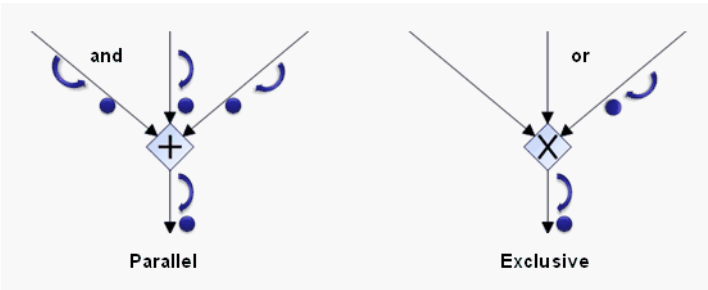
In the case of a **Parallel** gateway, all output branches are processed simultaneously.



In the case of a **Complex** gateway, one or several output branches can be selected from those available. A **Complex** gateway represents a combination of those above. When the gateway has been created, its type can be modified in its properties dialog box. At output of a step, a gateway represents a point of divergence of sequence flows of a system function.

Step Input Gateways

At input of a step, a gateway represents a point of convergence of sequence flows of a system function. In the case of an **Exclusive** gateway, the system function step is triggered when one of these branches is active. In the case of a **Parallel** gateway, all input branches are processed simultaneously.



Creating gateways

To create a gateway:

1. Click the arrow at the right of the **Gateway** button in the diagram insert toolbar and select the gateway type you wish to create.
2. Click on the diagram.
   The gateway appears in the diagram with the shape appropriate to its type.

To modify a gateway:

1. Right-click the gateway and select **Properties** in its pop-up menu.
   The properties windows opens.
2. Click **Characteristics**.
   You can modify the name or type of the gateway.

The different **gateway types** proposed are:

- **Complex**: the process can take a complex combination of paths.
- **Exclusive (Data)**: the process can take a single path from several possible paths depending on the value of the data available. This is the default gateway type.
- **Exclusive (Start)**: the process is triggered by the first event occurring; others are ignored.
- **Exclusive (Event)**: the process can take a single path from several possible paths depending on the events occurring.
- **Inclusive**: the process can take one or several paths simultaneously.
- **Parallel**: the process takes several parallel paths simultaneously.
- **Parallel (Start)**: the process is triggered by the first event occurring. The other events occurring during progress of the process are also taken into account.

3. Click **OK**.

Creating a System Process Participant

In a system process diagram, a participant enables grouping of tasks assigned to a system or service.

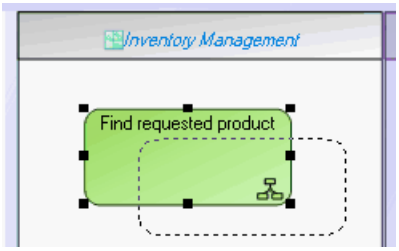
To create a participant:

1. In the diagram insert toolbar, click the arrow at the right of the  **Participant** button.
2. In the list proposed, select for example **Application Participant** and click in the diagram.
   The participant creation dialog box appears.
3. Click the arrow  at the right of the **Application** field and select **Connect Application**.
   The query dialog box appears.
4. Find the application and click **Connect**.
5. In the participant creation dialog box, click **OK** (Web Front-End) or **Finish** (Windows Front-End).
   The participant created appears in the diagram with a header containing the name of the assigned application.

   ☛ *To place a participant with assignment as yet unknown, select the **Participant** icon.*

To assign a task to a participant:

- place the task within the frame of the participant.



SV-5a Operational Activity to Systems Function Traceability Matrix

SV-5a Description

SV-5a	SV-5a Operational Activity to Systems Function Traceability Matrix	A mapping of system functions (activities) back to operational activities (activities).

For a more detailed description see the DoDAF web site: SV-5a: Operational Activity to Systems Function Traceability Matrix.

SV-5a Implementation

Operational Activity and System Hierarchy

Displays the hierarchical description of operational activities and systems.

☛ *An operational activity is a set of operations performed by organizations within a company or organization, to produce a result. It is depicted as a sequence of operations, controlled by events and conditions.*

🕮 *A system is a software component that can be deployed and provides users with a set of functionalities.*

Operational Activity to System Function Traceability Matrix

Creates a matrix to map Operational Activities to System Functions

🕮 *A system function is the executable representation of an operational activity.*

SV-5b Operational Activity to Systems Traceability Matrix

SV-5b Description

SV-5b	SV-5b Operational Activity to Systems Traceability Matrix	A mapping of systems back to capabilities or operational activities (activities).

SV-5b is an extension of SV-a to depict the mapping of operational activities to systems. It addresses the links between systems described in the SV-1 Systems Functionality Description and the operational activities specified in the OV-5a Operational Activity Decomposition Tree or the OV-5b Operational Activity Model.

For a more detailed description see the DoDAF web site: SV-5b: Operational Activity to Systems Traceability Matrix.

SV-5b HOPEX Implementation

HOPEX DoDAF offers matrices which enable you to connect systems and application systems, or functionalities and operational activities.

Operational Activity to Systems Hierarchy

This displays the hierarchical description of operational activities and systems.

> 🕮 *A system is a software component that can be deployed and provides users with a set of functionalities.*
>
> 🕮 *An operational activity is a set of operations performed by organizations within a company or organization, to produce a result. It is depicted as a sequence of operations, controlled by events and conditions.*

Systems and Operational Activities Matrix

This matrix displays:

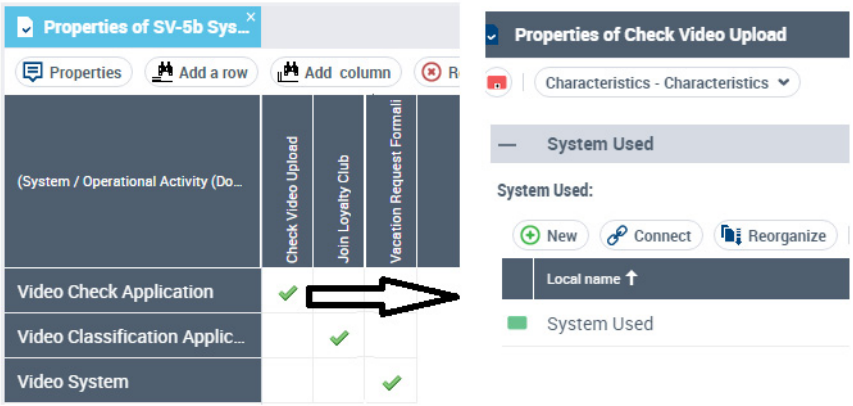
- Systems in rows
- Operational Activities in columns

When you create a link between those objects, you actually create a "system used" object between the system and the operational activity.

> 🕮 *A system used during the execution of a step of an operational activity represents what is necessary to realize this step. It can be a service or any other non IT resource, or*

more generally a functionality.

You can view the system used object on the property page of the operational activity.



Application Systems and Operational Activities Matrix

This matrix displays:

- Application Systems in rows

  📖 *An application system is an assembly of other application systems, systems and end users, in order to realize one or more functionalities (e.g.Payroll System).*

- Operational Activities in columns

Systems and Functionalities Matrix

📖 *A functionality is a service required by an organization in order to perform its work. This functionality is generally necessary within an activity in order to execute a specific operation. If it is a software functionality, it can be provided by a system.*

This enables to create a matrix to map systems and functionalities.

Application Systems and Functionalities Matrix

This enables to create a matrix to map application systems and functionalities.

SV-6 Systems Data Exchange Matrix

SV-6 Description

SV-6	SV-6 Systems Data Exchange Matrix	Provides details of system resource flow elements being exchanged between systems and the attributes of that exchange.

For a more detailed description see the DoDAF web site: SV-6: Systems Data Exchange Matrix.

SV-6 HOPEX Implementation

> ☛ *The objects found here are also available from the SV-1 view (Flow Scenarios and Environments tile).*

In this view you can find the different kind of system-related scenarios:

- scenarios of application system environment flows
- scenarios of application system flows
- scenarios of system environment flows

  > ☛ *A system flow environment presents globally the flows exchanged between this system and other application systems, systems or micro-services.*

- scenarios of system flows

  > ☛ *A scenario of system flows presents the flow exchanged between the IT services or the micro-services used by this system. The scenario can represent a specific use case of this system or, globally, the set of all flows exchanged inside this system.*

- scenarios of system of resources

From the pop-up menu of a scenario you can open:

- the flow editor
- the lifeline editor

  > ☛ *For more information on scenario editors, see "Editing Scenarios", page 260.*

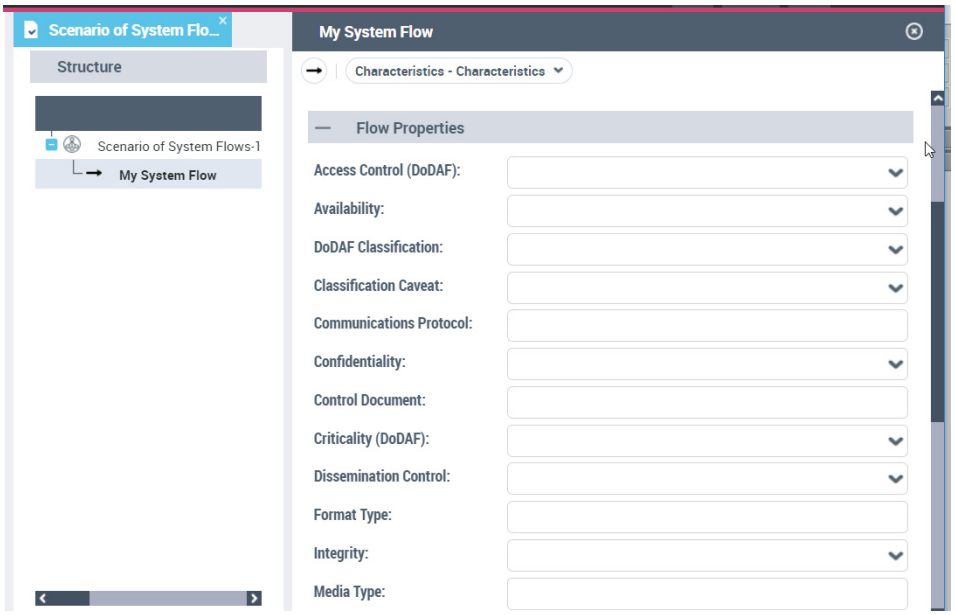
- a diagram for the scenario

System Flow Properties

> 🕮 *A system flow represents a piece of information flowing between systems or inside a system. A system flow can carry a content.*

The following properties are available on system flows (in the **Flow Properties** section). They enable to enrich their description and categorization.

> ☛ *These properties can also be entered through the flow editor. The editor tool enables you to:*
>
> - *create flows,*
> - *set values on their properties*
> - *map the flows with activities*
>
> ☛ *You can view these properties in the flows report. For more information, see "System Resource Flow Matrix".*



Access Control

- Not Required
- Profile
- Password & ID
- ID Cert/ACL
- Crypto Ignition Key (CIK)
- Pairwise Key
- Transport Layer Security (TLS)

Availability

- **Low**: Best effort to meet Resource Flow timeliness requirements with the resources that are available.
- **Medium**: Specific resources have been allocated to ensure Resource Flow timeliness requirements are met
- **High**: Pre-emptive resource allocation to meet Resource Flow timeliness requirements.
- **Not specified**
- **Not known**

Classification

- No Classification
- Unclassified
- FOUO
- Sensitive but Unclassified
- Confidential
- Secret
- Secret restricted
- Top secret
- Above top secret

Classification caveat

- Admin or Operational use data
- Critical technology
- Contractor performance evaluation
- Direct military support
- Foreign government information
- Preclude premature dissemination
- Proprietary information
- Software documentation
- Specific authority
- Test and evaluation
- Not specified
- Not known

Communications Protocol

Confidentiality

- **Unavailable**: Used in those "As-is" circumstances where there is no capability to provide confidentiality for the Resource Flow
- **Not required**: For unclassified, un-caveated, public information
- **Clearance**: An appropriate clearance for the level of classification of the information is required to access the Resource Flow.
- **Need-to-know**: A determination that the individual needs the Resource Flow and is authorized to use it is made before access is granted. If the Resource Flow is classified, Need-to-Know also implies the individual has the appropriate clearance.
- **Not Specified**
- **Not Known**

Control document

Criticality

- Force C2
- Mission Operations
- Core Functions
- Not Otherwise Stated
- Logistics
- Admin
- Mission Essential

Dissemination control

- Public
- Private
- Controlled
- Restricted
- Not specified
- Not known

Format type

Integrity

- **Unavailable**
  Even though checks for integrity may be desirable, the capability to accomplish such checks is not currently available.
- **Not Required**
  This Resource Flow and its uses do not call for the effort to check on integrity (i.e., An integrity check would not be required for printed copy of the Stars & Stripes or information transiting the Joint Worldwide Intelligence Communications System/Service (JWICS) is assumed to be safe, and no integrity check is required).
- **Discretionary**
  The decision on whether checks for integrity are to be accomplished is based on local decision
- **Mandatory**
  Checks for integrity are required
- **Not Specified**
- **Not Known**

Media Type

Non-repudation customer

- Required
- Not required

Non-repudiation producer

- Required
- Not required

Periodicity

Protection

- None
- Encrypted for Transmission Only (EFTO)
- Originating Agency Determination Required (OADR)
- Until Specified date (state the date)
- Until End of Mission
- For specified duration (state the # days)

Releasability

Security standard

Size

Throughpout

Timeliness

- Real-Time
- Near-Real-Time (Less Than 1 Second)
- Moderate (1-10 Seconds)
- Slow (10 Seconds -10 Minutes)
- Up to one hour (10 minutes - 1 hour)
- Up to 8 Hours (1 Hour -8 Hours)
- Up to one day (8 hours - 24 hours)
- Up to one Month (1 Day -30 Days)
- Large
- Greater than One Month
- Not Known
- Not Specified

System Resource Flow Matrix

A system resource flow matrix enables you to view flows exchanged in the different system scenarios with the indication of the sender, the recipient and the context.

To access the system resource flow matrix:

1. From the navigation menu, select **Services Viewpoint > SV-6 System Resource Flow Matrix > SV-6 System Resource Flow Matrix**.
   - ☛ *It is similar to the matrix found in the Svc-V6.*
   - ☛ *For more information about flow properties, see "System Flow Properties".*

System Resource Flow Reports

You can create your own scenario report, and customize it by selecting the scenarios and environment scenarios of interest to you and modifying the default parameters.

To create your scenario report:

1. In the navigation menu, click **Systems Viewpoint > SV-6 Systems Resource Flow Matrix > Systems Resource Flow Reports**.
2. Click **New**.
3. In the wizard select the scenarios of interest to you.

   ☛ *You can also choose to include operational scenarios in this report.*

SV-7 Systems Measures Matrix

SV-7 Description

SV-7	"SV-7 Systems Measures Matrix", page 174	The measures (metrics) of Systems Model elements for the appropriate timeframe(s).

For a more detailed description see the DoDAF web site: SV-7: Systems Measures Matrix.

SV-7 Prerequisites

Before using SV-7 you need to set up KPI dimensions.

For more information on KPIs and KPI dimensions see "Managing Metrics (KPI dimensions)".

> 🕮 *A KPI (key indicator) defines how much of something that can be quantified, either as a singular value or as range of values, according to a KPI Dimension. KPI are valued KPIs. Example: Time to deliver [10-20] minutes.*
>
> 🕮 *KPI dimensions express the nature of KPIs (Time, Mass, Cost, ..) and define the units used for KPI (minutes, kg, euros, etc.). Example: Time to deliver in minutes, Delivery cost in kilo Euros.*

SV-7 HOPEX Implementation

> ☛ *Please note that the SV-7 implementation is the same as Svcv-7.*

System Measures Hierarchy

This tree offers a hierarchical description of measures, KPIs and KPI dimensions.

KPI dimensions

KPI dimensions can also be described in the environment.

See "Describing a KPI dimension".

Composite KPI dimensions

Composite KPI dimensions can also be described in the environment.

See "Describing a composite KPI dimension".

System Element KPIs Matrix

This matrix enables to define measures on System Elements and KPIs.

It displays:

- enterprise artifacts in rows (Hardware, IT Services, System, Application System, Application System Environment, IT Device, IT Server, IT Service)
- KPIs dimensions in columns

System Element Composite KPIs Matrix

This matrix enables to define measure on System Elements Composite KPIs.

This matrix displays:

- Enterprise artifacts in rows (Hardware, IT Services, System, Application System, Application System Environment, IT Device, IT Server, IT Service)
- Composite KPIs dimensions in columns

> 🕮 *A Composite KPI Dimension defines the grouping of elementary KPIs that should be examined together in order to appreciate the actual performance of a KPIed item. E.g. a delivery should be achieved in a defined target timeframe AND at a target cost.*

SV-8 Systems Evolution Description

SV-8 Description

SV-8	SV-8 Systems Evolution Description	The planned incremental steps toward migrating a suite of systems to a more efficient suite, or toward evolving a current system to a future implementation.

SV-8 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.

For a more detailed description see the DoDAF web site: SV-8: Systems Evolution Description.

SV-8 HOPEX Implementation

See "SvcV-8 Implementation".

SV-9 Systems Technology and Skills Forecast

SV-9 Description

SV-9	SV-9 Systems Technology and Skills Forecast	The emerging technologies, software/hardware products, and skills that are expected to be available in a given set of time frames and that will affect future system development.

For a more detailed description see the DoDAF web site: SV-9: Systems Technology and Skills Forecast.

SV-9 Implementation

See "SVcV-9 HOPEX Implementation"

SV-10A SYSTEMS RULES MODEL

SV-10a Description

SV-10a	SV-10a Systems Rules Model	One of three models used to describe system functionality. It identifies constraints that are imposed on systems functionality due to some aspect of system design or implementation.

For a more detailed description see the DoDAF web site: SV-10a: Systems Rules Model.

SV-10a HOPEX Implementation

See "SvcV-10a Services Rules Model".

SV-10B SYSTEMS STATE TRANSITION DESCRIPTION

SV-10b Description

SV-10b	SV-10b Systems State Transition Description	One of three models used to describe system functionality. It identifies responses of systems to events.

For a more detailed description see the DoDAF web site: SV-10b: Systems state Transition Description.

SV-10b Implementation

The SV-10b is a graphical method of describing a system or system function response to various events by changing its state.

> ☛ *The explicit time sequencing of system functions in response to external and internal events is not fully expressed in the SV-4 (for more information on, see "SV-4 Systems Functionality", page 216).*

SV-10b can be used to describe the explicit sequencing of the system functions. Alternatively, SV-10b can be used to reflect explicit sequencing of the actions internal to a single system function, or the sequencing of system functions in relation to a specific system.

The implementation is the same as in SvcV-10b. See "SvcV-10b Services State Transition Description".

SV-10c Systems Event-Trace Description

SV-10c Description

SV-10c	SV-10c Systems Event-Trace Description	One of three models used to describe system functionality. It identifies system-specific refinements of critical sequences of events described in the Operational Viewpoint.

For a more detailed description see the DoDAF web site: SV-10c: Systems Event-Trace Description.

SV-10c HOPEX Implementation

See "SVcV-10c Implementation"

HOPEX DoDAF Reports

HOPEX offers a number of reports for each viewpoint. These reports can be displayed in the form of matrices, datasets, analysis reports.

Accessing Reports in HOPEX DoDAF

Reports available withing each ViewPoint

Major reports are available in the navigation pane corresponding to the viewpoint considered.

📖 *For more information about reports used in the different viewpoints, see the summary table found in "Concepts Used in Viewpoints", page 52. The last column lists the different reports available as tiles*

Reports available from the Reports navigation Pane

Other reports are available from the **Reports** navigation pane directly accessed from the navigation menu.

Two types of reports are available:

- Analysis reports

  ☛ *See "Managing Reports", page 239.*

- Report DataSets

  ☛ *See the corresponding section in the Common Features documentation: "Managing Report DataSets", page 339.*

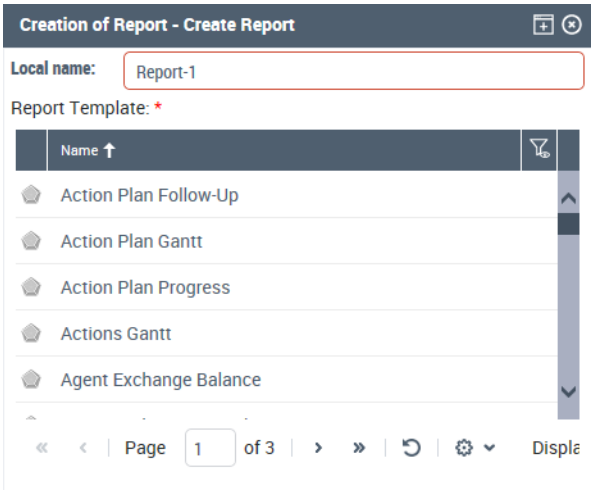
Managing Reports

Creating Reports

To create a report:

1. In the navigation menu, click **Reports > Other Reports >My Reports**.

2. Click **New** then **Next**.
3. From the **Create Report** window, select a **Report Template**.
   In the list which is dipslayed you can find general reports as well as reports specific to **HOPEX DoDAF**.



4. Select the parameters required as a function of the report template.
5. Right-click the created report and select **Open**.

Reports specific to HOPEX DoDAF

Some reports are specific to **HOPEX DoDAF**.

- Agent Interaction Scenario Report
- Component Report
- Interactions between
  - a list of Agents
  - the Agents of an Enterprise
  - the Agents of an Enterprise Undertaking
  - the children of an Agent

    ☛ *For these interaction reports, see "SV-3 HOPEX Implementation".*
- Operational Activity to Services Traceability Matrix Report

    ☛ *See "SvcV-5 HOPEX Implementation".*
- Operational Resource Flow Matrix Report

    ☛ *See "OV-2 Implementation".*
- Project Dependency
- Project to Capability Mapping

    ☛ *See "PV-3 HOPEX Implementation".*
- Service Catalogs Report
- Services Consumption Matrix

    ☛ *See "SvcV-4 HOPEX Implementation".*
- System Resource Flow Matrix Report

    ☛ *See "SV-6 HOPEX Implementation".*

Creating Report Datasets

To create a Report Dataset:

1. In the navigation menu, click **Reports > Other Reports >My Report Data Sets**.
2. From the drop-down list provided, make sure **My Report Datasets** is selected.
3. Click **New**.
4. Select a **Report Dataset** definition.
   In the list which is dipslayed you can find general Report Dataset definitions as well as some specific to **HOPEX DoDAF**.
5. Enter the parameters required for the Report Dataset definition selected and click **OK**.

DoDAF Glossary

Activity	A functional activity is an elementary step of a process. It expresses how a business function contributes to the value chain represented by this process. In BPMN notation it cannot be broken down.
Application Data Channel	Application data channels represent the interactions between application data stores.
Application Data Store	An application data store materializes the usage of data in the context of a software component (for instance a system). It provides a mechanism to retrieve or update information stored inside or outside the current software component. It can be local or external.
System Flow	A system flow represents a piece of information flowing between systems or inside a system. A system flow can carry a content.
Application Flow Channel	An application flow channel allows grouping graphically several system flows into a single flow.
Application Input Gate	An application input gate represents the entry point which allows to receive a piece of information inside a system. An application input gate is associated to a content.
Application Output Gate	An application output gate represents the exit point which allows to send a piece of information outside a system. An application output gate is associated to content.
Application system	An application system is an assembly of other application systems, systems and end users, in order to realize one or more functionalities (e.g.Payroll System).

Application System Environment	An application system environment presents an application system use context. It describes the interactions, between the application system and its external partners, which enables it to fulfill its mission and ensure the expected functionalities.
Application System Flow Environment	An application system flow environment presents globally the flows exchanged between this application system and other application systems, systems, micro-services or organizations.
Application System Technical Architecture	A technical architecture of an application system describes one possible configuration of the deployment of the system of this application system. It describes which technical architecture is chosen for each of the systems involved and the communication protocol they use to communicate with each other.
Application Technical Architecture	A technical Architecture describes one possible configuration of the deployment of a system. It describes how the different system technical areas are connected to each other and the technologies and communication protocols they use. A system can have multiple possible technical architectures (Ex: stand-alone installation, horizontal or vertical deployment, etc.).
Application Technical Area	An application technical area represents an organizational element of a system according to technical criteria. For example, this can be the user interface or a process. Each application technical area is associated with one or more technologies. The deployment of several application technical areas is necessary for the system to be operational.
Artifact	An artifact is any element in the physical domain that is not a system or an organizational element (where organizational includes people). An Artifact can represent a physical system, sub-system, platform, component or simply a physical item that has specific attributes.
Business capability	A Business Capability is a set of features that can be made available by an enterprise.
Business Capability Composition	A Business Capability Composition is the involvement of a business capability in the context of a business capability map (one and only one) linked to an enterprise.
Business capability dependency	A Business Capability Dependency is a relationship which asserts that a dependent Capability depends upon a needed capability in the context of a capability dependency owner, with respect to its needed effect (business outcome).

Business Capability Map	A Business Capability Map is an assembly of Business Capabilities and their Dependencies that, together, provide a capability scope for an Enterprise Stage.
Business information Area	A business information area is a sub-set of elements of a subject area that reduces the scope of a field.
Business Information Map	A business information map enables to define the scope of Business Information Areas for a studied concern.
Business Rule	A Business Rule is a rule that is under business jurisdiction. A rule's being 'under business jurisdiction' means that it is under the jurisdiction of the semantic community that it governs or guides - that the semantic community can opt to change or discard the rule. Laws of physics may be relevant to a company (or other semantic community); legislation and regulations may be imposed on it; external standards and best Semantics of Business Vocabulary and Business Rules, v1.0 161 practices may be adopted. These things are not business rules from the company's perspective, since it does not have the authority to change them. The company will decide how to react to laws and regulations, and will create business rules to ensure compliance with them. Similarly, it will create business rules to ensure that standards or best practices are implemented as intended.
Business Service Catalog	A business service catalog provides a centralized information source for the business services offered by the service provider organization. It contains a customer-oriented view of the business services used, how they are supposed to be used, the processes that they support as well as the expected service quality level. The business service catalog presents a list of functionalities mentioned as well as implementation recommendations.
Business Skill	A Business Skill is a Capability of an Organization (human resource) that has been acquired by training.
Business Transformation Stage	A business transformation stage is a type of enterprise transformation stage aiming at the alignment of the enterprise operating model to its strategy and corresponding exhibited business capabilities.
Component	A component is an intermediary object which represents the usage of an object in a specific context.

Composite KPI dimension

A Composite KPI Dimension defines the grouping of elementary KPIs that should be examined together in order to appreciate the actual performance of a KPIed item. E.g. a delivery should be achieved in a defined target timeframe AND at a target cost.

Concept

A concept is a statement expressing the essential nature of a being, an object, a word through its essential properties and characteristics or its specific qualities.

Concept Type

A concept type enables classification of concepts. Relationships between concept types are represented by concept type components.

Concept View

A concept view enables representation of the semantic scope covered by a business object. A concept view is based on the selection of several concepts specific to the view.

Condition

A condition indicates the state in which an object should be in order to perform an action.

Content

Content designates the content of a message or a message flow, independently of its structure. Content may be used by several messages or message flows, since it is not associated with an sender and a destination.

Data Area

A data area is subset of the enterprise data that is meant to be manipulated together in the context of business operations.

For instance, a "Sales" Data Area contains at least the following entities: Customers, Orders, Products.

Data Areas define functional data boundaries used both for Data Allocation to systems (see Data Stores) and Data Governance for data stewardship.

Data Map

Data Object

A data object is used to explain how documents, data, and other objects are used and updated during the process. A data object can represent an electronic document, or any other type of object, electronic or physical.

Data Store

A data store provides a mechanism to update or consult data that will persist beyond the scope of the current process. It enables storage of input message flows, and their retransmission via one or several output message flows.

Data View	A data view enables representation of the scope covered by a package element. A data view is based on the selection of several classes connected in the specific context of the view.
Database	A database stores data physically or logically.
Desired Applicaton Effect	A desired application effect is the effect (or applicative outcome) desired by a functionality. It can be required by another functionality through a functionality dependency.
Effect (Outcome)	The effect (or outcome) is the content delivered through an Exchange Contract or an Exchange.
Ends	Ends are about what an enterprise wants to be. Ends can be about changing what the enterprise is (e.g., developing new lines of business, moving into new markets) or about maintaining its current position relative its market and competition. The definition of an end does not say how it will be achieved. Ends are categorized as Vision, Goals and Objectives.
Enteprise Event	An enterprise event is something that happens at a given place and time and that marks the end of one enterprise stage and possibly the beginning of another.
Enterprise	An Enterprise is a purposeful undertaking, conducted by one or more organizations, aiming at delivering goods and services, in accordance with the enterprise mission in its changing environment. During its development over time, an enterprise has to adapt to its environment and sets up transformation goals and objectives along with course of action to achieve these objectives. The design and realization of the resulting transformation stages may transcend organizational boundaries and consequently require an integrated team working under the direction of a governing body to involve stakeholders in transformation initiatives.
Enterprise stage	En enterprise stage is a past, current or future stage of an enterprise.
Enterprise Undertaking	An enterprise undertaking is a supertype of Enterprise and Enterprise Stage, defining that subtypes may have components (sub-Enterprise Stages), an ability map and logical environment, as well as physical implementations.
Exchange Contract	An exchange contract is a model of a contract between organizational entities. This contract is described by exchanges between an initiator role and one or several contributor roles.

Exchange Use	An exchange use represents the usage of an exchange in another exchange contract.
Exchange Contract Use	An exchange contract use represents the usage of an exchange contract in another exchange contract.
Exhibited Business Capability	An exhibited business capability is a business Capability that is exhibited by an Enterprise Stage with quantified measure (KPI) and potential geopolitical scope (Site) for a defined market segment (Business Partner).
External Application Data Store	An external application data store materializes data usage in the context of a software component (for instance an application). It provides a mechanism to retrieve or update information stored outside the current software component.
Facility	A facility is a model of location of interest for the enterprise. Examples: Data Center, Factory, Outlet.
Fulfillment	Fulfillment refers to the provision of services or functionalities. Example: a system fulfills project management functionalities.
Functionality	A functionality is a service required by an organization in order to perform its work. This functionality is generally necessary within an activity in order to execute a specific operation. If it is a software functionality, it can be provided by a system.
Functionality Component	A functionality component represents a sub-functionality in a functionality map or a functionality.
Functionality Dependency	A functionality dependency is a relationship which asserts that a functionality is dependent on another (required functionality), in the context of a Functionality Building Block (owner), with respect to its desired effect.
Functionality Map	A functionality map is an assembly of functionalities and their dependencies that, together, define the scope of a hardware or software architecture.
Gate	A gate is a connection point between a message outside an interaction fragment with a message inside the interaction fragment.
Gateway	Gateways are modeling elements that are used to control how sequence flows interact as they converge and diverge within a system function.
Goal	A Goal tends to be longer term, and defined qualitatively rather than quantitatively. It should be sufficiently narrow-focused that Objectives can be defined for it.

Hardware

Hardware consists of non-IT equipment.

Non-IT Hardware can embed Computers. Together with their embedded computers, they provide information and IS services. Examples: Connected Truck with Delivery Calendar App, Connected Drone with Online Payment App.

Hardware device can also provide hardware functionalities. Example:- Connected fridge providing ordering functionalities and of course a freezing hardware functionality, connected drones fly and provide Online Payment.

Hardware Functionality

A hardware functionality is the ability to deliver a physical outcome which is required by an organizational resource in order to perform its work. This hardware functionality is generally necessary within an operational activity in order to execute a specific operation.

Hardware Service Catalog

The Hardware Service Catalog provides a central source of information on the Hardware services delivered by the service provider organization. It contains a customer-facing view of the Hardware services in use, how they are intended to be used, the process they enable, and the levels and quality of service the customer can expect from each service. The Hardware Service Catalog provides the list of reference Hardware functionalities and their recommended implementation.

Hardware Service Catalog Item

An Hardware Service Catalog Item defines which hardware functionality is part of the catalog and which hardware artifacts are fulfilling the hardware functionality.

Information Service Catalog

The Information Service Catalog provides a central source of information on the Information services delivered by the service provider organization. It provides the list of reference functionalities and their recommended implementation.

Information Service Catalog Item

An Information Service Catalog Item defines which functionality is part of the catalog and which application artifacts are fulfilling the functionality.

Interacting Element Endpoint

An interacting element endpoint is a connection point between an exchange channel and an interacting component.

Interaction

An Interaction represents a contract between entities in a specific context inside or outside a company. These entities can be organizations, activities, or processes. The content of this contract is described in a protocol.

Interaction Scenario	An interaction scenario is used to describe an operational, system or a service use case. It presents the sequence of message instances exchanged between organizations, systems or service instances during the execution of the scenario.
IoT Device	An IoT Device is both a hardware device and a computing device which provides combined hardware and information services to the users using it directly. As a hardware device, it embeds sensors - e.g. accelerometer - which provide data to the embedded computing device. As a computing device, it can host data stores or run systems.
IT Device	An IT Device is a computing device which provides end-users with a service. This computing device can host data stores or run systems. Examples: workstation, laptop computer, smart phone.
IT Infrastructures	An IT Infrastructure consists of several connected IT Devices (IT Technical Devices or Computing Devices) and IT Networks.
IT Network	An IT Network is an assembly of IT Technical Devices (e.g. routers, switches, firewalls) enabling remote communications between IT Devices (e.g. IT Servers). An IT Network may breakdown into sub-networks.
IT Peripherical Device	An IT Peripheral Device can host and run Software Technology. Together with its hosted Software Technologies, it provides Technical Services. Examples:- Wifi Access Point, Firewall, Router, Switch, Printer, Hard Drive, etc.
IT Server	An IT Server is a computing device which provides a service to the users connected to it via an IT network. This computing device can host data stores or run systems (applications).
IT Service	An IT service is a software component of a system. It cannot be deployed alone. An IT Service realizes a sub-set of the functionalities of this system either for end users of this system or inside the system (or another system). It includes batch programs.
IT Transformation Stage	An IT Transformation Stage is a type of Enterprise Transformation Stage aiming at the alignment of its IT System to expected functionalities required for the business to operate effectively at the right cost.

KPI

A KPI (key indicator) defines how much of something that can be quantified, either as a singular value or as range of values, according to a KPI Dimension. KPI are valued KPIs. Example: Time to deliver [10-20] minutes.

Composite KPI

A composite KPI defines the grouping of elementary KPIs that should be examined together in order to appreciate the performance of an item with KPI. E.g.: a delivery must take place in less than 20 minutes and cost less than 5 euros.

KPI dimension

KPI dimensions express the nature of KPIs (Time, Mass, Cost, ..) and define the units used for KPI (minutes, kg, euros, etc.). Example: Time to deliver in minutes, Delivery cost in kilo Euros.

KPI dimensions are KPI definitions. They can be elementary or composite. Elementary dimensions are described by KPI units: kg, Liter, Gallon, Hour, Minute.

Composite KPI dimension

A composite KPI dimension consolidates a set of KPI dimensions that must be considered jointly to assess the performance of a tracked element. E.g: a delivery must take place within a target timeframe AND at target cost.

Library

Libraries are collections of objects used to split HOPEX repository content into several independent parts. They allows virtual partition of the repository. In particular, objects owned by different libraries can have the same name.

Lifeline

A lifeline represents the participation of a software or organizational component in a scenario of another software component (application, IT Service, …).It represents an individual participant in the Interaction.

Logical Data Area

A logical data area is used to define a logical data structure made up of classes and data views.

Means

A Means is some capability, regime, technique, restriction, agency, instrument, device or method that may be called upon, activated, or enforced to achieve Ends. It does not include either the tasks (business processes and workflow) necessary to exploit it, nor responsibility for such tasks.

Measure

A measure is an indicator of the achievement of an objective, the impact of a risk factor, the likelihood or the severity of a risk, the efficiency of a control, etc..

Micro-Service	A micro-service is a software component that can be deployed autonomously, but it does not directly provide a service to the end user. It can interact with other IT Services, Systems or Application systems. It uses software technologies. Examples: Authentication service, PDF Printing service
Mission	A Mission indicates the ongoing operational activity of the enterprise. The Mission describes what the business is or will be doing on a day-to-day basis. A Mission makes a Vision operative; that is, it indicates the ongoing activity that makes the Vision a reality. A Mission is planned by means of Strategies.
Needline	Needlines group together internal operational flows.
Object life	An object life is the set of time periods representing the current schedule of states for an object.
Objective	An objective is a goal that a company/organization wants to achieve, or the target set for a business process or an operation. An objective allows you to highlight the features in a business process or operation that require improvement.
Operation	An operation is an elementary step in an operational activity executed by an organization. It cannot be broken down.
Operational Activity	An operational activity is a set of operations performed by organizations within a company or organization, to produce a result. It is depicted as a sequence of operations, controlled by events and conditions.
Operational Flow	
Operational Rule	Operational Rules are explicit constraints on operational activities and/or provide support for conducting them. Operational Rules are derived from Business Policies.
Operational Scenario	An operational scenario presents flows exchanged between organizations. A scenario can represent a specific use case or, globally, the set of all flow exchanges at the operational level.

Organization	An organization represents a person or a group of persons that intervenes in the enterprise business processes or information system. An organization can be internal or external to the enterprise. - An internal organization is an organizational element of the enterprise structure such as a department, a service, or a workstation. An internal organization is defined based on how detailed you require your view of the enterprise to be (cf org-unit-type). Example: financial management, sales management, marketing department, account manager. - An external organization is an organization that exchanges flows with the enterprise. Example: Customer, Supplier, Government Office.
Organization Environment	An organization environment defines the organizational context, roles and relationships among organizations.
Organizational Element	An organizational element is an organizational resource configured to achieve different capabilities within a resource architecture.
Package	A package partitions the domain studied and the associated work. It enables grouping of various elements, in particular use cases and classes. A package can also contain other packages. Packages are interconnected through contractual reports defining their interface.
Logical Data Area	A logical data area is used to define a logical data structure made up of classes and data views..
Position Type	A position type is a type of status assigned to an individual or group of individuals which defines a job in an organization or hierarchy. It helps define human roles.
Project	A Project is a temporary endeavor undertaken by a specific team, to create a unique product, service or result It serves a purpose which can be expressed in terms of capability that is acquired (new), extended (improvement) or decommissioned (rationalization). It generates Project deliverables. It can be attached to one or several Project Categories.
Project Category	A Project may fit into one or several categories, depending on its purpose and breadth or depth of coverage regarding the architectural landscape (e.g. Strategic Business Initiatives, Maintenance-driven activities, Technology initiatives, IT management initiatives, etc.).

Project Deliverable	A Project Deliverable defines the outcome of a project and its impact or contribution to the solutions architectural landscape. It is defined as a Solution Building Block (e.g. an Organization, an Application, a Resource Architecture, or IT Infrastructure) delivered by the project to the Architectural Landscape. As part of a Project Deliverable, a block can be: - New: the project is delivering a new block in the to be architecture landscape; - Updated: the project modifies a block from the 'as is' landscape, for instance to extend its lifecycle, and delivers it to the 'to be' landscape; - Decommissioned: the project removes a block from the as-is landscape.
Project Domain	A project is defined upon a given domain (e.g. Business, Information Technology). A domain gathers all the projects managed from the same perspective in terms of portfolio management decisions. Project Portfolios are therefore also attached to Project Domains; by default, one portfolio of each portfolio type is created when creating a new domain.
Project Portfolio	A Project Portfolio gathers all the projects of a given Project Domain.
Project Risk	A project risk is a potential issue faced by the project team when carrying out the project or concerning the project outcomes. It may face risks of various kinds (e.g. delays, budgeted costs increase, inadequate deliverables quality); the kinds of risk can be defined through project risk types. The Project Risks are not to be confused with operational risks, and concern only the project endeavor itself, not the operation of its deliverables after the end of project.
Realization	Realization refers to compliance to an operating model.
Resource Architecture	A resource architecture is a combination of used material and organizations configured to provide a capability.
Resource Architecture Environment	A Resource architecture environment is an environment context for a Resource Architecture or Facility and its interacting partners.
Resource Configuration	A Resource Configuration is a set of physical and human resources configured to provide a Business Capability.
Rule	A rule is a constraint represented by a control or a business rule that must be applied during processing.

Scenario of Application System Flows	A scenario of application system flows presents the flow exchanged between the other application systems, systems or the micro-services used by this application system. A scenario can represent a specific use case of this application system or, globally, the set of all flows exchanged inside this application system.
Scenario of System Flows	A scenario of system flows presents the flow exchanged between the IT services or the micro-services used by this system.
Sequence Flow	A sequence flow is used to show the order in which the steps of a function will be performed. It has only one source and one target.
Service Catalog	A Service Catalog is a list of key service offerings for which a set of recommended solutions are proposed.
Service Catalog Item	A service catalog item defines which functionality is part of the catalog and which artifacts are fulfilling the functionality.
Service Point	A service point is a point from which a system receives a request from another system and provides the requested service.
Site	A site is the geographical location of an organization. Examples: Boston subsidiary, Seattle plant, and more generally the headquarters, subsidiaries, plants, warehouses, etc.
Stage	An enterprise stage is a past, current or future stage of an enterprise plan.
Standard	A standard is a definition or format that has been approved by a recognized standards organization or is accepted as a de facto standard by the industry.
Standard Component	A standard component represents the use of a standard within another one.
State concept	A state concept is a situation in a concept life cycle during which it satisfies certain conditions, executes a certain activity or waits for a concept event. A state concept represents a time interval of which limits are two concept events. A state concept is a phase through which the concept passes during its life cycle.
State Machine	A state machine is a set of states and transitions governing the state changes that can match any time-dependent object.

Strategy

A Strategy is one component of the plan for the Mission. A Strategy represents the essential Course of Action to achieve Ends (Goals in particular). A Strategy usually channels efforts towards those Goals.

A Strategy is accepted by the enterprise as the right approach to achieve its Goals, given the environmental constraints and risks.

Subject area

A subject area is a branch of knowledge, a discipline or a field of study. It is used to describe all the elements defining your information architecture.

System

A system is a software component that can be deployed and provides users with a set of functionalities.

System Environment

A system environment allows presenting the other application systems, applications or micro-services with which this system can interact.

System Flow

A system flow represents an information flow between systems or inside a system. It can carry content.

System Flow Environment

System Flow Environment

A system flow environment presents globally the flows exchanged between this system and other application systems, systems or micro-services.

System Flow Environment Subject

A system flow environment subject represents the system whose environment is illustrated by the system flow environment.

System Function

A system function is the executable representation of an operational activity.

The elements that formalizes a system function are as follows: the events of the workflow, the tasks to be carried out during the processing, the algorithmic elements used to specify the way in which the tasks follow on each other, the information flows exchanged with the participants.

System of System

An system of system is the configuration of a resource architecture within another architecture.

System of Sytem

An system of system is an assembly of other systems of systems, systems and end users, in order to realize one or more functionalities.

System Technical Area

A system technical area is a split of a system according to technical criteria. For example, it may be GUI, process and data. Each technical area is associated with one or several technologies. Several system technical areas need to be deployed to get the system operational.

System Used

A system used during the execution of a step of an operational activity represents what is necessary to realize this step. It can be a service or any other non IT resource, or more generally a functionality.

Tactic

A Tactic is a Course of Action that implements part of a Strategy. Tactics generally channel efforts towards Objectives.

Tag

A tag is a classifying description which permits characterization of objects.

Task

A task is an elementary step that is included within a system function. A task is used when the work in the system function is not broken down to a finer level. Generally, an end-user and/or an IT service are used to perform the task when it is executed.

Technical Architecture

A technical Architecture describes one possible configuration of the deployment of a system. It describes how the different application technical areas are connected to each other and the technologies and communication protocols they use.

A system can have multiple possible technical architectures (Ex: stand-alone installation, horizontal or vertical deployment, etc.).

Technical Data Area

A data technical area represents an organizational element of a system used to access the data necessary for the operation of this system. Each application technical area is associated with one or more technologies (E.g.: Oracle 12, SQL Server 2012, etc.). A data technical area can allow access to one or more data stores.

Technical Area

An application technical area is a split of a system according to technical criteria. For example, it may be GUI, process and data. Each technical area is associated to one or several technologies. Several system technical areas need to be deployed to get the system operational.

Technical Communication Lines

A technical communication line represents a technical connection between application technical architectures or areas through input to output communication ports. The output technical port of a technical area or architecture asks the input technical port of the other technical architecture or area to open the communication line.

Technical Data Area

A technical data area is a split of a system allowing access to the data required for the operation of this system. Each technical data area is associated to one or several technologies (Ex: Oracle 12, SQL Server 2012, Windows file system, etc.). A technical data area can allow access to one of several data stores.

Technical Functionality	A technical functionality is the ability to deliver a technical information which is required by a technical artifact in order to function properly. This technical functionality is generally required within a technical process handled by the technical artifact.
Technica Input Port	An input technical port is a point used to open communications with a technical architecture or an application technical area in compliance with a particular communication protocol (SMTP, HTTP, etc.).
Technical Service Catalog	The Technical Service Catalog provides a central source of information on the technical services delivered by the service provider organization. It contains a customer-facing view of the Technical services in use, how they are intended to be used, the process they enable, and the levels and quality of service the customer can expect from each service. The Technical Service Catalog provides the list of reference IT functionalities and their recommended implementation.
Technical Service Catalog Item	A Technical Service Catalog Item defines which technical functionality is part of the catalog and which technical artifacts are fulfilling the technical functionality.
Term	A term is a word or group of words that is used for a specific meaning in a specific context.
Used Material	A used material is a resource that can host systems. It is configured to achieve different capabilities.
Vision	A Vision is the ultimate, possibly unattainable, state the enterprise would like to achieve. A Vision is often compound, rather than focused toward one particular aspect of the business problem. A Vision is supported or made operative by Missions. It is amplified by Goals.

APPENDIX

Here are **HOPEX** features which are used across the different viewpoints.

About Scenarios

Scenario is a common concept which is used across the DoDAF viewpoints.

Scenarios enable to describe use cases or user stories. We recommend to use them when you need to understand how exchanges are performed.

Types of scenarios

Scenarios can apply to several layers of the enterprise architecture:

- operational (OV-2)

  ☛ *For more details on operational scenarios, see "OV-2 Operational Resource Flow Description", page 104.*

- system (SV-10c)

  ☛ *For more details on system scenarios, see "SV-10c Systems Event-Trace Description", page 238.*

- service (SVcV-10c)

  ☛ *For more details on application system flow scenarios, see "SvcV-10c Services Event-Trace Description", page 179.*

Layer	Viewpoint	Type of Scenario	Scenario subjects
Operational	OV-2, OV-3	Operational Scenario	Org-Unit Operational Activity (optional)
System	SV-10c	System Flow Scenario	System System Process (optional)
System Service	SVcV-10c	Application System Flow Scenario	Application System

Editing Scenarios

HOPEX offers different possibilities to build a scenario. From the pop-up menu of the scenario you can use :

- an editor
  - the flow editor

    ☛ *With the flow editor you start with the description of flows and needlines exchanged between participants.*
  - the lifeline editor
    - *With the lifeline editor you start with the description of participants in the scenario. Then you describe the exchanges.*
- the corresponding scenario diagram

About Catalogs in HOPEX DoDAF

Service Catalogs

A Service Catalog is a list of key service offerings for which a set of recommended solutions are proposed.

Service catalogs are available in the different layers of the architecture.

Type of service catalog	Contents	Viewpoint	See:
Business Service Catalog	Business Capability	CV-7	"CV-7 HOPEX Implementation"
Technical Service Catalog	Technical functionalities	SvcV-1	"SvcV-1 HOPEX Implementation"
Information Service Catalog	Functionalities	SvcV-1	"SvcV-1 HOPEX Implementation"
Hardware Service Catalog	Hardware functionalities	SvcV-1	"SvcV-1 HOPEX Implementation"

Asset Catalogs

Type of asset catalog	Viewpoint	See:
Hardware Catalog	SV-8	"SV-8 HOPEX Implementation"
Software Catalog	SV-8	"SV-8 HOPEX Implementation"
Other	SV-8	"SV-8 HOPEX Implementation"

Other Catalogs

Type of catalog	Viewpoint	See:
Position Type Catalog	SV-9 (Systems) SvcV-9 (Services)	"SV-9 Description" "SVcV-9 HOPEX Implementation" (
System Technology Catalog	SV-9 (Systems) SvcV-9 (Services)	"SV-9 Description" "SVcV-9 HOPEX Implementation"

About Realization and Fulfillment

Realization and fulfillment need to be distinguished as follows:

- Fulfillment refers to the provision of services or functionalities.

  ```
  A particular system fulfills project management
  functionalities.
  ```

- Realization refers to compliance to an operating model.

  ```
  A particular system realizes a logical application or a
  business function. It conforms to the standard architecture
  of management project tools.
  ```

  ☛ *In this example the logical application is "Standard Project Management System".*

About Object Life

Object life represents development of a component of your repository as it is actually planned following analyses carried out.

📖 *An object life is the set of time periods representing the current schedule of states for an object.*

The life of an object is a set of time periods representing the real calendar of object states. Setting the life of an object enables you to view the life of components though a Gantt chart.

Here are the Viewpoints where the object life concept is used:

- "StdV-2 Standards Forecast", page 192
- "SV-9 Systems Technology and Skills Forecast", page 235
- "SvcV-9 Services Technology & Skills Forecast", page 172

About Owned and Imported Object Lists

When viewpoints display lists of objects, **HOPEX DoDAF** offers two different lists:

- ***Owned objects***
  This list displays objects owned by the current enterprise.
- ***Imported objects***
  This list displays objects which are not owned by the current enterprise. Still they are displayed here so that you could use them.