Sample Model Highlights

In-Flight Entertainment

v1.0

ARCADIA

Capella

Foreword

The system used as an example in this model does not reflect any existing Thales product. It is an overly simplified vision of what a real in-flight entertainment system is.

This model is partial, and mainly designed for educational purposes.

For any question about Arcadia or Capella, please post a question in the forum or use the contact addresses available on the Capella website.

Forum:

https://polarsys.org/forums/index.php/f/10/

Website:

http://www.polarsys.org/capella

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Document Objectives, Legend and Revision Table

Capella tips and tricks

Method or engineering highlights

The objective of this document is to browse the sample IFE model through the 5 Arcadia engineering steps.

These slides mainly rely on extracts of diagrams and form a kind of "reading path" through the model.

Noteworthy tooling, engineering or method aspects are highlighted throughout the document.

Version	Date	Author(s)	Notes
1.0	Feb 24th, 2015	Stéphane Bonnet (Thales)	Initialization

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Operational Analysis

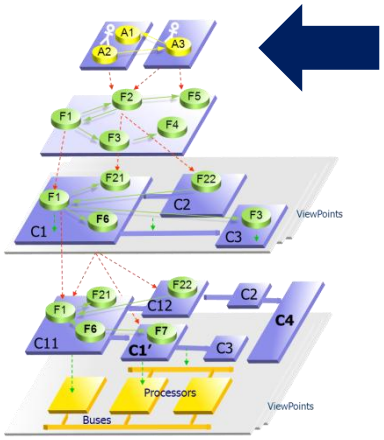
What the users of the system need to accomplish

OA

SA

LA

PA



EPBS

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Main Drivers for Operational Analysis

- The Operational Analysis is partial and minimal in this version. It basically introduces what kind of activities are performed by the Cabin Crew and the Passengers.

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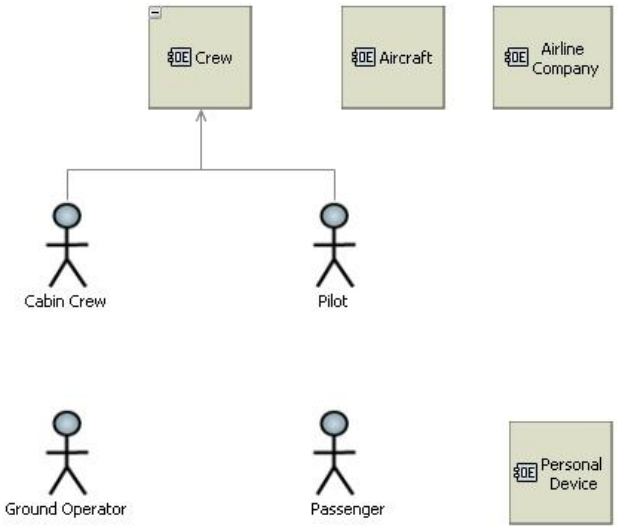
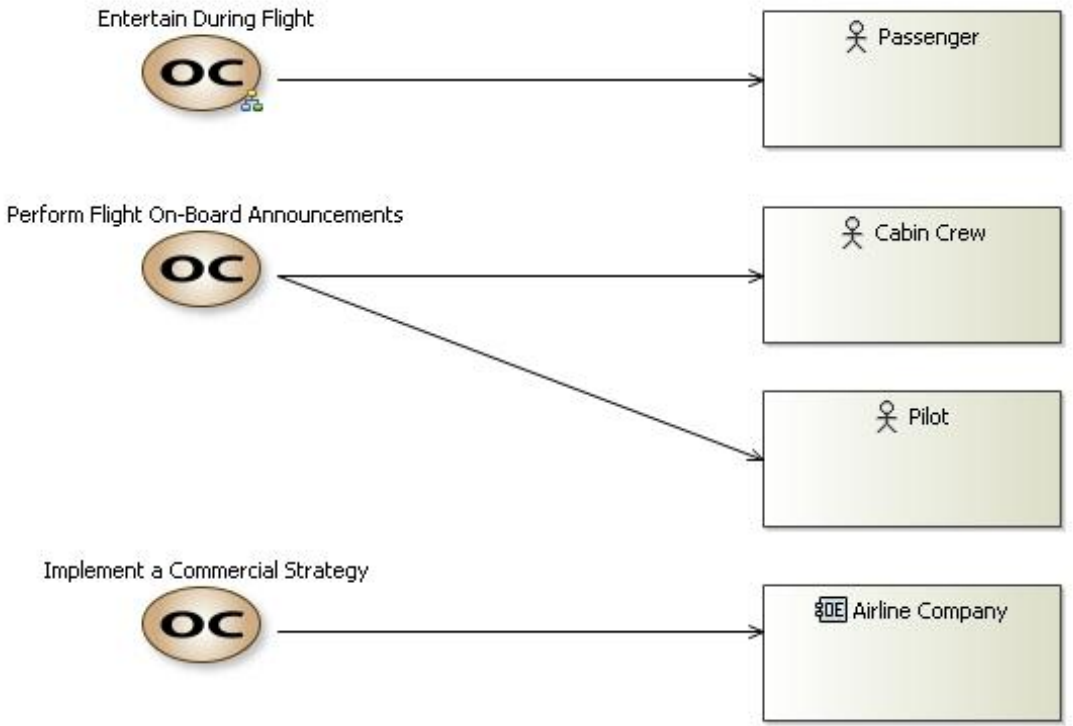
Operational Entities and Capabilities

[OEBD] Operational Entities and Actors



[OCB] Operational Capabilities



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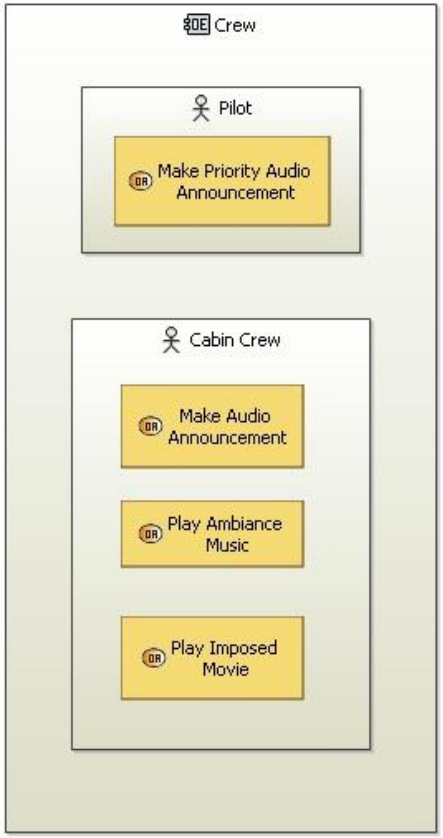
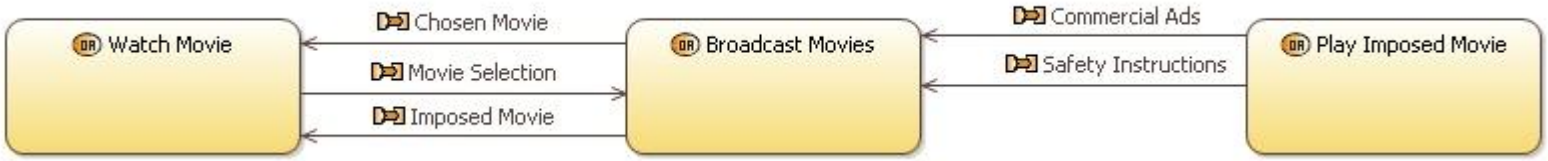
High-Level Expected Activities

[OAB] High-Level Expected Activities



[OAIB] Watch Movie



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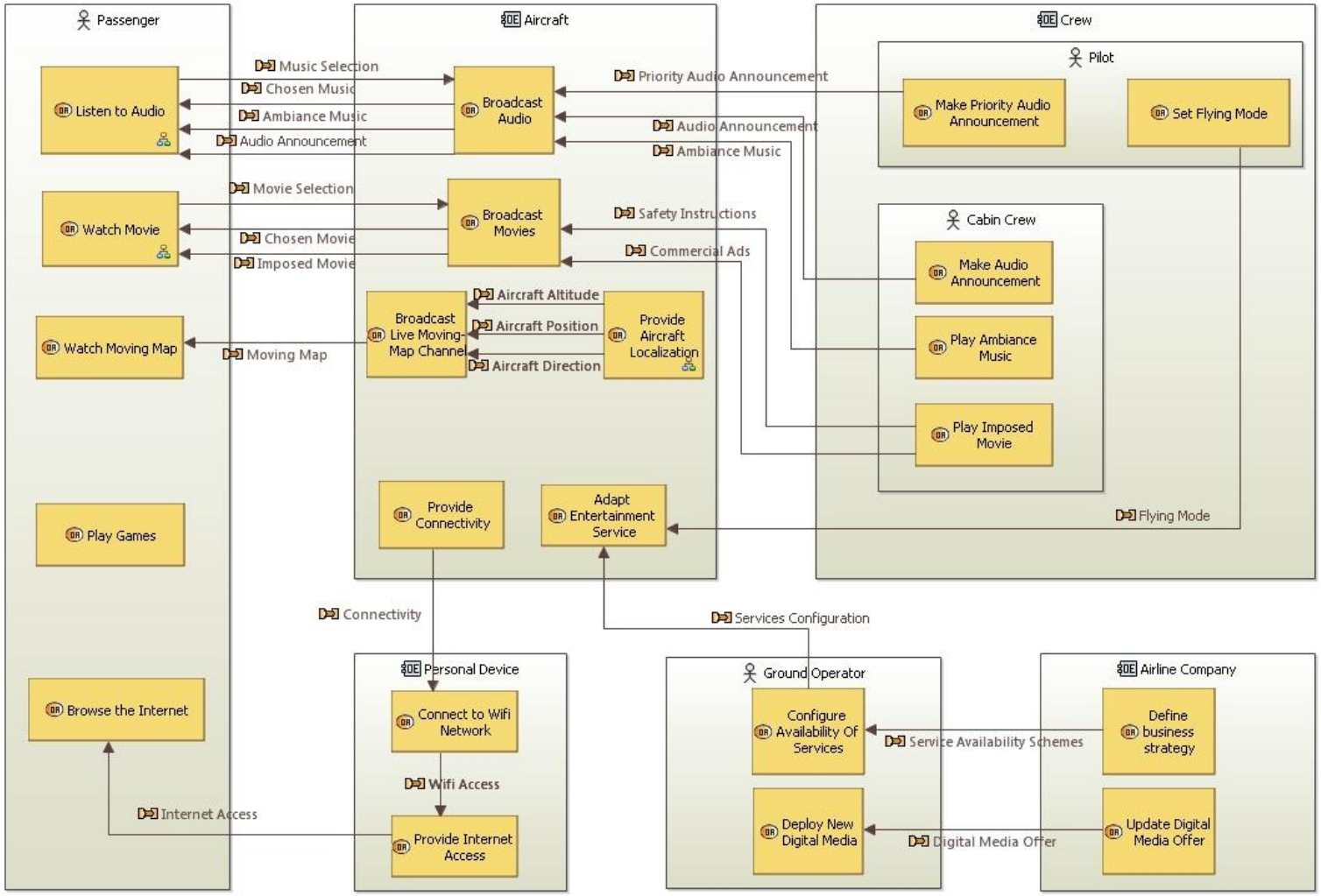
Overview of all Operational Entities and Activities

[OAB] All Operational Activities and Entities



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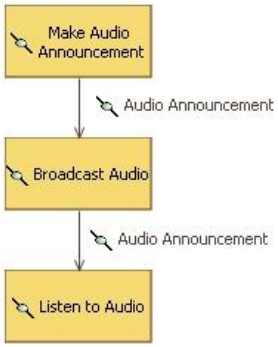
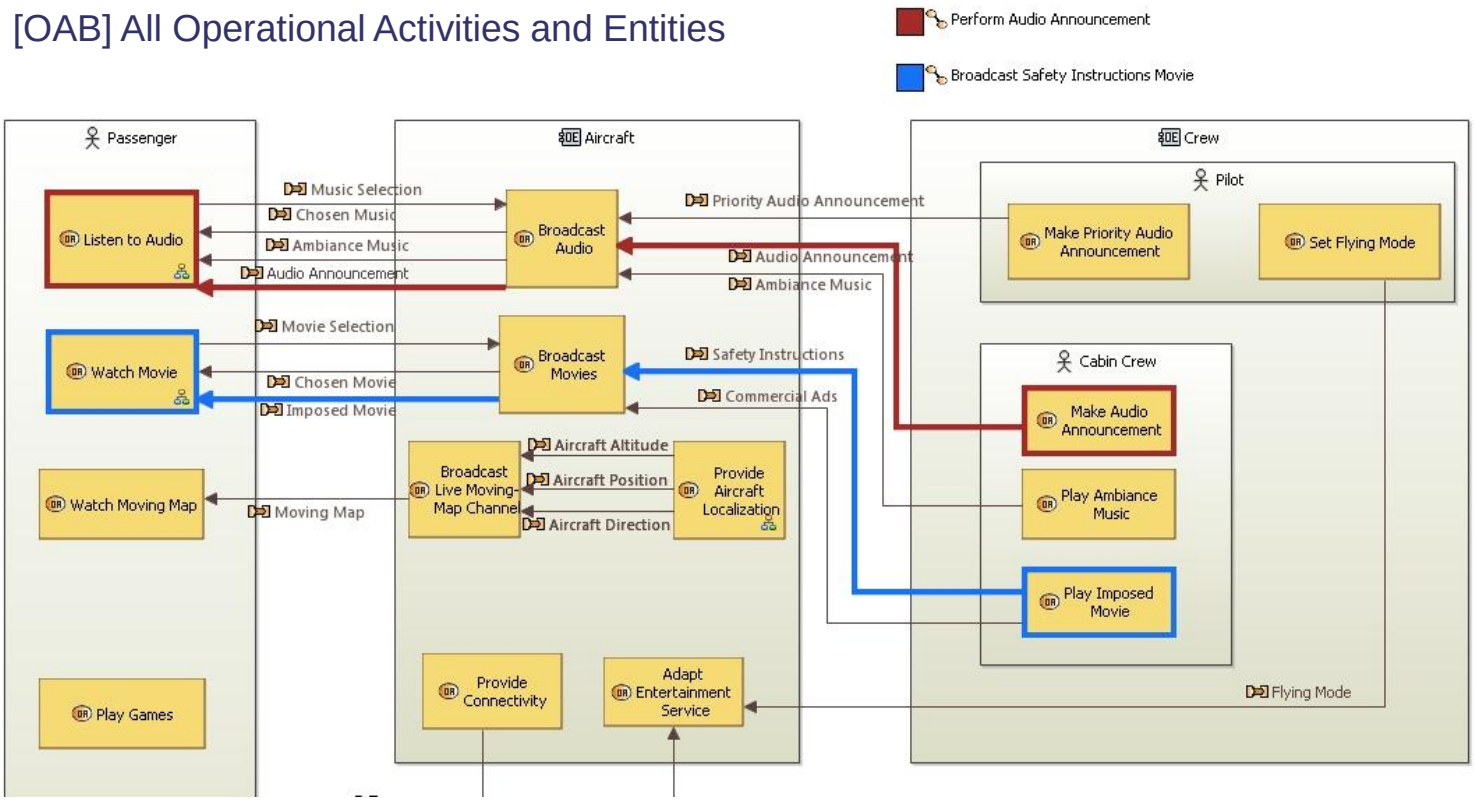
Operational Processes



[OPD] Perform Audio Announcement

[OAB] All Operational Activities and Entities



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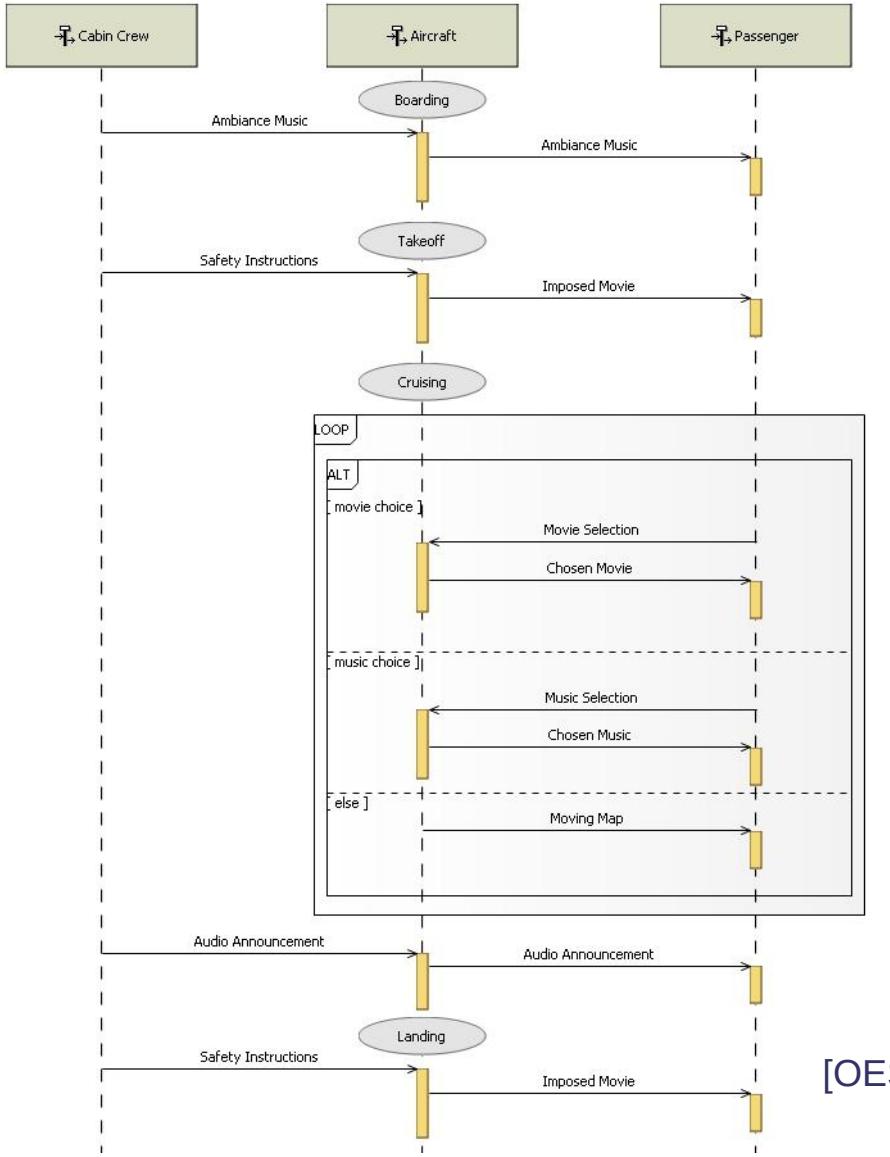
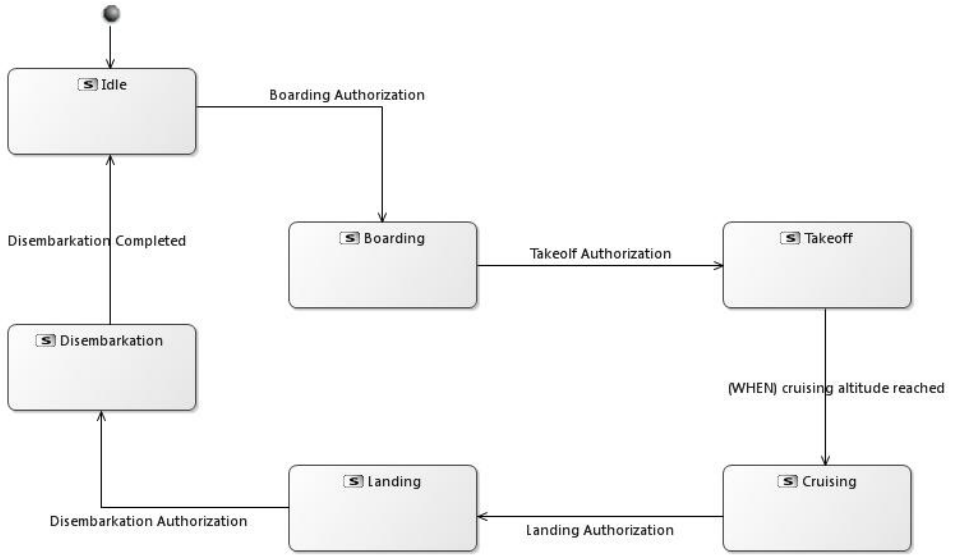
Operational Context: Flying Phases



[OES] Flight Phases



[M&S] Aircraft Flying Phases

The state machine is defined on the "Aircraft" Operational Entity.

The scenario is defined on the « Entertain During Flight » Operational Capability

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System Need Analysis

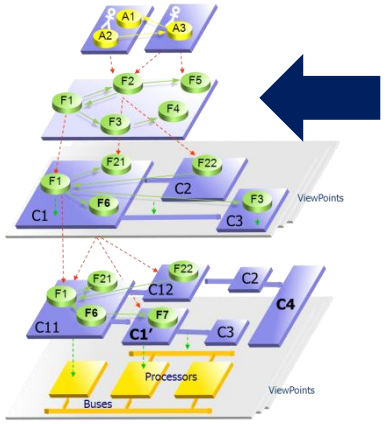
What the system has to accomplish for the users

OA

SA

LA

PA



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Main Drivers for System Need Analysis

- Not all the IFE system is modelled. Focus is put on VOD service, audio announcement and imposed videos (safety instructions, ads, etc.).
- While interesting, the topic of the integration of the IFE with the aircraft is kept minimal (according to flying conditions, the IFE system is supposed to behave differently).
- Not all possible Scenarios and Functional Chains have been created.
- The system is globally organized as follows:
  - Cabin crew services are always available, passenger services have to be activated. Their availability depends on the flying conditions and on the class the passengers are flying in
  - The system is able to store digital media content
  - Most of the interactions of the passengers with their services (navigating between menus, selecting movies, etc.) are captured in functions called "Run <xxx> service"
  - Services rely on audio and video broadcast means
  - Maintenance and configuration topics are only evoked

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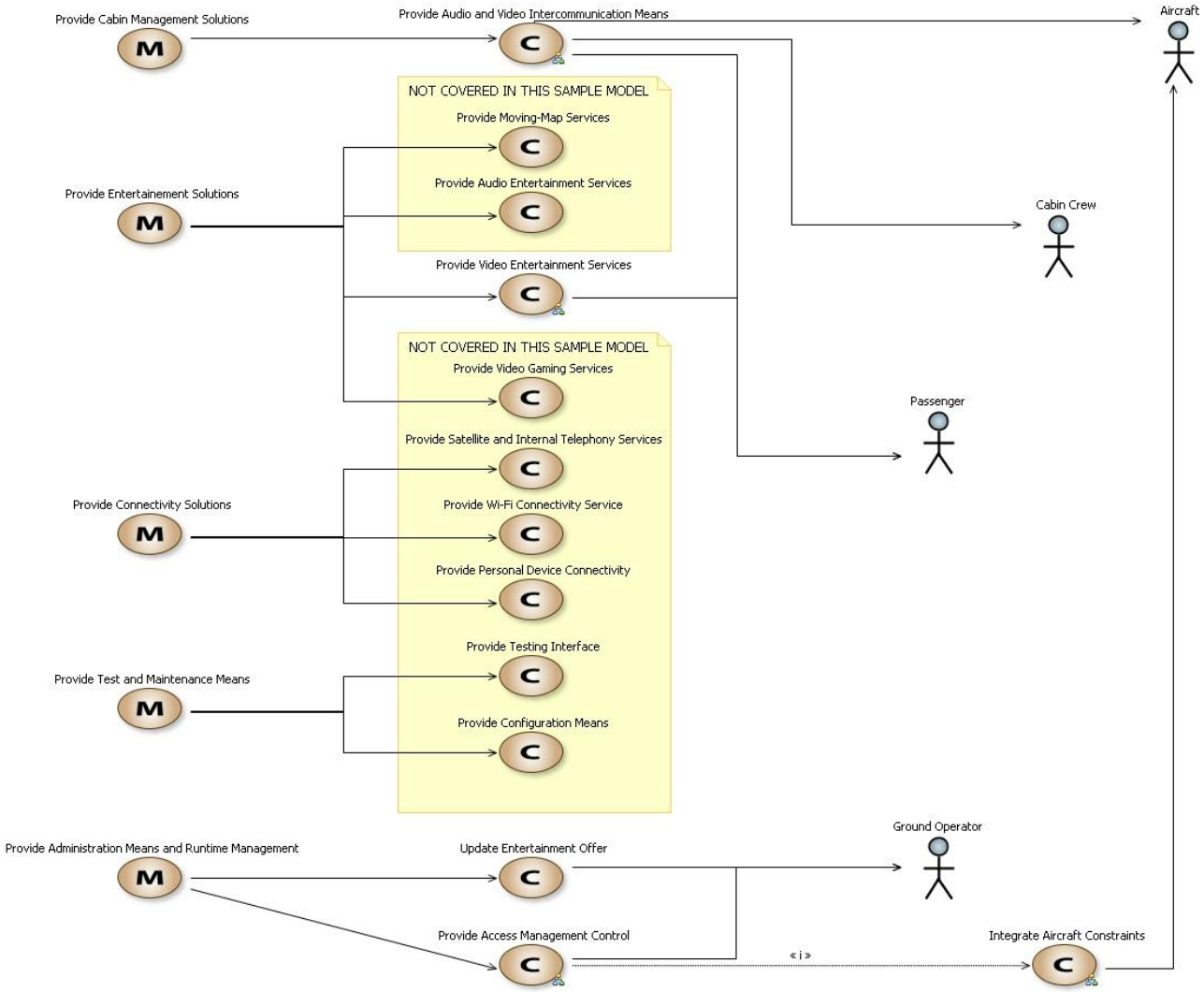
System Missions and Capabilities

[MCB] Capabilities



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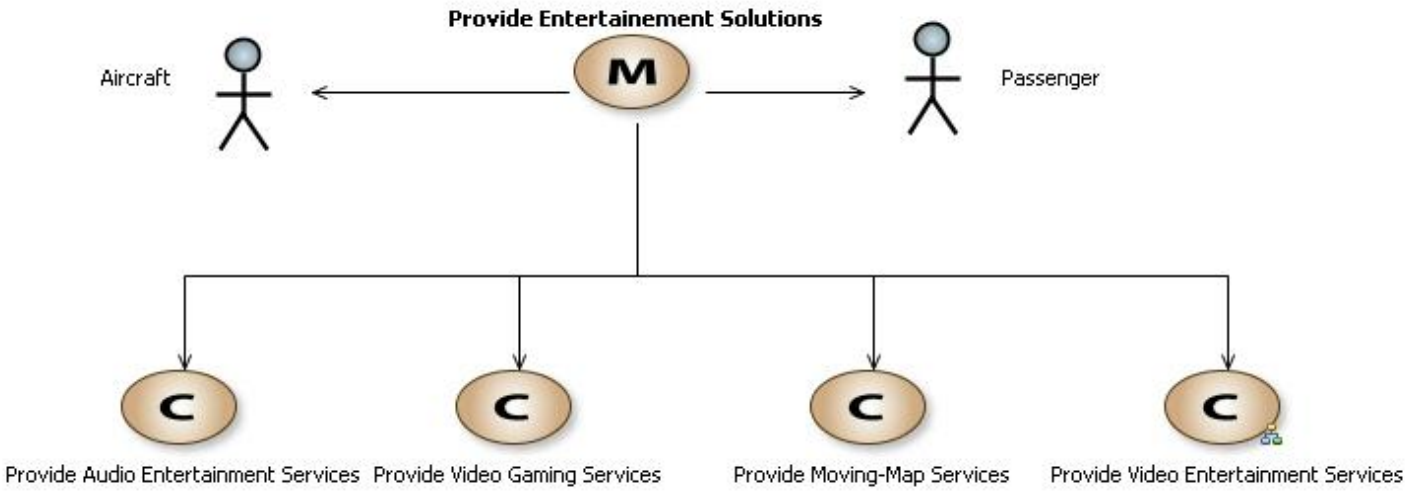
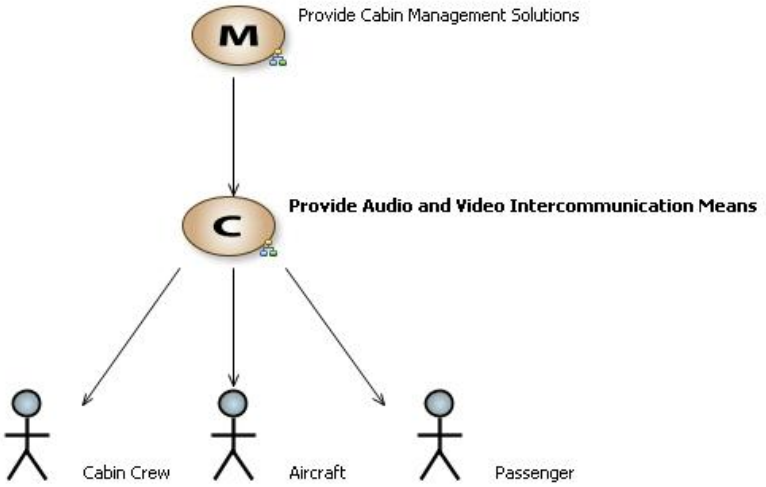
System Missions and Capabilities

[CM] Provide Cabin Management Solutions



[CC] Provide Audio and Video Intercommunication Means



The content of contextual Mission and contextual Capability diagrams is computed automatically.

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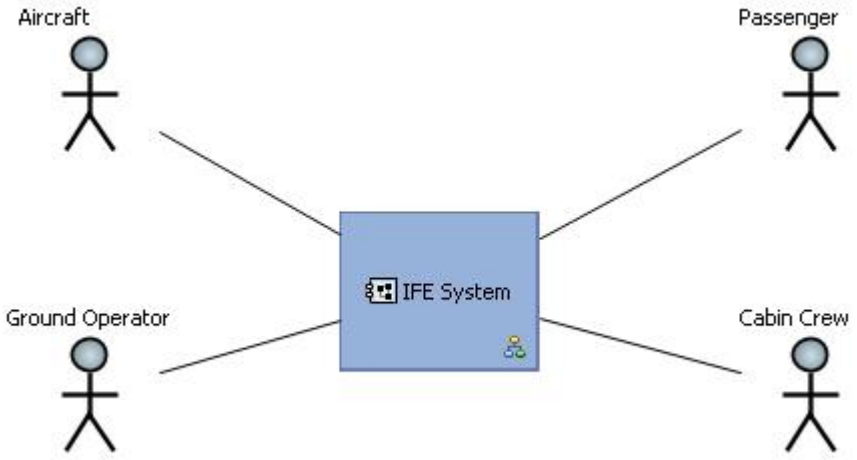
System Missions and Capabilities

[SC] System Actors



The aircraft is an Actor of the IFE system even though the system is inside the aircraft. This is because the Aircraft is providing information and means to the IFE.

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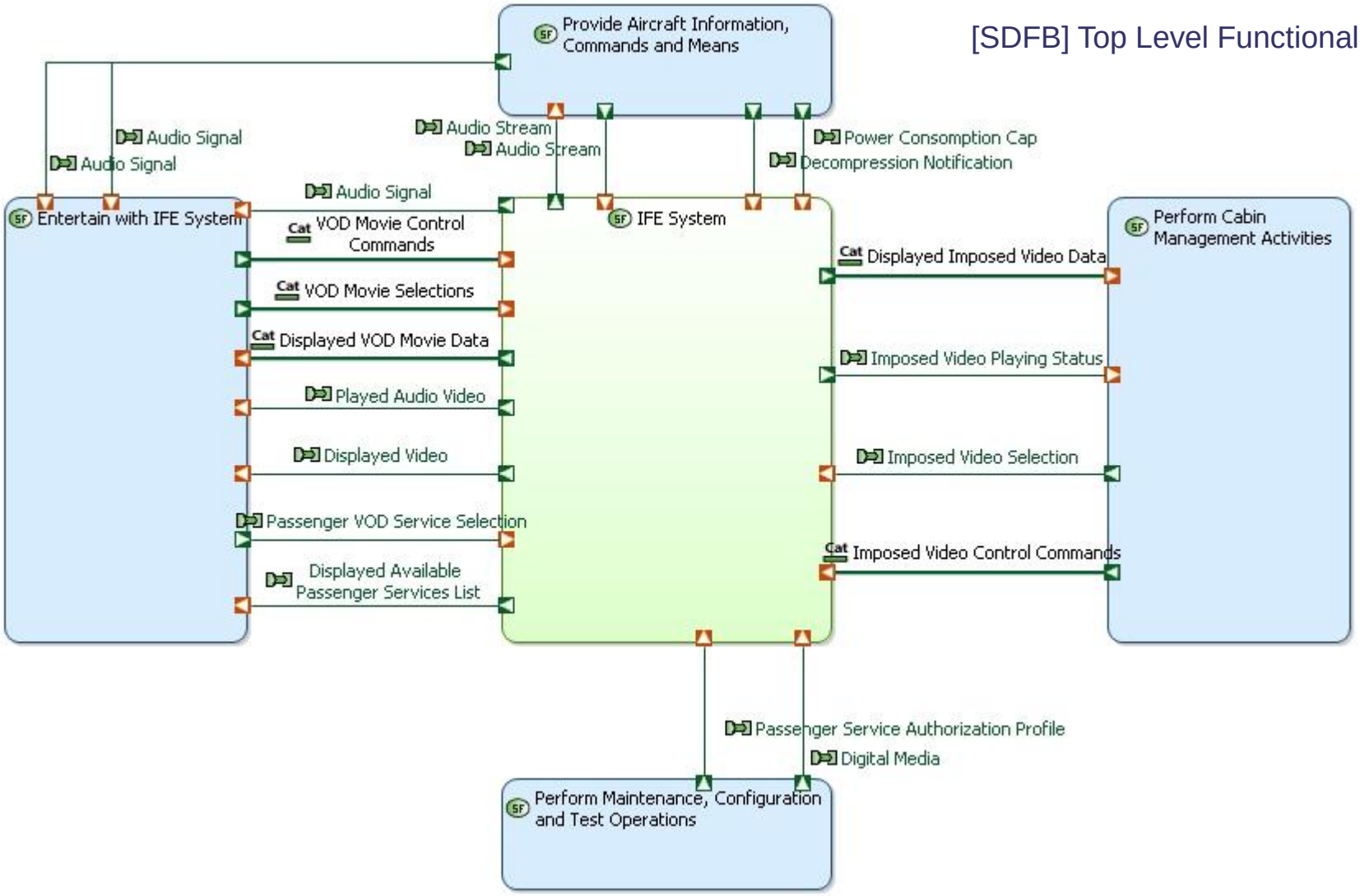
Top-Level Dataflow: The System, The Actors

[SDFB] Top Level Functional Overview



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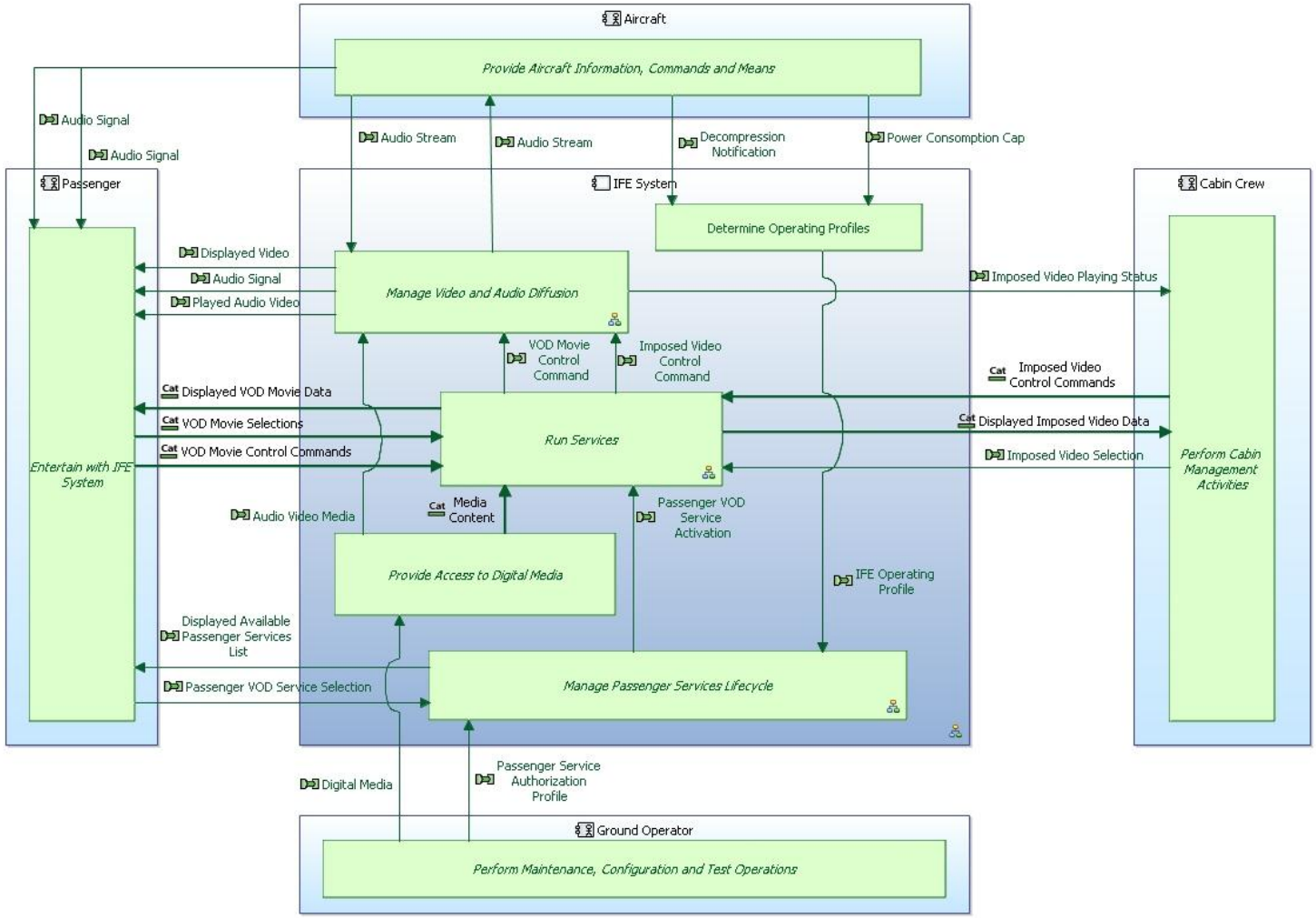
System Overview: An Entry Point to Functional Analysis

The SAB diagram is often a very entry point to the model. The idea is to display high-level Functions, and navigate / zoom inside the Functions to explore in greater detail the functional analysis.

[SAB] Top Level System Overview



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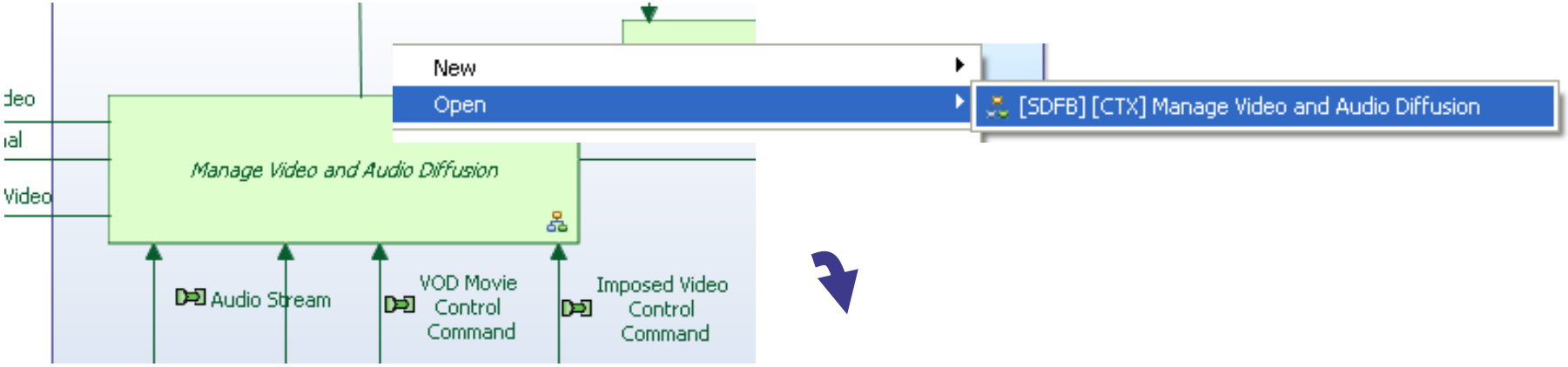
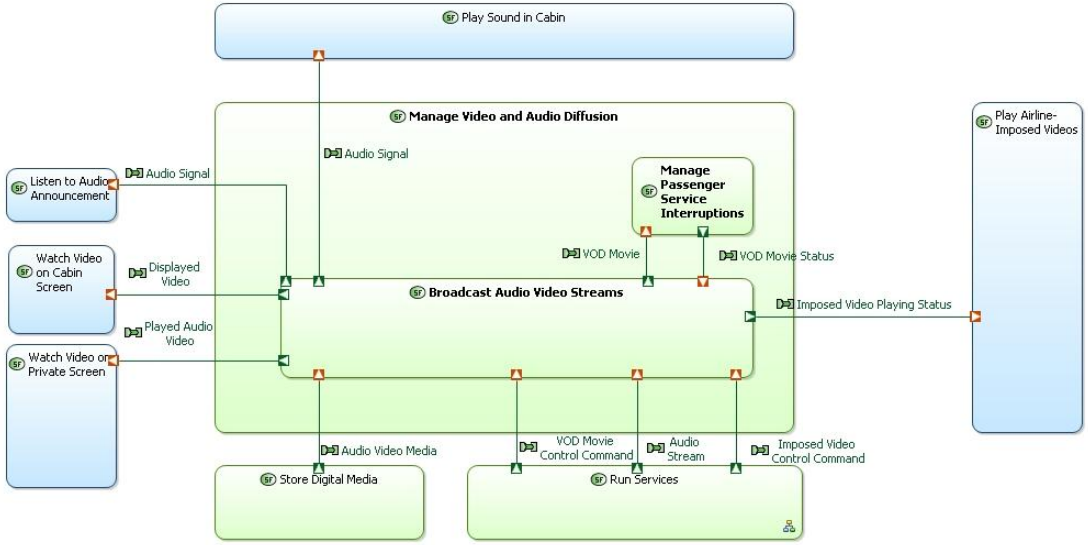
System Overview



Composite functions have their name in italic. Explore their internal content by navigating on the diagram describing them.



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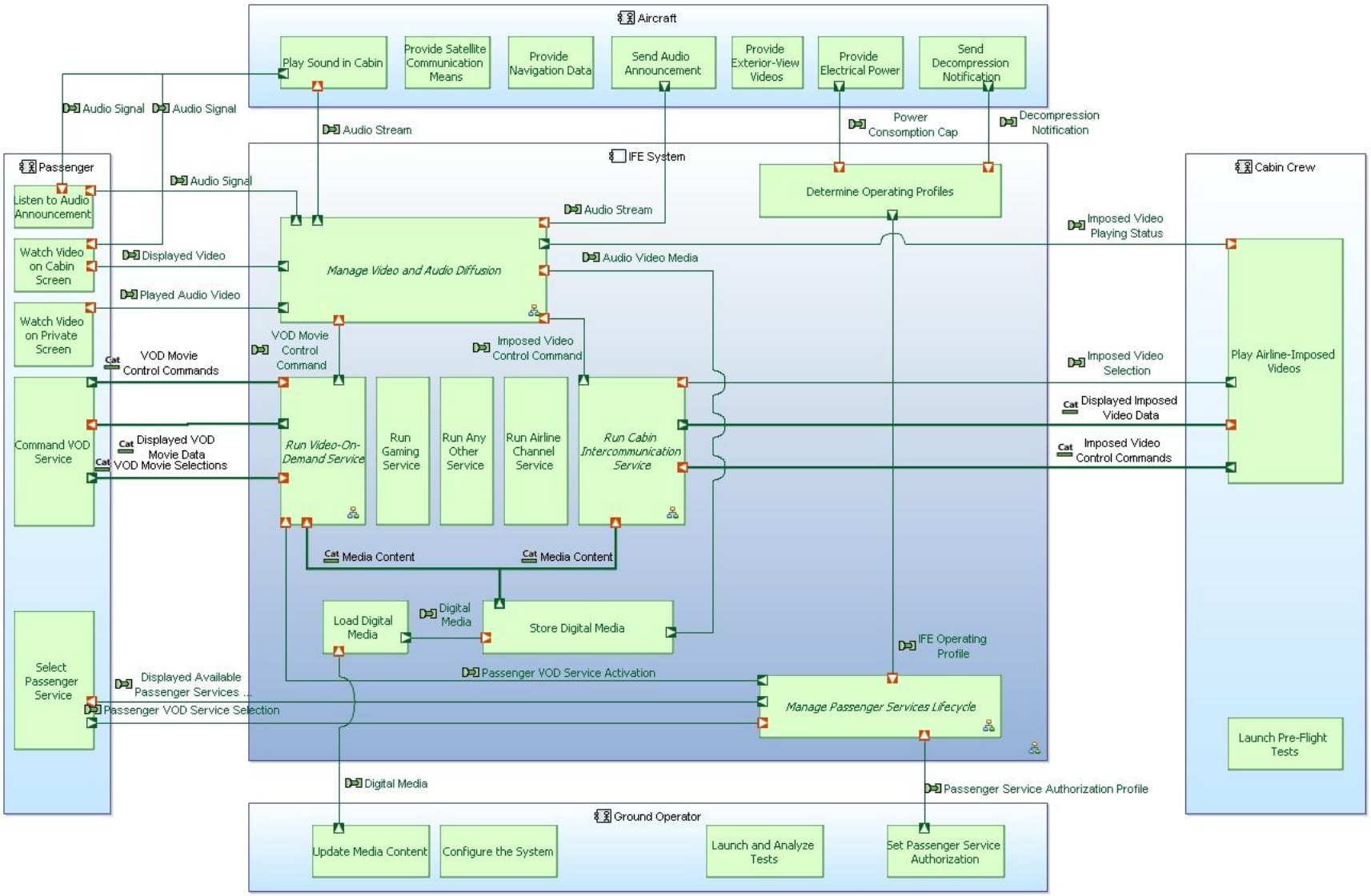
System Overview: Slightly Refined View



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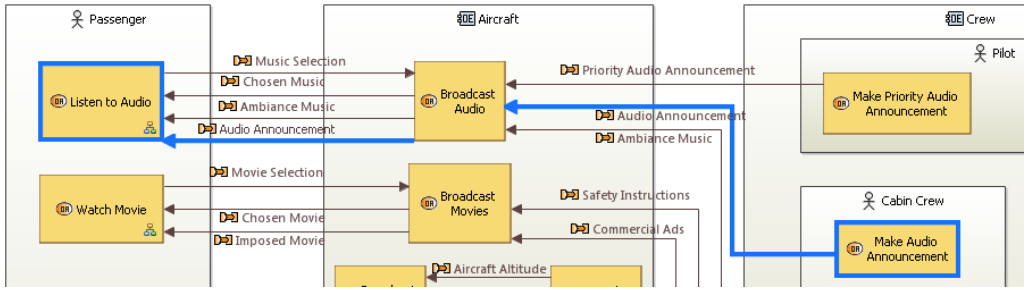
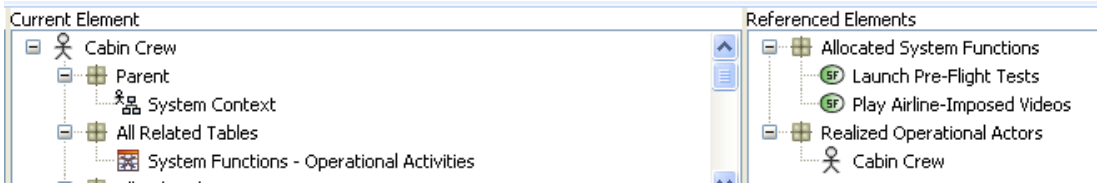
OA-SA Difference: Focus on Audio Announcements

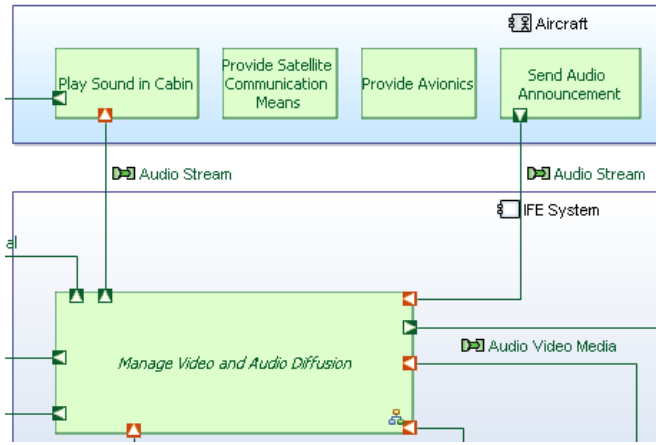
[OAB] All Operational Activities and Entities



Semantic Browser on “Cabin Crew” System Actor



[SAB] High Level System Overview



In Operational Analysis, cabin crew is performing audio announcement.

But in System Need Analysis, the cabin crew actor does not have a corresponding Function.

Rationale: Audio announcements are safety critical and cannot be dependent of the IFE. Audio announcements are performed through the aircraft hardware, even though the IFE system is still responsible for diplaying an interruption screen and for broadcasting the announcement in the headphones of each passenger.

The IFE actually receives an audio stream from the aircraft (that will trigger the interruption). The fact that the cabin crew is actually performing the announcement is out of scope.

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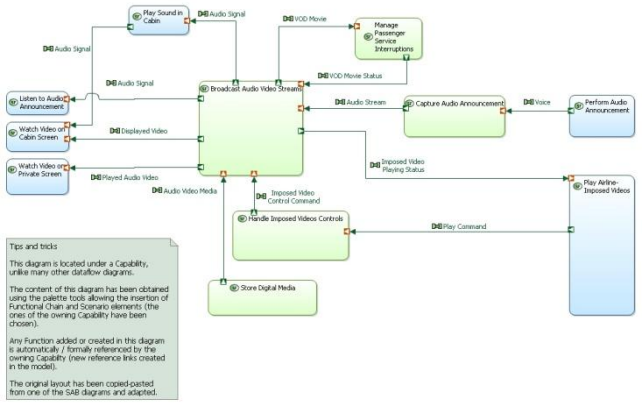
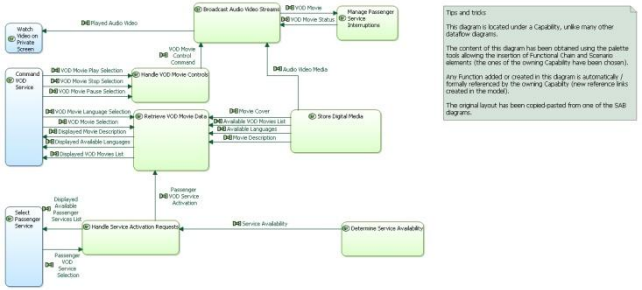
Capability-Based Organization

- System Analysis
  - System Functions
  - Requirements
  - Capabilities
    - Provide Audio and Video Intercommunication Means
      - Watch Imposed Video on Cabin Screen
      - Watch Imposed Video on Private Screen
      - Stop Playing Imposed Video [NOT DONE]
      - Pause Running Imposed Video [NOT DONE]
      - [FS] Perform Audio Announcement
      - [ES] Perform Audio Announcement
      - [SDFB] [CAPABILITY] Provide Audio and Video Intercommunication Means
    - Provide Video Entertainment Services
      - Start Playing VOD Movie
      - Resume VOD Movie
      - VOD Service Activation [NOT DONE]
      - VOD Movie Interruption [NOT DONE]
      - Stop VOD Movie[NOT DONE]
      - [ES] Start VOD Service
      - [ES] Start Playing VOD Movie
      - [SDFB] [CAPABILITY] Provide Video Entertainment Services
    - Provide Video Gaming Services
    - Provide Wi-Fi Connectivity Service

[SDFB] [CAPABILITY] Provide Audio and Video Intercommunication Means



[SDFB] [CAPABILITY] Provide Video Entertainment Services



Capabilities are usually a organizational unit for models: They can be used to distribute responsibilities between different contributors, they are useful when planning IV&V campaigns, etc.

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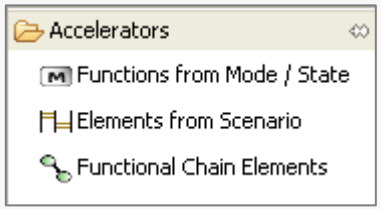
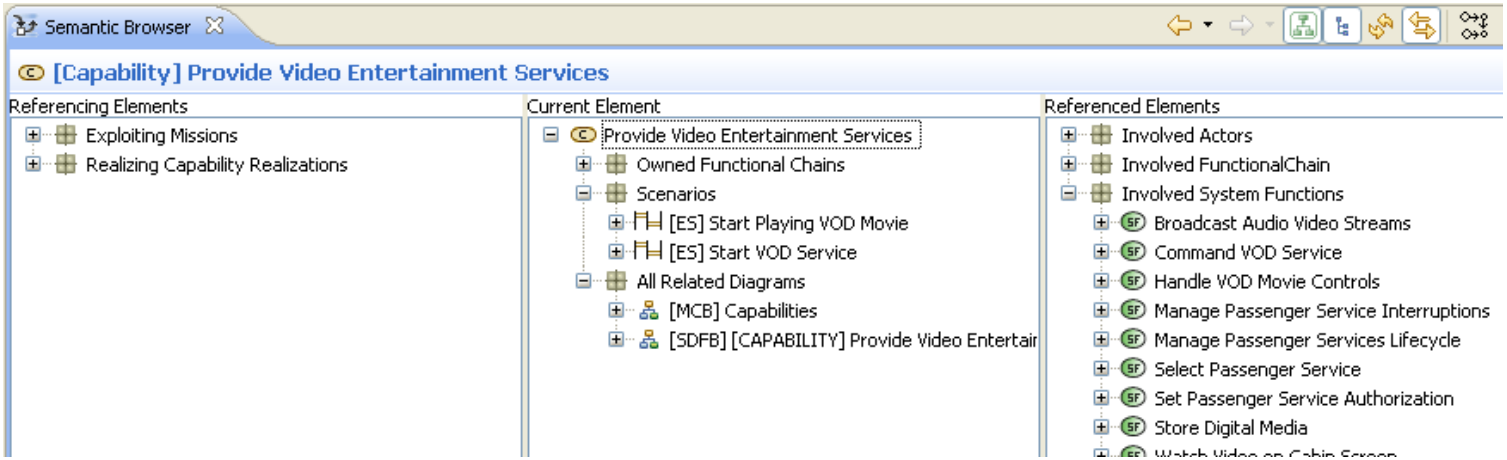
Capability-Based Organization

Displaying or creating Functions in a Dataflow diagram attached to a Capability automatically creates reference/exploitation relationships from the Capability to the Functions. This improves later impact analyses.

An easy way to display all Functions involved in a Capability is to use the modeling accelerators allowing to display at once all Functional Chain and Scenario elements.





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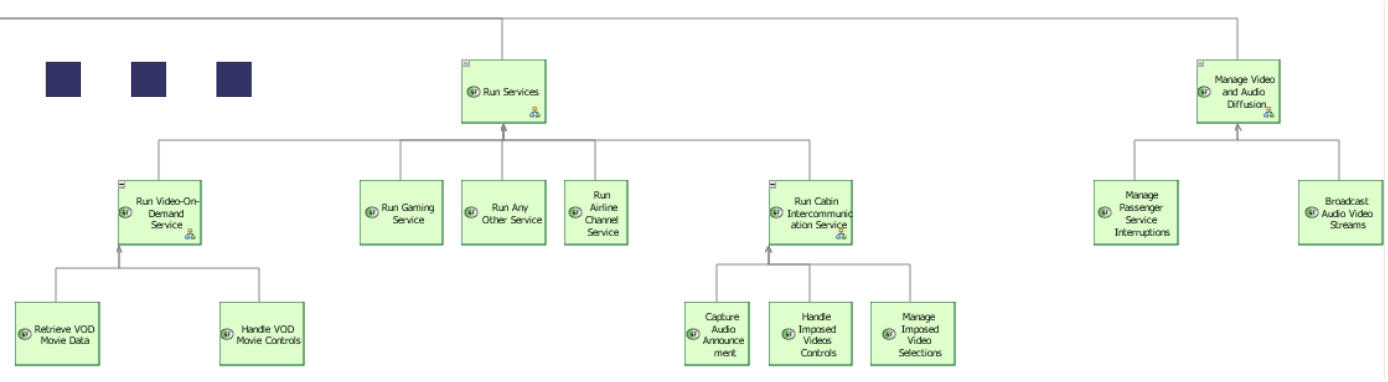
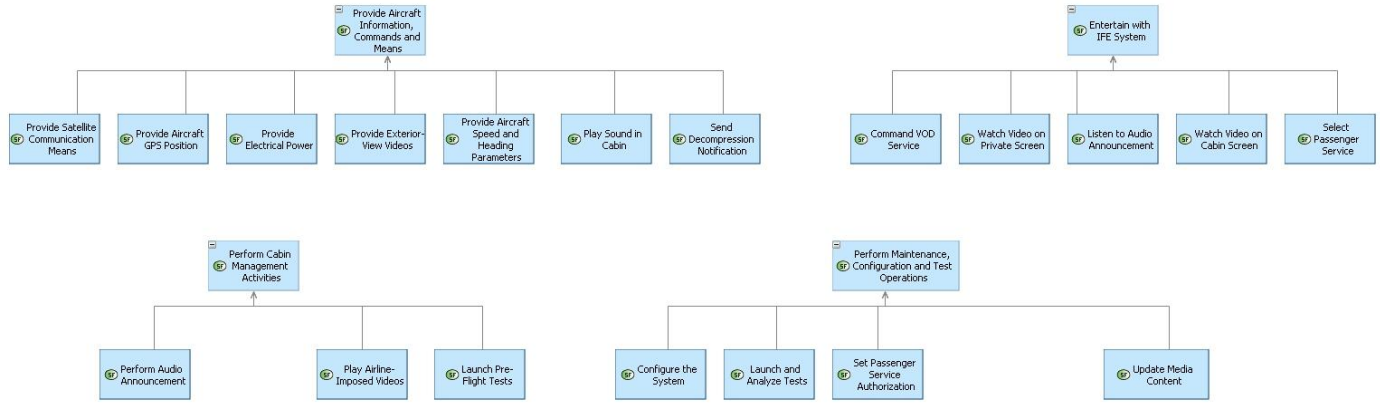
Functional Breakdown

[SFBD] All System Functions



[SFBD] All Actor Functions



Function breakdown are typically generated on the basis of the work performed in dataflow diagrams.

Avoiding to mix System and Actor functions in the same hierarchy is a good practice.

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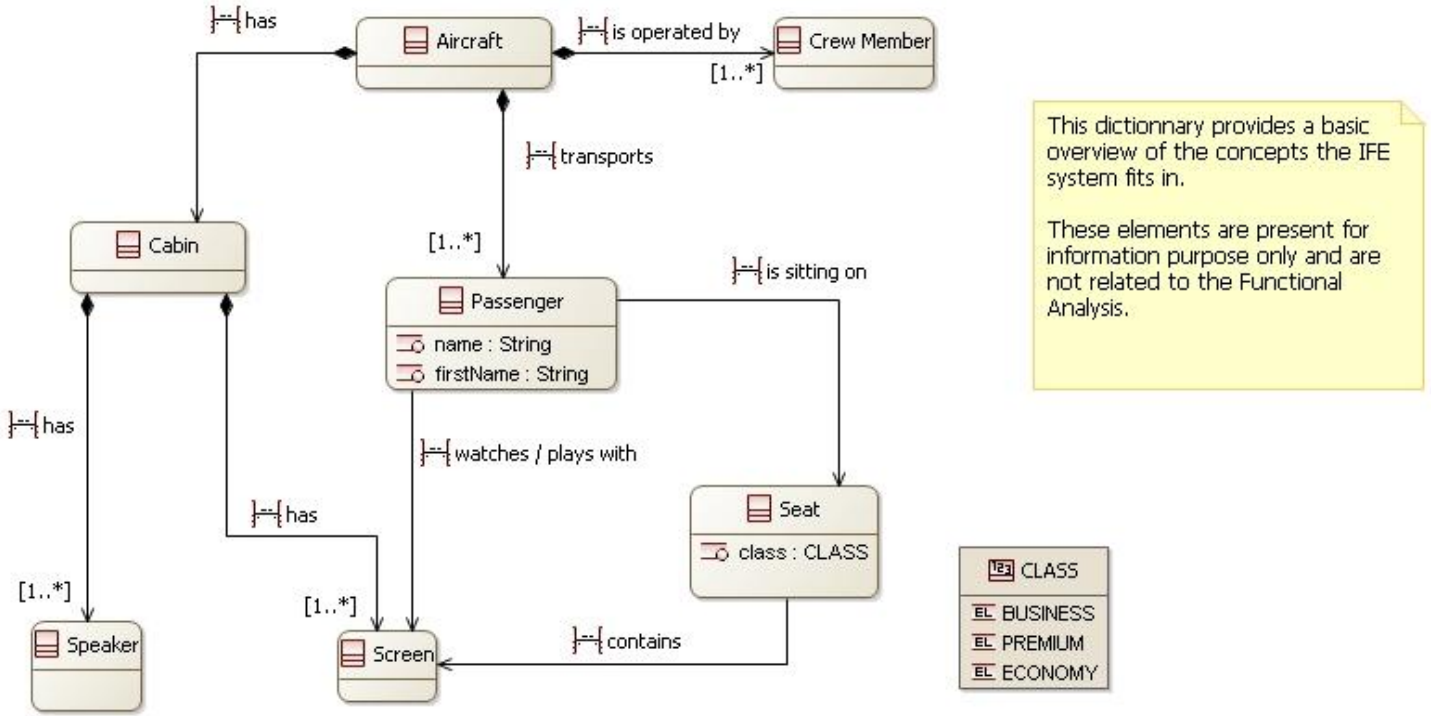
Dictionary / Domain Model

The data exchanged between Functions and between the System and the Actors could already be formalized in the System Need Analysis step. This is not the case in this sample model, the goal of this independent domain model is to give a small idea of the concepts the system will use / fits in.

[CDB] In-Flight Entertainment Dictionary



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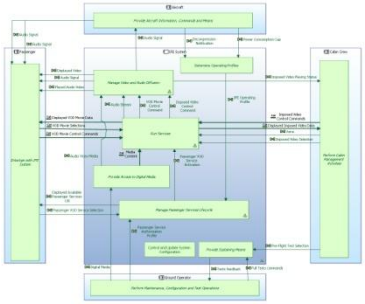
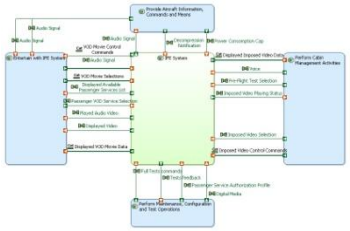
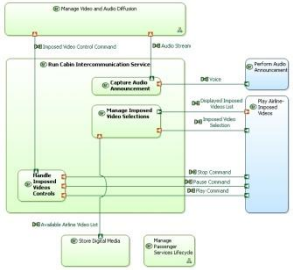
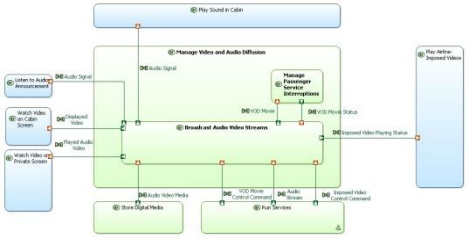
Layout Pattern

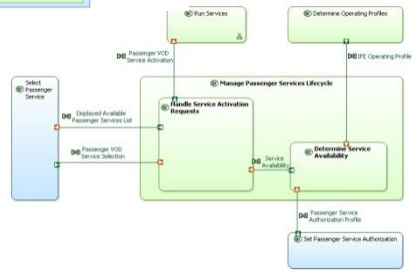
Keeping the layout consistent across diagram is a good way to improve diagram readability











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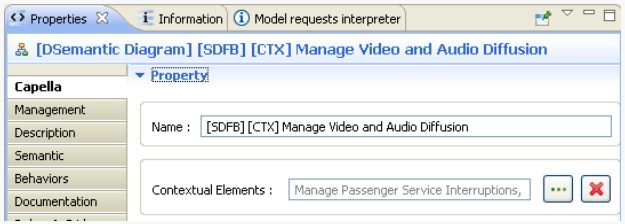
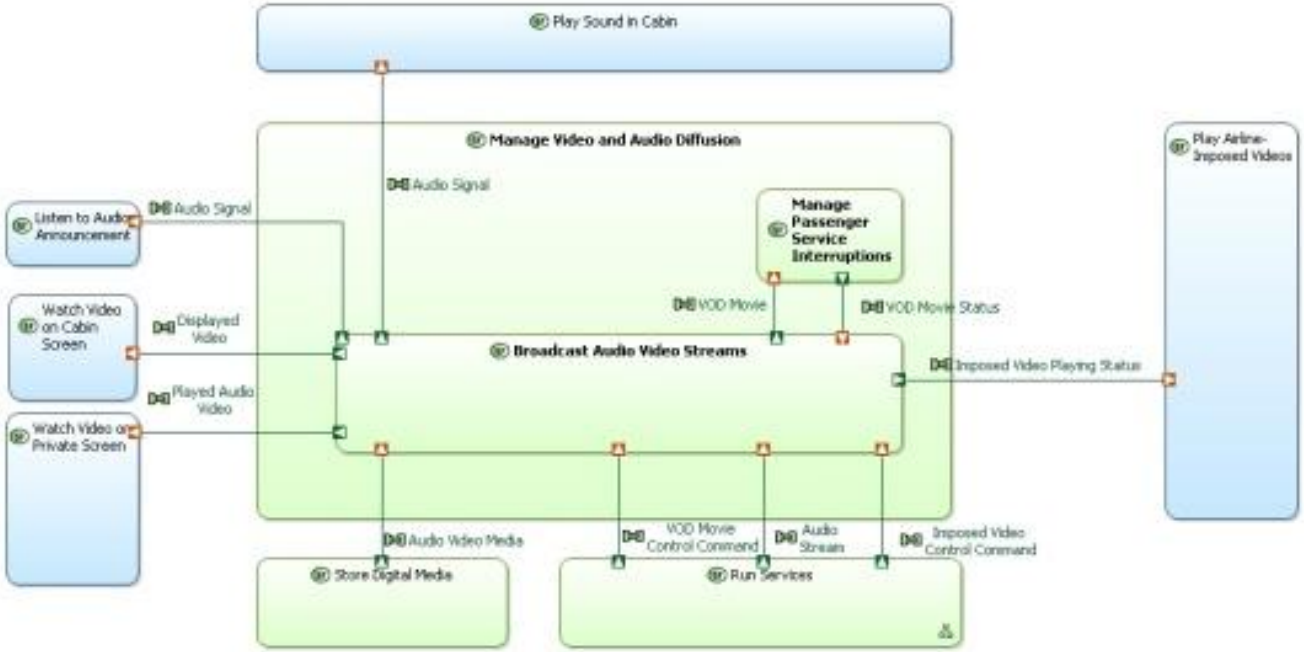
Contextual Dataflow Diagrams

In this model, all diagram illustrating the internal content of a fonction are prefixed by [CTX]. The contextual elements (the one on which refresh rules are based) are in bold.

Diagram can be set contextual to elements using the property view.



Most of these diagrams have been set as unsynchronized, in order to only display what is relevant to the current context. See the documentation.



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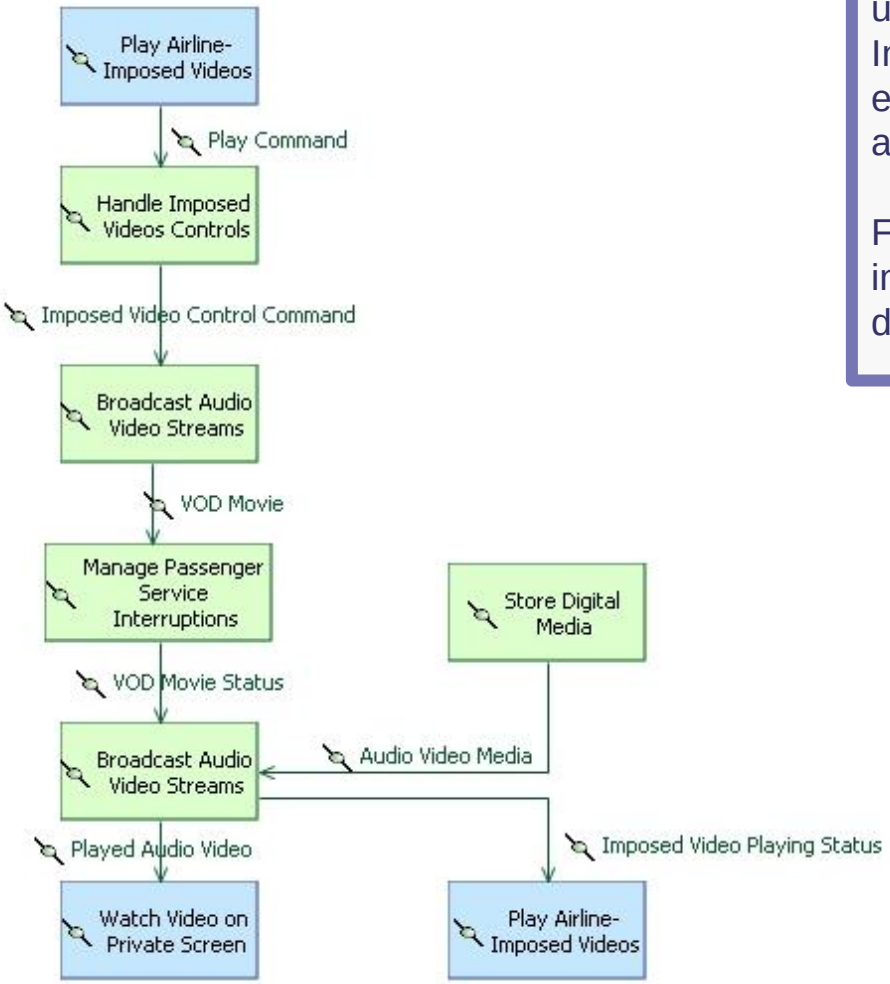
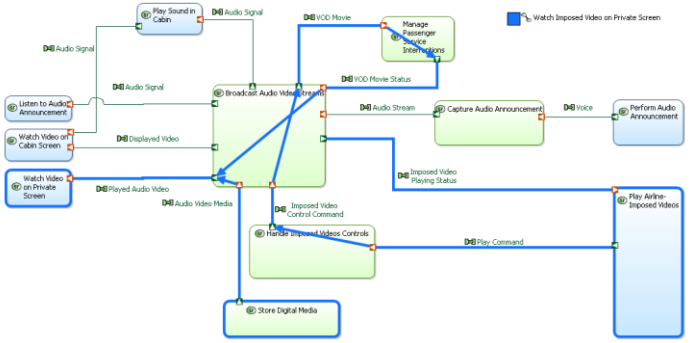
Functional Chains & Scenarios (1/2)

[SFCD] Watch Imposed Video on Private Screen



Functional Chains and Scenarios are specific paths use cases, they illustrate the Capabilities.
In order to be important asset for the global engineering picture (see Arcadia), creating them is a good way to check the design completeness.

Functional Chains can be displayed in dataflow diagrams and architecture diagrams.



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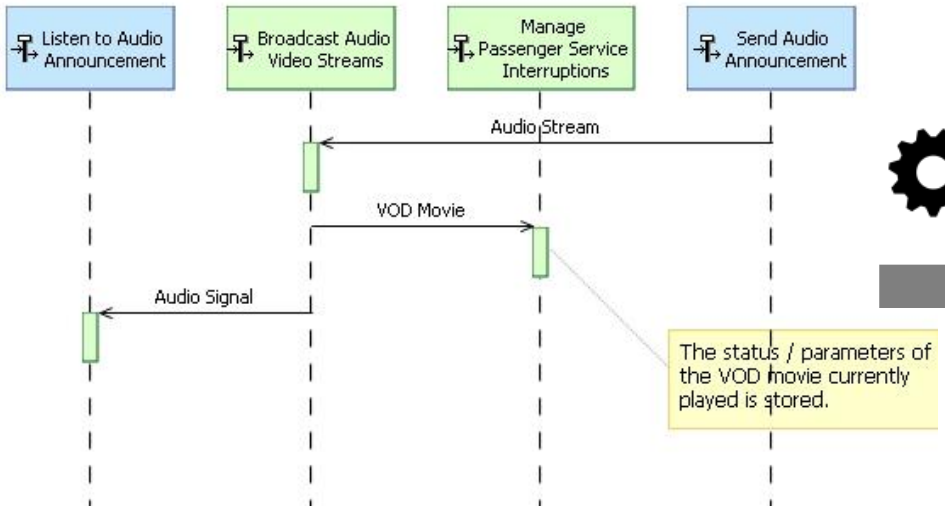
Functional Chains & Scenarios (2/2)

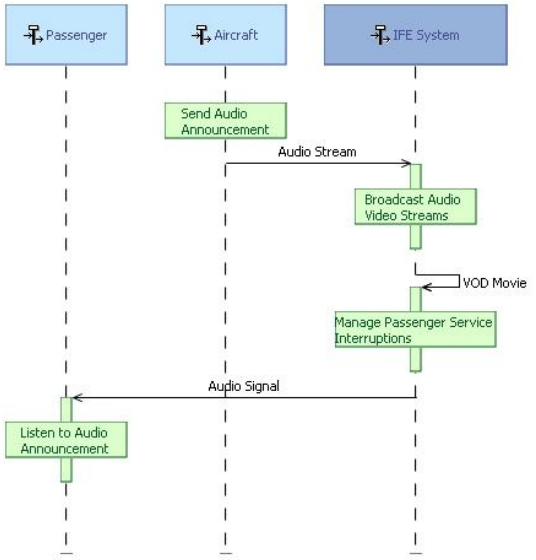
3 main kind of Scenarios:
- Function Scenarios (lifeline = Functions)
- Exchange Scenario (lifelines = component and actors)
- Interface Scenarios (sequence messages are Exchange Items)

Capella provide automated Initializations from one to another

[FS] Perform Audio Announcement



[ES] Perform Audio Announcement



Tips and tricks

This Exchange Scenario has been automatically initialized from the corresponding Functional Scenario.

Function "boxes" have then be added.

The Audio announcement is performed by the crew members using the aircraft built-in equipments (microphone, cabin speakers). The goal of the IFE is to forward the audio stream towards each Seat TV and to display an interruption message.

This is why, from the IFE system point of view, Cabin Crew is actually not part of the scenario.

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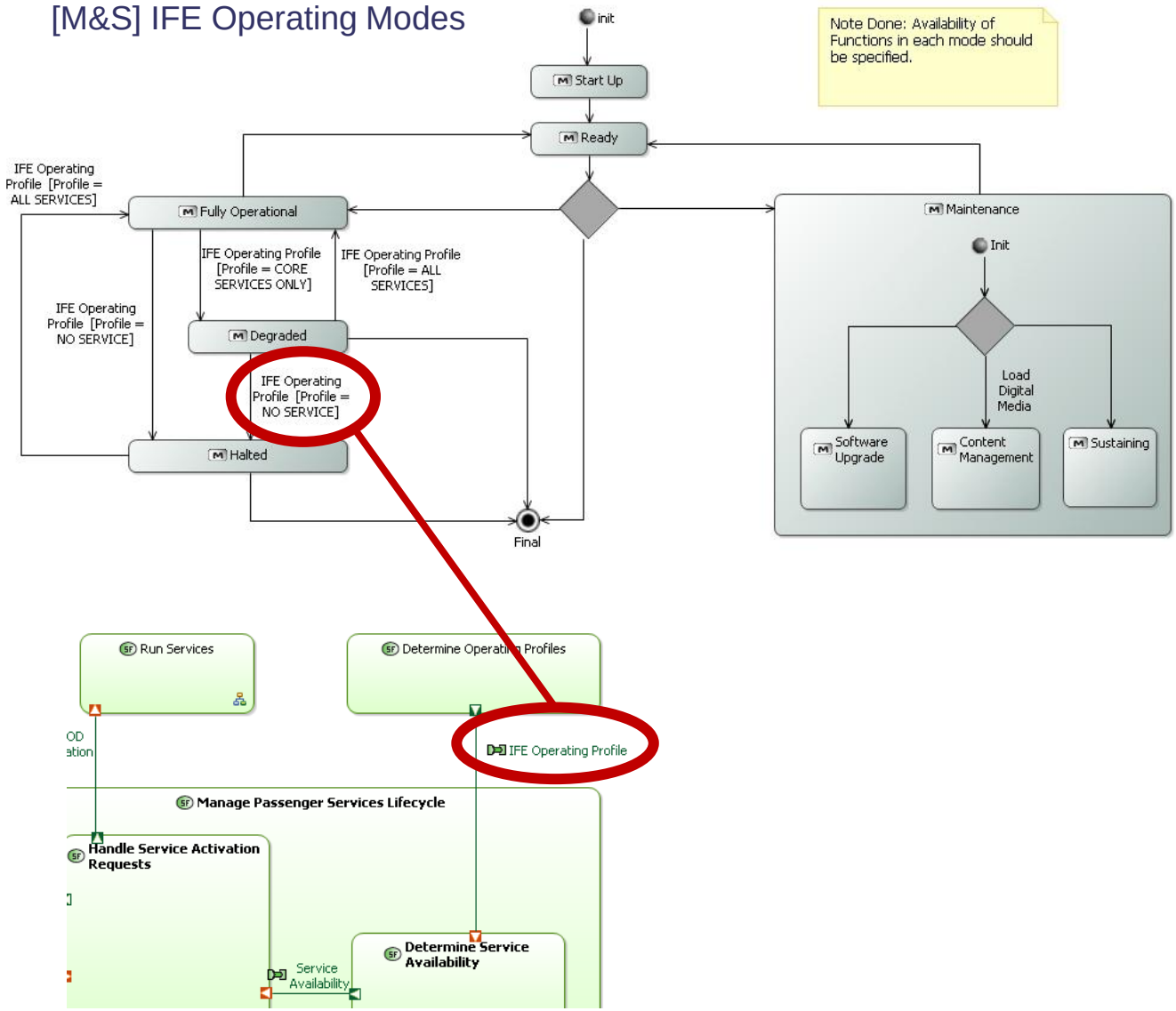
System Global Modes

[M&S] IFE Operating Modes



Relate the transitions and states to other elements of the model.
Warning: Capella is not restrictive enough in the choices it proposes and validation is not complete either.
ONGOING WORK

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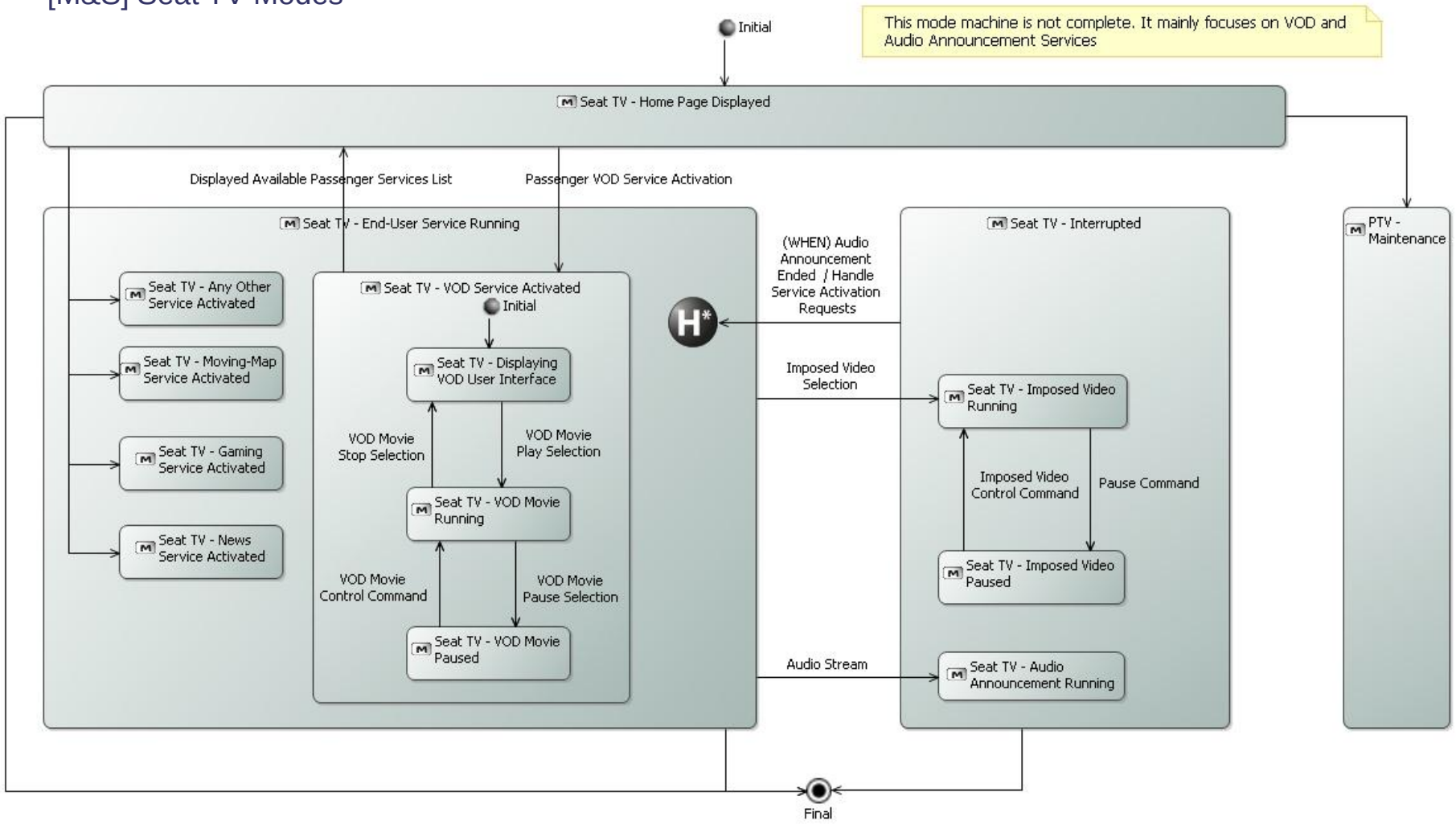
Other Mode Machine: The Seat TV

[M&S] Seat TV Modes



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Traceability with Operational Analysis

Traceability is partially created when performing automated transitions from Operational Analysis to System Need Analysis.
The remaining part has to be created manually, using element property editors or dedicated matrices.

	Provide Aircraft Localization	Use Entertainment Services	Watch Movie	Listen to Audio	Browse the Internet	Watch Moving Map	Play Games
Perform Cabin Management Activities							
Entertain with IFE System							
Watch Video on Private Screen			X				
Watch Video on Cabin Screen			X				
Select Passenger Service							
Command VOD Service			X				
Listen to Audio Announcement				X			
Provide Aircraft Information, Commands and Means							
Provide Satellite Communication Means							
Provide Aircraft GPS Position	X						
Provide Electrical Power							
Provide Exterior-View Videos							
Provide Aircraft Speed and Heading Parameters	X						
Play Sound in Cabin							
Send Decompression Notification							
Perform Maintenance, Configuration and Test Operations							
Update Media Content							
Configure the System							
Launch and Analyze Tests							
Set Passenger Service Authorization							
IFE System							
Provide Access to Digital Media							
Store Digital Media							
Load Digital Media							
Manage Passenger Services Lifecycle							
Determine Service Availability							
Handle Service Activation Requests							
Run Services							
Run Video-On-Demand Service							
Handle VOD Movie Controls							
Retrieve VOD Movie Data							
Run Cabin Intercommunication Service							
Handle Imposed Videos Controls							

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Logical Architecture

How the system will work so as to fulfill the expectations

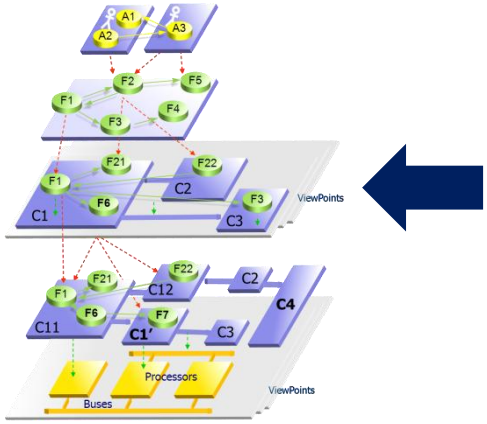
OA

SA

LA

PA

EPBS



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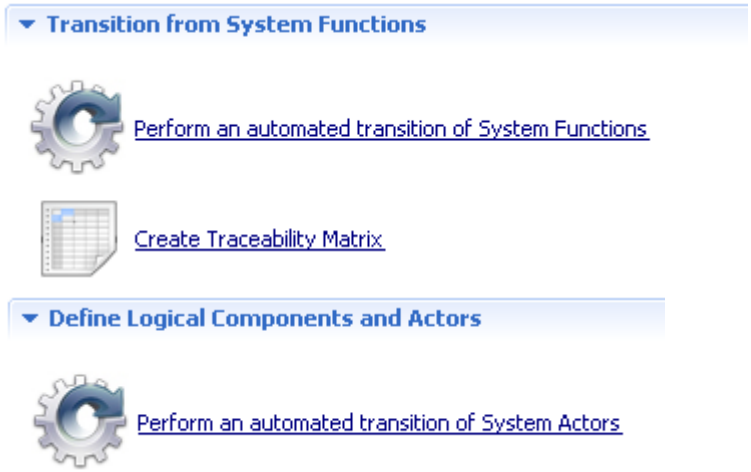
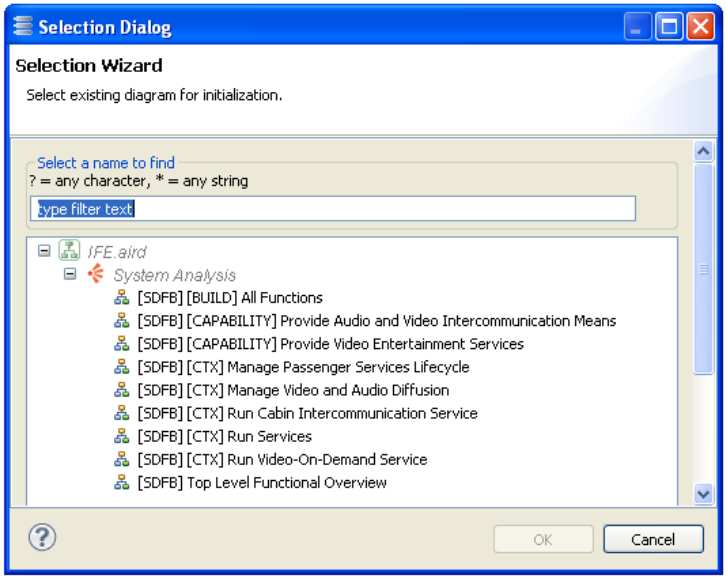
ARCADIA Capella

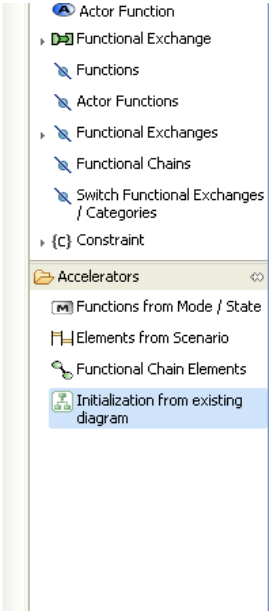
Transitions from System Need Analysis



Use transition tools to initialize the design at Logical Architecture level (Functions, Actors, Scenarios, etc.).

Use the Diagram content creation accelerator.





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Design choices for Logical Architecture

- Architecture driver #1
  - Organization of the architecture in 4 main parts in order to take into account the topology of the aircraft and anticipate integration concerns:
    - Front Servers + Cabin Terminal for Cabin Crew and Maintenance
    - Distribution network
    - Private TV on Seats
    - Cabin Screens
- Architecture driver #2
  - Functional grouping in order to reduce interfaces, optimize performance, etc.
- Architecture driver #3
  - Architecture patterns are implemented to anticipate product customisation and product line policy.
    - Product Customisation: Aircraft- and airline-specific functionality are segregated in separated components in order to be easily removed / replaced.
    - Product Line Policy : Currently not illustrated in this sample model (requires a Variability viewpoint).
- Modeling choice: No network modelling
  - While it is obvious all communications will ultimately go through a network, this is ignored at this stage.

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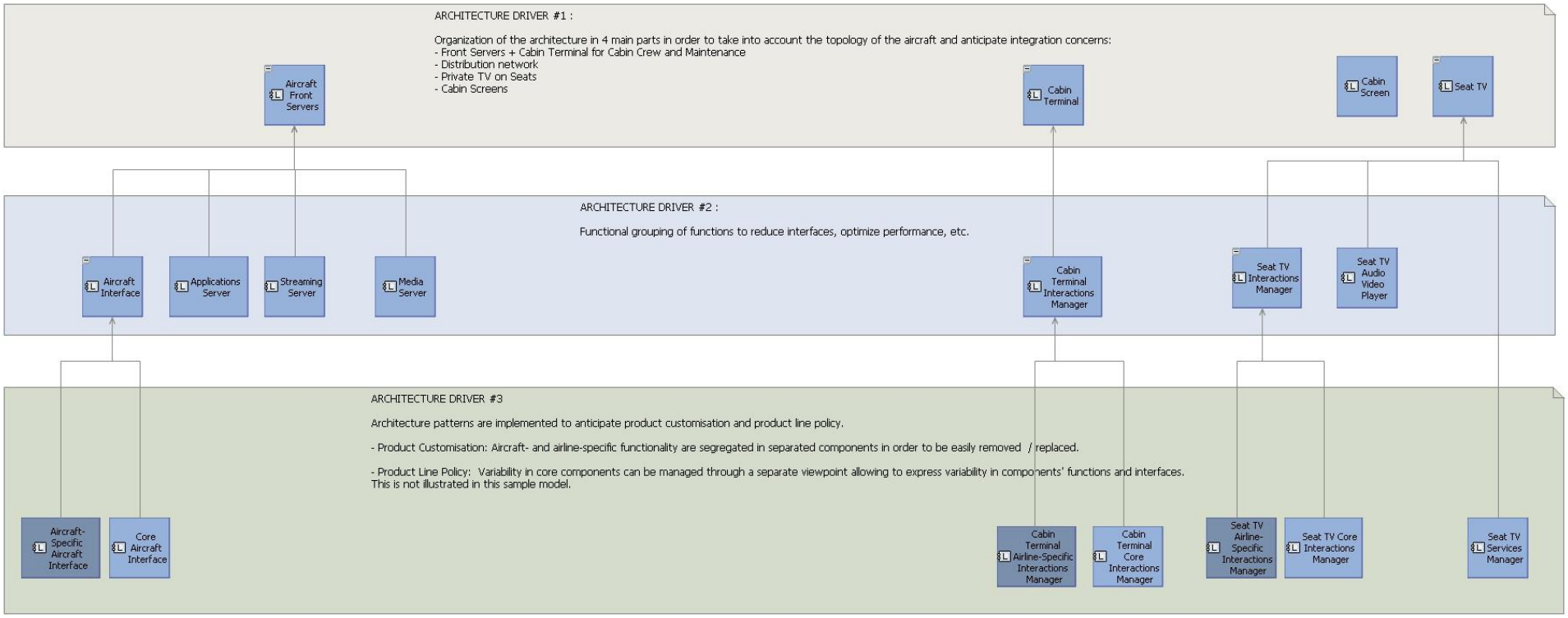
Definition of Architecture Drivers

[LCBD] Architecture Drivers



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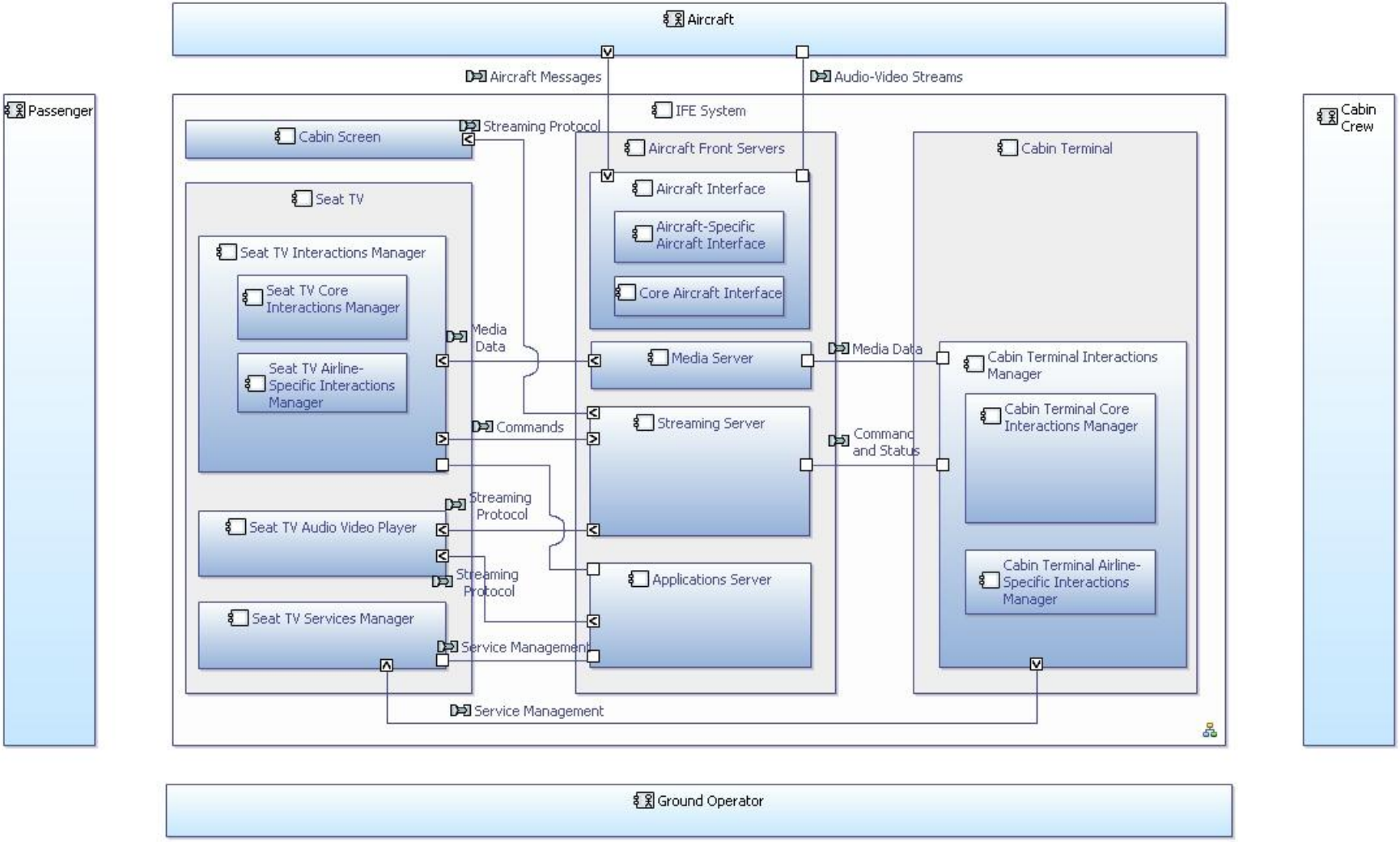
Logical Components

[LAB] IFE System - All Components, CEs



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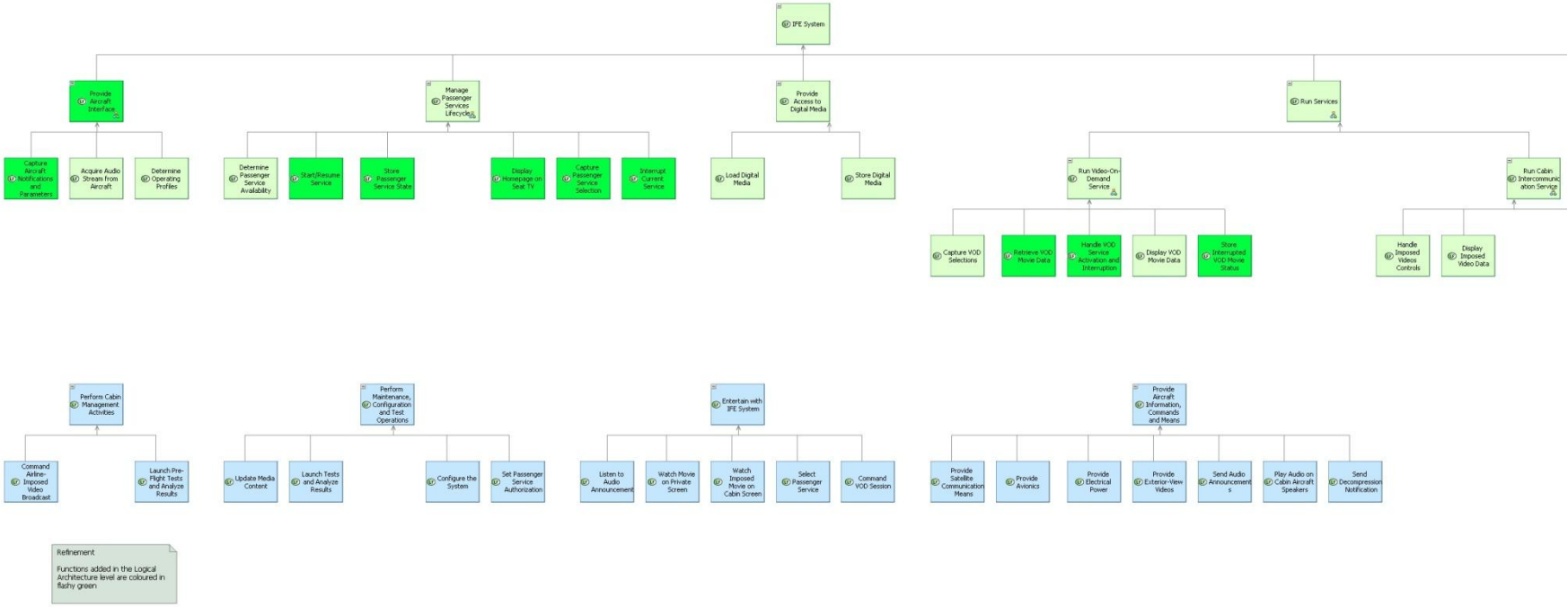
Functional Analysis Refinement (1/3)

[LFBD] All Functions



The new Functions can either be created directly from the breakdown diagram either be created while refining dataflow diagrams. Here, the Functions added at Logical level have been marked in flashy green.

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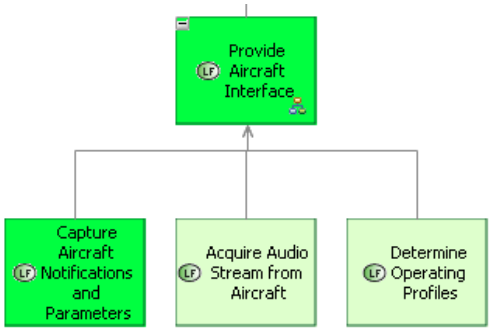
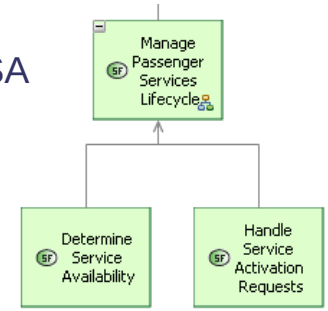
Functional Analysis Refinement - Examples (2/3)



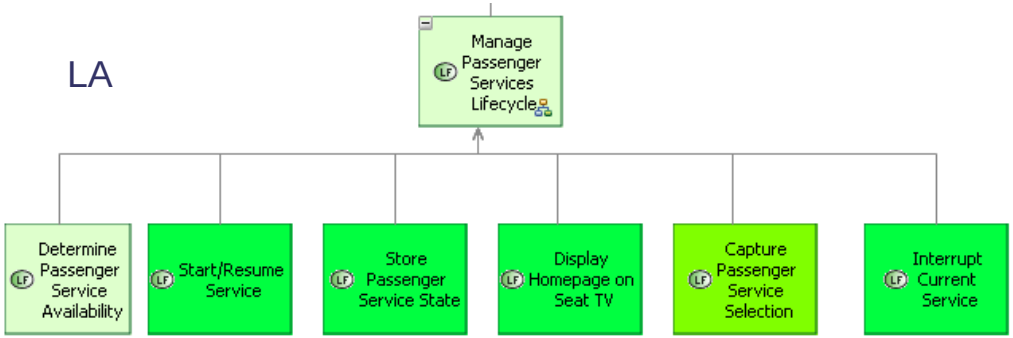
Design decision: Creation of a generic interface with the aircraft

SA



Description of how

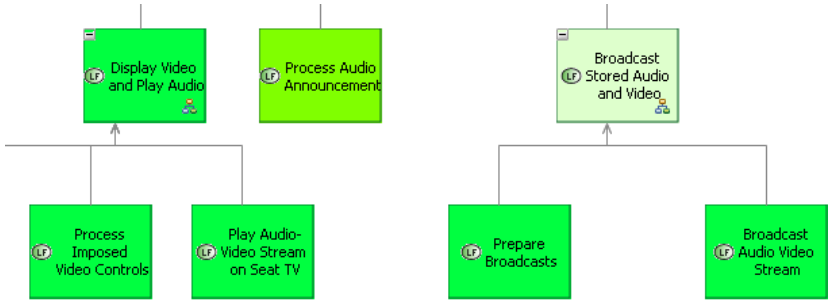
LA



SA

Description of how

LA



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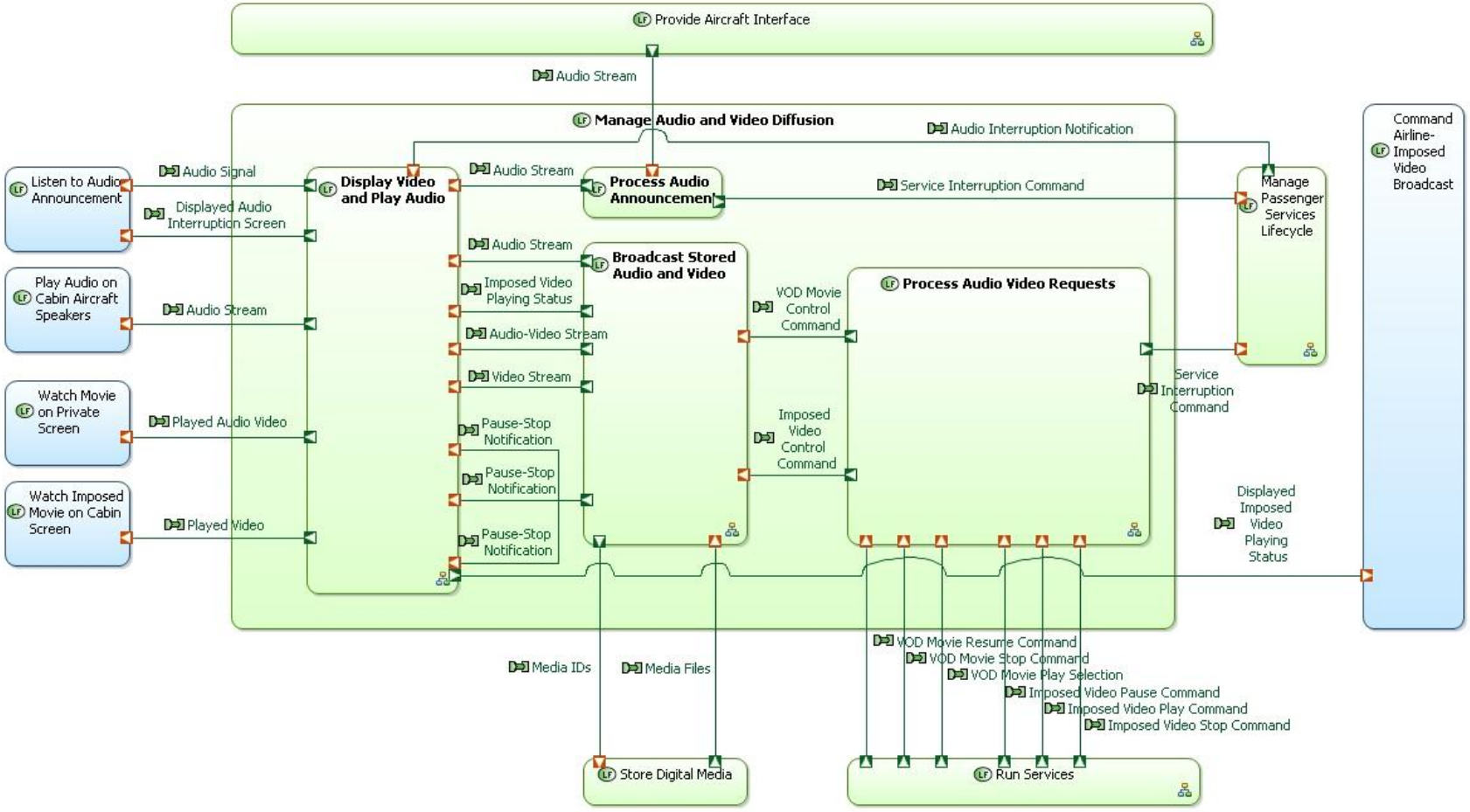
Functional Analysis Refinement – Examples (3/3)

[LDFB] [CTX] Manage Audio and Video Diffusion



Other example: The high level function in charge of managing the audio and video diffusion is split in 4 sub functions: process/analyze the requests, broadcast existing digital media, broadcast live audio (audio announcements) and display/play the video/audio streams. Each of these Functions are further decomposed.

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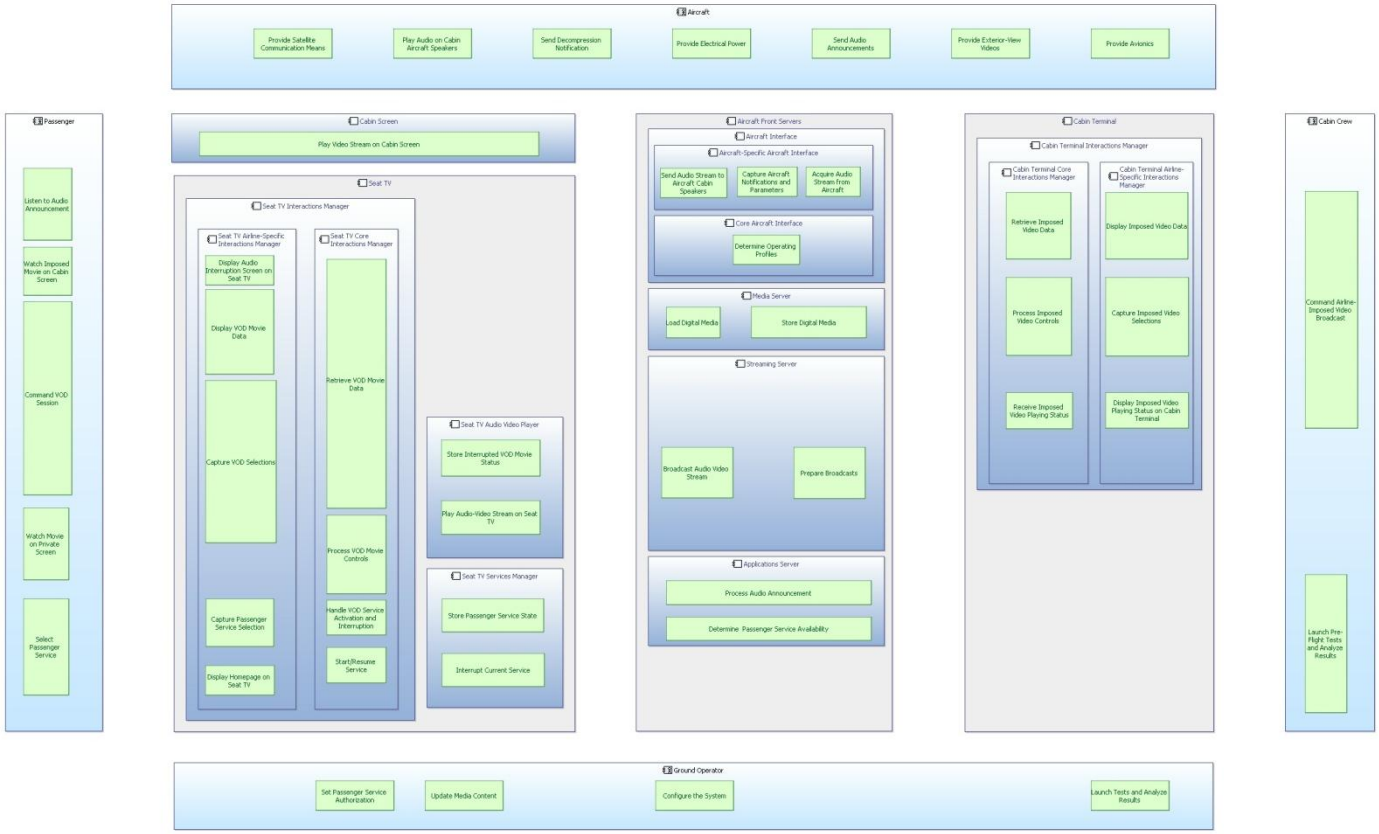
Allocation of Functions to Components

[LAB] [BUILD] Template



To improve productivity, it is often interesting to brush layout from one diagram to another or to clone diagrams.

Here, a template has been created and is used for a few other architecture diagrams.

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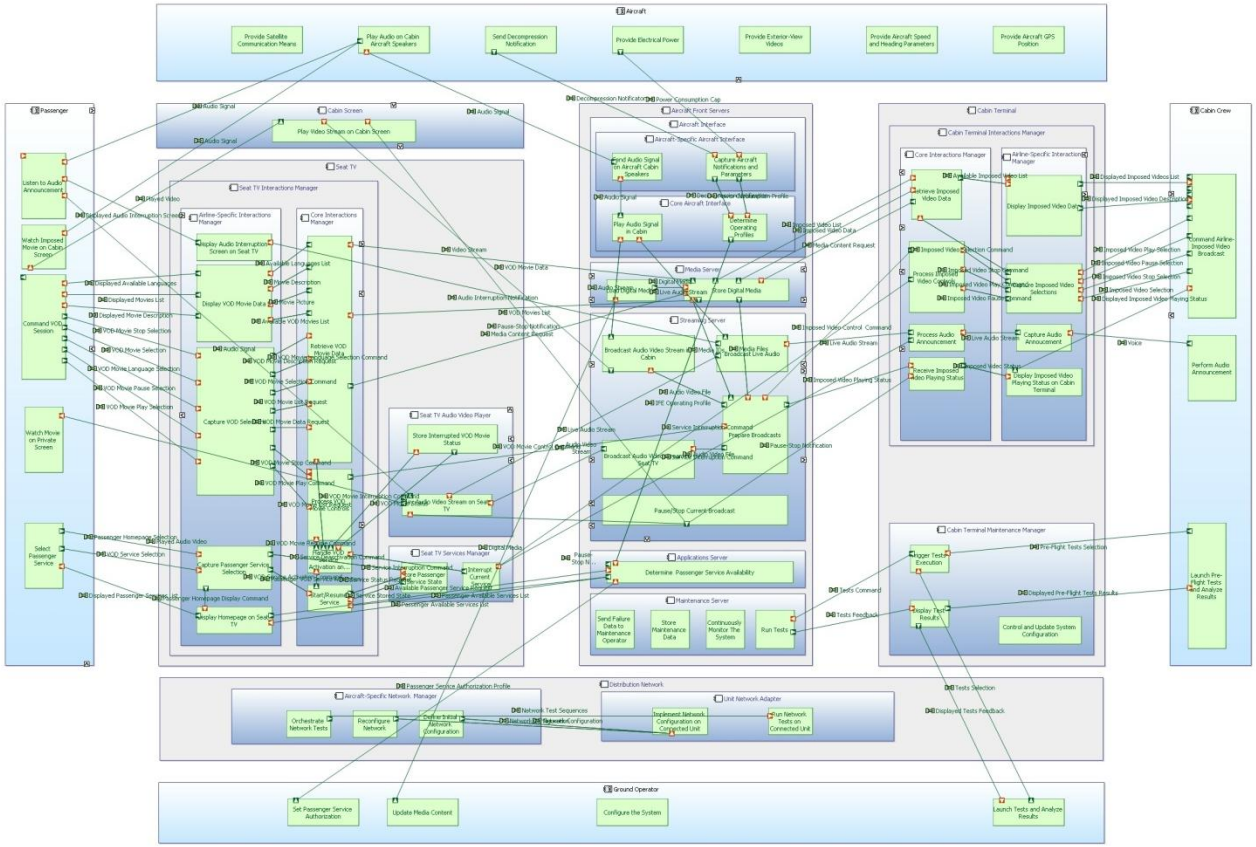
Different Purposes for Different Diagrams

[LAB] [BUILD] All Components, Functions, CEs, FEs



Not all diagrams are intended to be published. Some diagrams only exist temporarily for building or analysing purposes.

Such diagrams have been marked in this model with the tag [BUILD].

Here, the diagrams is a clone of the template where all Functions and all exchanges are displayed. While not adapted to publication, it is useful to check the design, visualize Functional Chains, etc.

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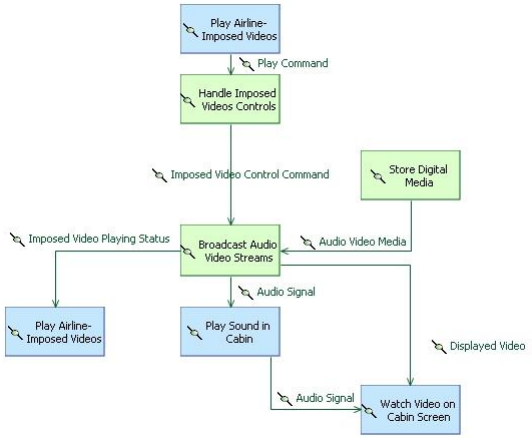
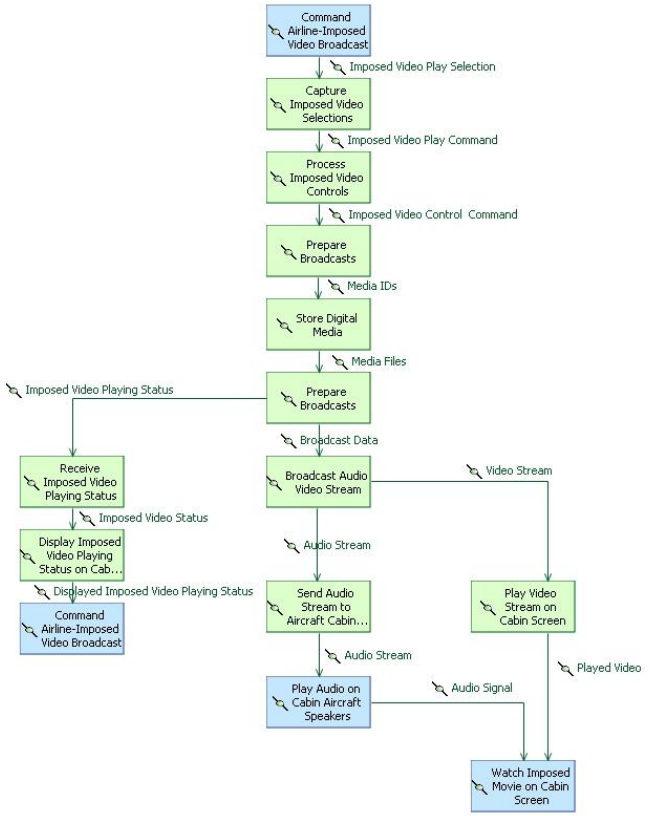
Refinement of Functional Chains

[SFCD] Watch Imposed Movie on Cabin Screen



SA → LA

[LFCD] Watch Imposed Video on Cabin Screen



The Functional Chains obtained after the automated transition will most likely be incomplete/invalid after the functional analysis refinement.

Fixing the Functional Chains at Logical Level is a mandatory task, which often leads to fixing inconsistencies in the functional refinement.

Functional Chains are a powerful way to ensure the design completeness.

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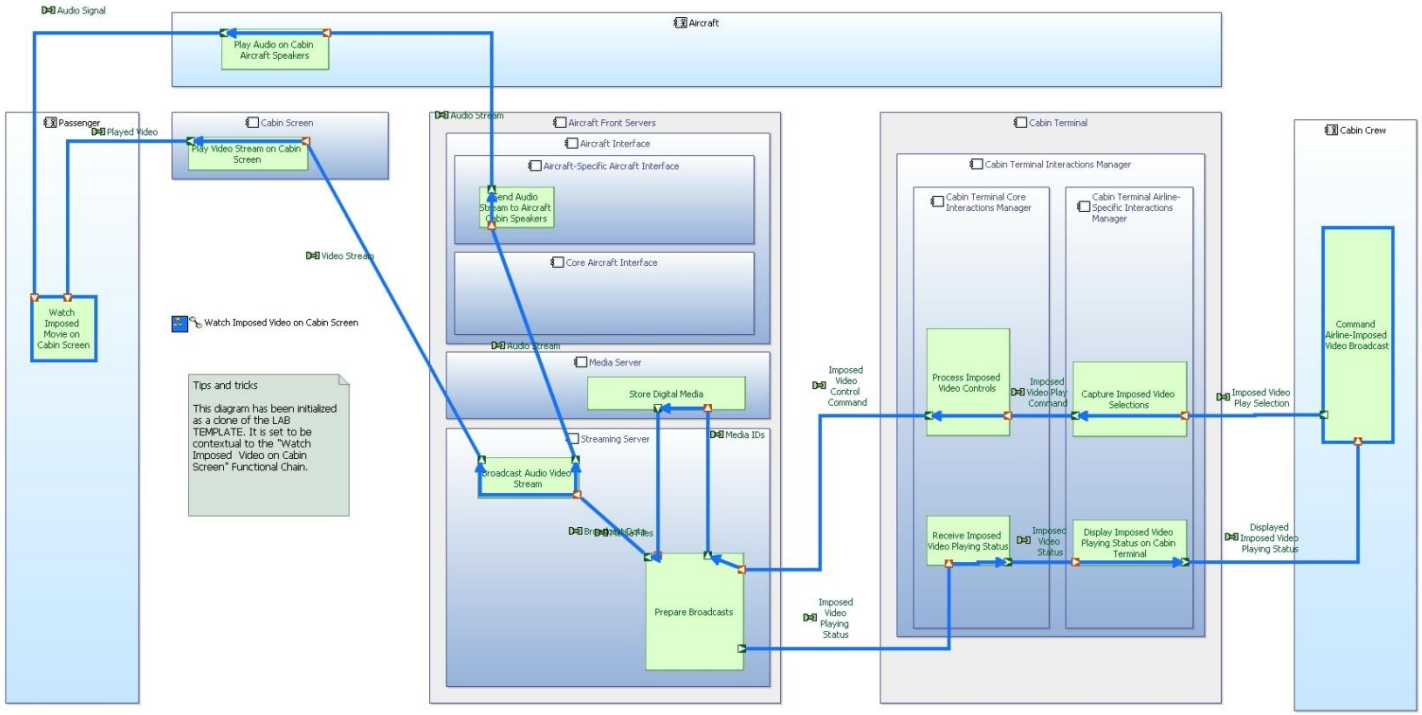
Rapid Creation of Contextual Diagrams



[LAB][CTX] Watch Imposed Video on Cabin Screen FC

How to quickly obtain this LAB diagram?

1. Clone the LAB template, remove all Functions
2. Set the diagram to be contextual to the Functional Chain, perform a diagram refresh
3. In the original LAB template diagram, copy the layout
4. Paste the layout in current diagram
5. Arrange the Functional Exchanges routing, remove unnecessary Components

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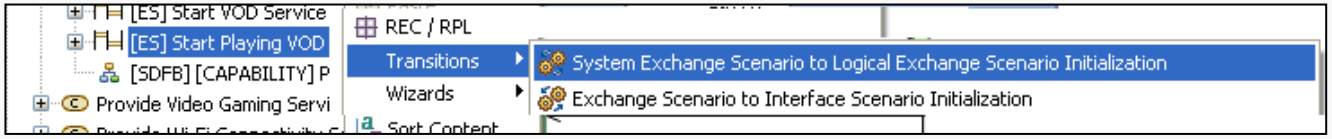
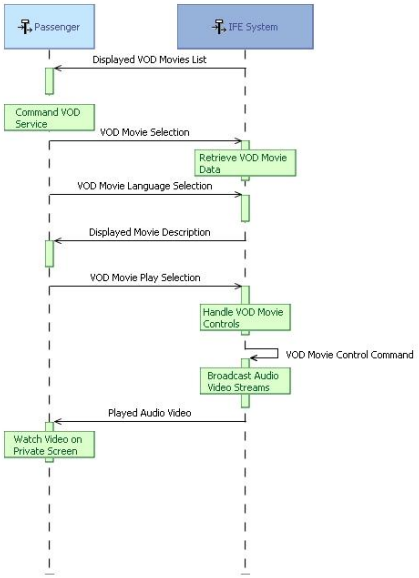
Refinement of Scenarios (1/2)

Use automated transitions to initialize the design of Logical Scenarios



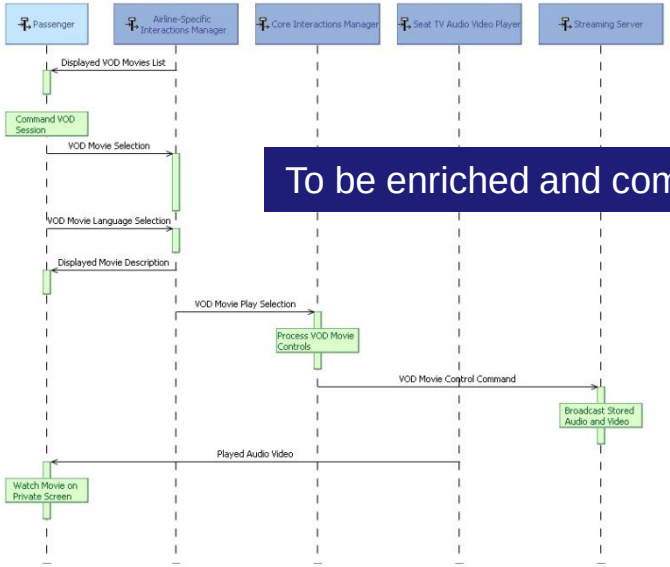
Correct and enrich the result with the existing Functions and Functional Exchanges or create the missing ones.

[ES] Start Playing VOD Movie



SA → LA

[ES] Start Playing VOD Movie



To be enriched and completed

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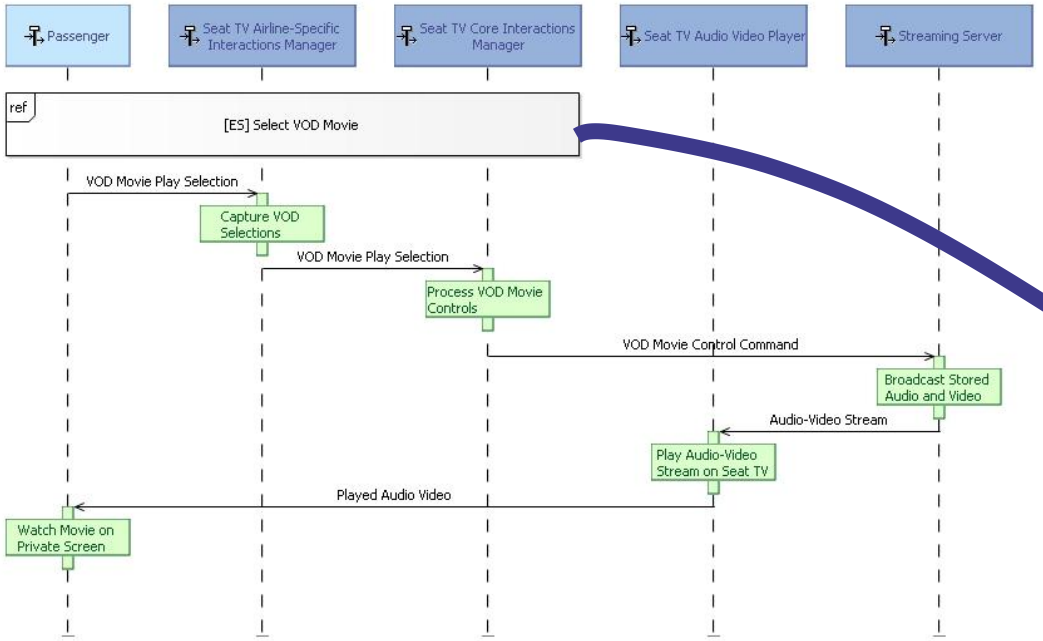
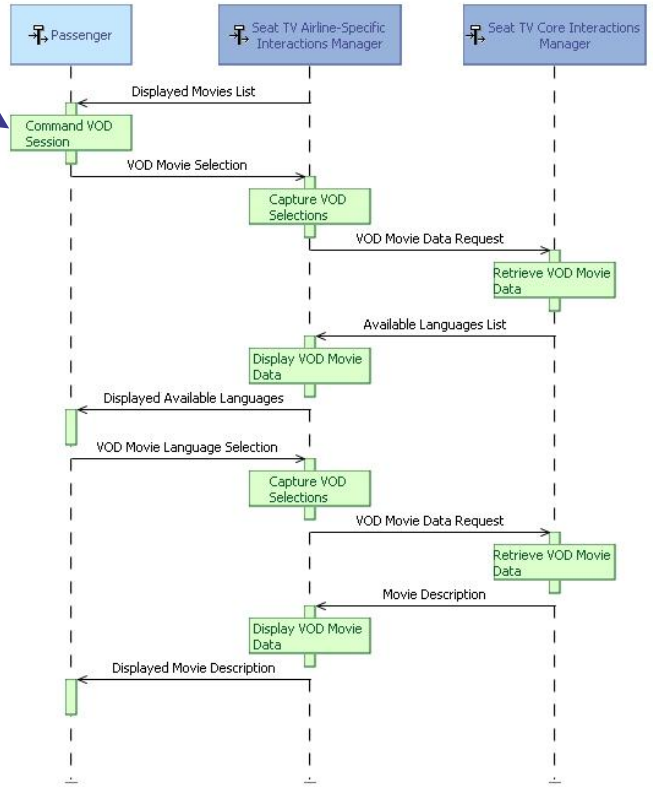
Refinement of Scenarios (2/2)

[ES] Start Playing VOD Movie





When sequence diagrams become too complex or when a pattern is repeated often, use Scenario References!

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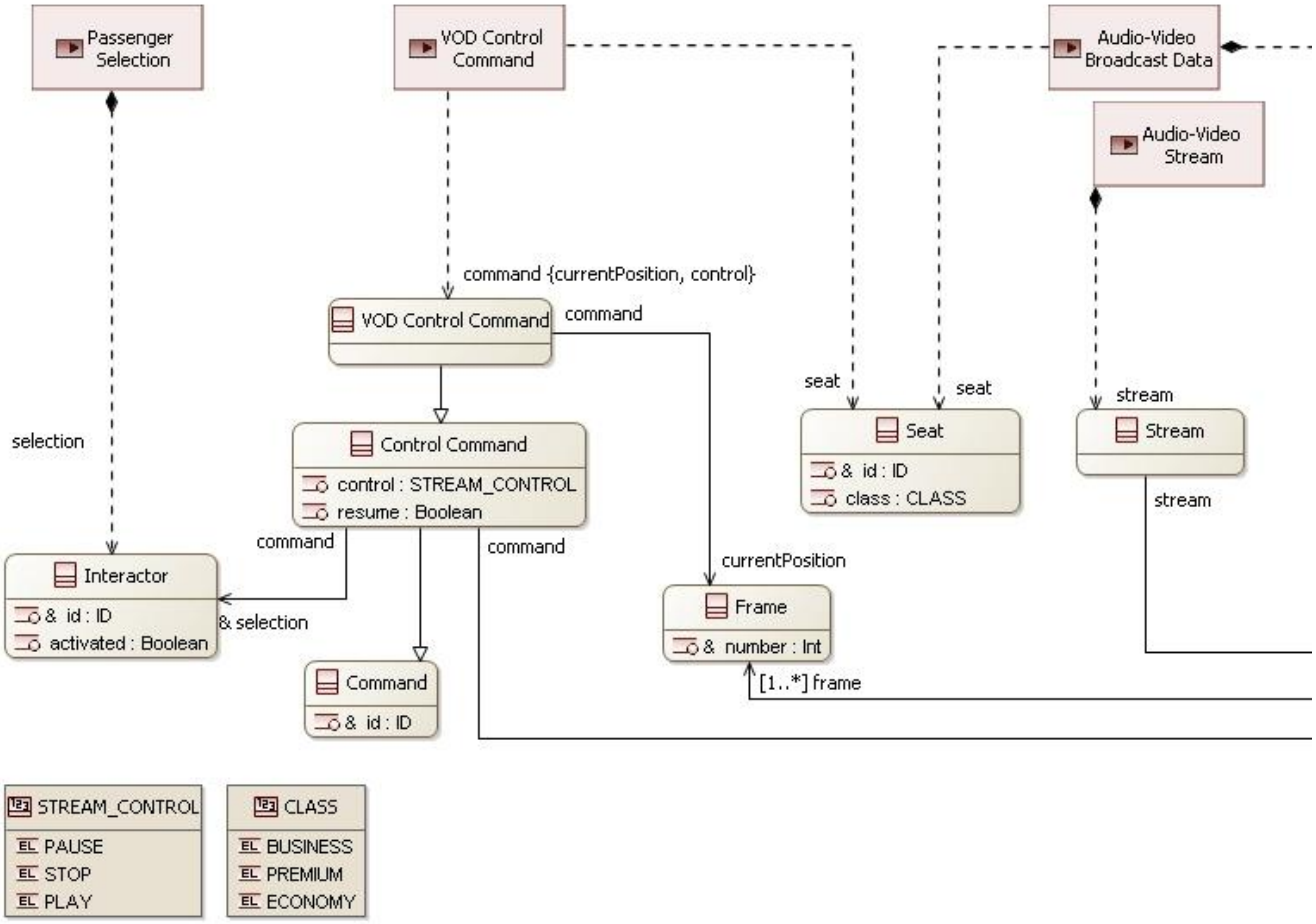
Data Modelling (1/2)

[CDB] Play Video Movie



A first level of data modelling is performed in the Logical Architecture of this model.

The goal is to better describe the exchanges between Functions (and thus, Components).

In this example, the data model is designed as a database, and the Exchange Items reference entirely of partly one or several data.

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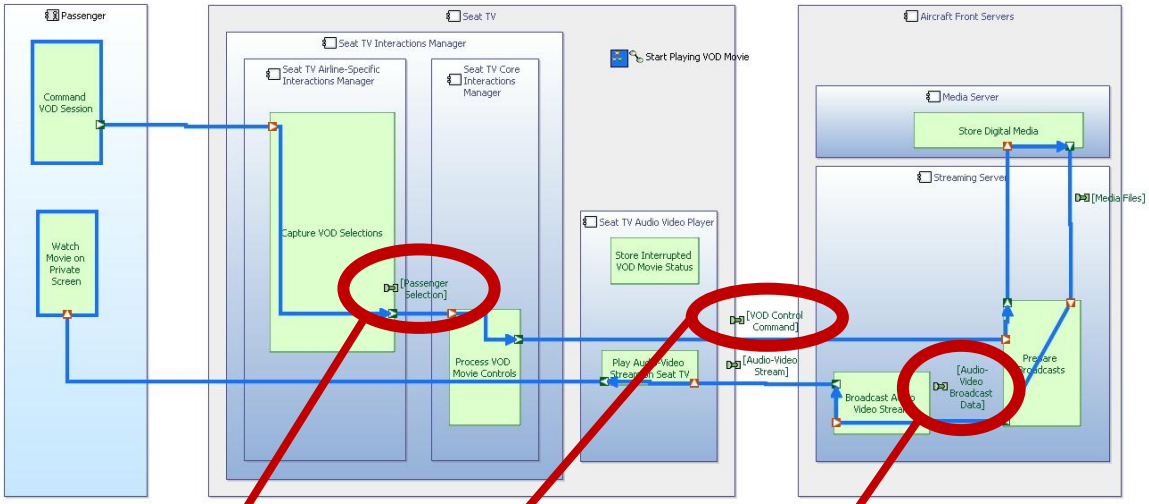
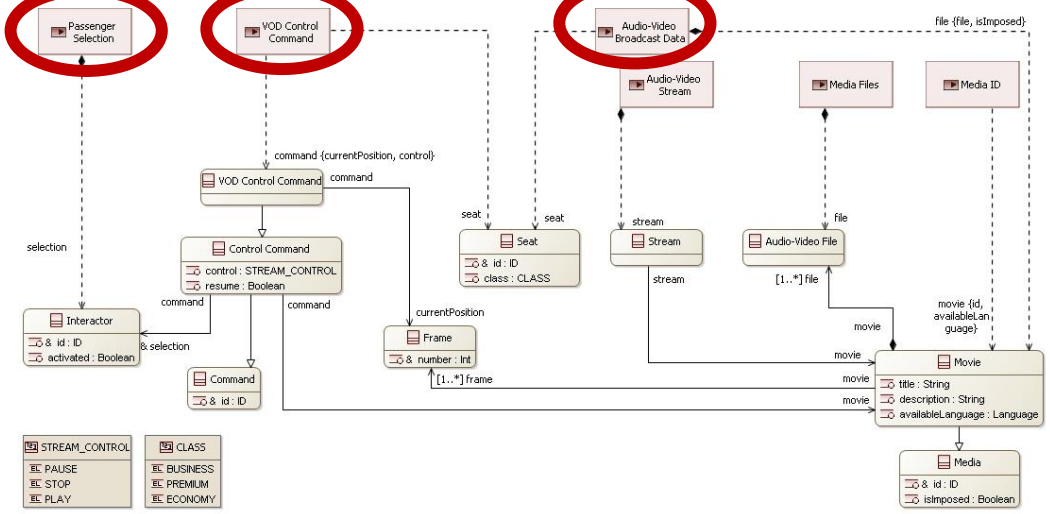
Data Modelling (2/2)

[LAB][CTX] Start Playing VOD Movie FC



[CDB] Play Video Movie



Exchange Items are used to relate Data and Functional Exchanges.

For example, it is the only mean to express that two distinct Functional Exchange actually carry the same of common data

In dataflow and architecture diagrams, filters allow to display the names of the carried Exchange Items instead of the Functional Exchanges labels

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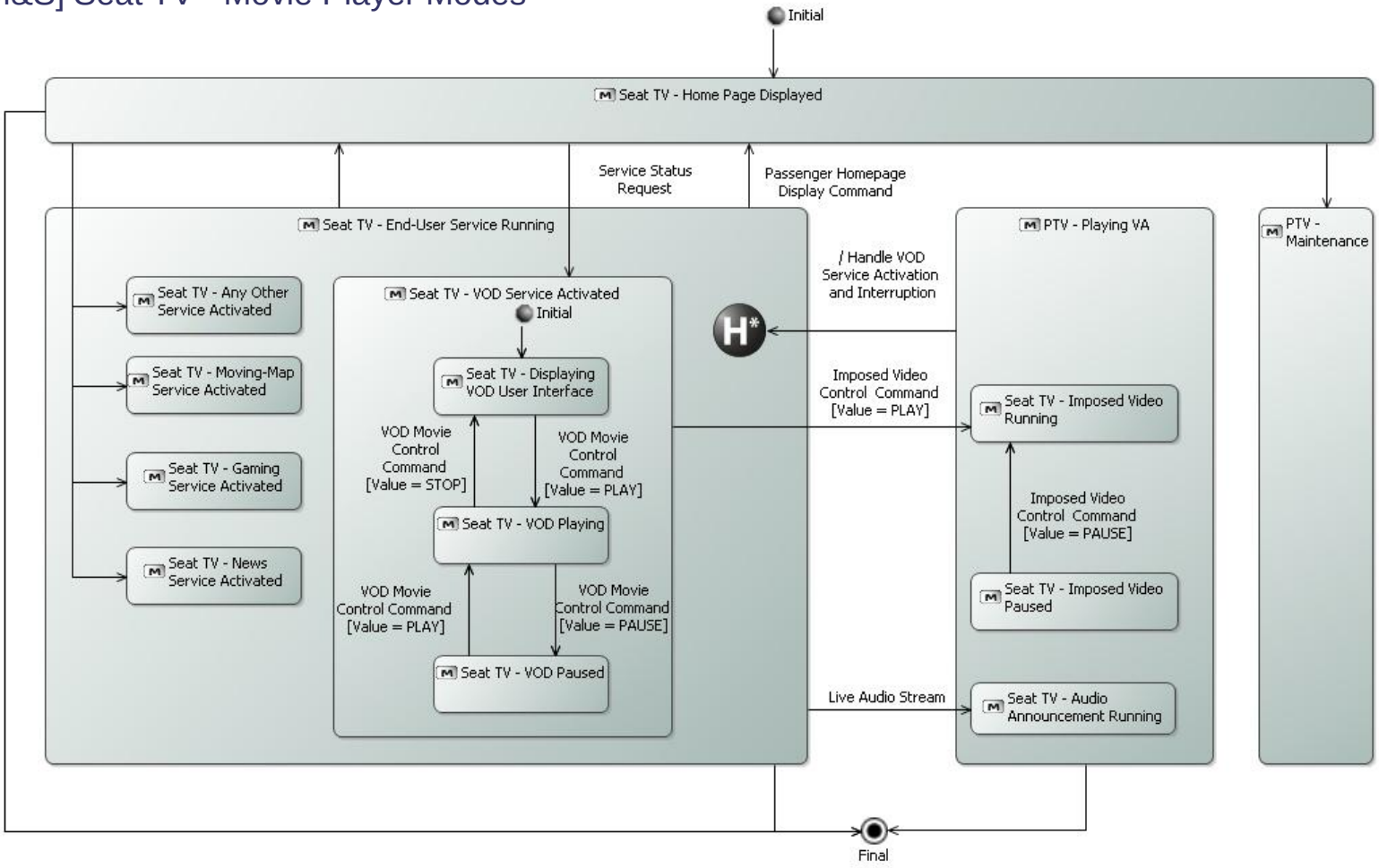
Seat TV Modes (1/2)

[M&S] Seat TV - Movie Player Modes



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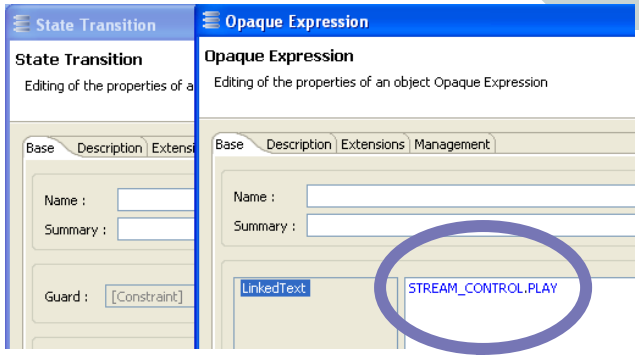
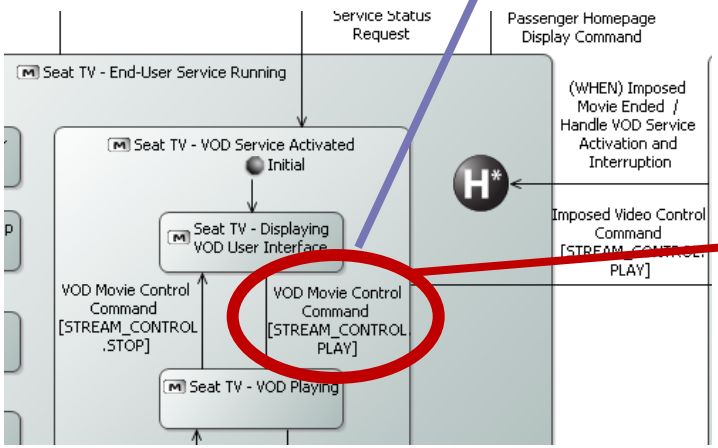
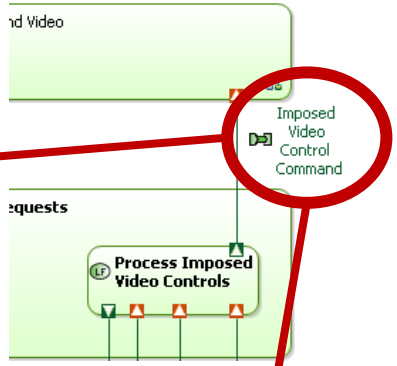
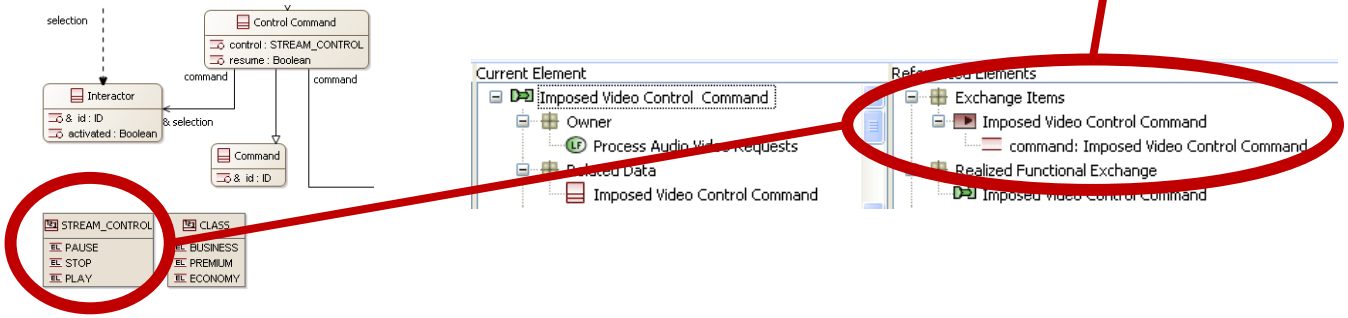
Seat TV Modes (2/2)









Capella does not provide means (yet) to really formalize the guards in Transitions.

However, it provides a constraint-based mechanism allowing to keep references between model elements (use CTRL-SPACE when editing constraints). If the name of the Enumeration Literal changes, the Guard will be kept synchronized.

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Physical Architecture

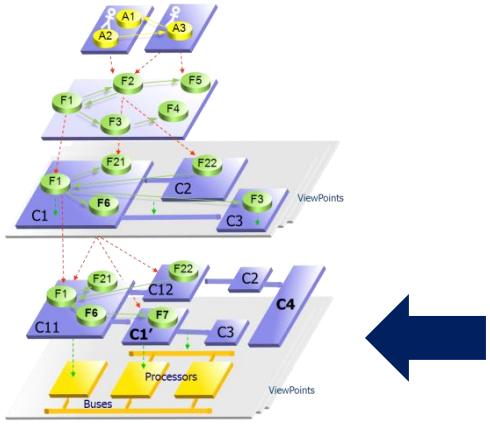
How the system will be developed and built

OA

SA

LA

PA



EPBS

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ARCADIA Capella

Physical Architecture

- The interactions of the Passenger with the Seat TV are performed through a remote control
- The interactions of the cabin crew with the Central Management Unit are based on a Touch Screen

- The modelling of the network is kept minimal:
  - In an IFE, the network distribution is an essential aspect (one of the goals is to reduce the length – and mass – of the network cables). This is not covered in this model where all switches are represented by one single component
  - No network routing functions. The only the setup and configuration basic Functions are created

- Streaming is a bit more detailed, without encompassing what would be the responsibility of the SW subsystems. The chosen stopping criterion is to be able to perform basic latency non-functional analysis.

- The replication of streaming servers is not (yet) modelled. Scenarios and Mode machines have not been propagated (they should be).

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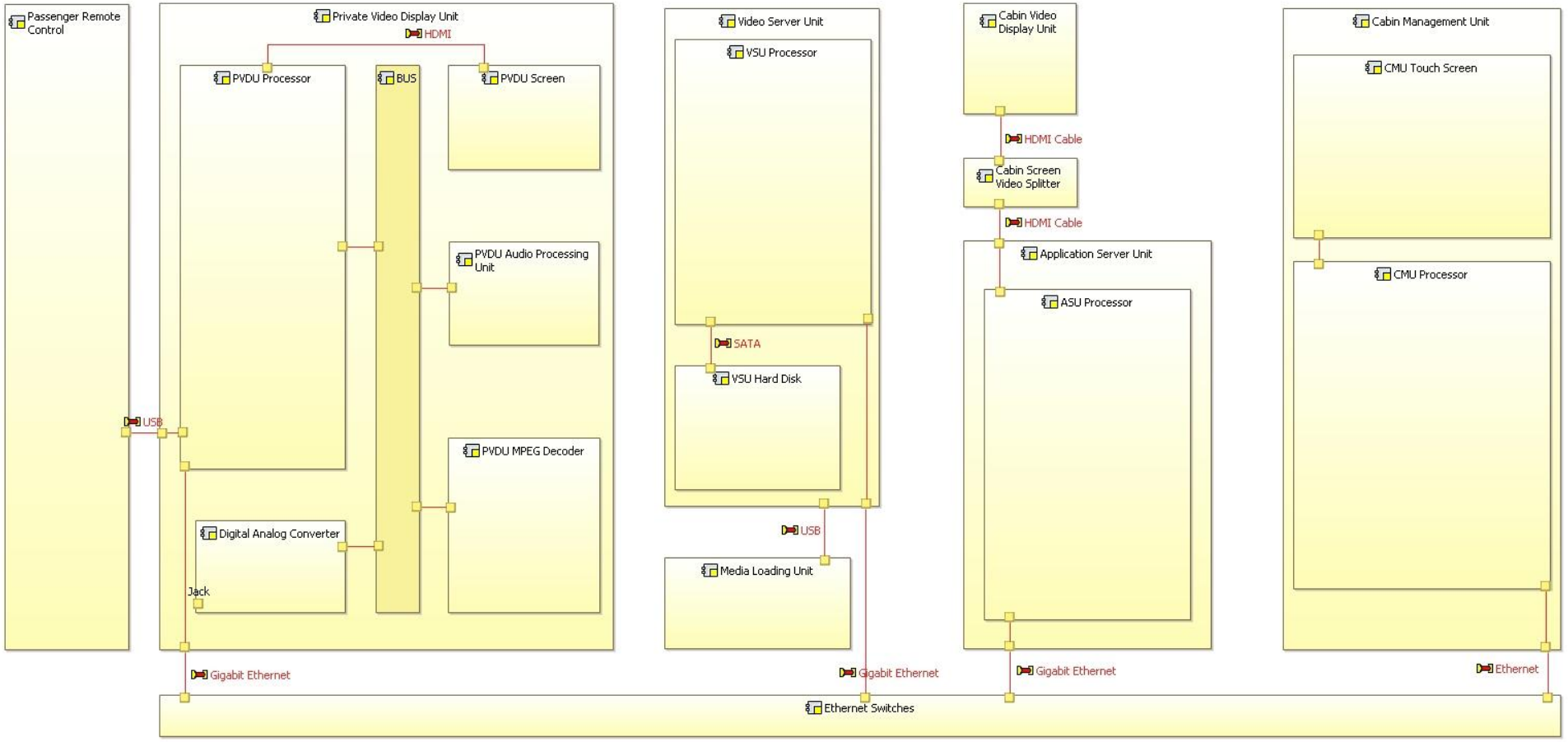
Implementation Components (1/2)

[PAB] Implementation and Behaviour Components



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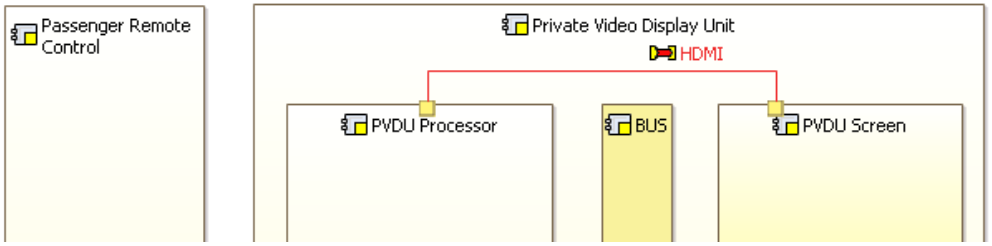
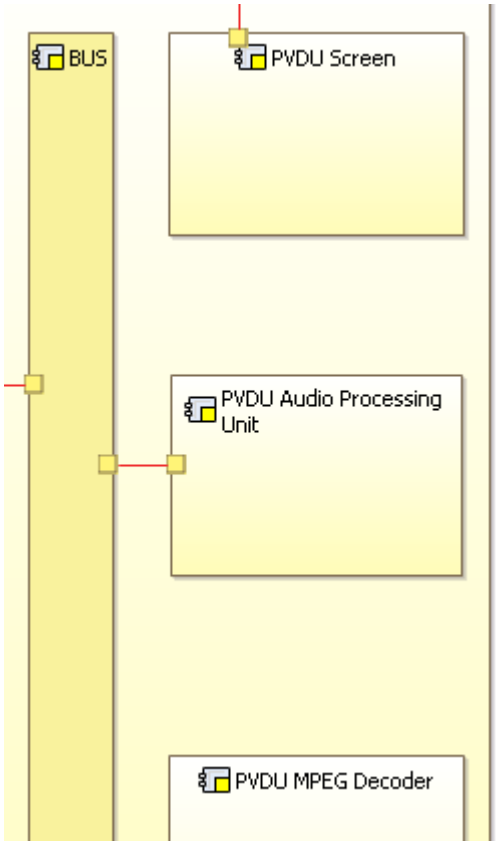
Physical Architecture – Implementation Components (2/2)

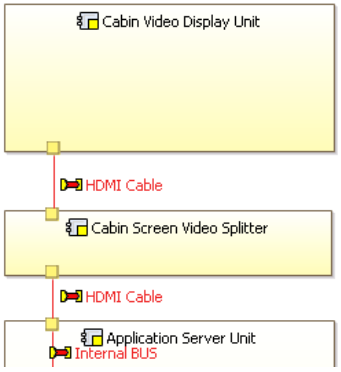
Interactions based on a remote control on passenger side



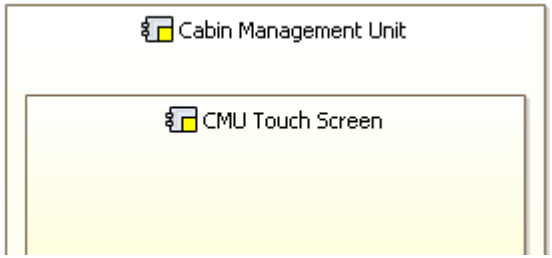
Dedicated audio and video processors



No intelligence in cabin displays



Touch Screen for Cabin Crew



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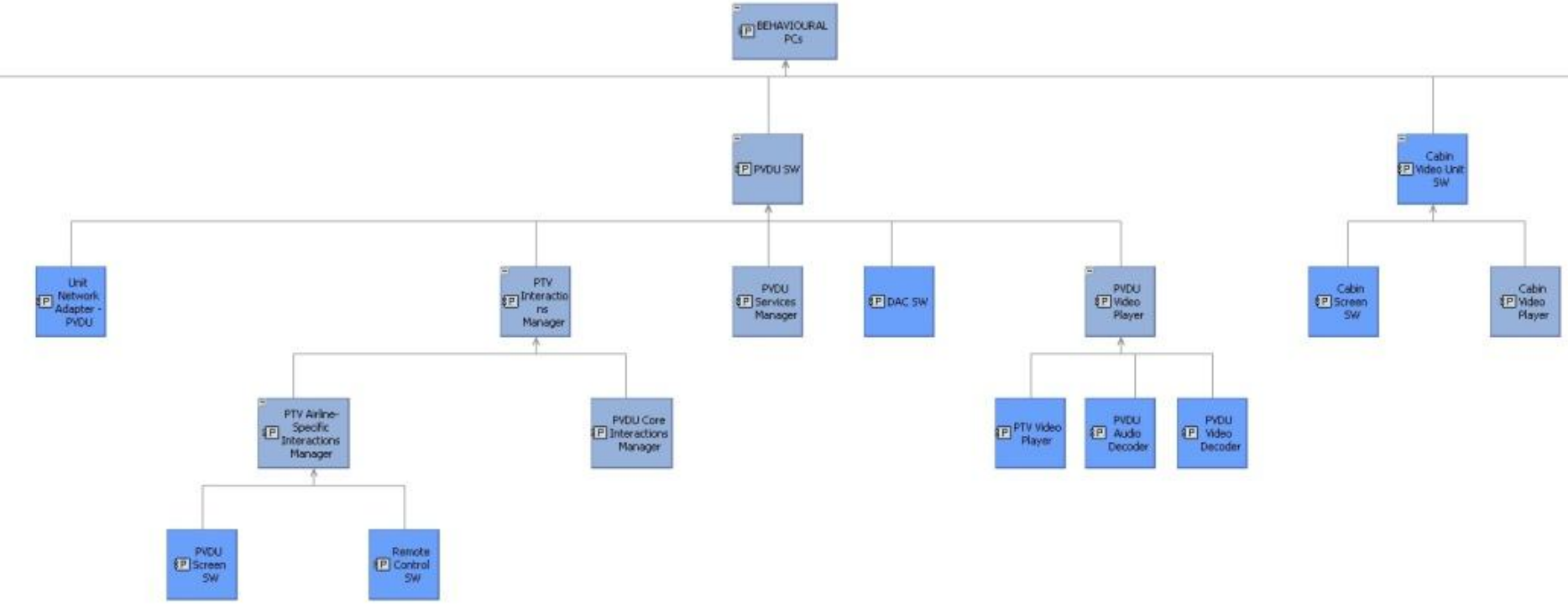
Physical Architecture – Behaviour Components (1/2)

[PCBD] Behavioral Components



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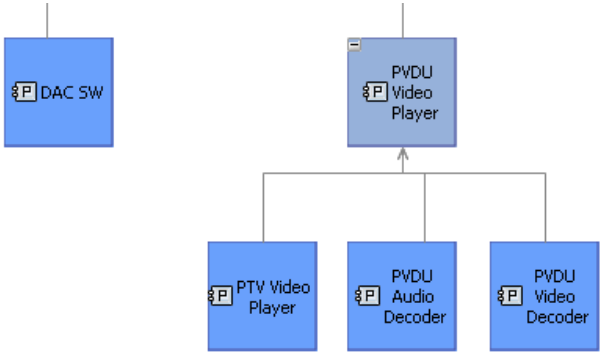
ARCADIA Capella

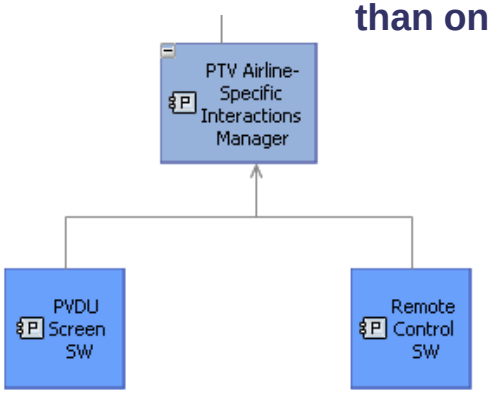
Physical Architecture – Behaviour Components (2/2)

[PCBD] Behavioral Components

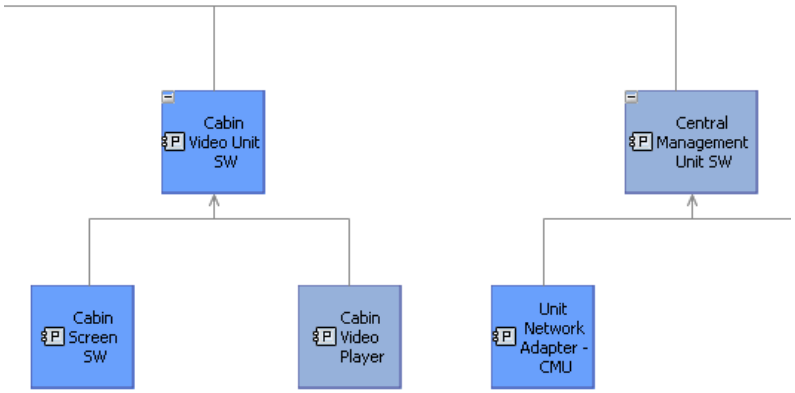


Breakdown to take into account the HW components: DAC and audio/video dedicated processors

Breakdown to take into account the choice of relying on a remote control rather than on a Touch Screen for the Seat TV



Breakdown to take into account concerns which were ignored in Logical Architecture: Network, Screens



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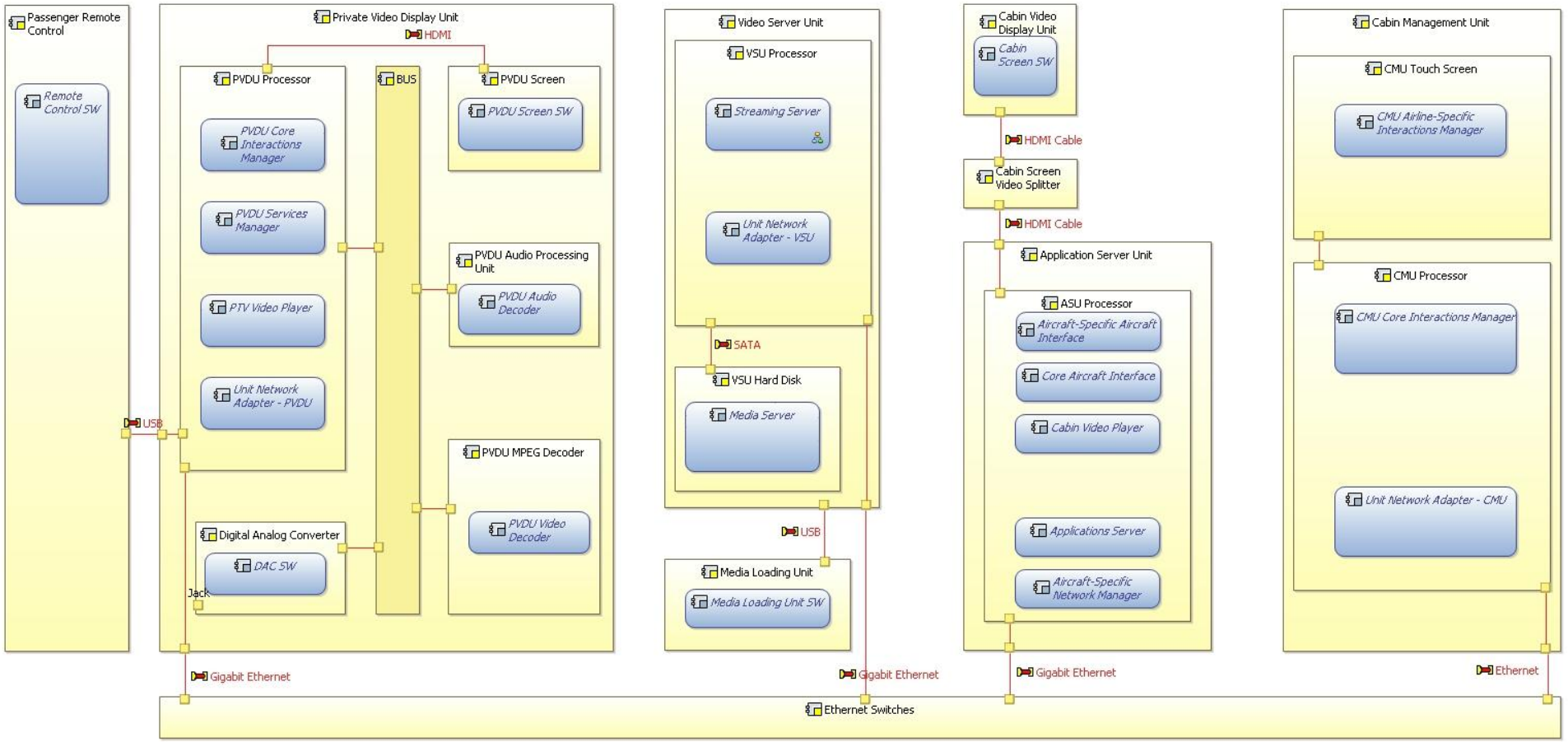
Implementation and Behaviour Components

[PAB] Implementation and Behaviour Components



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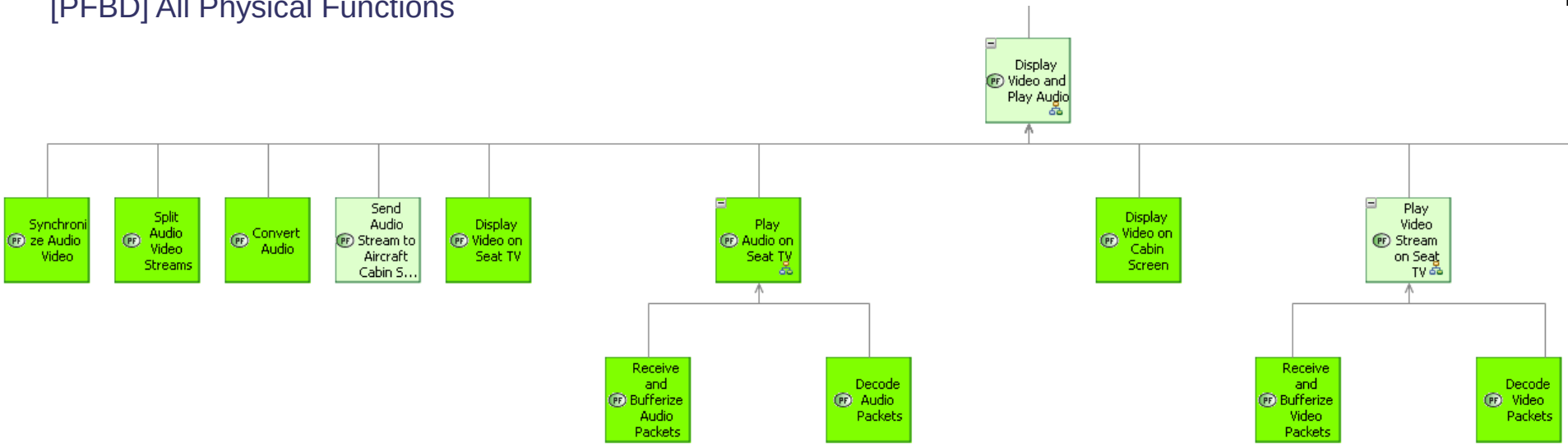
Refinement of Functional Analysis (1/2)

[PFBD] All Physical Functions



Several drivers for Functional Analysis refinement.

Topics not covered in Logical Architecture (Network, Screens, etc.) and further description of specific topics (management of audio and video streams)

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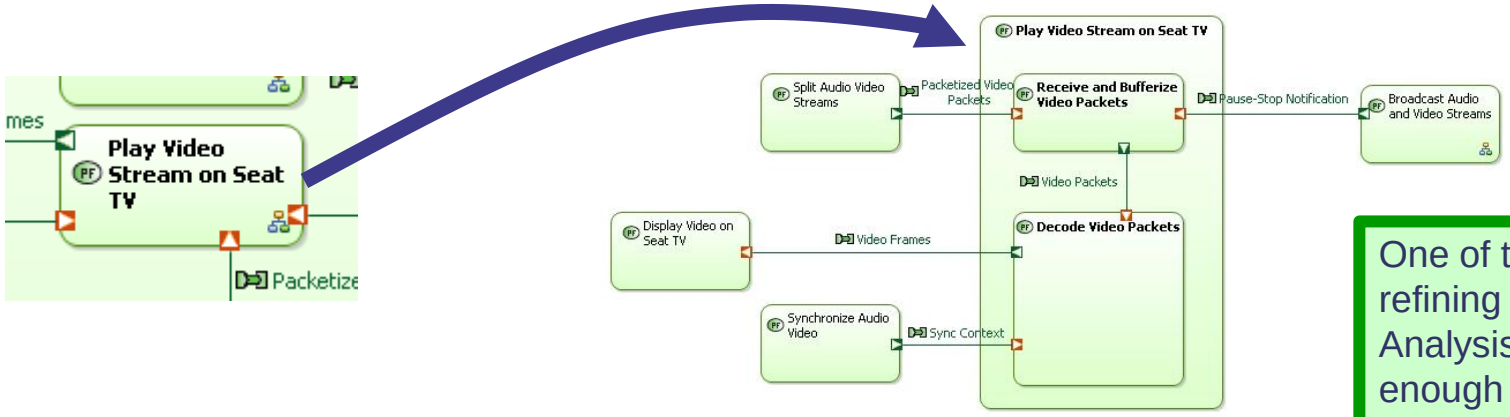
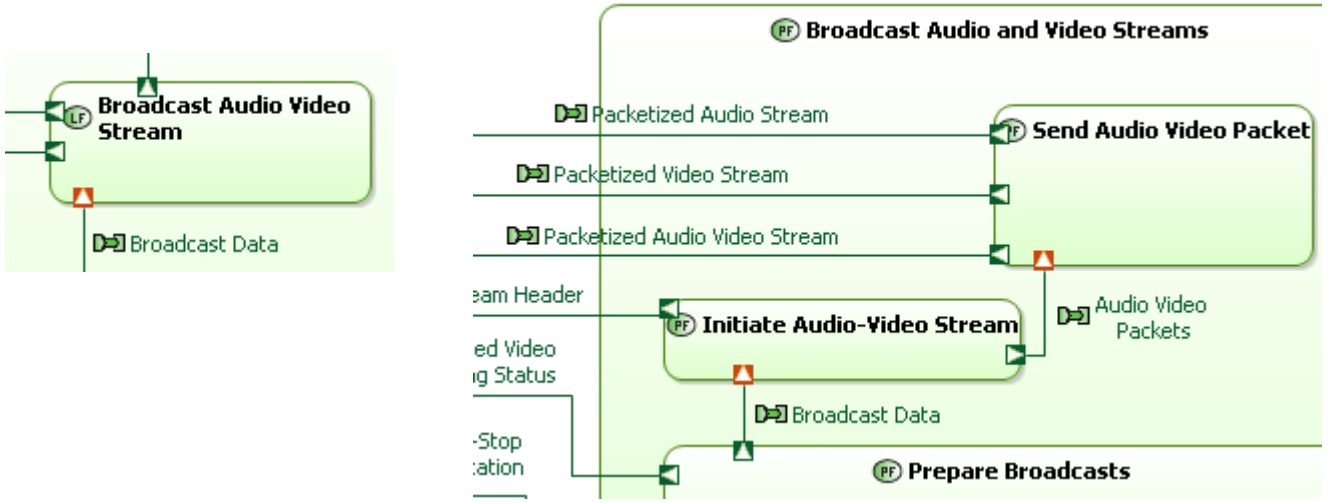
Refinement of Functional Analysis (2/2)

[PDFB] [CTX] Broadcast Audio Video Stream to Seat TV



[PDFB] [CTX] Broadcast Audio and Video Streams



One of the drivers for refining the Functional Analysis here is to add enough detail about the streaming mechanisms, in order to be able to perform non-functional analysis later on (for example, latency analyses).

Simplified streaming steps (packeting, etc.) are therefore described.

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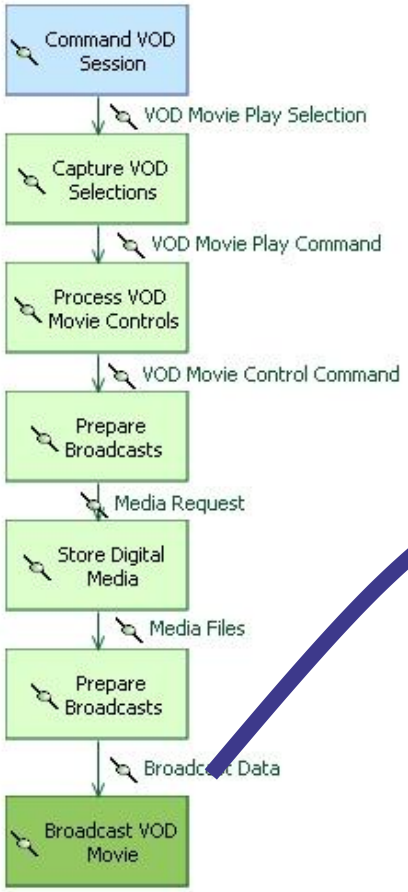
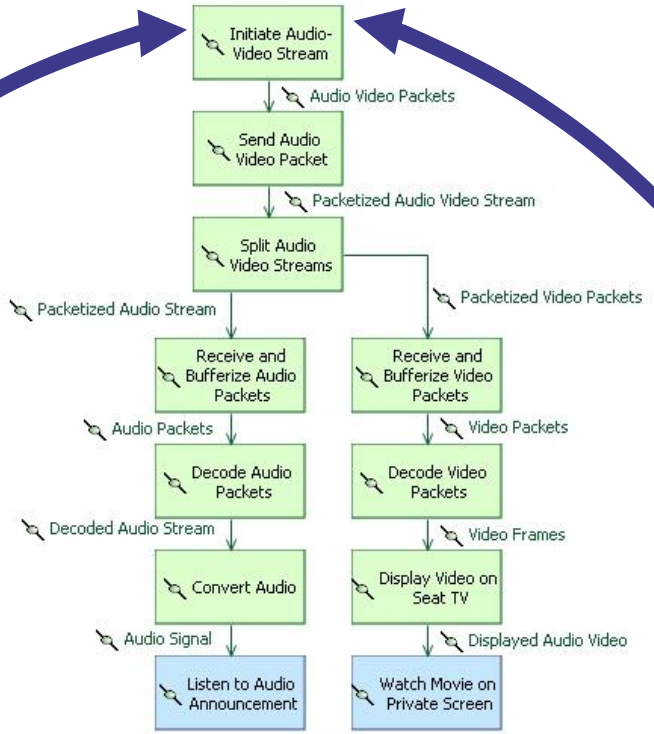
Refinement (and Composition) of Functional Chains

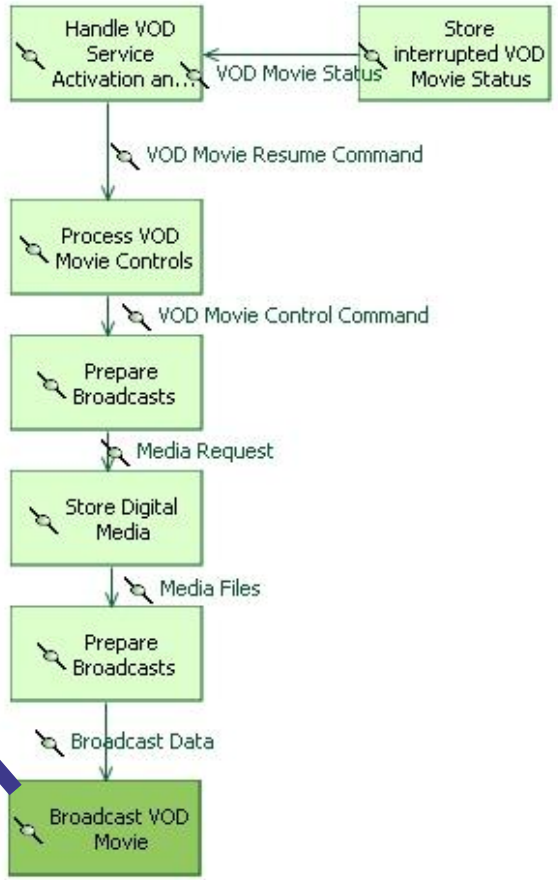
[PFCD] Start Playing VOD Movie



[PFCD] Broadcast VOD Movie



[PFCD] Resume VOD Movie



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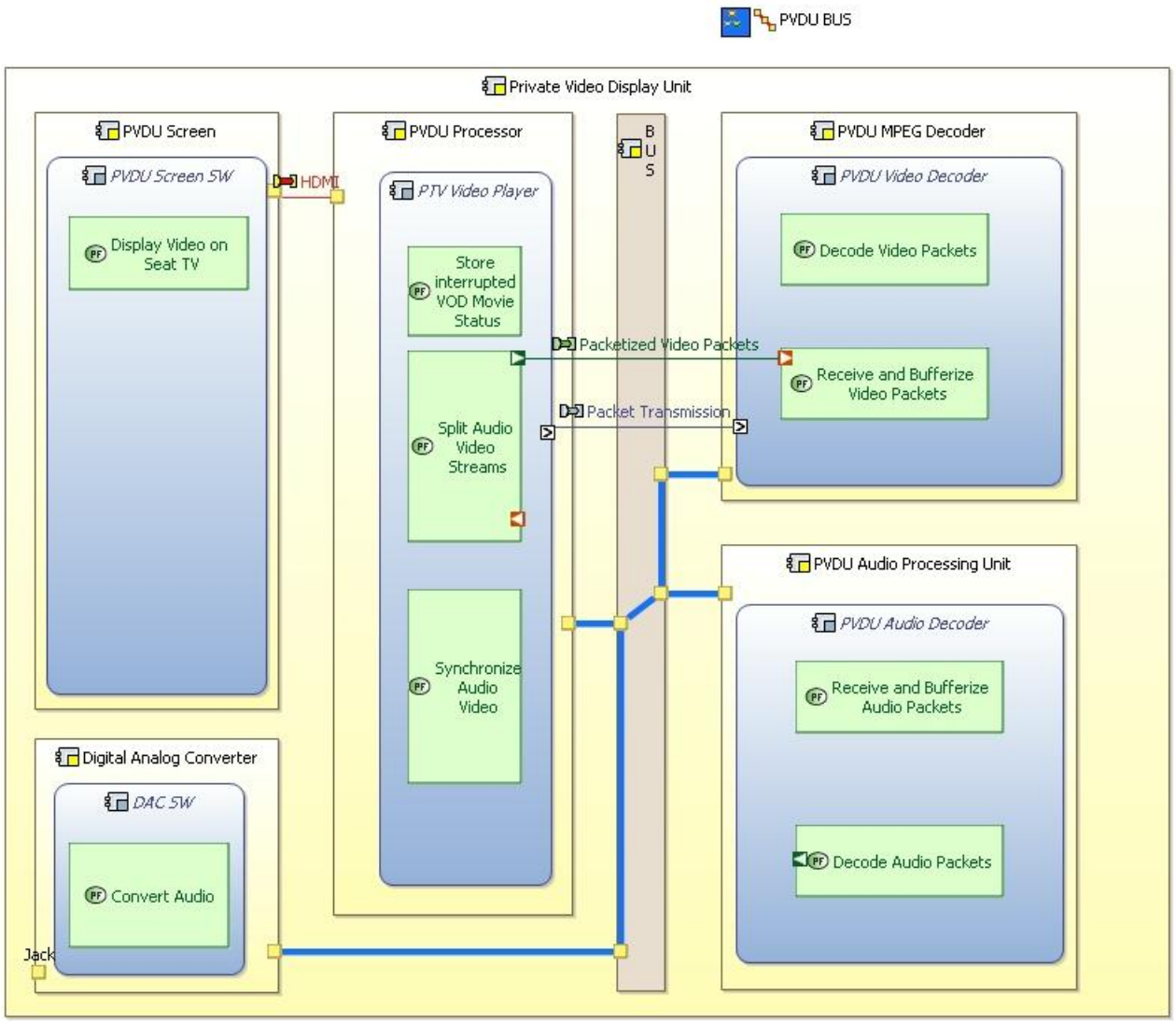
Mapping Functions / Components, Physical Path



The PVDU architecture is based on an internal bus connecting the processor, the media decoders and the DAC.

The BUS is modeled with a specific Implementation Component and a Physical Path linking all the elements connected to the BUS.

Here, the packets exchanged between the player and the decoder go through the "Packet Transmission" Component Exchange. The Component Exchange is transported by the "PVDU BUS" Physical Path.

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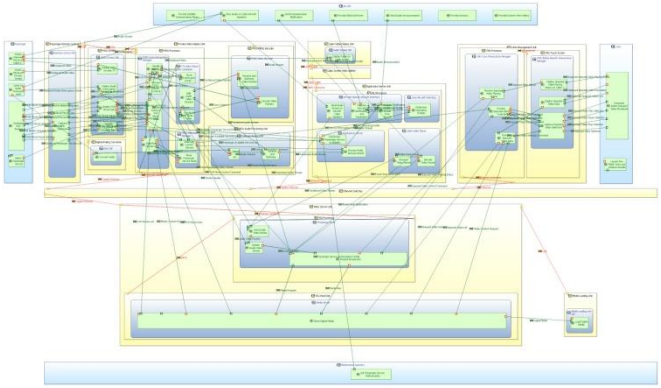
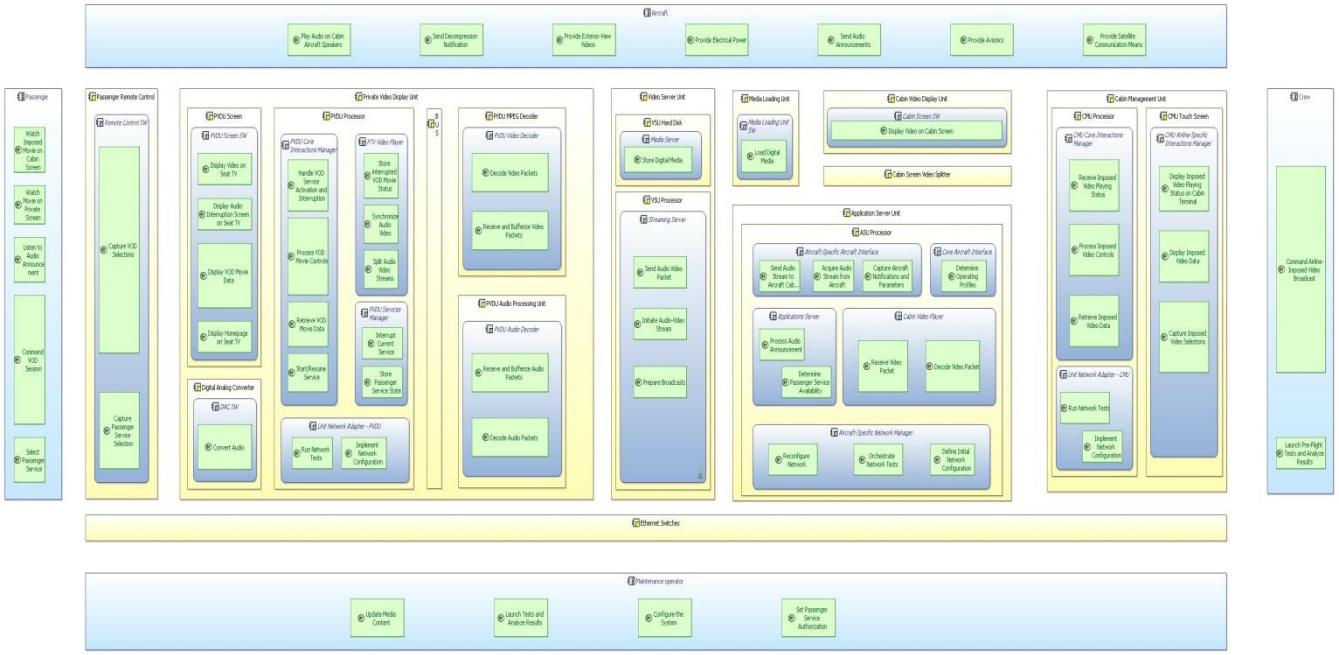
[BUILD] Working Diagrams

[PAB] [BUILD] All PCs, PFs, FEs



[PAB] [BUILD] Template



Building diagrams

Template. To gain in productivity, it is often interesting to brush layout from one diagram to another or to clone diagrams. Here, a template has been created and is used for a few other architecture diagrams.

All PCs, PFs, FEs. The diagram is a clone of the template where all Functions and all exchanges are displayed. While not adapted to publication, it is useful to check the design, visualize Functional Chains, etc.

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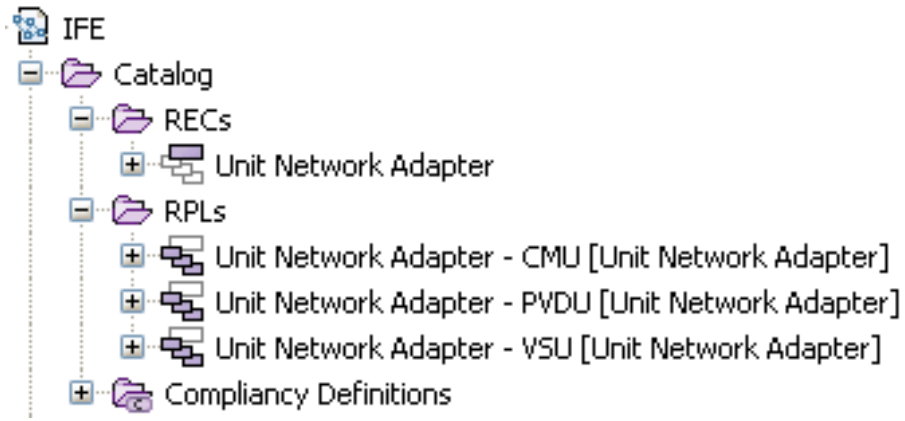
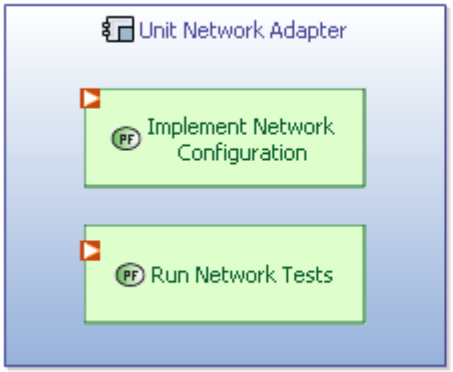
Management of Network Components (1/4)

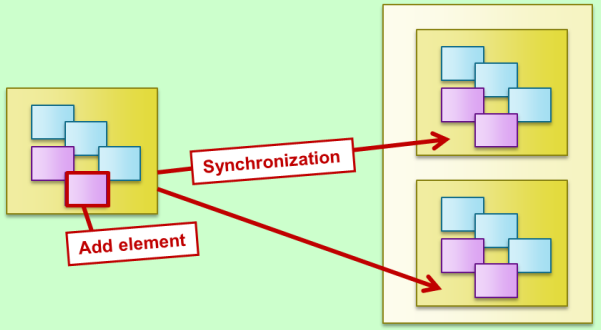




This component contributes to the definition of a REC. It is isolated in a specific location in the model.

The Network adapter is present on several components, with the same functionality.

Instead of modelling several time the same thing, the Replicable Elements mechanisms are used. Definition (REC) and instances (RPLs) can be kept synchronized.



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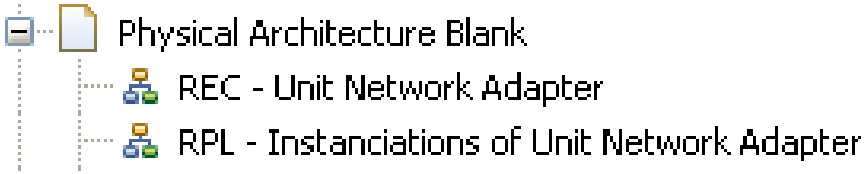
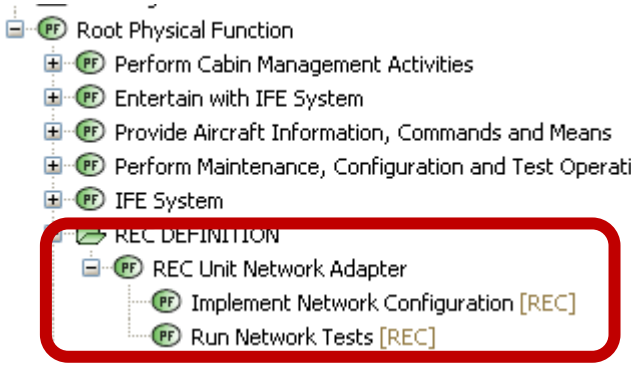
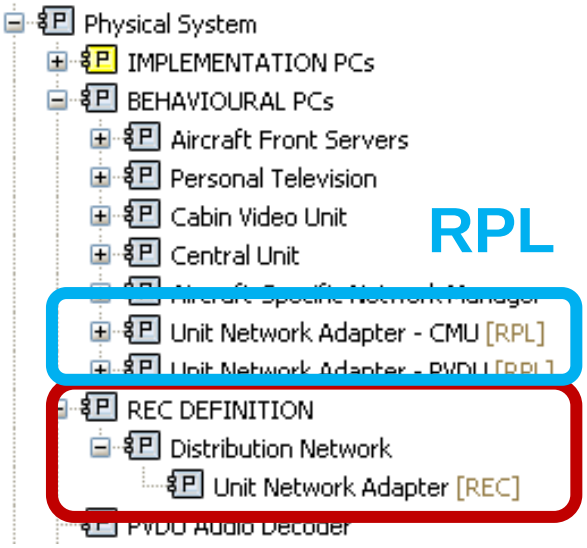
Management of Network Components (2/4)

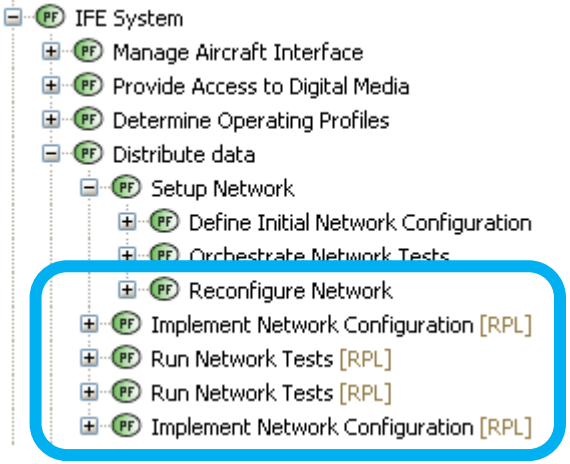




REC



RPL



Usage of REC-RPL mechanisms.

A REC is created and is instantiated several times. When no dedicated library is used, the organization of the model tree has to be carefully defined, in order to distinguish between “types” and “instances”.

The REC content is in the model, but somehow isolated from the other elements (it could be in a library).

The connection between the RPLs are managed manually (ONGOING work in Capella).

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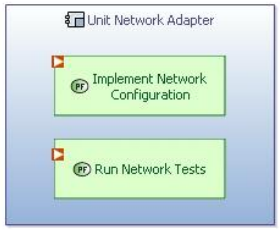
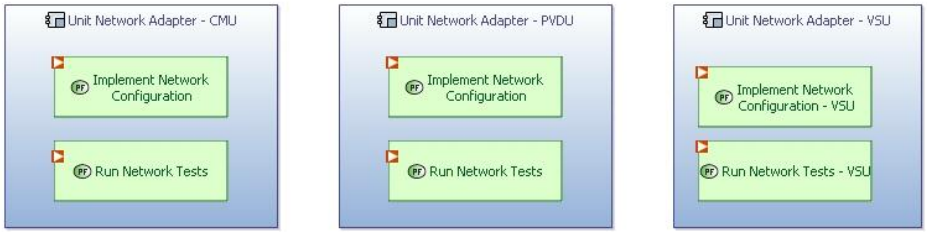
Management of Network Components (3/4)

REC - Unit Network Adapter

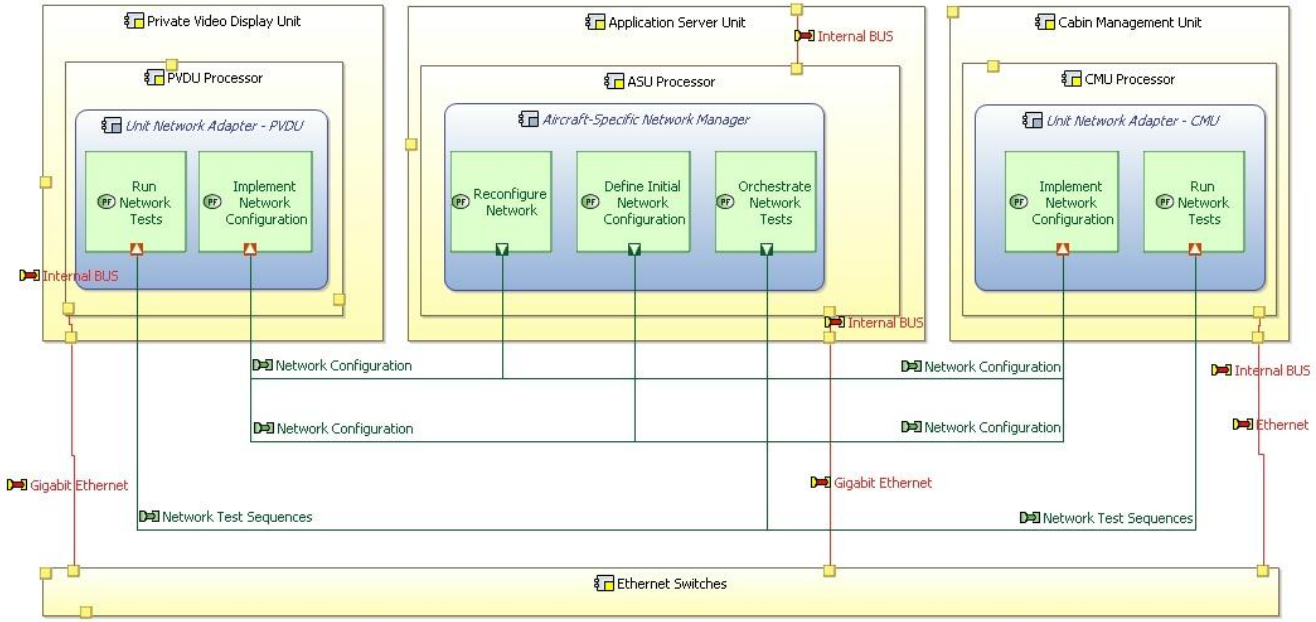


This component contributes to the definition of a REC. It is isolated in a specific location in the model.

RPL - Instantiations of Unit Network Adapter



[PAB] Focus on Network Setup, Configuration and Tests



The connections (Funcitonal Exchanges) between the RPLs (replicas) are performed manually.

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Management of Network Components (4/4)

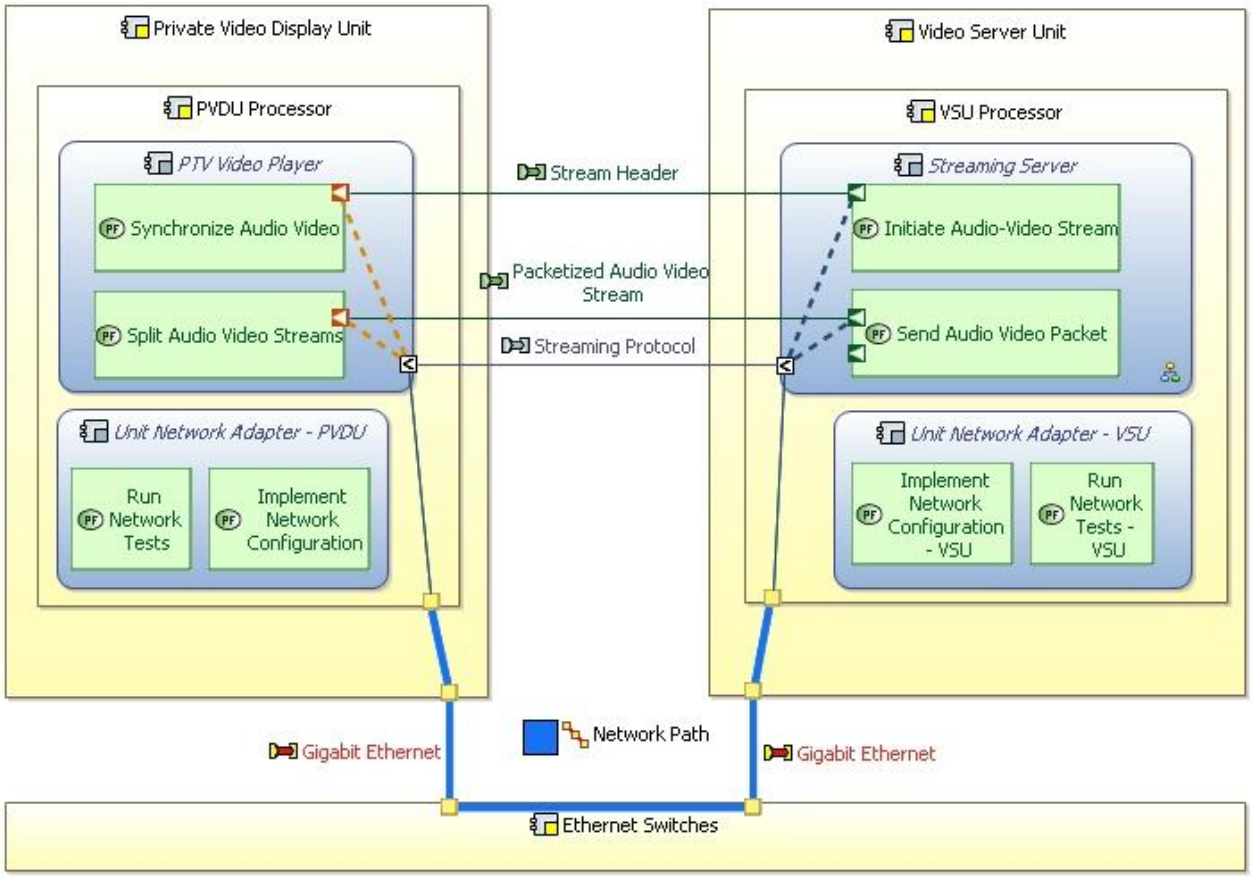

Illustration of the network carrying exchanges.

There is no added-value in this model in modelling the functional part of the transport over the network. Only network setup and configuration is modelled.

The transport between components are modelled with Physical Links. Here, the Physical Path "Network Path" is set to transport the Component Exchange "Streaming Protocol", showing that all packets between "Send" and "Split" Functions as well as the stream Header actually go through the Ethernet network and switches.

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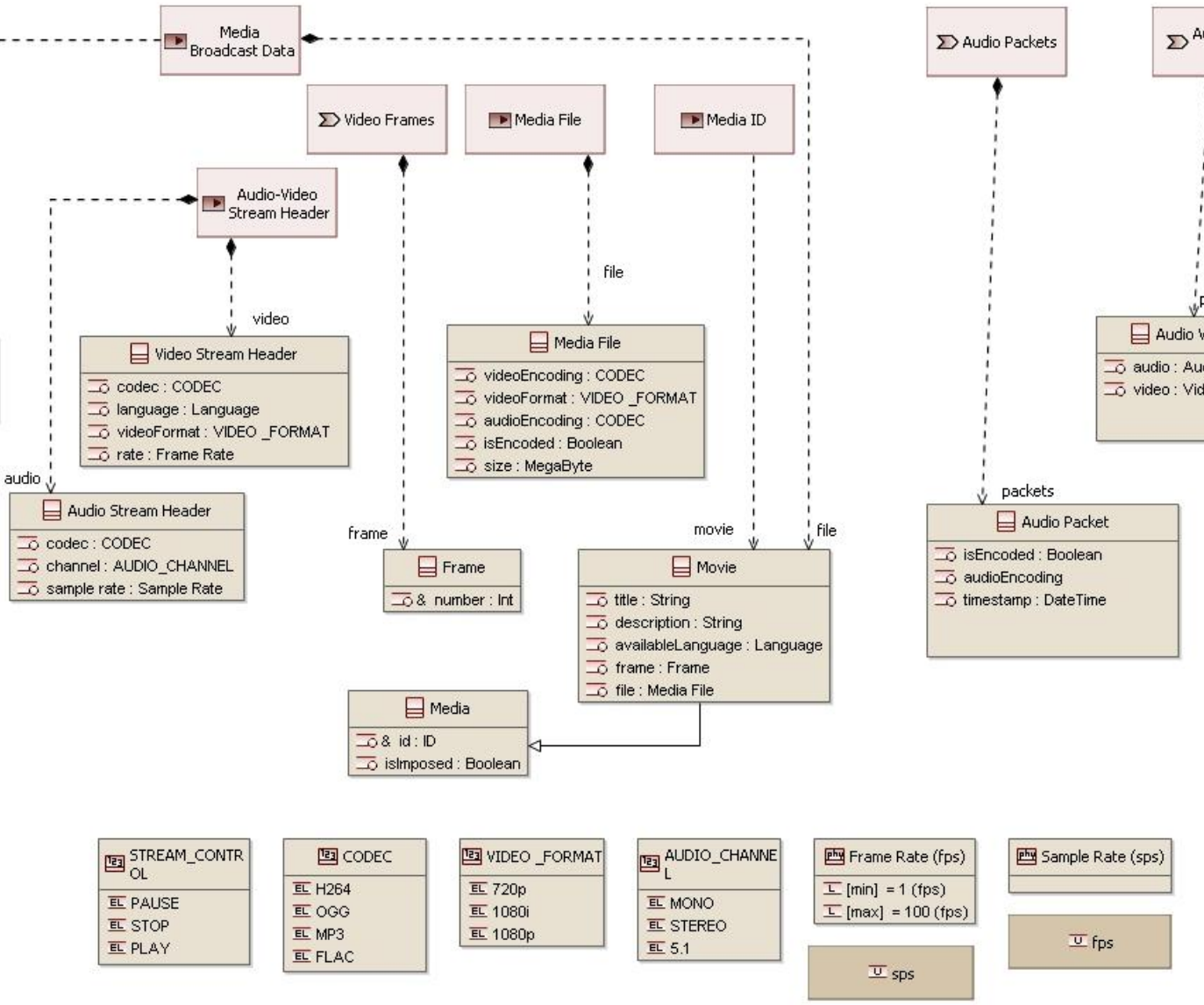
Refinement of Data Model (1/3)



Refinement of the data model:

- New streaming concepts taken into account, such as packets, stream headers, codecs, etc.
- Unlike the data model in Logical Architecture, the (arbitrary) choice is made here not to rely on a database-like design but on standalone types (constraint of the targeted SW environment)

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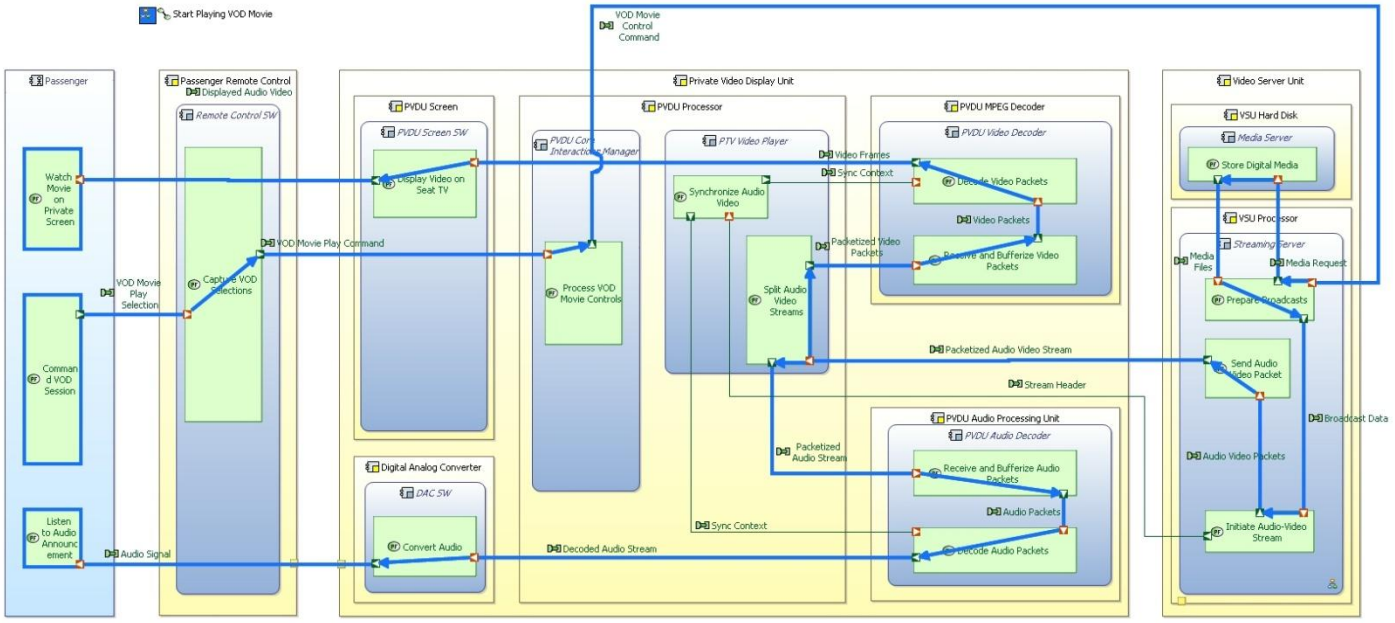
Refinement of Data Model (2/3)

In the current version of the model, the data modelling has only been performed partly, focusing on the “Start Playing Video Movie” Functional Chain

[PAB] [CTX] Start Playing VOD Movie FC



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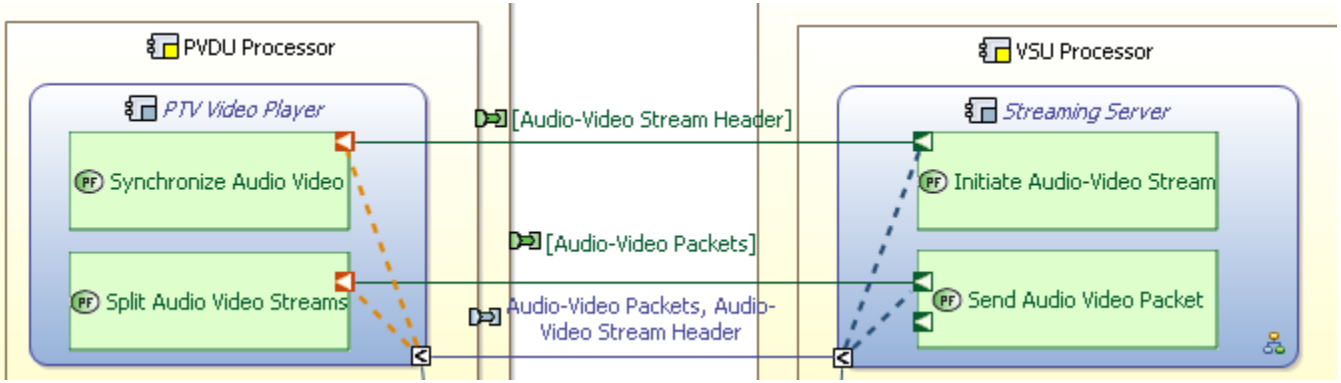
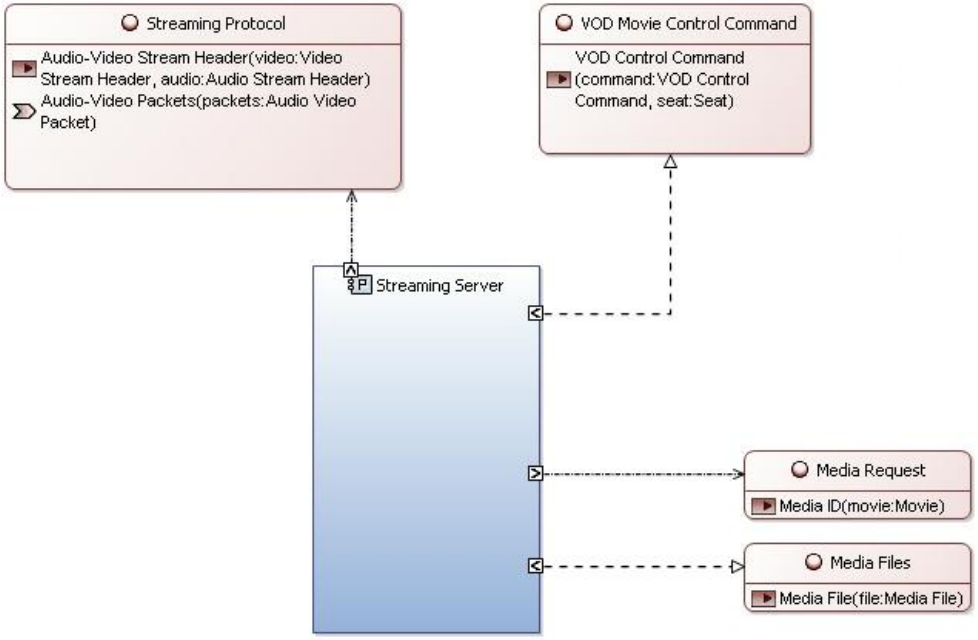
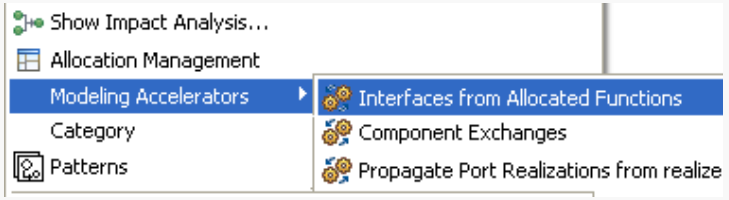
Refinement of Data Model (3/3)



[CDI] Streaming Server



Capella provides means to generate a first version of the interfaces of a component based on the incoming/outgoing Component Exchanges, Functional Exchanges, Exchange Items.



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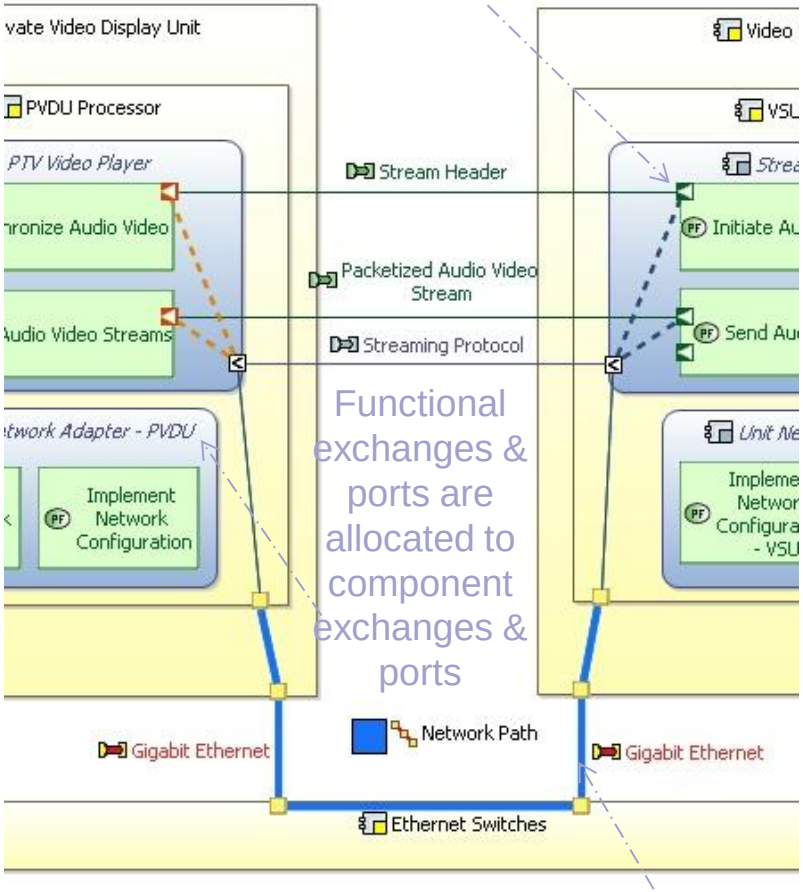
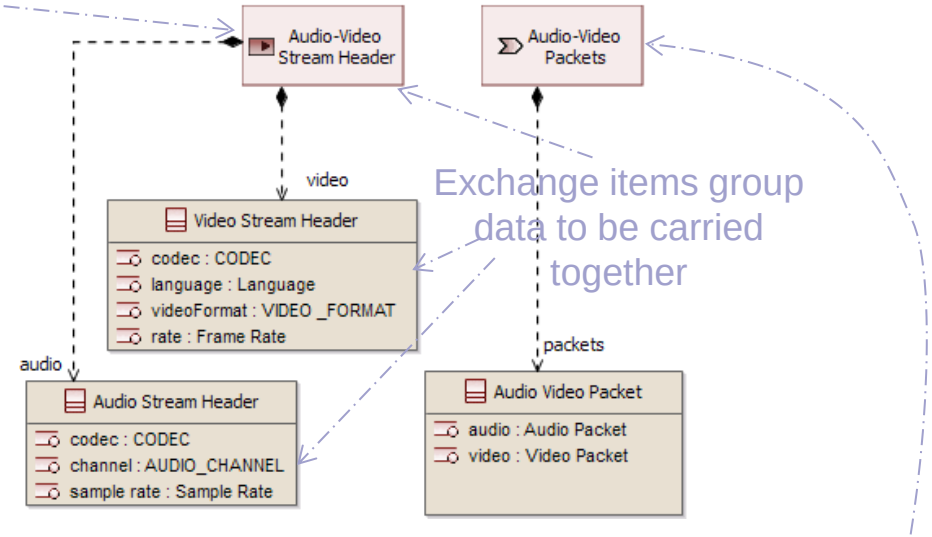
Definition/justification of Interfaces: Summary

Functional exchanges & ports carry Exchange items

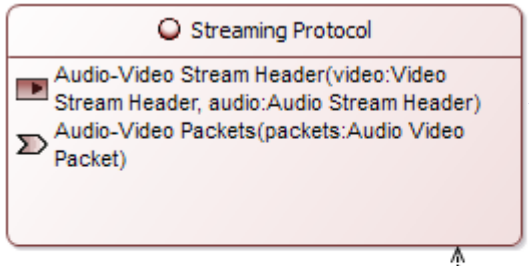


Functional exchanges & ports are allocated to component exchanges & ports

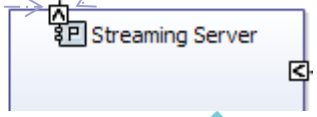


Exchange items group data to be carried together

Interfaces group & reference Exchange items



Interfaces are provided/required by Component Ports



Component exchanges & ports are allocated to Physical links/paths & ports

Use semantic Browser to navigate between these concepts & relations

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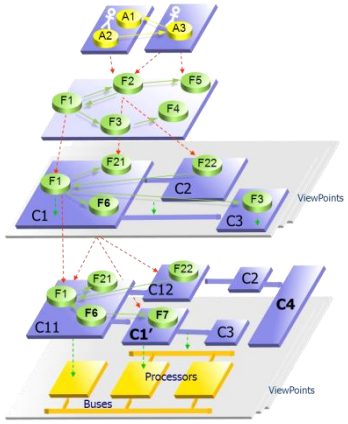
What is expected from each designer / sub-contractor

OA

SA

LA

PA



EPBS

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- Several drivers can orient the choices for Configuration Items. One goal of EPBS is to define an architectural frame to master component development and integration.

- In this sample model, different rationales:
  - Group all streaming SW components into one single Configuration Item
  - Group all airline-specific SW components into one single Configuration Item
  - Create all Network setup and configuration SW into one single Configuration Item
  - Have a Non Developed Configuration Item all network equipment and cables
  - Etc.

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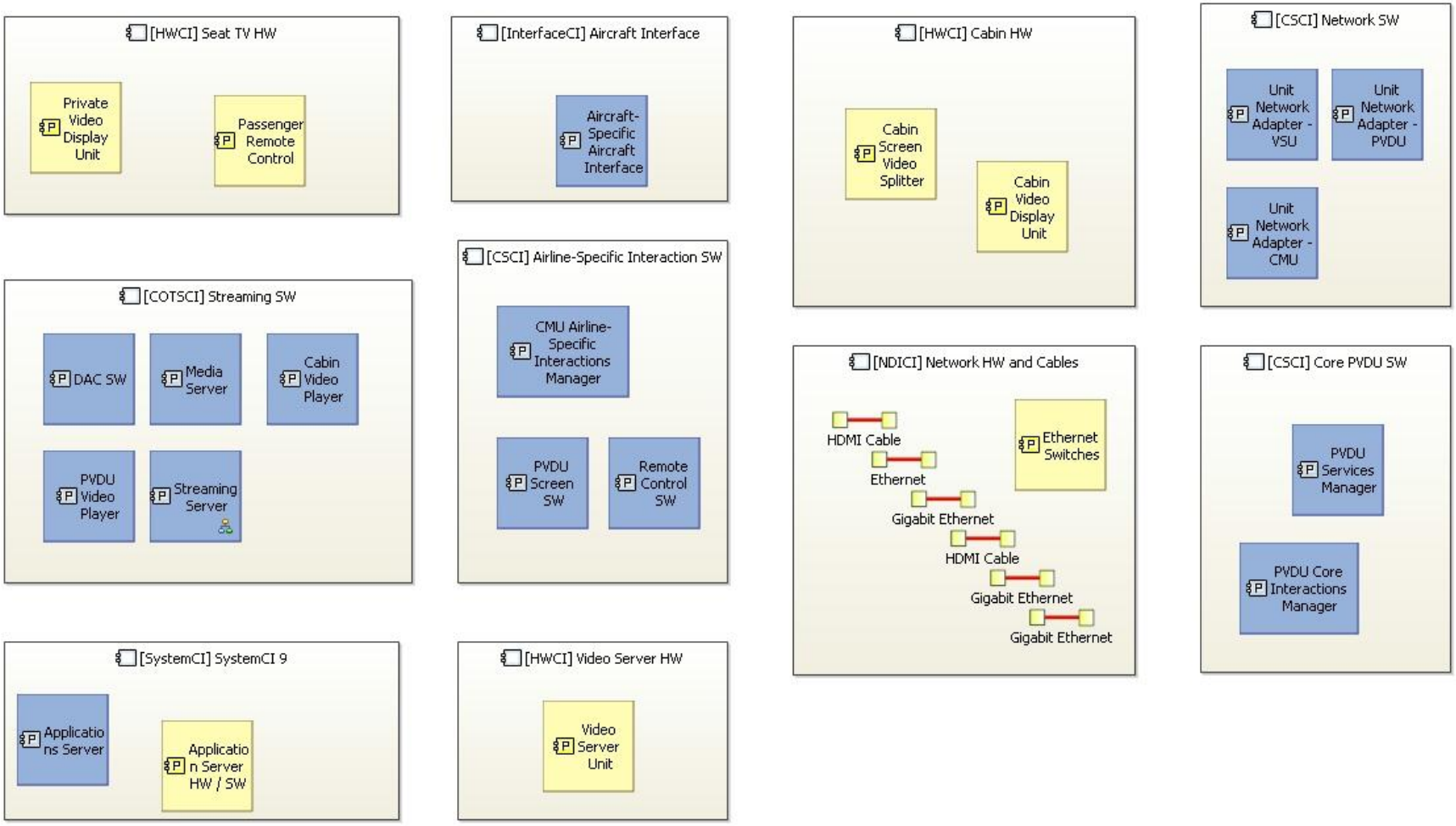
Examples of Configuration Items

[EAB] Configuration Items and Realized Artefacts



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Considered future evolutions for this sample model

- Multi-viewpoint analysis, including
  - Reliability analysis, with replication of video servers
  - Sizing (network)
  - Mass
- Refinement of Modes/States modelling (enhancement of the relationship with functions and functional exchanges)
- (Automated) transition towards subsystem
- Completeness + functional scope enrichment

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Questions on this model?

Use the Arcadia Forum:

https://polarsys.org/forums/index.php/f/12/

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Feel like contributing?

- Directly submit us your enrichments
- Contact us to converge on a specific scope

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