DCB/ASM Scenario Step1 System Definition Final

Document information	
Project title	Network Operations & Monitoring sub-system definition
Project N°	13.02.03
Project Manager	ECTRL
Deliverable Name	DCB/ASM Scenario Step1 System Definition Final
Deliverable ID	D02
Edition	00.01.00
Template Version	02.00.00
Task contributors	
AENA, ENAV, EUROCONTROL, INDRA, NATS	

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Abstract

This document is the Technical Specification for the "Cooperative Scenario Planning" Functional Block. It addresses the system required to ensure the support at local/sub-regional level of the collaborative processes with the local and sub-regional actors, Airports and all Airspace Users (including the military). It is based upon operational requirements, and contains technical requirements specifying this system. The requirements are derived from the P04.07.07 [1] Preliminary Operational Service and Environment Definition (OSED), deliverable 04.07.07.D25. The system specified in this document is intended to cover the PERSEO module and the PIVL module enhancement operational requirements stated in P04.07.07.D25 Final OSED [1], so there is no traceability in this document for OCOT or HLDR requirements, as they are do not need a v3 prototype to be delivered by P13.02.03 for validation.

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Document History

Edition	Date	Status	Author	Justification
00.00.01	10/01/2013	Draft	[redacted]	Draft
00.00.02	17/01/2013	Draft		Draft
00.00.02	24/01/2013	Draft		Internal Draft Review
00.00.03	14/02/2013	Final		Final Version to formal review
00.01.00	06/03/2013	Final		Approved version

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1.Executive summary

This document sets out the Technical Specification (TS) and System Definition, describing the requirements pertinent to the implementation of “DCB/ASM Scenario management” system in step1 associated to “Cooperative Scenario Planning” Functional Block. It is defined in the context of Step 1 of the SESAR Validation and Verification (V&V) Storyboard.

The main function provided by DCB/ASM Scenario management system in Step 1 is to support decision making about operational sectorization in a local/sub-regional scope, taking into account network effects at a local/sub-regional level. This decision-making support is provided by sectorization analysis and optimal solution suggestion for each Area Control Center, realized by this sub-system as an element of the whole functional block.

DCB/ASM Scenario management system supports elaboration of pre-defined scenarios in a collaborative way with local/sub-regional actors and AAMS/ Cooperative Scenario planning.

The requirements have been worked out in such a way that they actually describe the services provided by the sub-system and that they are as much as possible independent from the internal design.

Two local modules of this system, called PERSEO and PIVL, will be enhanced according to P04.07.07 operational requirements and will be used to support Step 1 P04.07.07 validation activities. According to P04.07.07, the system specified in this document is intended to cover only the PERSEO and PIVL operational requirements, as expressed in the Final OSED [1]. Only PERSEO and PIVL enhanced modules and its relationship with ATC System is intended to be validated through a v3 prototype; thereby, and in terms of P04.07.07 Initial OSED, there is no traceability in this document for OCOT or HLDR requirements.

2.Introduction

Controller workload (traffic complexity) in situations of high demand, and/or very busy airspace can be so high that it will becomes impossible to manage it with conventional ATC means; managing controllers' workload by balancing capacity with demand becomes crucial.

Dynamic resizing and change of sector's shape and volume contributes to distribute the workload with respect to the capacity of sectors in one centre/FAB and it could be done only through automated systems which continuously evaluate traffic complexity and propose optimum sectorization solutions.

This will provide possibilities for the users to fly as close as possible to their "business trajectories", doing an optimum use of human and airspace capacity.

2.1 Purpose of the document

This document describes the technical requirements for the DCB/ASM Scenario management system to be developed. This information will serve as a starting point for further design and development of a prototype to be verified and validated (by P04.07.07) in the context of Step 1 SESAR V&V Roadmap.

These requirements describe functional and capabilities specifications, covering performance, physical characteristics and environmental and facility conditions under which the functional block has to perform.

This document covers functional, non-functional and interface requirements for the PERSEO and PIVL tools, as specified in the P04.07.07 Final OSED [1]. Only the PERSEO and PIVL prototypes as specified in P04.07.07 are intended to be validated through a v3 prototype to be delivered by P13.02.03; thereby, there is no traceability in this document for OCOT or HLDR requirements, as stated in the P04.07.07 Final OSED [1].

The relations between this technical specification and the other SESAR deliverables are illustrated in Figure 1.

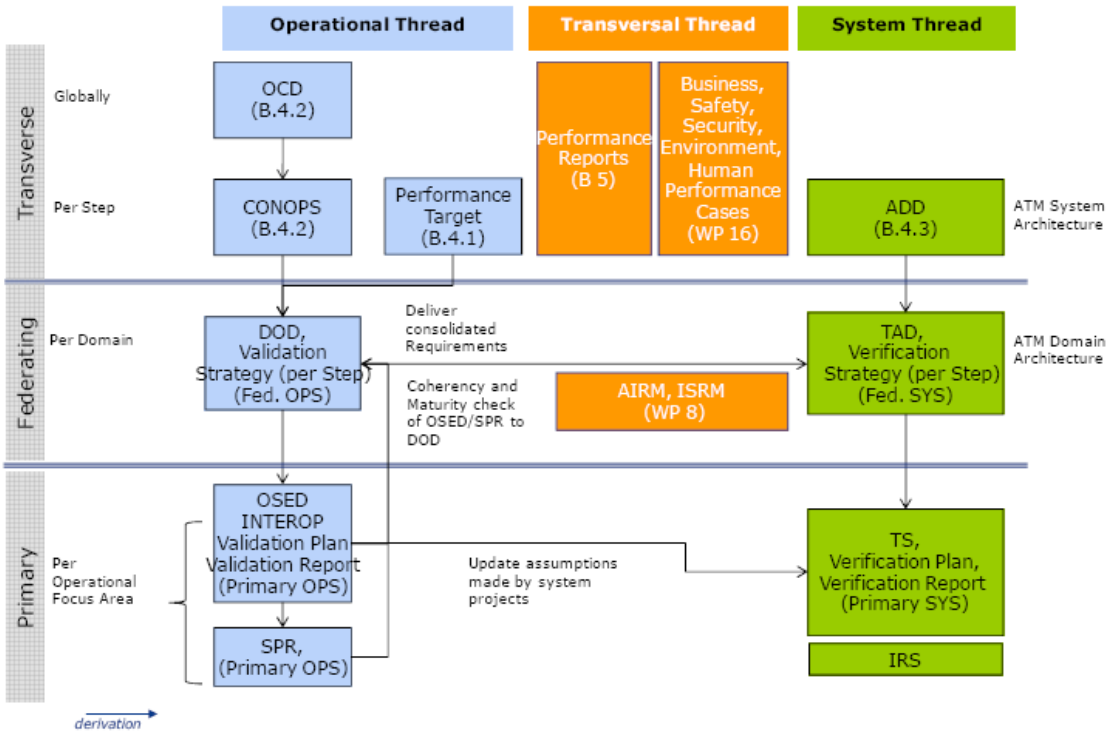

Figure 1: Flow of documentation overview [PMP]

2.2 Intended readership

This document is intended for the following audience:

- Operational projects: P04.07.07 (Implementation of the Dynamic Capacity Management in a high density area) as the sources of the operational requirements
- WPB4.3 as the SESAR Technical Architect
- P13.01.01 (Network Sub-System Definition & Verification) is interested in the document to identify and maintain the functional block list and to contribute to the definition of the architecture.

2.3 Inputs from other projects

Project 04.07.07 is identified as the source of a first set of inputs requirements impacting the DCB/ASM Cooperative Scenario planning FB.

2.4 Requirements Definitions – General Guidance

Requirements have been developed according to the SESAR Requirements and V&V Guidelines[3].

In order to facilitate importing of the requirements in a DOORS data base it has been used the toolbox delivered by the IS that provides the following layout described in [2].

The layout is illustrated below:

[REQ]

Identifier	
Requirement	

Title	
Status	
Rationale	
Category	
Validation Method	
Verification Method	

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance

Table 1: Requirements layout

The requirement Identifier follows the structure proposed by the SJU Guidelines, therefore having the following structure:

<Object type>-<Project code>-<Document code>-<Reference number 1>.<Reference number 2>

The four digits (abcd) of the <Reference number 1> field are structured inside this project as follows:

a (first digit) represents the Step.

b (second digit) represents the 13.02.03 strand: 1 for DCB/ASM scenario, 2 for enhanced DCB, 3 for federated DCB, 4 for Performance Management and 5 for UDPP strands respectively.

c (third digit) represents the requirement type – according to the SJU TS template sections - (1 for functional/capability requirement, 2 for adaptability requirements, 3 for performance requirements, 4 for safety & security requirements, 5 for maintainability requirements, 6 for reliability requirements, 7 for component internal data requirements, 8 for design and construction requirements and 9 for component interface requirements).

d (fourth digit) is to be used freely by each strand. In the case of DCB/ASM scenario, this digit will be always set to 0 or it would be used to complement the <Reference number 2> field.

This structure will prevent having duplicated identifiers in the different P13.02.03 project strands and Steps.

2.5 Functional block Purpose

The purpose of this Cooperative Scenario planning functional block is to provide a tool to analyze the demand and capacity of sectors at regional and local level in a determined period of time and provide optimal sectorization plans in order to reduce the load of these sectors and the consequences of overload, like regulations, controllers workload, optimization use of controller

2.6 Functional block Overview

This document is the Technical Specification for the “Cooperative Scenario Planning” Functional Block. The FB-2.04 groups all functions for planning and managing scenarios. These FB´s functions cover the regional and local levels, a scenario being elaborated at local level and its impacts being analysed at regional level. The preparation of scenarios is based on CDM processes between the local impacted areas and the regional level.

This FB groups only the functions in planning phases to prepare the scenarios and to manage them. The activation and the late adaptation of already prepared scenarios in tactical phase is not part of this FB.

The main internal data flows between “Cooperative Scenario Planning” FB and the others FBs are shown in figure 2.

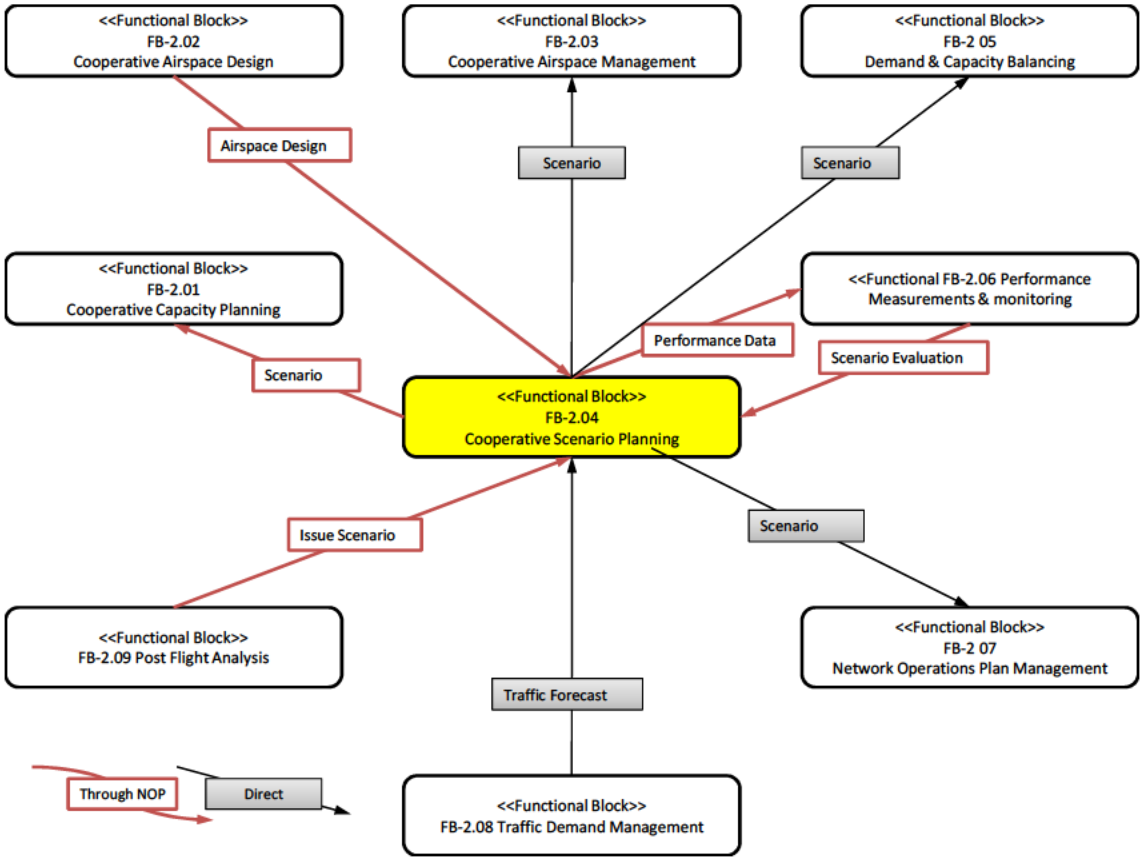

Figure 2: FB Cooperative Scenario Planning

To know more information about related functional blocks and their respective relations with technical blocks and connectivity capabilities, see "NIMS Step 1 TAD" [4].

2.7 Acronyms and Terminology

Term	Definition
AAMS	Advanced Airspace Management System
ADD	Architecture Definition Document
ASM	Airspace Management
ATFCM	Air Traffic Flow and Capacity Management
ATC	Air Traffic Control
ATM	Air Traffic Management
ATS	Air Traffic Services
CDM	Collaborative Decision Making
CFMU	Central Flow Management Unit

Term	Definition
CONOPS	Operational Concept
CWP	Controller Working Position
DCB	Demand & Capacity Balancing
DOD	Detailed Operational Description
E-ATMS	European Air Traffic Management System
ETFMS	Enhanced Tactical Flow Management System
FAB	Functional Airspace Block
FB	Functional Block
GIPV	Flight plan information management
HLDR	High-Level Direct Routing
IFPS	Integrated Initial Flight Plan Processing System
INTEROP	Interoperability Requirements
IRS	Interface Requirements Specification
N/A	Not Applicable
NIMS	Network Information Management System
NOP	Network Operations Plan
OCD	Operational Concept Description
OCOT	Oceanic Clearance Optimizer Tool
OFA	Operational Focus Area
OSED	Operational Service and Environment Definition
PERSEO	Platform for the Analysis of Network Effects of Sectors Configuration
PIVL	Local integrated surveillance position
RBT	Reference Business Trajectory
SBT	Shared Business Trajectory
SESAR	Single European Sky ATM Research Programme
SJU	SESAR Joint Undertaking (Agency of the European Commission)
SJU Work Programme	The programme which addresses all activities of the SESAR Joint Undertaking Agency.

Term	Definition
SESAR Programme	The programme which defines the Research and Development activities and Projects for the SJU.
SPR	Safety and Performance Requirements
SWIM	System-Wide Information Management
TAD	Technical Architecture Description
TB	Technical Block
TS	Technical Specification
Shift	One of three time periods in which divides the day of operation

3 General Functional block Description

3.1 Context

This “Cooperative Scenario planning” Functional Block is enclosed in a local context of ATM, so that, using ATCs predefined sectorizations, declared capacity, and the demand over the operation day (in each sector of every pre-defined sectorization), it can propose an optimal sectorization plan along a time, in order to cover the needs for making decisions in each ATC airspace.

3.2 Functional block Modes and States

3.2.1 Functional Block States

Not Applicable

3.2.2 Functional Block Modes

This FB can work in three modes that have to be selected by the user to simulate and analyze sectorizations to be set in each ATC, over the operation day.

3.2.2.1 Historical Mode

This FB in Historical mode will perform an analysis with historical data stored in a database.

This mode can also be used to simulate sectorizations in order to improve the process in a day with a similar type of traffic. Additionally, the mining of historical data is used for reliable prediction of demand in a long-term horizon.

3.2.2.2 Real Mode

This FB in Real mode will perform an analysis with the latest available data provided by IFPS. The IFPS has to be configured to provide the data as a sequence of TCP/IP messages associated with events that occur in the IFPS, in a format known by the system.

This information provided by IFPS allows the user to view the evolution of flights and thus the system calculate the metrics associated demand by sectors that evolve these flights and to determine the optimal configuration plan.

3.2.2.3Mixed Mode

Real data may be combined with historical data to simulate traffic conditions and to determine the best optimal configuration plan using more information than the Real Mode.

3.3 Major Functional block Capabilities

This section gives an overview of the system associated to this functional block main requirements and the grouping of functionalities regarding these requirements.

This system is named “DCB/ASM Scenario Management System” but it will be named as “the system” in the next sections.

3.3.1Data Acquisition

- The system shall be connected to the online ATC system to receive configuration settings for the analysis that will be performed.
- The system shall compute the demand indicators from data received from the online ATC system for real or mixed traffic data type analysis.

- The system shall compute the demand indicators from historical data received from a database for historical or mixed traffic data type analysis.
- The system shall use the following metrics to compute the demand indicators, metrics that allow the system to determine the demand in a sector:
  - The number of aircraft within the sector in each time interval during the period of the analysis.
  - The capacity of each sector per each time interval during the period of the analysis.
  - The Occupancy Factor, relation between demand and capacity within the sector in each time interval during the period of the analysis.
  - Number of Saturation flights, difference between demand and capacity within the sector in each time interval during the period of the analysis.
- The system should be connected to a database to retrieve historical information that allows demand indicator calculation as well as storage of the calculated demand indicators for later analysis or re-use.
- The system should validate the data received or loaded in order to check that is formatted properly and consistent with the parameters an mode which determine the analysis to be performed. If this checking is not done the calculation may be done with the wrong information and thereby the reliability of the output would decrease.

3.3.2Optimization Analysis

- The goal of this optimization/analysis is to determine the optimal sequence of predefined airspace sectorizations in a determined work shift, called "sectorization plan", by trying to achieve even distribution of workload. To achieve this goal, the system, based on the ATC predefined airspace sectorizations for the analysis is performed, selects the optimal sequence by visiting the choices and constrains for each moment.
- The system should provide a default setup for optimal sectorization plan calculation constraints and a way to select it by the user.
- The optimal sectorization in a period of time shall be calculated taking into account the following parameters: Number of Controller Working Positions (CWP), mean value of load/capacity of each CWP, number of overloaded CWP, number of overloaded periods
- The optimal sectorizations calculated shall be one of the predefined and standardized sectorizations for the control area
- The system shall calculate optimal sectorization plan for the ATC Unit, predefined sectorizations, data source and constraints determined by the user or configured by default. For historical traffic data analysis, calculation will be performed for the time period date determined by the user. In a real, or mixed traffic data type analysis, calculation will be performed for the time period related to the system date.
- The system should compute a list of optimal sectorization plan, by finding time intervals for sectors to reduce the number of flights on saturation that cause the sectors traversed by them are overloaded, called saturation flights.
- The system should calculate a metric for each optimal sectorization plan by finding the minimum dispersion of the occupancy factor between sectors that belongs to a predefined sectorization of every plan in a time interval.
- The system should determine the best optimal sectorization plan and the other sectorization plans order by its metrics
- The system should provide a comparison between the best optimal sectorization and the operational sectorization for an interval of time determined for the current sectorization.
- The system should store the best optimal sectorization plan for historical purposes.

3.3.3Display

- The system should display charts showing computed demand indicator for each sector of each predefined sectorization in every time interval of the time period for which analysis will be performed.
- The system should display tables showing computed demand indicator for each sector of each predefined sectorization in every time interval of the time period for which analysis will be performed.
- The system should inform the user about errors detected.
- The system should display the optimal sectorization plan and the metrics used for optimization per interval and sectors that are part of some of the sectorizations proposed.
- The system should display the optimal sectorization plan list as a result of the optimization analysis.
- The system should provide the user a way to display any stored optimal sectorization plan determined by the system in previous analysis.

3.4User Characteristics

Intended users:

- Flow Manager Position (FMP): Flow manager position uses the local tool to analyze sectorizations to be set, in each ATC, over the operation day.
- ACC Supervisor: ACC supervisor will use the ATC system to analyze and decide sectorizations to be set, in each ATC, over the operation day or the operation day.

3.5Operational Scenarios

The operational scenario for this FB, according to a local/subregional scope, will be an ATC control area in order to simulate and analyze sectorizations to be set in this ATC center, over the operation day. Pre-defined sectorizations for the selected ACC will be previously loaded on the tool.

3.6Functional

3.6.1Functional decomposition

The functional decomposition of the “DCB/ASM Scenario Management” system is illustrated in figure 3.

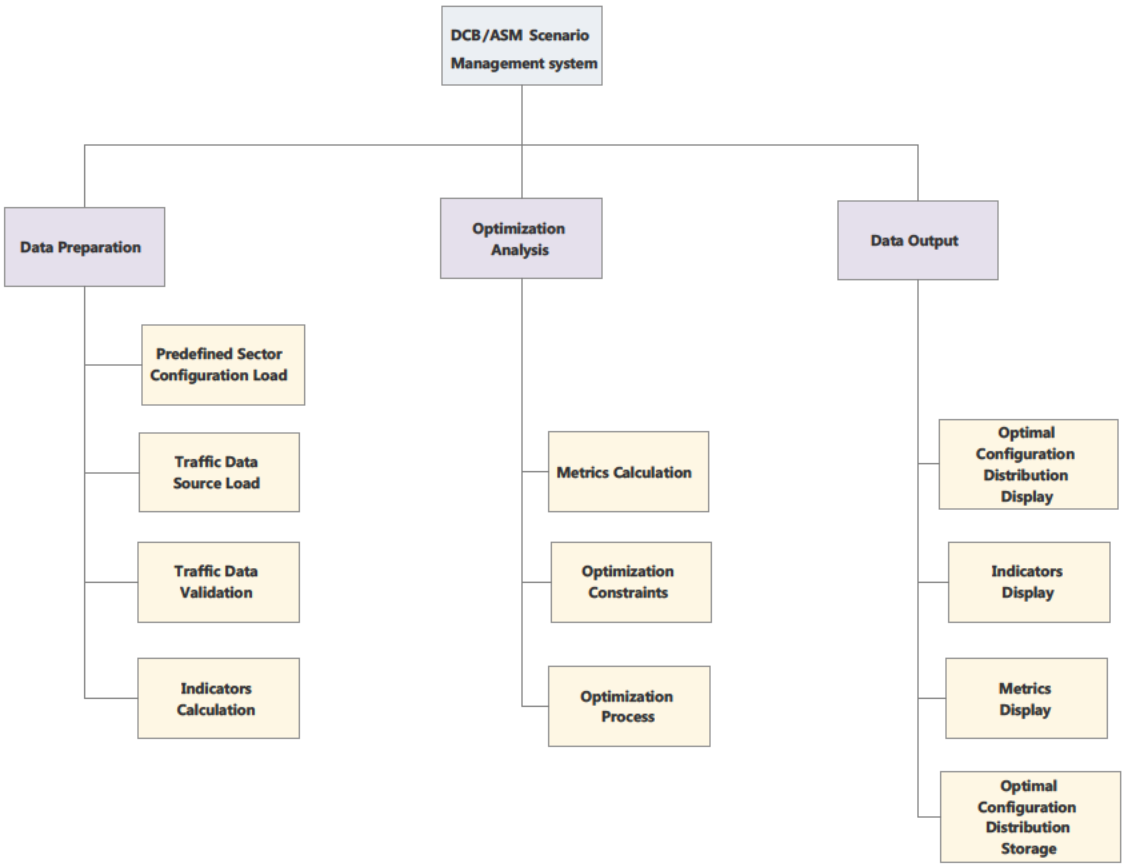

Figure 3: "DCB/ASM Scenario Management" system functional decomposition

3.6.2Functional analysis

The functional analysis of this system is shown in Figure 4 by the representation of processes and data flows between the system and other systems.

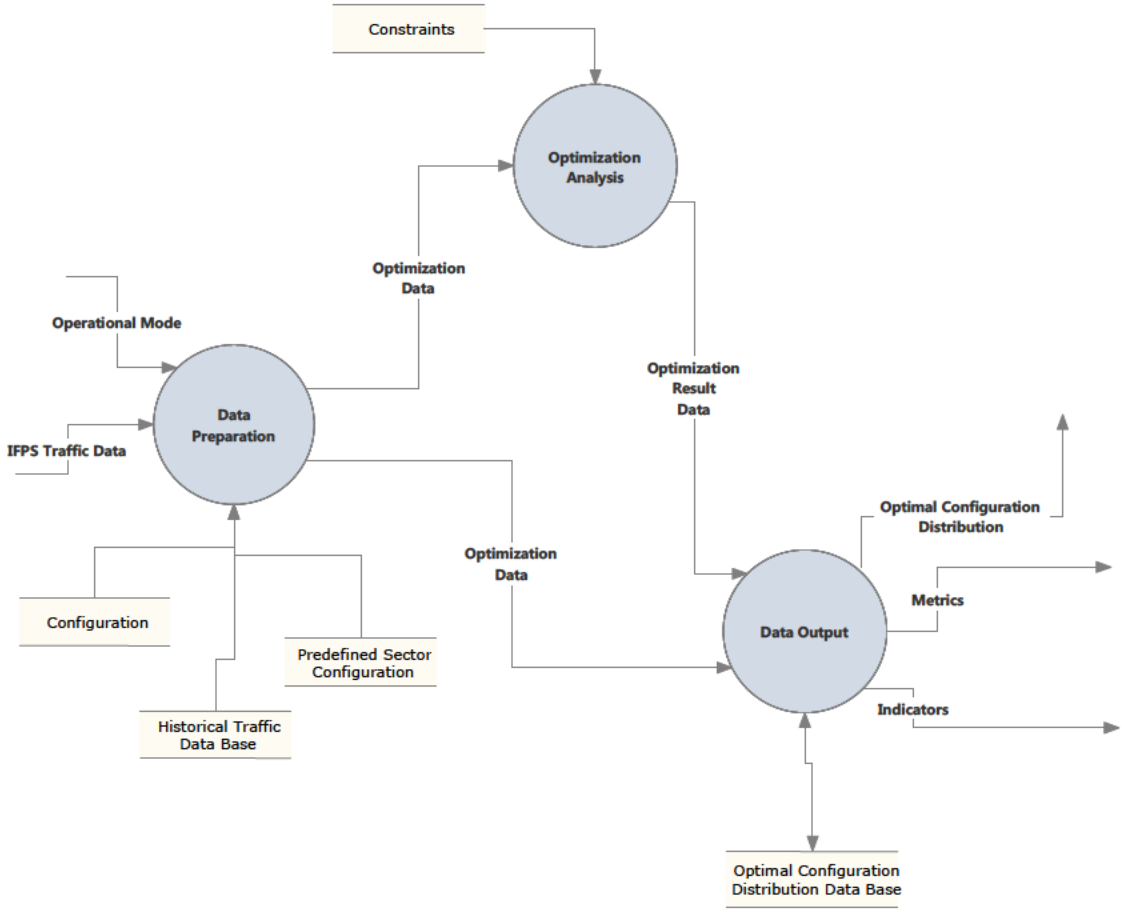

Figure 4: DCB/ASM Scenario Management system Data Flow Diagram

3.7Service View

Not applicable.

4Functional block Functional and non-Functional Requirements

4.1Capabilities

4.1.1 Functional Requirements

Identifier	REQ-13.02.03-TS-1110.0001
Requirement	The system shall provide the user a way to select the ATC Unit for which analysis will be performed.
Title	ATC Unit selector for Optimization Analysis
Status	<In Progress>
Rationale	User Input parameter for Data Acquisition and Optimization Analysis. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information.
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<Enabler>	Enabler code	<Full>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0001	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0009	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0002
Requirement	The system shall provide the user a way to select the date for which analysis will be performed.
Title	Date selector for Optimization Analysis
Status	<In Progress>
Rationale	User Input parameter for Data Acquisition and Optimization Analysis in Historical Mode. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information.
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0001	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0009	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0003
Requirement	The system shall provide the user a way to select the shift (Morning, Afternoon or Night), for which analysis will be performed.
Title	Shift selector for Optimization Analysis
Status	<In Progress>
Rationale	User Input parameter for Data Acquisition and Optimization Analysis. PIVL module does not need to meet this requirement as is a special case of

	implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0001	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0009	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0008
Requirement	The system shall provide the user a way to select the type of traffic data for which analysis will be performed: real, historical or mixed.
Title	Type of traffic data selector
Status	<In Progress>
Rationale	User Input parameter for Data Acquisition, allowing the user to work with both sources or, if desired, with only one of them. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0010	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0012
Requirement	The system shall provide the user a way to set up the sectorization currently in operation.
Title	Sectorization selector
Status	<In Progress>
Rationale	User input for Optimization Analysis. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.00012	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0013
Requirement	The system shall provide the user a way to know the capacity for each sector for which analysis will be performed.
Title	Sector Capacity Edition
Status	<In Progress>

Rationale	Sector capacity editable which alow to modify Demand Indicator for each sector. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0014	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0001	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0015
Requirement	For optimal sectorization plan calculation, the day shall be divided in three shifts, morning, afternoon and night, because it could exist specific restrictions to each one
Title	Main shifts for optimization
Status	<In Progress>
Rationale	The day is divided in periods to comply the users working time.
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0001	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0006	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0017
Requirement	One optimal sectorization shall be calculated for both TMA and en-route sections defined in the control area.
Title	TMA and en-route sectorization
Status	<In Progress>
Rationale	It is needed the optimal sectorization for the two sections TMA and en-route. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0005	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0018
Requirement	The user shall request the calculation of the optimal sectorization plan at any time.
Title	Optimization request
Status	<In Progress>

Rationale	An optimal sectorization could be needed at any time during the day
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0012	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0019
Requirement	The proposed optimal sectorization shall be stored in a way that makes it recoverable
Title	Store proposed sectorisation
Status	<In Progress>
Rationale	The proposed sectorisation shall be stored for further off-line analysis
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0019	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0020
Requirement	The stored proposed sectorizations shall be recovered from the media where they are stored
Title	Recover a stored sectorization
Status	<In Progress>
Rationale	Any previously stored sectorization could need to be manually modified
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0019	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0021
Requirement	The calculated optimal sectorization shall be one of the predefined and standardized sectorizations for the control area
Title	Set of standard sectorisations
Status	<In Progress>
Rationale	It is too complicated at the moment to use sectorisations different from the previously standardized sectorisations defined for the specific ACC
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0005	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0022
Requirement	Each sector (corresponding to a CWP) defined in a standard sectorization shall have associated a capacity value
Title	Sectorisation capacity value
Status	<In Progress>
Rationale	The capacity value will be used for the optimization calculation, and previously defined
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0002	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0023
Requirement	The optimal sectorization shall be calculated taking into account the following parameters: Number of CWPs, mean value of load/capacity of each CWP, number of overloaded CWPs, number of overloaded periods
Title	Sectorisation optimization parameters
Status	<In Progress>
Rationale	Those parameters are needed for the optimization calculus
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0004	<Partial>

Constraints Requirements

[REQ]

Identifier	REQ-13.02.03-TS-1110.0024
Requirement	The system shall calculate optimal sectorization plan for the ATC Unit, predefined sectorizations, data source and constraints determined by the user or configured by default.
Title	Analysis Optimization determination
Status	<In Progress>
Rationale	The parameters used during the optimization process are predefined or can be configured by the user
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A

<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0005	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0015	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0057
Requirement	For historical traffic data analysis, calculation should be performed for the time period date determined by the user.
Title	Analysis Optimization for historical traffic
Status	<In Progress>
Rationale	Calculates is limited to the required time period. PIVL module does not need to meet this requirement as is a special case of implementation.
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0005	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0015	<Partial>

Constraints Requirements

[REQ]

Identifier	REQ-13.02.03-TS-1110.0058
Requirement	In a real or mixed traffic data type analysis, calculation shall be performed for the time period related to the system date.
Title	Analysis Optimization for real or mixed traffic
Status	<In Progress>
Rationale	The optimization is calculated related to the current system date.
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0005	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0015	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0025
Requirement	The system shall compute a list of optimal sectorization plans, by finding time intervals for sectors to reduce the number of saturation flights.
Title	Analysis Optimization search process
Status	<In Progress>
Rationale	Reducing the number of separation flights is one optimization criteria.
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0003	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0005	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0026
Requirement	The system shall calculate a metric for each optimal sectorization plan by finding the minimum dispersion of the occupancy factor between sectors that belongs to a predefined sectorization of every plan in a time interval.
Title	Analysis Optimization combination process
Status	<In Progress>
Rationale	Minimum dispersion of the occupancy factor is one optimisation criteria.
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0003	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0005	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0027
Requirement	The system shall provide the best optimal sectorization plan and the other sectorization plans order by its metrics
Title	Analysis Optimization filter process
Status	<In Progress>
Rationale	The order of combined metrics determines the solutions proposed.
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0003	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0005	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0028
Requirement	The system shall store the best optimal sectorization plan for historical purposes.
Title	Analysis Optimization result storage
Status	<In Progress>
Rationale	The calculated sectorizations are stored for further analysis in an appropriate media.
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0019	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0029

Requirement	The system shall provide a comparison between the best optimal sectorization and the operational sectorization for an interval of time determined for the current sectorization.
Title	Analysis Optimization comparison output
Status	<In Progress>
Rationale	The proposed comparison allows the user to determine the degree of benefit. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0006	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0030
Requirement	The system shall use the following metrics to compute the demand indicators: •The number of aircrafts within the sector in each time interval during the period of the analysis. •The capacity of each sector per each time interval during the period of the analysis. •The Occupancy Factor, relation between demand and capacity within the sector in each time interval during the period of the analysis. •Number of Saturation flights, difference between demand and capacity within the sector in each time interval during the period of the analysis.
Title	Demand Indicators
Status	<In Progress>
Rationale	Several metrics are used to perform the optimization calculus
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0003	<Partial>

Identifier	REQ-13.02.03-TS-1110.0031
Requirement	The system shall provide the user a way to configure the maximum number of sectorization changes in morning and afternoon shifts. This is not applicable to the night shift.
Title	Maximum number of changes
Status	<In Progress>
Rationale	Sectorisation changes shall be limited in each shift due to the process time consuming
Category	<Functional>

Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0032
Requirement	The minimum period of time for a proposed sectorization shall be configurable (typically one hour).This is not applicable to the last sectorization of each shift.
Title	Minimum period of time for a new sectorisation
Status	<In Progress>
Rationale	A deployed sectorisation shall remain stable for a certain amount of time
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0033
Requirement	It is not allowed to change more than two sectors in a proposed sectorization during the morning and afternoon shifts. This is not applicable to the night shift.
Title	Maximum number of sectors to be changed
Status	<In Progress>
Rationale	The proposal sectorisation shall not be very different from the previous one.
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0034
Requirement	During the night shift it shall not be allow to change from one sectorization to another with the same numbers of sectors, unless one ECU(control unit) is overload.
Title	Minimum number of sectors to be changed
Status	<In Progress>
Rationale	The number of sectorisation changes shall be minimize during this shift
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A

<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0059
Requirement	The maximum number of sectorization changes shall not be configurable at night shift
Title	Maximum number of changes in night shift
Status	<In Progress>
Rationale	Sectorization changes shall be limited in each shift due to the process time consuming
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0060
Requirement	The minimum period of time for a proposed sectorizations shall not be applicable to the last sectorization of each shift
Title	Minimum period of time to the last sectorization of each shift
Status	<In Progress>
Rationale	A deployed sectorisation should remain stable for a certain amount of time
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0035
Requirement	The system shall provide the user a way to know a constraint of minimum number of sectors of each proposed sectorization in an optimal sectorization plan.
Title	Minimum number of sectors constraint
Status	<In Progress>
Rationale	Constraints that determine the results of the optimization analysis process. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0036
Requirement	The system shall provide a default setup for a constraint of minimum number of sectors of each proposed sectorization in an optimal sectorization plan.
Title	Minimum number of sectors constraint by default
Status	<In Progress>
Rationale	Constraints that determine the results of the optimization analysis process. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0037
Requirement	The system shall provide the user a way to select the maximum number of sectorizations in an optimal sectorization plan for a shift.
Title	Maximum number of sectorizations constraint
Status	<In Progress>
Rationale	Constraints that determine the results of the optimization analysis process. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0038
Requirement	The system shall provide a default setup for the maximum number of sectorizations in an optimal sectorization plan for a time period.
Title	Maximum number of sectorizations constraint by default
Status	<In Progress>
Rationale	Constraints that determine the results of the optimization analysis process. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0039
Requirement	The system shall provide the user a way to know the maximum number of difference sectors between correlated sectorizations in an optimal sectorization plan for a time period.
Title	Maximum number of difference sectors constraint
Status	<In Progress>
Rationale	Constraints that determine the results of the optimization analysis process. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0040
Requirement	The system shall provide a default setup for the maximum number of difference sectors between correlated sectorizations in an optimal sectorization plan for a time period.
Title	Maximum number of difference sectors constraint by default
Status	<In Progress>
Rationale	Constraints that determine the results of the optimization analysis process. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0041
Requirement	The system shall provide the user a way to select the minimum duration of time for a sectorization in an optimal sectorization plan for a time period.
Title	Minimum duration of time for a sectorization constraint
Status	<In Progress>
Rationale	Constraints that determine the results of the optimization analysis process. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0042
Requirement	The system shall provide a default setup for the minimum duration of time for a sectorization in an optimal sectorization plan for a time period.
Title	Minimum duration of time for a sectorization constraint by default
Status	<In Progress>
Rationale	Constraints that determine the results of the optimization analysis process. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0043
Requirement	The system shall provide the user a way to select the maximum interval of calculation process for an optimal sectorization plan.
Title	Maximum interval of calculation constraint
Status	<In Progress>
Rationale	Constraints that determine the results of the optimization analysis process. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0004	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0044
Requirement	The system shall provide a default setup for the maximum time of calculation process for an optimal sectorization plan.
Title	Maximum interval of calculation constraint by default
Status	<In Progress>
Rationale	Constraints that determine the results of the optimization analysis process. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Functional>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0004	<Partial>

<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0007	<Partial>

4.1.2 HMI Requirements

[REQ]

Identifier	REQ-13.02.03-TS-1110.0045
Requirement	The HMI of the system shall display the calculated optimal sectorization adequately.
Title	Display of optimal sectorization
Status	<In Progress>
Rationale	The proposal sectorization shall be shown to the user
Category	<HMI>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0003	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0001	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0046
Requirement	The HMI of the system shall provide to the user a means (usually a button) to request a new optimal sectorization at any time
Title	HMI request for optimization
Status	<In Progress>
Rationale	The user shall be able to request a new optimal sectorization at any time
Category	<HMI>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0012	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0047
Requirement	The HMI of the system shall allow the user to manually store the optimal calculated sectorization
Title	Store the calculated sectorisation
Status	<In Progress>
Rationale	The sectorisation shall be stored for easing further offline analysis
Category	<HMI>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0048
Requirement	The HMI of the system shall be able to display to the user any previously stored optimal sectorization.
Title	Display stored sectorizations
Status	<In Progress>
Rationale	The stored sectorizations shall be displayed to ease the offline analysis
Category	<HMI>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0018	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0049
Requirement	The HMI of the system shall provide to the user a means for selecting any of the previously stored optimal sectorizations
Title	Select a stored sectorisation
Status	<In Progress>
Rationale	The user can perform, in this way, an offline analysis by comparing the different stored sectorisations
Category	<HMI>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0018	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0006	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0050
Requirement	The HMI of the system shall provide to the user a means to modify manually any of the previously stored optimal sectorizations
Title	Modify a stored sectorization
Status	<In Progress>
Rationale	The user shall be able to test small changes on a previously stored sectorization. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<HMI>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0009	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0014	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0051
Requirement	The HMI of the system shall display charts showing computed demand indicator for each sector of each predefined sectorization in every time interval of the time period for which analysis will be performed.
Title	Demand Indicators per Sector data chart output
Status	<In Progress>
Rationale	System output for demand indicators calculated in data acquisition by graphical chart. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<HMI>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0001	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0052
Requirement	The HMI of the system shall display tables showing computed demand indicator for each sector of each predefined sectorization in every time interval of the time period for which analysis will be performed.
Title	Demand Indicator per Sector data table output
Status	<In Progress>
Rationale	System output for demand indicators calculated in data acquisition by Property Value table. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<HMI>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0002	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0053
Requirement	The HMI of the system shall inform the user about errors detected in the user input data process by error warnings.
Title	Error output.
Status	<In Progress>
Rationale	System output for errors detected. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<HMI>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A

<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0008	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0054
Requirement	The HMI of the system shall display the optimal sectorization plan and the metrics used for optimization per interval and sectors that are part of some of the sectorizations proposed.
Title	Optimal Sectorization Plan output
Status	<In Progress>
Rationale	System output for optimal sectorization plan as a result of optimization analysis. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<HMI>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0017	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0055
Requirement	The HMI of the system shall display the optimal sectorization plan list as a result of the optimization analysis.
Title	Optimal Sectorization plan list output
Status	<In Progress>
Rationale	System output for optimal sectorization plan as a result of optimization analysis. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<HMI>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0017	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0005	<Partial>

4.1.3 Configuration Requirements

[REQ]

Identifier	REQ-13.02.03-TS-1110.0004
Requirement	The start/end time for each shift (morning, afternoon and night) shall be configurable
Title	Shift configuration
Status	<In Progress>
Rationale	Configuration Input parameter for Data Acquisition and Optimization Analysis.
Category	<Configuration>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0011	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0006	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0005
Requirement	The system shall provide a default setup of the start/end time for each shift: Morning, Afternoon or Night.
Title	Default configuration for Time Period
Status	<In Progress>
Rationale	Configuration Input parameter for Data Acquisition and Optimization Analysis. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information.
Category	<Configuration>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0011	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0009
Requirement	The system shall provide a way to configure communication setup with the ATC-System to which it is connected.
Title	ATC-System communication configuration
Status	<In Progress>
Rationale	Parameters used by the communication are TCP/IP protocol and format determined by the ATC Unit. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Configuration>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0008	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0010
Requirement	The system shall provide a way to configure communication setup with the Data Base to which it is connected.
Title	Data Base communication configuration
Status	<In Progress>
Rationale	Parameters used by the communication are TCP/IP protocol and format determined by the data Base. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Configuration>

Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0008	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0011
Requirement	The system shall provide a way to configure Data Base communication parameters to load each predefined sectorization for which analysis will be performed.
Title	Data Base communication parameters configuration.
Status	<In Progress>
Rationale	Data Base Acquisition configuration. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Configuration>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0010	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1110.0014
Requirement	The system shall be connected to online ATC system to receive configuration settings, these shall be predefined sectorizations and shifts.
Title	ATC system input data
Status	<In Progress>
Rationale	ATC system input for Data Acquisition and Optimization Analysis. PERSEO module does not meet this requirement
Category	<Configuration>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0013	<Partial>

4.2Adaptability

N/A.

4.3Performance Characteristics

4.3.1Performances Requirements

[REQ]

Identifier	REQ-13.02.03-TS-1130.0001
Requirement	The performances of the system take into account the following parameters: -The number of predefined sectorizations -The number of flights processed in the system -The duration of the shifts
Title	Optimal Sectorization Plan performance
Status	<In Progress>
Rationale	. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Performance>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0004	<Partial>

4.4Safety & Security

N/A

4.5Maintainability

N/A

4.6Reliability

Reliability encompasses robustness to abnormal operating conditions.

4.6.1Reliability Requirements

[REQ]

Identifier	REQ-13.02.03-TS-1160.0001
Requirement	The system shall detect format errors on the input data from the ATC System
Title	Detection of input data errors from the ATC System
Status	<In Progress>
Rationale	An error in input data shall be detected to avoid further processing on those data. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Reliability>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0008	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1160.0002
Requirement	The system shall record the errors detected in order to facilitate further analysis
Title	Store input data errors
Status	<In Progress>
Rationale	The user shall be able to perform off-line analysis of the detected errors. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Reliability>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1160.0003
Requirement	The system shall generate alarms to the HMI on detecting errors during the optimization process.
Title	Alarms generation on detecting errors
Status	<In Progress>
Rationale	The user shall be aware about the amount of input data errors. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Reliability>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0010	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1160.0004
Requirement	The system shall detect format errors on configuration data.
Title	Configuration data error detection
Status	<In Progress>
Rationale	Inconsistent configurations shall be detected. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Reliability>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0008	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1160.0005

Requirement	The system shall detect format errors on user input data.
Title	User input data error detection
Status	<In Progress>
Rationale	These alarms allow reliable use for intended users. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Reliability>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0008	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1160.0006
Requirement	The system shall record all the alarms generated in order to facilitate further analysis
Title	Record generated alarms
Status	<In Progress>
Rationale	The alarms generated shall be used for further analysis. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Reliability>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1160.0007
Requirement	The system shall provide a media (likely a service) to deliver the recorded alarms and errors information to external systems requests
Title	Deliver recorded alarm and error information
Status	<In Progress>
Rationale	This information could be used by other systems for further analysis. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Reliability>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0008	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0007	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1160.0008
Requirement	The system should use a stateless communication protocol with the ATC System
Title	Avoiding problem propagation
Status	<In Progress>
Rationale	A stateless communication protocol (e.g. listening to UDP) allows avoiding that a problem in the module may cause a problem in the ATC Platform.
Category	<Reliability>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM2.0008	<Partial>

4.7 Functional block Internal Data Requirements

N/A

4.8Design and Construction Constraints

N/A

4.9Functional block Interface Requirements

4.9.1Interface Configuration Requirements

[REQ]

Identifier	REQ-13.02.03-TS-1190.0001
Requirement	The system shall receive the needed configured data from the ATC system to which it is connected.
Title	data input configuration
Status	<In Progress>
Rationale	This provides the needed flexibility to the system. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Interface>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0016	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1190.0002
Requirement	The system shall receive information through the configured filters from the ATC system to which it is connected.
Title	Input data filter configuration
Status	<In Progress>

Rationale	The filters improve the performance of the system input data communication. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Interface>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0009	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1190.0003
Requirement	The system shall receive the needed configured events from the ATC system to which it is connected.
Title	Event configuration
Status	<In Progress>
Rationale	The events to be processed by the system shall be configured to ease the communication processes. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Interface>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0008	<Partial>
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0013	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1190.0004
Requirement	The system shall be able to configure the communication parameters for the link of the ATC system to with it is connected
Title	ATC system communication parameters configuration
Status	<In Progress>
Rationale	The system shall be able to be connecting to different ATC communication systems. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Interface>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0010	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1190.0005
Requirement	The system shall compute the demand indicators from data received from the online ATC system for real or mixed traffic data type analysis.
Title	Data Acquisition from ATC-System.

Status	
Rationale	The traffic data type is selected by the user for data acquisition to determine the source of these data.
Category	<Interface>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0008	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1190.0006
Requirement	The system shall compute the demand indicators from data stored in historical database for historical or mixed traffic data type analysis will be performed.
Title	Data Acquisition from DataBase
Status	
Rationale	The traffic data type is selected by the user for data acquisition to determine the source of these data. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Interface>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0008	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1190.0007
Requirement	The system shall be connected to online ATC system for receive and process specific configured events that allow demand indicators calculation.
Title	Data Acquisition ATC-system connection
Status	
Rationale	Connection with ATC System for indicators calculation.
Category	<Interface>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED_TO>	<Functional block>	FB-2.04	N/A
<APPLIES_TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0008	<Partial>

[REQ]

Identifier	REQ-13.02.03-TS-1190.0008
Requirement	The system shall be connected to a data base for recover historical information that allow demand indicators calculation and its storage for historical purposes.
Title	Data Acquisition Database connection
Status	

Rationale	Historical information mining and exploitation. PIVL module does not need to meet this requirement as is a special case of implementation that already knows internal ATC Unit information
Category	<Interface>
Validation Method	
Verification Method	<Test>

[REQ Trace]

Relationship	Linked Element Type	Identifier	Compliance
<ALLOCATED TO>	<Functional block>	FB-2.04	N/A
<APPLIES TO>	<Operational Focus Area>	OFA05.03.04	N/A
<SATISFIES>	<ATMS Requirement>	REQ-04.07.07-OSED-DCM1.0008	<Partial>

4.10Compliance Matrix

This section gives a general view of the relationship between the operational requirements for PERSEO and PIVL prototypes enhancement, as stated in [1], and the System Definition requirements, as defined in this document.

Every PERSEO and PIVL operational requirement is described by one or more system requirements, according to the table below. All of the operational PERSEO requirements will be implemented in the version of the system described in this document (Step1).

OSED Requirement [1]	System Definition Requirement	Implementation in PERSEO / PIVL Step 1
REQ-04.07.07-OSED-DCM1.0001	REQ-13.02.03-TS-1110.0001 REQ-13.02.03-TS-1110.0002 REQ-13.02.03-TS-1110.0003 REQ-13.02.03-TS-1110.0015 REQ-13.02.03-TS-1110.0045	Yes
REQ-04.07.07-OSED-DCM1.0002	REQ-13.02.03-TS-1110.0022	Yes
REQ-04.07.07-OSED-DCM1.0003	REQ-13.02.03-TS-1110.0025 REQ-13.02.03-TS-1110.0026 REQ-13.02.03-TS-1110.0027 REQ-13.02.03-TS-1110.0030	Yes
REQ-04.07.07-OSED-DCM1.0004	REQ-13.02.03-TS-1110.0023	Yes
REQ-04.07.07-OSED-DCM1.0005	REQ-13.02.03-TS-1110.0021 REQ-13.02.03-TS-1110.0024 REQ-13.02.03-TS-1110.0025 REQ-13.02.03-TS-1110.0026 REQ-13.02.03-TS-1110.0027 REQ-13.02.03-TS-1110.0055	Yes
REQ-04.07.07-OSED-DCM1.0006	REQ-13.02.03-TS-1110.0015 REQ-13.02.03-TS-1110.0004	Yes
REQ-04.07.07-OSED-DCM1.0007	REQ-13.02.03-TS-1110.0012 REQ-13.02.03-TS-1110.0031 REQ-13.02.03-TS-1110.0032 REQ-13.02.03-TS-1110.0033 REQ-13.02.03-TS-1110.0034 REQ-13.02.03-TS-1110.0035 REQ-13.02.03-TS-1110.0036 REQ-13.02.03-TS-1110.0037 REQ-13.02.03-TS-1110.0038	Yes

	REQ-13.02.03-TS-1110.0039 REQ-13.02.03-TS-1110.0040 REQ-13.02.03-TS-1110.0041 REQ-13.02.03-TS-1110.0042 REQ-13.02.03-TS-1110.0043 REQ-13.02.03-TS-1110.0044	
REQ-04.07.07-OSED-DCM1.0008	REQ-13.02.03-TS-1110.0009 REQ-13.02.03-TS-1110.0010 REQ-13.02.03-TS-1190.0003 REQ-13.02.03-TS-1190.0005 REQ-13.02.03-TS-1190.0007 REQ-13.02.03-TS-1190.0008	Yes
REQ-04.07.07-OSED-DCM1.0009	REQ-13.02.03-TS-1110.0001 REQ-13.02.03-TS-1110.0002 REQ-13.02.03-TS-1110.0003 REQ-13.02.03-TS-1190.0002	Yes
REQ-04.07.07-OSED-DCM1.0010	REQ-13.02.03-TS-1110.0008 REQ-13.02.03-TS-1110.0011	Yes
REQ-04.07.07-OSED-DCM1.0011	REQ-13.02.03-TS-1110.0004 REQ-13.02.03-TS-1110.0005 REQ-13.02.03-TS-1110.0007	Yes
REQ-04.07.07-OSED-DCM1.0012	REQ-13.02.03-TS-1110.0018 REQ-13.02.03-TS-1110.0046 REQ-13.02.03-TS-1110.0012	Yes
REQ-04.07.07-OSED-DCM1.0013	REQ-13.02.03-TS-1110.0014 REQ-13.02.03-TS-1190.0003	Yes
REQ-04.07.07-OSED-DCM1.0014	REQ-13.02.03-TS-1110.0013 REQ-13.02.03-TS-1110.0050	Yes
REQ-04.07.07-OSED-DCM1.0015	REQ-13.02.03-TS-1110.0024	Yes
REQ-04.07.07-OSED-DCM1.0016	REQ-13.02.03-TS-1190.0001	Yes
REQ-04.07.07-OSED-DCM1.0017	REQ-13.02.03-TS-1110.0053 REQ-13.02.03-TS-1110.0054	Yes
REQ-04.07.07-OSED-DCM1.0018	REQ-13.02.03-TS-1110.0048 REQ-13.02.03-TS-1110.0049	Yes
REQ-04.07.07-OSED-DCM1.0019	REQ-13.02.03-TS-1110.0019 REQ-13.02.03-TS-1110.0020 REQ-13.02.03-TS-1110.0028	Yes
REQ-04.07.07-OSED-DCM2.0001	REQ-13.02.03-TS-1110.0051 REQ-13.02.03-TS-1110.0013	Yes
REQ-04.07.07-OSED-DCM2.0002	REQ-13.02.03-TS-1110.0052	Yes
REQ-04.07.07-OSED-DCM2.0003	REQ-13.02.03-TS-1110.0045	Yes
REQ-04.07.07-OSED-DCM2.0004	REQ-13.02.03-TS-1110.0043 REQ-13.02.03-TS-1110.0044	Yes
REQ-04.07.07-OSED-DCM2.0005	REQ-13.02.03-TS-1110.0056	Yes
REQ-04.07.07-OSED-DCM2.0006	REQ-13.02.03-TS-1110.0029 REQ-13.02.03-TS-1110.0049 REQ-13.02.03-TS-1160.0007	Yes
REQ-04.07.07-OSED-DCM2.0007	REQ-13.02.03-TS-1110.0047 REQ-13.02.03-TS-1160.0006 REQ-13.02.03-TS-1110.0019	Yes
REQ-04.07.07-OSED-DCM2.0008	REQ-13.02.03-TS-1110.0053 REQ-13.02.03-TS-1160.0001 REQ-13.02.03-TS-1160.0004 REQ-13.02.03-TS-1160.0005 REQ-13.02.03-TS-1160.0007	Yes
REQ-04.07.07-OSED-DCM2.0009	REQ-13.02.03-TS-1110.0049	Yes
REQ-04.07.07-OSED-DCM2.0010	REQ-13.02.03-TS-1160.003	Yes

5References

[1] SESAR 04.07.07.D25 Final OSED Edition 00.01.00 22/01/2013

[2] SESAR Template Toolbox 02.00.00

[3] SESAR Requirements and V&V Guidelines 02.00.00

[4] DEL_13.01.01.D04 NIMS Step 1 TAD Edition 00.00.01 12/10/2011

Appendix A Traceability

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