



Thread 1 Requirement Specification

Document information	
Project title	Baseline for Airport Controller Tools
Project N°	12.04.01.
Project Manager	NATMIG
Deliverable Name	Thread 1 Requirement Specification
Deliverable ID	D03
Edition	00.02.01
Task contributors	
Selex Systems Integration Ltd , National Air Traffic Services (NATS), UK and NATMIG	

Please complete the advanced properties of the document

Abstract

This Technical Specification relates to SESAR Project 12.04.01. The objective of this document is to define the functional requirements for Thread 1 development. This Thread includes the development of a Tool to better integrate small to medium sized airports into the CFMU to help improve traffic flow through the airways network.

Authoring & Approval

Prepared By		
Name & company	Position / Title	Date
[REDACTED] Selex Systems Integration Ltd	[REDACTED]	17/11/2011
Reviewed By		
Name & company	Position / Title	Date
[REDACTED] NATMIG (Saab AB)	[REDACTED]	01/06/2012
[REDACTED] National Air Traffic Services (NATS), UK	[REDACTED]	28/05/2012
Approved By		
Name & company	Position / Title	Date
[REDACTED] NATMIG (Saab AB)	[REDACTED]	01/06/2012
[REDACTED] National Air Traffic Services (NATS), UK	[REDACTED]	28/05/2012
[REDACTED] Selex Systems Integration Ltd	[REDACTED]	30/05/2012

Document History

Edition	Date	Status	Author	Justification
00.00.01	9/9/2010	DRAFT	[REDACTED]	New Document
00.00.02	7/10/2010	DRAFT	[REDACTED]	Incorporate Review comments from NATMIG & NATS
00.00.03	28/4/2011	DRAFT	[REDACTED]	Format to New SJU Template and incorporate Amendments/comments following V & V exercise.
00.00.04	16/5/2011	DRAFT	[REDACTED]	Incorporate Amendments/comments from NATS & NATMIG
00.00.05	24/5/2011	DRAFT	[REDACTED]	incorporate further Amendments/comments from NATS & NATMIG
00.01.00	25/5/2011	Initial Issue	[REDACTED]	Draft 00.00.05 review complete.
00.01.01	8/11/2011	Draft	[REDACTED]	Incorporate comments from SJU review.
00.02.00	17/11/2011	Second Issue	[REDACTED]	Draft 00.01.01 review complete
00.02.01	24/05/2012	Update	[REDACTED]	Changes to match updated template

IPR (foreground)

This deliverable consists of foreground owned by one or several Members or their Affiliates.

Table of Contents

EXECUTIVE SUMMARY	4
1 INTRODUCTION	5
1.1 PURPOSE OF THE DOCUMENT	5
1.2 INTENDED READERSHIP	5
1.3 INPUTS FROM OTHER PROJECTS	5
1.4 STRUCTURE OF THE DOCUMENT	5
1.5 REQUIREMENTS DEFINITIONS – GENERAL GUIDANCE	5
1.5.1 <i>Background</i>	5
1.5.2 <i>Requirements Derivation Process</i>	6
1.5.3 <i>Assumptions</i>	6
1.6 COMPONENT PURPOSE.....	6
1.7 COMPONENT OVERVIEW	6
1.7.1 <i>QW Tool - Concept of Operation</i>	7
1.8 ACRONYMS AND TERMINOLOGY.....	7
2 GENERAL COMPONENT DESCRIPTION	9
2.1 CONTEXT	9
2.2 COMPONENT MODES AND STATES	9
2.3 MAJOR COMPONENT CAPABILITIES	9
2.4 USER CHARACTERISTICS	10
2.5 OPERATIONAL SCENARIOS.....	10
2.6 FUNCTIONAL	10
2.6.1 <i>Functional decomposition</i>	10
2.6.2 <i>Functional analysis</i>	11
2.7 SERVICE VIEW.....	12
3 COMPONENT FUNCTIONAL AND NON-FUNCTIONAL REQUIREMENTS	13
3.1 CAPABILITIES.....	13
3.1.1 <i>Provision of Flight List and Human Machine Interface</i>	13
3.1.2 <i>Provision for updating flight status and flight clearances</i>	17
3.1.3 <i>Provision for transmitting flight status data (DPI messages)</i>	20
3.1.4 <i>Provision of External Interfaces</i>	22
3.1.5 <i>Provision of Non Functional Requirements</i>	23
3.2 ADAPTABILITY.....	24
3.3 PERFORMANCE CHARACTERISTICS	24
3.4 SAFETY & SECURITY	24
3.4.1 <i>Electrical Safety Requirements</i>	24
3.4.2 <i>Security Requirements</i>	24
3.5 MAINTAINABILITY	25
3.5.1 <i>Maintainability Requirements</i>	25
3.6 RELIABILITY	25
3.6.1 <i>Reliability Requirements</i>	25
3.7 COMPONENT INTERNAL DATA REQUIREMENTS.....	25
3.8 DESIGN AND CONSTRUCTION CONSTRAINTS	26
3.8.1 <i>Design Requirements</i>	26
3.9 COMPONENT INTERFACE REQUIREMENTS.....	26
4 REFERENCES	27
4.1 USE OF COPYRIGHT/PATENT MATERIAL /CLASSIFIED MATERIAL	27
4.1.1 <i>Classified Material</i>	27
APPENDIX A VERIFICATION TRACEABILITY	28

List of tables

Table 1-1: Capability Provision.....7

List of figures

Figure 1: Component Overview.....7
Figure 2: Modes of Operation.....9
Figure 3: TH01 Capability Provision.....9
Figure 4 NSV- 4 Aerodrome ATC system11

Executive summary

It has long been recognised that the better integration of airports into the Air Traffic Management (ATM) business would be beneficial and the SESAR Concept of Operations as described in 'The ATM Target Concept D3, DLM-0612-001-02-00', document [ref 1] recognises this and describes this integration as one of its principal features. The larger airports in Europe can already be described as integrated into the network as they are equipped with advanced automation capabilities using electronic flight data to manage their day to day operations. The availability of accurate data concerning the departure status of an aircraft can easily be shared with CFMU and other stake holders and their systems often for the basis of comprehensive collaborative decision making arrangements.

However, smaller airfields often do not have the financial capability for investing in such electronic flight data systems and are sometimes limited to only paper based tools and as such the inaccuracy of departure information available to the Network can have a significant affect, especially if their departing aircraft enters complex Terminal Control Area (TMA) or En-route airspace almost immediately due to the airport's location.

The CFMU at Eurocontrol has undertaken significant work on the use of Departure Planning Information (DPI) messages in order to improve the accuracy of data within the network.

The aim of the system definition task is to define requirements for a Quick Win (QW) tool(s) to be developed in work package 12.04.01. The developments shall target the following areas:

- Improvement of departure time notification sent to CFMU,
- Sharing of information from the Tower with airport stakeholder and vice versa,
- Interaction with flow sequence tools

The capabilities and requirements specified in this document will support CFMU improvement work.

The development of these capabilities is planned in two stages. The first stage involves developing QW tool that can provide improvements in departure times leading to improvements in traffic flow further down the airways network. The second stage involves further tool development (QW+) , providing sharing of information for collaborative decision making as well as interaction with flow sequence tools (AMAN, DMAN).

This document details the system requirements for a low cost QW tool that will incorporate a simple airport departure data entry panel (ADDEP) to be deployed at airfields enabling electronic communication with the CFMU concerning the departure status of aircraft under their control. The universal availability of more accurate departure data will significantly improve the performance of network management and capacity which will be further enhanced through the more effective use of the existing controller staff complement. This document should be read in conjunction with Airport Departure Data Entry Panel Concept of Operations document [ref 2].

The separate deliverables (D11, D12) will incorporate requirements for the development of data sharing capabilities and interaction with flow sequence tools.

Note: This issue of the document does not include any changes or recommendations flowing out from the validation activity. The document will be updated as necessary to capture any items identified by the validation exercise.

1 Introduction

1.1 Purpose of the document

This release of the document details the System Requirements for an Airport Departure Data Entry Panel (ADDEP) that may be deployed at airfields within Europe so as to improve the availability of aircraft pre-departure information to the ATM Network. This improvement in accuracy and timeliness of information will provide benefits to the network both in terms of performance and in safety of the operation.

1.2 Intended readership

This document is mainly intended for the members of SESAR Project 12.04.01 involved in prototype development and for potential Industry suppliers in order to provide details of features and capabilities of the QW Tool developments.

1.3 Inputs from other projects

Not Applicable

1.4 Structure of the document

The document is organised as follows:

Chapter 1: Purpose and scope; Requirements structure; Component purpose and high level overview

Chapter 2: General component description;

Chapter 3: Component Capabilities, Conditions and Constraints

Chapter 4: Referenced documents

1.5 Requirements Definitions – General Guidance

1.5.1 Background

1.5.1.1 Operational Need

The SESAR Concept of Operation recognises that in the development of a performance based approach to the delivery of better ATM within Europe the importance of all partners sharing the same information about aircraft, mainly the trajectory, is crucial. Timely and accurate information, widely shared amongst all partners in the ATM business, allows for better collaborative decision making, and network and operational management. The integration of airports, of whatever size, into the network is critical if accurate information concerning departures is to be available to agencies operating services at airports or if the departure status of an aircraft is to be available to the rest of the ATM network.

Although the CFMU at Eurocontrol has undertaken significant work on the use of Departure Planning Information (DPI) messages in order to improve the accuracy of data within the network data currently used in Air Traffic Flow and Capacity Management (ATFCM) is not always the most accurate. At both a network level and within an Area Control Centre (ACC), data concerning aircraft already flying within or en-route to a control centre's area of responsibility is known with a high degree of accuracy due to confirmation through the use of surveillance data; whereas for aircraft departing in the area the data is far less certain. Flight plans need to be filed, as a minimum, three hours in advance giving details of the Estimated Off Block Time (EOBT) based upon the operator's scheduled departure time.

Depending on circumstances, the difference between the estimated and actual time the aircraft departs can vary by 15 minutes either way. This leads to a considerable degree of inaccuracy of the data within the network. The situation is improved at airports that are equipped with advanced automation tools using electronic flight strips. As the turnaround of the aircraft progresses, these automated tools can provide more accurate DPI messages to CFMU. For airports not equipped with

such tools, the earliest that the regional ACC is aware of the impending departure is when the airport's tower requests a clearance and, often, for the actual departure time, when the aircraft enters the Centre's radar coverage activating its flight plan.

This level of uncertainty about departures makes it difficult to judge when flow regulation needs to be applied and erring on caution when they need to be applied some two hours in advance, regulations are often applied unnecessarily. It can also impact on sector management, leading to sectors being split for longer than necessary resulting in an inefficient use of the operations room resources, or worse an unexpected overload for a sector leading to a possible safety event.

The premise behind this concept of operation is that if airports are provided with a low cost Departure Data Entry Panel that is easy to use and has a minimal impact upon the operator's work load in the tower, but has the capability to provide accurate electronic pre-departure information to the CFMU then there would be benefits for the efficiency of the network and safety of the operation.

Furthermore, as the display will ultimately be used for airport operations' data sharing, populating the display by taking the departure list directly from the CFMU, creates the opportunity to more directly integrate airport operations in the ATM Business and by having more accurate advance information of an aircraft's movements, Air Traffic Control becomes Air Traffic Management.

1.5.2 Requirements Derivation Process

As a Quick Win project, the execution and delivery of this project is timed to occur in advance of the Airport Operational projects and as such no inputs have been available from any Operational Project.

To enable the project to define the system requirements, the project team held workshops involving ANSP and Network Management stakeholders to define the operational capability required from a tool (viz the QW tool) that could help to improve the flow of traffic through the airways network and also provide improvements in aircraft turn round time.

The workshops identified the need for better integration of airports, in particular small to medium sized airports, into the CFMU. Provision of accurate departure information using electronic flight data to stakeholders and CFMU was identified as a capability that could provide traffic flow improvement.

1.5.3 Assumptions

It is assumed is that the QW tool will be used by small/medium sized airports for whom electronic flight progress strips would not be a cost effective solution.

1.6 Component Purpose

The purpose of this component (QW Tool) is to provide tool support to enable sharing of dynamic traffic data between airport tower and other actors (CFMU and other Network Management, and Airport operations).

1.7 Component Overview

The project comprises 3 development threads, with each thread providing incremental capability. System functionality listed in Table 1-1. have been identified and will be aimed for implementation by the Project.

Development Thread	Description of capability
TH01	Provision of accurate departure information using electronic flight data to CFMU
TH02	Provision for sharing of departure and arrival information with airport

Development Thread	Description of capability
	stakeholders for collaborative decision making
TH03	Provision of tool support for traffic control in a traffic synchronized context

Table 1-1: Capability Provision

This document details the Thread 1 (TH01) requirements for a tool set designated 'Airport Departure Data Entry Panel (ADDEP)'. The tool set is intended to be deployed in the Visual Control Room to enable ATC operators to share flight data with other actors, in particular:

- Send Improved departure time notification to CFMU
- Sharing of Departure information between Visual Control Room (VCR) and Approach Control Room (ACR) in the ATC Tower.

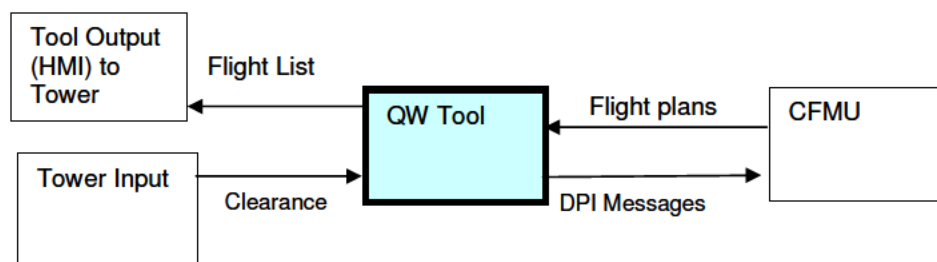


Figure 1: Component Overview

1.7.1 QW Tool - Concept of Operation

The Aerodrome Controllers will provide 'Cleared for push-back' and 'Cleared for take-off' flight information to the CFMU using the QW tool ADDEP. These clearances will be transformed, by the QW tool, to Departure Planning Information (DPI) and sent to CFMU expressed as DPI messages (see the DPI Implementation Manual [ref 5]).

The Concept of Operation is described in detail in 'Airport Departure Data Entry Panel – Concept of Operations' document [ref 2].

1.8 Acronyms and Terminology

Term	Definition
ACC	Area Control Centre
ACR	Approach Control Room
ADDEP	Airport Departure Data Entry Panel
AMAN	Arrival Manager
AOC	Airport Operator Committee
ATFCM	Air Traffic Flow and Capacity Management

Term	Definition
ATM	Air Traffic Management
ATOT	Actual Take Off Time
CFMU	Central Flow Management Unit
DMAN	Departure Manager
DPI	Departure Planning Information. NB: The DPI is used by the CFMU to update the flight data for ATFM purposes.
E-ATMS	European Air Traffic Management System
EFPS	Electronic Flight Progress Strip
EOBT	Estimated Off Block Time
EXOT	Estimated Taxi Out Time
FOIPS	Flight Object Interoperability Proposed Standard
HMI	Human Machine Interface
QW	Quick Win
QW+	Quick Win Plus
RWY	Runway
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.
SESAR Programme	The programme which defines the Research and Development activities and Projects for the SJU.
TBD	To Be Defined
TMA	Terminal Control Area
TOBT	Target Off Block Time
TTOT	Target Take Off Time

2 General Component Description

2.1 Context

This component given the designation Airport Departure Data Entry Panel (ADDEP) is part of the Aerodrome ATC system and provides baseline capabilities for information sharing in the context of improving the airports' interface with ATM systems.

The component shall provide a low cost interface in order to share dynamic traffic data between airport tower operations and other actors (AOCs, ACCs, CFMU and airport operations).

2.2 Component Modes and States

The component will have a single mode of operation as shown in Figure 2

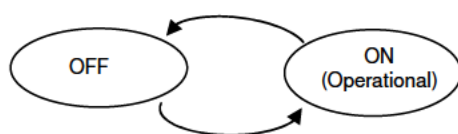


Figure 2: Modes of Operation

2.3 Major Component Capabilities

The following capabilities have been identified:

1. Provision of a low cost basic electronic flight list (departures)
2. HMI support for handling flight clearances
3. Provision for sending DPI messages to CFMU,

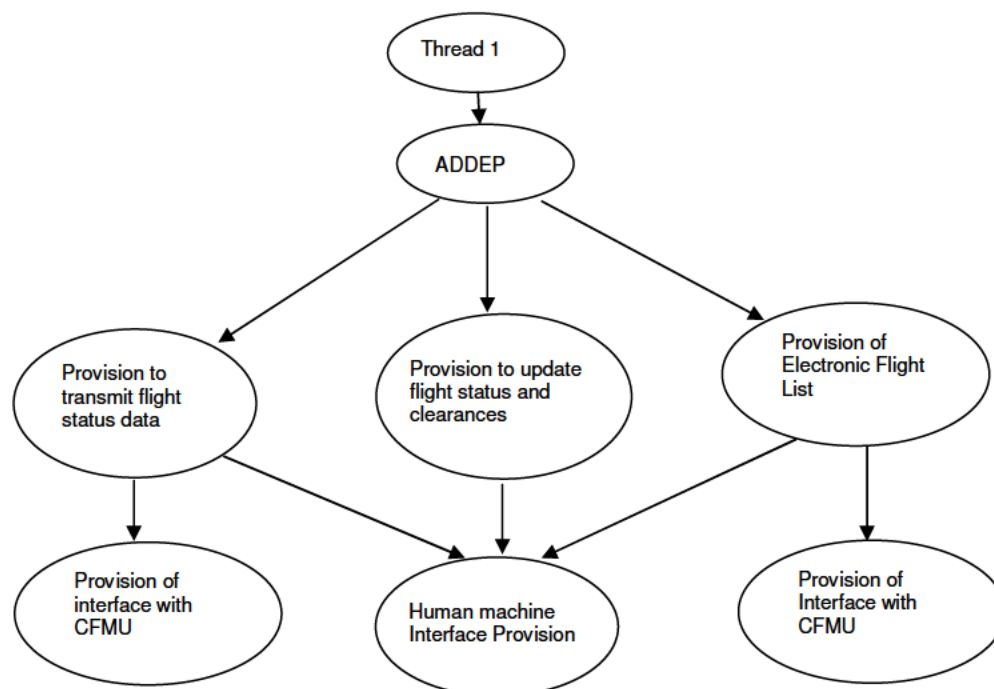


Figure 3: TH01 Capability Provision

2.4 User Characteristics

The ADDEP QW tool will be deployed in the Tower Visual Control Room of small/medium sized airports. The ADDEP will provide an electronic departure flight list (compiled using flight plans downloaded from the CFMU). Aerodrome Controllers will operate the ADDEP to record the 'push-back' and 'Cleared for take-off' clearances. The ADDEP will compile and send DPI messages corresponding to the clearances cleared by the operator.

2.5 Operational Scenarios

The following scenario is referred from 'Airport Departure Data Entry Panel – Concept of Operations' document [Ref 2].

The Tower ATC operations staff will be provided with a touch sensitive display screen to communicate pre-departure information directly to CFMU.

The ATC operator within the tower will be provided with departure details of an aircraft three hours in advance through receipt from IFPS or the ACC of the flight plan pre-departure details submitted by the aircraft operator. The details of each flight will be displayed within a "flight strip" (on the ADDEP) and these will be organised into separate "bays", each covering a separate state for the aircraft from "On-Stand" to "Taxing" to "Cleared for Take Off". The flight details will include call sign, and EOBT .

Following boarding of the aircraft and closure of the aircraft doors the pilot will request approval to start up from the Tower ATC; ATC will subsequently request a departure clearance for the aircraft from the local ACC. Following receipt of the departure clearance, the Tower ATC will issue start up approval to the pilot at which point the pilot is able to request push back then taxi clearance to the runway holding point. At this point the Tower ATC operator will push the "Push Back" button on the ADDEP; this action will initiate the sending of a DPI message to CFMU containing the Target Take Off Time (TTOT) and calculated by summing the Actual Off Block Time (AOBT), in this case the time that the "Push Back" button was pressed, and the standard taxi out time (EXOT) for the airfield. The "flight Strip" on the ADDEP will then move from the Departure Bay to the Taxiing Bay.

The Aircraft will then taxi to the departure point for the runway.

On arrival at the departure point for the runway the Pilot will request clearance to depart. When appropriate the Tower ATC will give the pilot clearance to take off. At this stage the Tower ATC operator will push the "Take Off" button on the ADDEP. If the take off time that this action indicates now differs from the TTOT previously sent (based on adapted parameters); it will also initiate the sending of a further DPI message to the CFMU informing both the network managers and ACC of a revision to the estimate for aircraft's now impending departure.

2.6 Functional

2.6.1 Functional decomposition

In relation to the functional decomposition described in the Architecture of the Technical Systems Description Document for Step 1 [8], this specification impacts on two functional blocks of the Aerodrome ATC system NSV-4 view:

In relation to the functional decomposition described in the Architecture of the Technical Systems Description Document for Step 1 [8], this specification impacts on two functional block of the Aerodrome ATC system NSV-4 view:

- **Controller Human Machine Interaction Management:** *"this function provides controllers with a graphical user interface and with means to interact with the aerodrome systems"*
- **Aerodrome Flight Data Processing:** "This function manages the creation, update and modification of system flight plans up to/from the moment aircraft take-off/land. In addition, it calculates predicted trajectory by taking into account applicable constraints and relevant data (e.g. aircraft performance, weather data, airport configuration data). Aerodrome Flight should be updated at occurrence of identified significant events like, for example: request and approval clearance for Start-Up, Push Back, Taxi, Line-Up, Take-Off and vice-versa for landing aircraft" Aerodrome Flight Data Processing: "This function manages the creation,

update and modification of system flight plans up to/from the moment aircraft take-off/land. In addition, it calculates predicted trajectory by taking into account applicable constraints and relevant data (e.g. aircraft performance, weather data, airport configuration data). Aerodrome Flight should be updated at occurrence of identified significant events like, for example: request and approval clearance for Start-Up, Push Back, Taxi, Line-Up, Take-Off and vice-versa for landing aircraft”

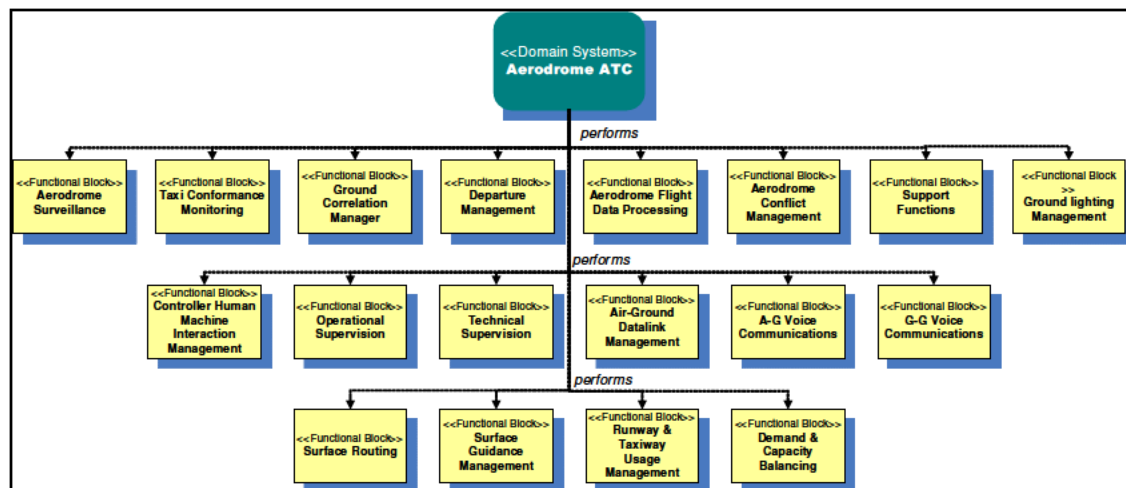


Figure 4 NSV- 4 Aerodrome ATC system

The functional blocks have been further decomposed into the following functions which will be specified in this document:

- <functional block> Controller Human Machine Interaction
 - § <function> Display flight strips
 - § <function> Display CDM milestones on strips
 - § <function> HMI for entering clearances
- <functional block> Aerodrome Flight Data Processing
 - § <function> Receiving flight plans from CFMU
 - § <function> Sending Flight Status Information to CFMU

2.6.2 Functional analysis

Controller Human Machine Interaction Management receives flight data from the *Aerodrome Flight Data Processing* functional. The data is used to display flight strips with relevant information. When the user enters departure clearance in the strip, this data is sent back to the *Aerodrome FDP*.

The **Aerodrome FDP** interfaces with AFTN with the purpose to receive flight plans from the CFMU and provide updates on flight departure status. The *Aerodrome FDP* is managing flight data based on flight plans received from CFMU, supplemented by data entered through the *Controller HMI*. The Aerodrome FDP sends DPI messages to CFMU via AFTN to convey departure status of the flights.

2.7 Service View

Refer to 12.04.01-D04 Architecture and Interface Specification [9] for a view of the project developments in relation to the SESAR architecture.

3 Component Functional and non-Functional Requirements

3.1 Capabilities

To support the capabilities listed in Paragraph 2.3, the component shall provide the functionality detailed in the paragraphs below.

3.1.1 Provision of Flight List and Human Machine Interface

[REQ]

Identifier	REQ-12.04.01-TS-D03-001
Requirement	The System shall provide a touch sensitive display screen to enable the Tower ATC staff to interface with the system.
Title	Provision of Touch sensitive display screen
Status	<In Progress>
Rationale	Provide platform for HMI
Category	<HMI>
Verification Method	<Inspection>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-051
Requirement	The System shall provide a second slave display, for use by Approach Controllers. .
Title	Provision of Touch sensitive display screen
Status	<In Progress>
Rationale	Provide means to disseminate information
Category	<HMI>
Verification Method	<Inspection>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-052
Requirement	The Slave Display shall operate in 'Read only' mode, providing replicate flight list, as shown on the master touch sensitive screen.
Title	Provision of slave display screen
Status	<In Progress>
Rationale	Prevent interaction with system
Category	<HMI>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-003
Requirement	The ADDEP shall provide an interactive Human Machine Interface (HMI) to enable Tower ATC operations staff to interact with the system via the master Touch sensitive display.
Title	Provision of Interactive HMI
Status	<In Progress>
Rationale	Provide means to interact with system
Category	<HMI>

Verification Method	<Inspection><Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-009
Requirement	The ADDEP shall display the list of departing flights (flight list).
Title	Provision to display flight list
Status	<In Progress>
Rationale	Identify flights requiring ATC service
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-011
Requirement	The flight list shall be compiled and maintained by listening to the flight plan (message) updates received from the CFMU via the AFTN.
Title	Provision to compile flight lists using CFMU flight plans
Status	<In Progress>
Rationale	Define Source of information
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-012
Requirement	The flight list shall be populated automatically with the call-signs of departing aircraft, and it's EOBT.
Title	Provision to automatically generate flight List
Status	<In Progress>
Rationale	Data required by ATC
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-013
Requirement	The flight list call signs shall be in time (EOBT) order.
Title	Provision for time ordering of flight strips
Status	<In Progress>
Rationale	Defines order of service
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-014
Requirement	The Flight List shall be segmented into 3 separate bays according to the following categories: <ol style="list-style-type: none"> 1. On-Stand 2. Startup/Pushback 3. Take-off
Title	Provision for separate bays
Status	<In Progress>
Rationale	To segregate the flight list into different departure clearance states
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-053
Requirement	The Flight Strip Bays should be arranged in Two columns, with the Passive Flight Bay (showing on-stand flights) located on the left hand side, while the Bays containing the active flights (Startup/pushback & Take-off bays) located on the right hand side
Title	Provision for separation of bays
Status	<In Progress>
Rationale	Segregation of passive and active flights
Category	<Functional>
Verification Method	<Inspection>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-015
Requirement	Each bay shall be identified by a title, the title being one of the 3 categories listed above.
Title	Provision for bay title
Status	<In Progress>
Rationale	Provide clear identification
Category	<Functional>
Verification Method	<Inspection>/<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-016
Requirement	The flight call signs shall initially appear in the 'On-Stand' bay
Title	Provision for Initial appearance of flight calls in on-stand bay
Status	<In Progress>
Rationale	Define startup configuration
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-033
------------	-------------------------

Requirement	Tower ATC shall have the facility to vary the amount of flight data displayed on the ADDEP. The amount of data displayed shall be configurable to show: <ol style="list-style-type: none"> 1. N number of flight strips (Flights Limit No.) and/or 2. T minutes worth of flights.(ie Activation period of flight strips). Where N & T are pre-settable parameters.
Title	Provision to vary amount of data displayed
Status	<In Progress>
Rationale	Limit amount of data displayed
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-010
Requirement	Facility shall be provided on the ADDEP, to configure and set parameters that control the amount of data displayed: <ol style="list-style-type: none"> 1. 'N' Parameter to select between 0 - 60 mins worth of flights 2. 'T' Parameter to select number of flight strips between 1 and 50.
Title	Provision to set parameters to vary amount of flight data
Status	<In Progress>
Rationale	Limit amount of data displayed
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-036
Requirement	The ADDEP shall display current system UTC time as hours, minutes and seconds .
Title	Provision to display system time on ADDEP
Status	<In Progress>
Rationale	Time source provision for ATC
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-054
Requirement	The Slave Display shall display current system UTC time as hours, minutes and seconds .
Title	Provision to display system time on Slave Display
Status	<In Progress>
Rationale	Time source provision for ATC
Category	<Functional>
Verification Method	<Test>
Validation Method	

3.1.2 Provision for updating flight status and flight clearances

[REQ]

Identifier	REQ-12.04.01-TS-D03-017
Requirement	As the flight progresses from one state (category) to another the Call sign and its associated data shall be moved to the next appropriate bay
Title	Provision to progress call sign and data
Status	<In Progress>
Rationale	Separate out flights at different stages of departure
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-018
Requirement	The ADDEP Touch Sensitive Display shall provide the user with a facility to change state of a Call sign: <ol style="list-style-type: none"> 1. From 'On-Stand' to 'Startup/Pushback'; 2. From 'Startup/Pushback' to 'Take-off'
Title	Provision to change state of Call Sign
Status	<In Progress>
Rationale	Provide ATC means to enter data into system
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-019
Requirement	The ADDEP shall provide the user with a facility to return the Call sign to its previous state: <ol style="list-style-type: none"> 1. From 'Startup/Pushback' to 'On-Stand'. 2. From 'Take-off' to 'Startup/Pushback',
Title	Provision to return call sign to previous state
Status	<In Progress>
Rationale	Provide ATC means to enter data into system
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-005
Requirement	Pre-departure information shall include but not be limited to the following: <ul style="list-style-type: none"> • Start-up time¹/Pushback Time (AOBT) • Target Take-Off Time (TTOT)

¹ Start-up time is the time the aircraft is cleared to start engines

Title	Pre-departure information contents provision
Status	<In Progress>
Rationale	Define information content
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-024
Requirement	This TTOT shall be calculated as follows: <ul style="list-style-type: none"> 1. In the case of 'On-Stand' to 'Pushback' transition: TTOT shall be generated using the current system time for the Actual Off-Block Time (AOBT) and the system retained Estimated Taxi Out Time (EXOT) for the airfield. $TTOT_1 = AOBT + EXOT$ 2. In the case of 'Taxing' to 'Take off' transition: TTOT shall be generated using the 'take-off clearance' time and a predetermined time delay (Take off delay). $TTOT_2 = [Take\ off\ clearance\ time] + [Take\ off\ delay]$
Title	Calculation of TTOT
Status	<In Progress>
Rationale	Define how TTOT is calculated
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-025
Requirement	Means shall be provided, via the ADDEP touch sensitive display, to configure the 'predetermined time delay (Take off delay)' by the user between 0 and 10 Minutes (TBC). This 'predetermined time delay' is used for calculation of TTOT (see requirement REQ-12.04.01-TS-D03-024)
Title	Provision for configuring predetermined time delay
Status	<In Progress>
Rationale	Provide means to enter data into system
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-055
Requirement	Means shall be provided, via the ADDEP touch sensitive display, to configure the system retained 'Estimated Taxi Out Time (EXOT)' by the user between 1 and 60 Minutes. This 'EXOT' is used for calculation of TTOT (see requirement REQ-12.04.01-TS-D03-024)
Title	Provision for configuring predetermined time delay
Status	<In Progress>
Rationale	Provide means to enter data into system
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-028
Requirement	The Cleared for take off Flights shall be retained on display following departure for a minimum period set by an adjustable parameter (Deletion time).
Title	Provision to retain 'cleared for take' call sign for a predetermined period
Status	<In Progress>
Rationale	Prevent data loss in case of in-correct operation
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-029
Requirement	The adjustable parameter (Deletion time) for departed aircraft shall be able to be set between 5 minutes and one hour via the ADDEP touch sensitive screen.
Title	Range setting for adjustable parameter
Status	<In Progress>
Rationale	Define range value for parameter
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-030
Requirement	It shall be possible to cancel 'Take-off' on a Call sign that has been 'Cleared for Take Off' and is still displayed, and this will move the flight back to Startup/Pushback position.
Title	Provision to cancel 'Take-off' state on a call sign
Status	<In Progress>
Rationale	Provide means to revert back to original state
Category	<Functional>
Verification Method	<Test>
Validation Method	

3.1.3 Provision for transmitting flight status data (DPI messages)

[REQ]

Identifier	REQ-12.04.01-TS-D03-004
Requirement	The ADDEP shall provide the ability to provide pre-departure information to external actors, in particular to the CFMU.
Title	Provision to transmit pre-departure information
Status	<In Progress>
Rationale	Disseminate departure data to external actors
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-002
Requirement	The touch sensitive display screen shall provide the HMI by which Tower ATC can initiate the sending of pre-departure information directly to the CFMU.
Title	HMI Provision for initiating communication with CFMU
Status	<In Progress>
Rationale	Provide means to send data (messages) to external actors
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-006
Requirement	Pre-departure information provided to the CFMU shall take the form of DPI messages in accordance with Eurocontrol's DPI Implementation Guide [ref 5] , in respect to A-DPI messages
Title	Provision to form Pre-departure information into DPI messages
Status	<In Progress>
Rationale	Define message format
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-008
Requirement	The ADDEP shall provide the A-DPI message based upon system time against an individual aircraft call-sign when a controller updates the flight status by means of the ADDEP HMI.
Title	Provision to transmit messages based upon system time
Status	<In Progress>
Rationale	Define formatting of data
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-020
Requirement	Selection by Tower ATC of “Startup/Pushback” on the ADDEP against an ‘On-stand’ Call sign shall initiate the sending of a DPI message to CFMU containing the system generated Target Take Off Time (TTOT).
Title	Provision to initiate sending of DPI messages
Status	<In Progress>
Rationale	Define content of DPI message
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-023
Requirement	Sending of a second A-DPI message, on progressing a call sign from Startup/Pushback to ‘Take Off, shall only occur if the new TTOT (generated using Take off clearance time and predetermined time delay) differs from the previous TTOT (calculated at Startup/Pushback using AOBT & EXOT) by more than +/- 5 minutes.
Title	Sending of second A-DPI message
Status	<In Progress>
Rationale	Define condition for sending second A-DPI message
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-032
Requirement	If the cancel function is selected on the ADDEP to return a flight to a previous state, the system shall provide the ability to automatically cancel previously transmitted DPI messages by sending C-DPI.
Title	Provision to return call sign to previous state
Status	<In Progress>
Rationale	
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-034
Requirement	The ADDEP shall provide the facility to record and archive transmitted DPI messages for an adaptable period.
Title	Provision to Record DPI messages
Status	<In Progress>
Rationale	Retain data for incident investigation
Category	<Functional>

Verification Method	<Test>
Validation Method	

3.1.4 Provision of External Interfaces

[REQ]

Identifier	REQ-12.04.01-TS-D03-037
Requirement	The ADDEP shall be able to interface to the local AFTN network node provisions in order to: receive the flight plan messages in the ICAO format from, and send DPI messages in the ADEXP format to, CFMU. The default interface shall be through a TCP/IP link.
Title	Provision for Interface to AFTN Node
Status	<In Progress>
Rationale	Provide mechanism to download flight plans from and send departure information to CFMU
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-038
Requirement	Where the local AFTN Message node requires use of X25, the system shall provide for conversion of the TCP/IP link interface to an X25 provision by provision of an IP to X25 router..
Title	Provision for interface to an X25 AFTN node
Status	<In Progress>
Rationale	Provide alternate mechanism to download flight plans from and send departure information to CFMU
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-039
Requirement	The interface into the AFTN shall comply with the Requirements of ICAO Annex 10 Volume 3 Chapter 8 [Ref 7]
Title	AFTN interface compliance
Status	<In Progress>
Rationale	Specify standard for the AFTN interface
Category	<Functional>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-040
Requirement	The data exchange protocol shall be in accordance with Eurocontrol Standard DPS.ETI.ST09-STD-01-01 [Ref 4]
Title	Data exchange protocol standard
Status	<In Progress>
Rationale	Specify protocol for data exchange
Category	<Functional>
Verification Method	<Test>
Validation Method	

3.1.5 Provision of Non Functional Requirements

[REQ]

Identifier	REQ-12.04.01-TS-D03-041
Requirement	The ADDEP shall be designed to be installed in suitable spaces in the ATC tower.
Title	Provision to install in suitable space
Status	<In Progress>
Rationale	Identify place of deployment
Category	<Maintainability>
Verification Method	<Inspection>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-042
Requirement	The ADDEP shall be operationally available for 24 hours a day.
Title	Operational availability provision
Status	<In Progress>
Rationale	Define system availability
Category	<Performance>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-043
Requirement	The ADDEP shall provide displayed information using multi-coloured layers, text and symbols
Title	Display information characteristics
Status	<In Progress>
Rationale	Define necessary features for ease of use and readability
Category	<HMI>
Verification Method	<Inspection>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-044
Requirement	The ADDEP should provide 60 degrees central field of vision
Title	Display Field of View

Status	<In Progress>
Rationale	Provide display with a wide field of view
Category	<HMI> -
Verification Method	<Test>
Validation Method	

3.2 Adaptability

Not Applicable

3.3 Performance Characteristics

Not Applicable

3.4 Safety & Security

3.4.1 Electrical Safety Requirements

[REQ]

Identifier	REQ-12.04.01-TS-D03-047
Requirement	ADDEP and any associated equipment shall comply with the EEC Low Voltage Directive 73/23/EEC
Title	Compliance with EEC Low Voltage directive
Status	<In Progress>
Rationale	Meet European Directive requirement for ATc equipment
Category	<Interoperability>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-048
Requirement	The ADDEP and any associated equipment shall comply with the EEC EMC Directive 2004/108/EC
Title	Compliance with EEC EMC directive
Status	<In Progress>
Rationale	Meet European Directive requirement for ATC equipment
Category	<Interoperability>
Verification Method	<Test>
Validation Method	

3.4.2 Security Requirements

TBD

3.5 Maintainability

3.5.1 Maintainability Requirements

[REQ]

Identifier	REQ-12.04.01-TS-D03-050
Requirement	The Mean Time To Repair (MTTR) for the ADDEP shall be less than 60 minutes.
Title	Mean Time to Repair Provision
Status	<In Progress>
Rationale	MTTR = Time to diagnose (20 mins) + Time to procure LRU (20 mins)+ Time to Replace LRU (10 Mins) + Time to Test (10 mins)
Category	<Maintainability>
Verification Method	<Test>
Validation Method	

[REQ]

Identifier	REQ-12.04.01-TS-D03-051
Requirement	Repair shall be by replacement of Line Replaceable Unit (viz: display, server, hub etc)
Title	Repair Policy
Status	<In Progress>
Rationale	Minimise spares holding and ease of repair
Category	<Maintainability>
Verification Method	<Test>
Validation Method	

3.6 Reliability

3.6.1 Reliability Requirements

[REQ]

Identifier	REQ-12.04.01-TS-D03-049
Requirement	Mean Time between Failure (MTBF) for the ADDEP shall be better than 8760 hours
Title	Equipment Reliability
Status	<In Progress>
Rationale	Less than one failure per year
Category	<Reliability>
Verification Method	<Test>
Validation Method	

3.7 Component Internal Data Requirements

Not Applicable

3.8 Design and Construction Constraints

3.8.1 Design Requirements

[REQ]

Identifier	REQ-12.04.01-TS-D03-046
Requirement	The ADDEP shall operate in all levels of illuminance between 1x10E5 Lux and 5x10E-5 Lux (TBC).
Title	Operational Environment
Status	<In Progress>
Rationale	Display operable in darkness or bright daylight
Category	<HMI>
Verification Method	<Test>
Validation Method	

3.9 Component Interface Requirements

See Paragraph 3.1.4 for detailed requirements

4 References

- [1] The ATM Target Concept D3, DLM-0612-001-02-00a, September 2007
- [2] Airport Departure Data Entry Panel – Concept of Operations
- [3] European ATM Enterprise Architecture Structure and Guidance, Edition 0.0.3, 2010-06-11
- [4] Eurocontrol Standard Document for ATS Data Exchange Presentation (ADEXP) DPS.ETI.ST09-STD-01-01
- [5] Eurocontrol's DPI Implementation Guide – URB/USD/DPI_Imp_Guide Edn 1.400
- [6] Tactical Operational Management System (TOMS) Traffic Load Prediction Device (TLPD) Requirements for IP TOMS376 – TLPD EFPS Data – 3091/REQ/02 Issue 2
- [7] Annex 10 to the Convention on International Civil Aviation Volume 3 – Communication Systems
- [8] Architecture of the Technical Systems Description Document for Step 1. (B.04.03-D09-00-ADD_20110511.doc)
- [9] 12.04.01-D04-Architecture and Interface Specification, version 00.02.00, 2011-09-30

4.1 Use of copyright/patent material /classified material

Not Applicable

4.1.1 Classified Material

Not Applicable

Appendix A Verification Traceability

Requirement No.	D03 - System Requirement Specification	Verify at Phase			Verification method			Compliance Status	Verification Comment
		Factory test	Site Test (Southampton)	Operational validation	<Inspection>	Analysis Declaration	Test		
	3.1.1 Provision of Flight List and Human Machine Interface								
REQ-12.04.01-TS-D03-001	The System shall provide a touch sensitive display screen to enable the Tower ATC staff to interface with the system.	X	X		X				
REQ-12.04.01-TS-D03-051	The System shall provide a second slave display, for use by Approach Controllers. .	X	X		X				
REQ-12.04.01-TS-D03-052	The Slave Display shall operate in 'Read only' mode, providing replicate flight list, as shown on the master touch sensitive screen.	X							
REQ-12.04.01-TS-D03-003	The ADDEP shall provide an interactive Human Machine Interface (HMI) to enable Tower ATC operations staff to interact with the system via the master Touch sensitive display.	X	X				X		
REQ-12.04.01-TS-D03-009	The ADDEP shall display the list of departing flights (flight list).	X	X				X		
REQ-12.04.01-TS-D03-011	The flight list shall be compiled and maintained by listening to the flight plan (message) updates received from the CFMU via the AFTN.		X				X		
REQ-12.04.01-TS-D03-012	The flight list shall be populated automatically with the call-signs of departing aircraft, and it's EOBT.	X	X				X		

Requirement No.	D03 - System Requirement Specification	Verify at Phase			Verification method			Compliance Status	Verification Comment
		Factory test	Site Test (Southampton)	Operational validation	<Inspection>	Analysis Declaration	Test		
REQ-12.04.01-TS-D03-013	The flight list call signs shall be in time (EOBT) order.	X	X				X		
REQ-12.04.01-TS-D03-014	The Flight List shall be segmented into 3 separate bays according to the following categories: 1. On-Stand 2. Startup/Pushback 3. Take-off	X	X				X		
REQ-12.04.01-TS-D03-053	The Flight Strip Bays shall be arranged in Two columns, with the Passive Flight Bay (showing on-stand flights) located on the left hand side, while the Bays containing the active flights (Startup/pushback & Take-off bays) located on the right hand side:	X					X		
REQ-12.04.01-TS-D03-015	Each bay shall be identified by a title, the title being one of the 3 categories listed above.	X	X				X		
REQ-12.04.01-TS-D03-016	The flight call signs shall initially appear in the 'On-Stand' bay	X	X				X		
REQ-12.04.01-TS-D03-033	Tower ATC shall have the facility to vary the amount of flight data displayed on the ADDEP. The amount of data displayed shall be configurable to show: 1. N number of flight strips (Flights Limit No.) and/or 2. T minutes worth of flights.(ie Activation period of flight strips). Where N & T are pre-settable parameters.	X	X				X		

Requirement No.	D03 - System Requirement Specification	Verify at Phase			Verification method			Compliance Status	Verification Comment
		Factory test	Site Test (Southampton)	Operational validation	<Inspection>	Analysis Declaration	Test		
REQ-12.04.01-TS-D03-010	Facility shall be provided on the ADDEP, to configure and set parameters that control the amount of data displayed: 1. 'N' Parameter to select between 0 - 60 mins worth of flights 2. 'T' Parameter to select number of flight strips between 1 and 50.	X	X				X		
REQ-12.04.01-TS-D03-036	The ADDEP shall display current system UTC time as hours, minutes and seconds .	X					X		
REQ-12.04.01-TS-D03-054	The Slave Display shall display current system UTC time as hours, minutes and seconds .	X					X		
	3.1.2 Provision for updating flight status and flight clearances								
REQ-12.04.01-TS-D03-017	As the flight progresses from one state (category) to another the Call sign and its associated data shall be moved to the next appropriate bay	X	X				X		
REQ-12.04.01-TS-D03-018	The ADDEP Touch Sensitive Display shall provide the user with a facility to change state of a Call sign: 1. From 'On-Stand' to 'Startup/Pushback'; 2. From 'Startup/Pushback' to 'Take-off'	X	X				X		
REQ-12.04.01-TS-D03-019	The ADDEP shall provide the user with a facility to return the Call sign to its previous state: 1. From 'Startup/Pushback' to 'On-Stand'. 2. From 'Take-off' to 'Startup/Pushback',	X	X				X		

Requirement No.	D03 - System Requirement Specification	Verify at Phase			Verification method			Compliance Status	Verification Comment
		Factory test	Site Test (Southampton)	Operational validation	<Inspection>	Analysis Declaration	Test		
REQ-12.04.01-TS-D03-005	Pre-departure information shall include but not be limited to the following: <ul style="list-style-type: none"> Start-up time²/Pushback Time (AOBT) Target Take-Off Time (TTOT) 	X	X				X		
REQ-12.04.01-TS-D03-024	This TTOT shall be calculated as follows: <ol style="list-style-type: none"> In the case of 'On-Stand' to 'Pushback' transition: TTOT shall be generated using the current system time for the Actual Off-Block Time (AOBT) and the system retained Estimated Taxi Out Time (EXOT) for the airfield. $TTOT_1 = AOBT + EXOT$ In the case of 'Taxing' to 'Take off' transition: TTOT shall be generated using the 'take-off clearance' time and a predetermined time delay (Take off delay). $TTOT_2 = [Take\ off\ clearance\ time] + [Take\ off\ delay]$ 	X					X		

² Start-up time is the time the aircraft is cleared to start engines

Requirement No.	D03 - System Requirement Specification	Verify at Phase			Verification method			Compliance Status	Verification Comment
		Factory test	Site Test (Southampton)	Operational validation	<Inspection>	Analysis Declaration	Test		
REQ-12.04.01-TS-D03-025	Means shall be provided, via the ADDEP touch sensitive display, to configure the 'predetermined time delay (Take off delay)' by the user between 0 and 10 Minutes (TBC). This 'predetermined time delay' is used for calculation of TTOT (see requirement REQ-12.04.01-TS-D03-024)	X	X				X		
REQ-12.04.01-TS-D03-055	Means shall be provided, via the ADDEP touch sensitive display, to configure the system retained 'Estimated Taxi Out Time (EXOT)' by the user between 1 and 60 Minutes. This 'EXOT' is used for calculation of TTOT (see requirement REQ-12.04.01-TS-D03-024)	X	X				X		
REQ-12.04.01-TS-D03-028	The Cleared for take off Flights shall be retained on display following departure for a minimum period set by an adjustable parameter (Delection time).	X	X				X		
REQ-12.04.01-TS-D03-029	The adjustable parameter (Delection time) for departed aircraft shall be able to be set between 5 minutes and one hour via the ADDEP touch sensitive screen.	X	X				X		
REQ-12.04.01-TS-D03-030	It shall be possible to cancel 'Take-off' on a Call sign that has been 'Cleared for Take Off' and is still displayed, and this will move the flight back to Startup/Pushback position.	X	X				X		
	3.1.3 Provision for transmitting flight status data (DPI messages)								

Requirement No.	D03 - System Requirement Specification	Verify at Phase			Verification method			Compliance Status	Verification Comment
		Factory test	Site Test (Southampton)	Operational validation	<Inspection>	Analysis Declaration	Test		
REQ-12.04.01-TS-D03-004	The ADDEP shall provide the ability to provide pre-departure information to external actors, in particular to the CFMU.	X	X				X		
REQ-12.04.01-TS-D03-002	The touch sensitive display screen shall provide the HMI by which Tower ATC can initiate the sending of pre-departure information directly to the CFMU.		X				X		
REQ-12.04.01-TS-D03-006	Pre-departure information provided to the CFMU shall take the form of DPI messages in accordance with Eurocontrol's DPI Implementation Guide [ref 5], in respect to A-DPI messages	X	X				X		
REQ-12.04.01-TS-D03-008	The ADDEP shall provide the A-DPI message based upon system time against an individual aircraft call-sign when a controller updates the flight status by means of the ADDEP HMI.	X					X		
REQ-12.04.01-TS-D03-020	Selection by Tower ATC of "Startup/Pushback" on the ADDEP against an 'On-stand' Call sign shall initiate the sending of a DPI message to CFMU containing the system generated Target Take Off Time (TTOT).	X	X				X		
REQ-12.04.01-TS-D03-023	Sending of a second A-DPI message, on progressing a call sign from Startup/Pushback to 'Take Off, shall only occur if the new TTOT (generated using Take off clearance time and predetermined time delay) differs from the previous TTOT (calculated at Startup/Pushback using AOBT & EXOT) by more than +/- 5 minutes.	X	X				X		

Requirement No.	D03 - System Requirement Specification	Verify at Phase			Verification method			Compliance Status	Verification Comment
		Factory test	Site Test (Southampton)	Operational validation	<Inspection>	Analysis Declaration	Test		
REQ-12.04.01-TS-D03-032	If the cancel function is selected on the ADDEP to return a flight to a previous state, the system shall provide the ability to automatically cancel previously transmitted DPI messages by sending C-DPI.	X	X				X		
REQ-12.04.01-TS-D03-034	The ADDEP shall provide the facility to record and archive transmitted DPI messages for an adaptable period.	X					X		
	3.1.4 Provision of External Interfaces								
REQ-12.04.01-TS-D03-037	The ADDEP shall be able to interface to the local AFTN network node provisions in order to: receive the flight plan messages in the ICAO format from, and send DPI messages in the ADEXP format to, CFMU. The default interface shall be through a TCP/IP link.		X				X		
REQ-12.04.01-TS-D03-038	Where the local AFTN Message node requires use of X25, the system shall provide for conversion of the TCP/IP link interface to an X25 provision by provision of an IP to X25 router..		X				X		
REQ-12.04.01-TS-D03-039	The interface into the AFTN shall comply with the Requirements of ICAO Annex 10 Volume 3 Chapter 8 [Ref 7]		X				X		
REQ-12.04.01-TS-D03-040	The data exchange protocol shall be in accordance with Eurocontrol Standard DPS.ETI.ST09-STD-01-01 [Ref 4]		X				X		
	3.1.5 Provision of Non Functional Requirements								

Requirement No.	D03 - System Requirement Specification	Verify at Phase			Verification method			Compliance Status	Verification Comment
		Factory test	Site Test (Southampton)	Operational validation	<Inspection>	Analysis Declaration	Test		
REQ-12.04.01-TS-D03-041	The ADDEP shall be designed to be installed in suitable spaces in the ATC tower.			X	X				
REQ-12.04.01-TS-D03-042	The ADDEP shall be operationally available for 24 hours a day.	X				X			
REQ-12.04.01-TS-D03-043	The ADDEP shall provide displayed information using multi-coloured layers, text and symbols	X					X		
REQ-12.04.01-TS-D03-044	The ADDEP shall provide 60 degrees central field of vision.	X				X			
3.4.1 Electrical Safety Requirements									
REQ-12.04.01-TS-D03-047	ADDEP and any associated equipment shall comply with the EEC Low Voltage Directive 73/23/EEC	X				X			
REQ-12.04.01-TS-D03-048	The ADDEP and any associated equipment shall comply with the EEC EMC Directive 2004/108/EC	X				X			
3.5.1 Maintainability Requirements									
REQ-12.04.01-TS-D03-050	The Mean Time To Repair (MTTR) for the ADDEP shall be less than 60 minutes.	X				X			
REQ-12.04.01-TS-D03-051	Repair shall be by replacement of Line Replaceable Unit (viz: display, server, hub etc).	X				X			
3.6.1 Reliability Requirements									
REQ-12.04.01-TS-D03-049	Mean Time between Failure (MTBF) for the ADDEP shall be better than 8750 hours	X				X			
3.8.1 Design Requirements									

Requirement No.	D03 - System Requirement Specification	Verify at Phase			Verification method			Compliance Status	Verification Comment
		Factory test	Site Test (Southampton)	Operational validation	<Inspection>	Analysis Declaration	Test		
REQ-12.04.01-TS-D03-046	The ADDEP shall operate in all levels of illuminance between 1x10E5 Lux and 5x10E-5 Lux (TBC).	X				X			

| **Project ID 12.04.18001**

D03 - Thread 1 Requirement Specification Edition: 00.02.01

- END OF DOCUMENT -