EUROCONTROL

LSSIP 2022
THE NETHERLANDS
LOCAL SINGLE SKY IMPLEMENTATION

Implementation Overview

FOREWORD

The EUROCONTROL Local Single Sky ImPlementation (LSSIP) is a long-standing successful process (almost 30 years) that, in combination with the European ATM Master Plan (Level 3), reaches out on a yearly and continuous basis to all ECAC and Comprehensive States stakeholders to ensure the monitoring of the ATM Modernisation in Europe.

In 2021, a major milestone has been achieved by the EUROCONTROL Network Manager and the SESAR Deployment Manager (SDM) Teams by implementing a unified planning and monitoring process that addresses the introduction of new systems, functionalities and procedures.

For the second year in a row, LSSIP will ensure the monitoring of implementation of the functionalities detailed in the SESAR Deployment Programme, on which the European Commission is counting to ensure compliance according to the EU Regulation 2021/116.

This year we have further developed tools and processes and a revised calendar, increasing the accuracy of the LSSIP reporting. EUROCONTROL will continue along this path to be an essential part of the single value chain that coordinates all steps from development to deployment with the goal to steer and accelerate the modernisation of ATM across ECAC in support of European aviation.

The economic crisis keeps affecting all operational stakeholders in the aviation sector. It is in this challenging context that the support of civil and military national organisations (Regulators and National Supervisory Authorities, Air Navigation Service Providers and Airport Operators) to timely provide their data, shows the commitment towards a robust planning and monitoring process for the European ATM implementation in our evolving environment.

In addition to providing a consolidated picture of implementation progress at National and ECAC level, LSSIP National documents are paramount for the development of ICAO's Aviation System Block Upgrades (ASBUs) Implementation Monitoring Report in the ICAO EUR Region. On behalf of ICAO, EUROCONTROL is responsible for delivering this yearly update, for all 55 ICAO/EUR States, in accordance with the Global Air Navigation Plan (GANP).

From this year on, the new EUR RASP questionnaire from EASA has been implemented into the LSSIP process enlarging the view that the process offers on the modernisation of the European ATM system.

I would like to thank all our stakeholders for their continued engagement and significant effort in contributing to the production of this LSSIP document and in supporting EUROCONTROL towards our goal of diligently guiding and informing the Aviation community on ATM deployment.

Happy reading!

Iacopo Prissinotti
Director NM - Network Manager
EUROCONTROL

SESAR DEPLOYMENT MANAGER LOOKOUT

The present report is a testament to the commitment of all stakeholders involved in ATM modernisation, as already demonstrated last year. 2022 has been a watershed year for the deployment of SESAR, and of Common Project 1 in particular.

Not just because the European ATM industry has seen the establishment of a new and reinforced partnership to play the function of SESAR Deployment Manager (SDM), but – most importantly – because we have successfully passed the first regulatory target deadlines of Common Project 1: in the last 12 months, we have a seen a significant progress in the status of its implementation thanks to the joint effort of ATM stakeholders throughout Europe.

I would like to extend my gratitude to all European organisations involved and contributing to the present LSSIP cycle, which will also feed the elaboration of the SESAR Deployment Programme (SDP) Monitoring View 2022.

The joint work of the SDM and EUROCONTROL substantially improved the overall data collection process and reduced the reporting burden on all involved organisations, but it is only through stakeholders' cooperation, efforts and partnerships' spirit that we will keep pushing deployment forward within the European skies, avoiding delays in the adoption of CP1 and building an ATM industry that can overcome the challenges of the upcoming years.

Thank you and let's continue delivering together!

Mariagrazia La Piscopia
Executive Director
SESAR Deployment Manager

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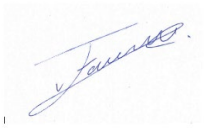
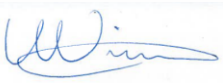
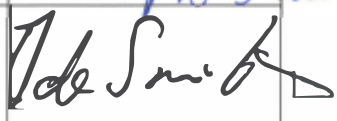
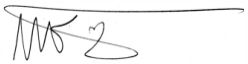
Reference Documents	
LSSIP Documents	https://www.eurocontrol.int/service/local-single-sky-implementation-monitoring
Master Plan Level 3 – Plan Edition 2022	https://www.eurocontrol.int/publication/european-atm-master-plan-implementation-plan-level-3
Master Plan Level 3 – Report Year 2022	https://www.eurocontrol.int/publication/european-atm-master-plan-implementation-report-level-3
European ATM Portal	https://www.atmmasterplan.eu/
STATFOR Forecasts	https://www.eurocontrol.int/statfor
National AIP	
FAB Performance Plan	

APPROVAL SHEET

The following authorities have approved all parts of the LSSIP Year 2022 document, and the signatures confirm the correctness of the reported information and reflect the commitment to implement the actions laid down in the European ATM Master Plan Level 3 (Implementation View) – Edition 2022.

Stakeholder / Organisation	Name	Position	Signature and date
Ministry of Infrastructure and Water Management (MoT)	Mr. H. van Faassen	Acting Director General of Civil Aviation	 May 2, 2023
Human Environment and Transport Inspectorate (CAA-NL)	Mrs. K. Visser	Director Civil Aviation Authority	16-05-2023 
Ministry of Defence (MoD)	Cdre. J.P. Apon	Director Military Aviation Authority	 11 May 2023
ATS Provider (LVNL)	Mr. M. van Dorst	Chief Executive Officer	 18-5-2023
Royal Netherlands Airforce (RNLAF)	Cdre A.J. de Smit	Director of Operations	 22 May 2023
MET provider (KNMI)	Prof. Dr. Maarten van Aalst	Director General	 02.05.2023
Amsterdam Airport Schiphol (AAS)	Mrs. P. Vitalis	Director Airport Operations	 02-05-2023

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Executive Summary

National ATM Context

Member State of:

Main developments national ATM context:

In November 2020 the Civil Aviation Policy Memorandum 2020-2050 was published[1]. This policy document focuses on four public interests: 1) safety, in the air and on the ground; 2) good international connections; 3) an attractive and healthy environment; and 4) an aviation sector that contributes to ambitious climate goals. With the new Policy Memorandum, the Netherlands cabinet sets a new course for a safe and sustainable aviation sector that connects the Netherlands with the rest of the world, with clear rules and conditions for the development of civil aviation.

In 2022, the Netherlands continued the work on the joint civil-military programme for redesigning its airspace under national (Netherlands) coordination: the Dutch Airspace Redesign Programme (DARP). The ministries of Defence (MoD) and Transport (MoT) and the ANSPs (LVNL, MUAC and CLSK) work together in this programme. It spans operational air traffic management concepts, airspace structure and routes as well as arrangements regarding airspace usage (who, what, where, when and how). The objective is to implement an integral, future-proof air traffic management system through the redesign and management of the Netherlands airspace based on a careful weighing of interests, in cooperation with international partners and in a continuing dialogue with actively involved stakeholders. The airspace redesign is necessary to better accommodate civil and military use, and to reduce the noise and climate impact. The operational concept in the Netherlands ATM system has not changed significantly in the past decades and cannot accommodate changing and increasing demands. Military airspace requirements are

[1] https://www.rijksoverheid.nl/documenten/rapporten/2020/11/20/bijlage-1-luchtvaartnota-2020-2050

developing, an efficient and optimal traffic flow in the European network and increased sustainability of civil air traffic is required, and General Aviation and drones have their own requirements.

The Netherlands government published a Preferential Decision on DARP in October 2022. This Decision describes the steps (to be) taken to attain the three overarching programme goals. It is supported by an environmental impact assessment and published together with a Response Memorandum (containing responses to formal reactions received). The Preferential Decision marks the finalisation of the exploration phase of the programme and the start of the design and implementation phase. An Integrated Programme Decision (IPD) is expected to be adopted in 2023, which will be based on the Preferential Decision. The IPD will contain an implementation roadmap, a description of public engagement at project level, and information on monitoring & evaluation. After this IPD the initiation of several implementation projects will take place including proposals for public and user engagement for such projects.

After the finalisation of the co-location of LVNL and RNLAF in 2017, the organisations were asked to develop a project plan for the integration of the two organisations into one ATM organisation (1ATM). Based on the results, MoT and MoD agreed in 2019 to the intention to fully integrate the two organisations into one ATM organisation (LVNL). Integration of the organisations supports effective management and use of the airspace, guarantees the service provision for civil and military air traffic and safeguards the constitutional duties. Through a phased approach, the aim is to finalise the integration in 2024.

In 2015, the Netherlands government approved the expansion plans of Lelystad Airport. The realisation of the expansion is delayed. The total airport capacity in the Netherlands will increase with the development of Lelystad Airport. Air traffic control services are provided by LVNL (tower control services) and RNLAF (approach and departure control services).

LVNL is working on the implementation of the new air traffic control system iCAS, the successor to the current AAA system. iCAS offers a platform for further development, such as introducing 4D trajectory-based operations, enabling the air traffic controllers to handle traffic more systematically and efficiently, thus reducing their workload. The operational commissioning of iCAS is currently rescheduled.

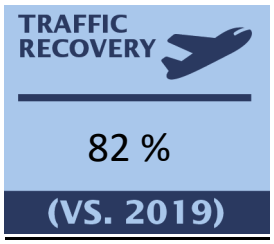
Main national stakeholders:

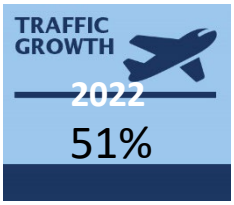
- Ministry of Infrastructure and Water Management (MoT, “Ministerie van Infrastructuur en Waterstaat”);
- Human Environment and Transport Inspectorate (ILT /CAA-NL, “Inspectie Leefomgeving en Transport”);
- Ministry of Defence (MoD, “Ministerie van Defensie”);
- Military Aviation Authority the Netherlands (MAA-NL, “Militaire Luchtvaart Autoriteit”);
- Air Traffic Control the Netherlands (LVNL, “Luchtverkeersleiding Nederland”);
- Royal Netherlands Air Force (RNLAF; Commando Luchtstrijdkrachten (CLSK));
- EUROCONTROL Maastricht Upper Area Control Center (MUAC);
- Netherlands Air Traffic Committee (LVC, “Luchtverkeerscommissie”);
- Airspace and Flow Management Unit (AFMU) and Netherlands Airspace Management Cell (NL AMC);
- Dutch Safety Board (OVV, “Onderzoeksraad voor Veiligheid”);
- Amsterdam Airport Schiphol (AAS);
- Royal Netherlands Meteorological Institute (KNMI, “Koninklijk Nederlands Meteorologisch Instituut”).

Main airport covered by LSSIP:

- Amsterdam Airport Schiphol (AAS)

Traffic and Capacity

Level of traffic compared to 2019	Summer En-Route Delay
	**Per ACC** 



Netherlands is part of:

FABEC

The Functional Airspace Block Europe Central

Number of national projects: 15
Number of FAB projects: 2
Number of multinational projects: 1

Summary of 2022 developments:

In 2022, the Dutch Airspace Redesign Programme continued their activities for redesigning its airspace. The ministries of Defence and Transport and the ANSPs (LVNL, MUAC and CLSK) work together in this programme.

Currently, LVNL is working on the implementation of the new air traffic control system iCAS. The Deutsche Flugsicherung (DFS) and LVNL are cooperating in this project. The iCAS partnership aims at the development and deployment of iCAS within LVNL ATC Centre and al four DFS ATC Centres. The current AAA system will be replaced by iCAS

The APOC building and interior are delivered to the Operations Department in December 2019. Since the start of the year 2020 the project was stopped because of the Covid-19 pandemic. A reorganisation within the company delayed the full deployment with two years. In 2021 and 2022 will be used for developing procedures and processes.

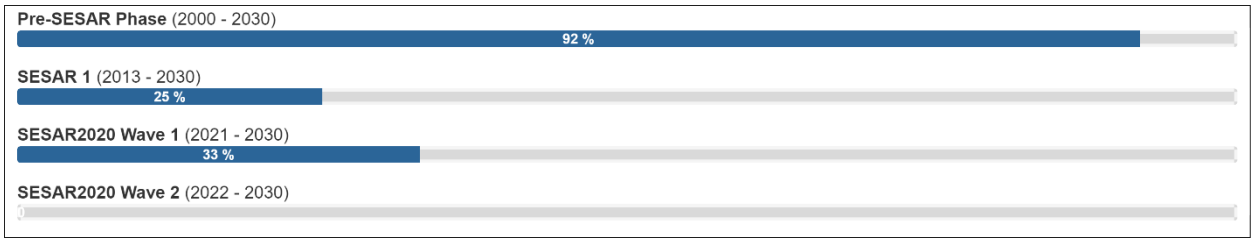
In 2022 trials and training started in order to start the operational use. The APOC was opened on November 15th 2022.

EMADDC v1.0 is operational since February 2019. As of 2021 EMADDC is a European service under the EUMETNET Aircraft Based Observation Programme (E-ABO). Release 2.2 (improved algorithms, larger geographical area) became operational in Q2 2022.

Progress per SESAR Phase

The figure below shows the progress made so far in the implementation of objectives stemming from different R&D phases (Pre-SESAR, SESAR1 and SESAR 2020).

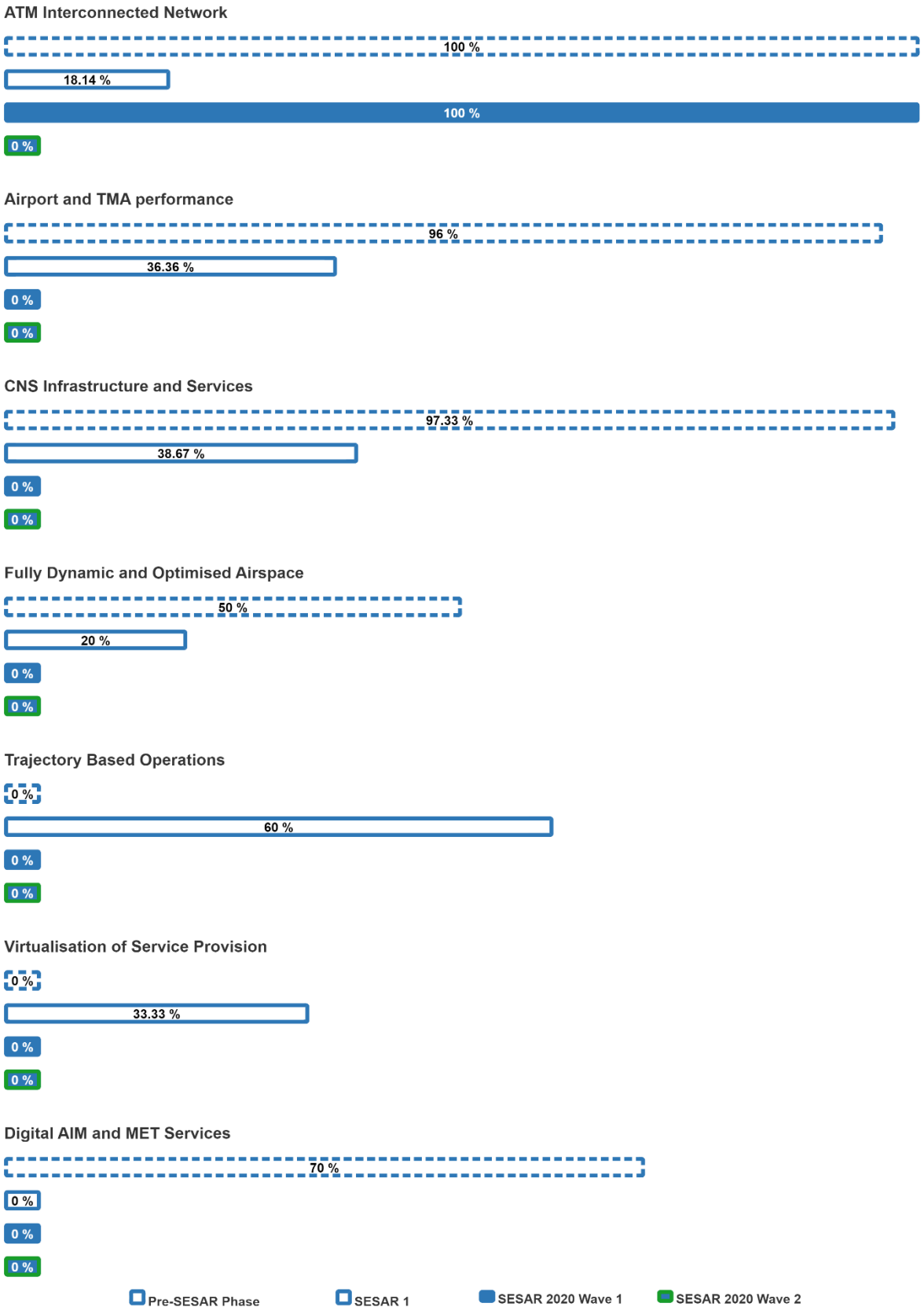
It shows the average implementation progress for all objectives grouped by SESAR Phase, excluding those for which the State is outside the applicability area as defined on a yearly basis in the European ATM Master Plan (Level 3) 2022, i.e. disregarding the declared “NOT APPLICABLE” LSSIP progress status.



Source: EUROCONTROL LSSIP+ DB

Progress per SESAR Essential Operational Changes and Phase

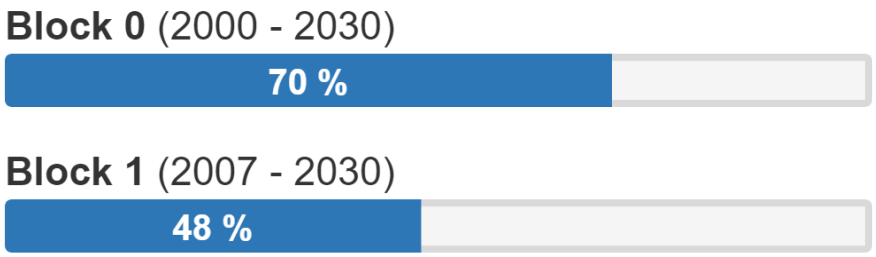
The figure below shows the progress made so far, per SESAR Essential Operational Changes, in the implementation of the SESAR phases. The percentages are calculated as an average, per EOC, of the same objectives as in the previous paragraph.



Source: EUROCONTROL LSSIP+ DB

ICAO ASBU Implementation Progress – Blocks 0 and 1

The figure below shows the progress made so far in the implementation of the ICAO ASBU Blocks 0 and 1, according to ICAO Global Air Navigation Plan 6th Edition (2019). The overall percentage is calculated as an average of the relevant Objectives contributing to each of the relevant ASBU Blocks; this is a summary of the table explained in Chapter 5.3 – ICAO ASBU Implementation Progress.



Source: EUROCONTROL LSSIP+ DB

ATM Deployment Outlook

State Objectives

✓ **Deployed in 2022**

- **Enhanced Short Term ATFCM Measures**

  [FCM04.2] 100 % progress

By 2023

- **Interactive Rolling NOP**

  [FCM10] 25 % progress

- **New Pan-European Network Service (NewPENS)**

  [COM12] 78 % progress

- **Voice over Internet Protocol (VoIP) in Airport/Terminal**

  [COM11.2] 58 % progress

By 2024

- **Electronic Terrain and Obstacle Data (eTOD)**

  [INF07] 70 % progress

- **RNP Approach Procedures to instrument RWY**

  [NAV10] 94 % progress

- **Information Exchange with En-route in Support of AMAN**

  [ATC15.1] 50 % progress

- **Aircraft Identification**

  [ITY-ACID] 90 % progress

By 2025

- **Cooperative Network Information Exchange - Short Term ATFCM Measures services (MCDM, eHelpdesk, STAM measures)**

  [INF10.16] 0 % progress

- **Cooperative Network Information Exchange – Counts service (ATFCM Congestion Points)**

  [INF10.17] 0 % progress

- **Flight Information Exchange (Yellow Profile) - Notification Service**

  [INF10.20] 0 % progress

- **Flight Information Exchange (Yellow Profile) - Data Publication Service**

  [INF10.21] 0 % progress

- **Flight Information Exchange (Yellow Profile) - Extended AMAN SWIM Service**

  [INF10.23] 0 % progress

- **Cooperative Network Information Exchange – Measures Service (Traffic Regulation)**

  [INF10.15] 0 % progress

- **Cooperative Network Information Exchange – Flight Management Service (Slots and NOP/AOP integration)**

  [INF10.14] 15 % progress

- **Cooperative Network Information Exchange - ATFCM Tactical Updates Service (Airport Capacity and Enroute)**

  [INF10.13] 0 % progress

- **Meteorological Information Exchange - En-Route and Approach Meteorological information service**

  [INF10.11] 9 % progress

- **Meteorological Information Exchange - Aerodrome Meteorological information Service**

  [INF10.10] 46 % progress

- **Meteorological Information Exchange - Volcanic Ash Mass Concentration information service**

  [INF10.9] 0 % progress

- **Aeronautical Information Exchange - Aeronautical Information Features service**

  [INF10.8] 8 % progress

- **Aeronautical Information Exchange - Aerodrome mapping service**

  [INF10.7] 0 % progress

- **Aeronautical Information Exchange - Airspace Reservation (ARES)**

  [INF10.5] 0 % progress

- **Aeronautical Information Exchange - Airspace Availability Service**

  [INF10.4] 0 % progress

- **Aeronautical Information Exchange - Airspace structure service**

  [INF10.3] 0 % progress

- **Stakeholders' SWIM PKI and cyber security**

[INF10.2] 2 % progress

- **Voice over Internet Protocol (VoIP) in En-Route**

  [COM11.1] 58 % progress

- **Enhanced STCA with down-linked parameters via Mode S EHS**

  [ATC20] 60 % progress

- **Meteorological Information Exchange - Network Meteorological Information**

  [INF10.12] 6 % progress

By 2026+

- **Short Term Conflict Alert (STCA) for TMAs**

  [ATC02.9] 0 % progress

- **RNAV 1 in TMA Operations**

  [NAV03.1] 94 % progress

- **RNP 1 in TMA Operations**

  [NAV03.2] 74 % progress

Source: EUROCONTROL LSSIP+ DB

Airport Objectives GRONINGEN/EELDE

✓ **Deployed in 2022**

By 2024

- **Remote Tower Services**

  [AOP14.1] 50 % progress

Airport Objectives MAASTRICHT/MAASTRICHT AACHEN

✓ **Deployed in 2022**

By 2024

- **Remote Tower Services**

  [AOP14.1] 50 % progress

Airport Objectives Amsterdam Schiphol

✓ **Deployed in 2022**

- **Departure Management Synchronised with Pre-departure sequencing**

  [AOP19] 100 % progress

By 2023

- **Initial AOP/NOP Information Sharing**

  [FCM11.1] 19 % progress

- **Time-Based Separation**

  [AOP10] 89 % progress

By 2024

- **Arrival Management Extended to En-route Airspace**

  [ATC15.2] 0 % progress

By 2025

- **Automated Assistance to Controller for Surface Movement Planning and Routing**

  [AOP13] 3 % progress

- **Guidance assistance through airfield ground lighting**

  [AOP16] 70 % progress

- **Airport Safety Nets**

  [AOP12.1] 62 % progress

By 2026+

- **Continuous Descent Operations (CDO)**

  [ENV01] 62 % progress

- **Extended Airport Operations Plan**

  [AOP11.2] 0 % progress

- **AOP/NOP integration**

  [FCM11.2] 0 % progress

- **De-icing management tool**

  [AOP25] 0 % progress

Source: EUROCONTROL LSSIP+ DB

Overall situation of Implementation Objectives

Main Objectives	Topic	Progress at the end of 2022	Status	2022		2023		2024		2025		2026		2027		>2027
AOM13.1	Harmonise Operational Air Traffic (OAT) and General Air Traffic (GAT) Handling	100%	Completed													
AOM19.4	Management of Predefined Airspace Configurations	100%	Completed		*											
AOM19.5	ASM and A-FUA	100%	Completed		*											
AOM21.2	Initial Free Route Airspace	100%	Completed		*											
AOM21.3	Enhanced Free Route Airspace Operations	100%	Completed								*					
AOP04.1(EHAM)	Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance Service (former ICAO Level 1)	100%	Completed													
AOP04.2(EHAM)	Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (Airport Safety Support Service = former ICAO Level 2)	100%	Completed								*					
AOP05(EHAM)	Airport Collaborative Decision Making (A-CDM)	100%	Completed													
AOP10(EHAM)	Time-Based Separation	89%	Ongoing				*									
AOP11.1(EHAM)	Initial Airport Operations Plan	100%	Completed				*									
AOP11.2(EHAM)	Extended Airport Operations Plan	0%	Planned												*	2027
AOP12.1(EHAM)	Airport Safety Nets	62%	Ongoing								*					
AOP13(EHAM)	Automated Assistance to Controller for Surface Movement Planning and Routing	3%	Ongoing								*					
AOP14.1(EHAM)	Remote Tower Services	0%	Not yet planned													2030
AOP14.1(EHBK)	Remote Tower Services	50%	Ongoing													2030
AOP14.1(EHGG)	Remote Tower Services	50%	Ongoing													2030
AOP15(EHAM)	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers	0%	Not yet planned													2030
AOP16(EHAM)	Guidance assistance through airfield ground lighting	70%	Ongoing													2030
AOP17(EHAM)	Provision/integration of departure planning	0%	Not													2030

Main Objectives	Topic	Progress at the end of 2022	Status	2022		2023		2024		2025		2026		2027		>2027
	information to NMOC		Applicable													
AOP18(EHAM)	Runway Status Lights (RWSL)	0%	Not yet planned													2030
AOP19(EHAM)	Departure Management Synchronised with Pre-departure sequencing	100%	Completed		*											
AOP25(EHAM)	De-icing management tool	0%	Planned													2030
AOP26(EHAM)	Reduced separation based on local Runway Occupancy Time (ROT) characterisation	0%	Not yet planned													2030
ATC02.8	Ground-Based Safety Nets	0%	Not Applicable													
ATC07.1(EHAM)	AMAN Tools and Procedures	100%	Completed													
ATC12.1	Automated Support for Conflict Detection, Resolution Support Information and Conformance Monitoring	100%	Completed													
ATC15.1	Information Exchange with En-route in Support of AMAN	50%	Ongoing													
ATC15.2(EHAM)	Arrival Management Extended to En-route Airspace	0%	Planned						*							
ATC18	Multi-Sector Planning En-route - 1P2T	0%	Not Applicable													2030
ATC19(EHAM)	AMAN/DMAN Integration	0%	Not Applicable												*	2027
ATC20	Enhanced STCA with down-linked parameters via Mode S EHS	60%	Ongoing													2030
ATC26(EHAM)	Point Merge in complex TMA	0%	Not yet planned													2030
COM10.2	Extended AMHS	100%	Completed						*							
COM11.1	Voice over Internet Protocol (VoIP) in En-Route	58%	Ongoing													
COM11.2	Voice over Internet Protocol (VoIP) in Airport/Terminal	58%	Ongoing				*									
COM12	New Pan-European Network Service (NewPENS)	78%	Ongoing						*							
COM13	Air Traffic Services (ATS) datalink using SatCom Class B	0%	Not yet planned													2030

Main Objectives	Topic	Progress at the end of 2022	Status	2022		2023		2024		2025		2026		2027		>2027
ENV01(EHAM)	Continuous Descent Operations (CDO)	62%	Ongoing				*									
ENV02(EHAM)	Airport Collaborative Environmental Management	100%	Completed													2030
ENV03(EHAM)	Continuous Climb Operations (CCO)	100%	Completed													2030
ENV03(EHBK)	Continuous Climb Operations (CCO)	100%	Completed													2030
ENV03(EHGG)	Continuous Climb Operations (CCO)	100%	Completed													2030
ENV03(EHRD)	Continuous Climb Operations (CCO)	100%	Completed													2030
FCM03	Collaborative Flight Planning	100%	Completed		*											
FCM04.2	Enhanced Short Term ATFCM Measures	100%	Completed		*											
FCM06.1	Automated Support for Traffic Complexity Assessment and Flight Planning interfaces	100%	Completed		*											
FCM10	Interactive Rolling NOP	25%	Ongoing				*									
FCM11.1(EHAM)	Initial AOP/NOP Information Sharing	19%	Ongoing				*									
FCM11.2(EHAM)	AOP/NOP integration	0%	Planned												*	2027
INF07	Electronic Terrain and Obstacle Data (eTOD)	70%	Ongoing													
INF10.10	Meteorological Information Exchange - Aerodrome Meteorological information Service	46%	Ongoing								*					
INF10.11	Meteorological Information Exchange - En-Route and Approach Meteorological information service	9%	Ongoing								*					
INF10.12	Meteorological Information Exchange - Network Meteorological Information	6%	Ongoing								*					
INF10.13	Cooperative Network Information Exchange - ATFCM Tactical Updates Service (Airport Capacity and Enroute)	0%	Planned								*					
INF10.14	Cooperative Network Information Exchange – Flight Management Service (Slots and NOP/AOP integration)	15%	Ongoing								*					
INF10.15	Cooperative Network Information Exchange – Measures Service (Traffic Regulation)	0%	Planned								*					
INF10.16	Cooperative Network Information Exchange - Short Term ATFCM Measures services (MCDM, eHelpdesk, STAM measures)	0%	Planned								*					
INF10.17	Cooperative Network Information Exchange –	0%	Planned								*					

Main Objectives	Topic	Progress at the end of 2022	Status	2022		2023		2024		2025		2026		2027		>2027
	Counts service (ATFCM Congestion Points)															
INF10.19	Flight Information Exchange (Yellow Profile) - Flight Data Request Service	0%	Not yet planned								*					
INF10.2	Stakeholders' SWIM PKI and cyber security	2%	Ongoing								*					
INF10.20	Flight Information Exchange (Yellow Profile) - Notification Service	0%	Planned								*					
INF10.21	Flight Information Exchange (Yellow Profile) - Data Publication Service	0%	Planned								*					
INF10.23	Flight Information Exchange (Yellow Profile) - Extended AMAN SWIM Service	0%	Planned								*					
INF10.3	Aeronautical Information Exchange - Airspace structure service	0%	Planned								*					
INF10.4	Aeronautical Information Exchange - Airspace Availability Service	0%	Planned								*					
INF10.5	Aeronautical Information Exchange - Airspace Reservation (ARES)	0%	Planned								*					
INF10.6	Aeronautical Information Exchange – Digital NOTAM service	0%	Not yet planned								*					
INF10.7	Aeronautical Information Exchange - Aerodrome mapping service	0%	Planned								*					
INF10.8	Aeronautical Information Exchange - Aeronautical Information Features service	8%	Ongoing								*					
INF10.9	Meteorological Information Exchange - Volcanic Ash Mass Concentration information service	0%	Planned								*					
ITY-ACID	Aircraft Identification	90%	Ongoing													
ITY-AGDL	Initial ATC Air-Ground Data Link Services	100%	Completed													
ITY-AGVCS2	8,33 kHz Air-Ground Voice Channel Spacing below FL195	100%	Completed													
ITY-FMTP	Common Flight Message Transfer Protocol (FMTP)	100%	Completed													
NAV03.1	RNAV 1 in TMA Operations	94%	Ongoing													2030
NAV03.2	RNP 1 in TMA Operations	74%	Ongoing													2030
NAV10	RNP Approach Procedures to instrument RWY	94%	Ongoing					*								

Main Objectives	Topic	Progress at the end of 2022	Status	2022		2023		2024		2025		2026		2027		>2027
NAV11.1	Implement precision approach procedures using GBAS CAT II based on GAST C	0%	Not yet planned													2030
NAV12	ATS IFR Routes for Rotorcraft Operations	0%	Not Applicable													2030
SAF10.1	Implement measures to reduce the risk to aircraft operations caused by airspace infringements	0%	Not yet planned													2030
SAF11.1	Improve Runway Safety by Preventing Runway Excursions	100%	Completed													2030

LEGEND:

*	Full Operational Capability (FOC) date
	The Planned Implementation Date as reported in the LSSIP DB for each objective

Introduction

The Local Single Sky ImPlementation (LSSIP) documents, as an integral part of the Master Plan (MP) Level 3 (L3)/LSSIP mechanism, constitute a short/medium term implementation plan containing ECAC States' actions to achieve the Implementation Objectives as set out by the MP Level 3 and to improve the performance of their national ATM System. This LSSIP document describes the situation in the State at the end of December 2022, together with plans for the next years.

Chapter 1 provides an overview of the ATM institutional arrangements within the State, the membership of the State in various international organisations, the organisational structure of the main ATM players -civil and military- and their responsibilities under the national legislation. In addition, it gives an overview of the Airspace Organisation and Classification, the ATC Units and the ATM systems operated by the main ANSP.

Chapter 2 provides a comprehensive picture of the situation of Air Traffic, Capacity and ATFM Delay per each ACC in the State. It shows the evolution of Air Traffic and Delay in the last five years and the forecast for the next five years. It also presents the achieved performance in terms of delay during the summer season period and the planned projects assumed to offer the required capacity which will match the foreseen traffic increase and keep the delay at the agreed performance level.

Chapter 3 provides the main Implementation Projects (at national, FAB and multinational level) which contribute directly to the implementation of the MP Operational Improvements and/or Enablers and Implementation Objectives. The LSSIP document covers a high-level list of the projects showing the applicable links. All other details like description, timescale, progress made and expected contribution to the ATM Key Performance Areas provided by the State per each project are available in the LSSP DB (extraction can be asked to LSSIP FP or LSSIP CP).

Chapter 4 deals with other cooperation activities beyond Implementation Projects. It provides an overview of the FAB cooperation, as well as all other multinational initiatives, which are out of the FAB scope. The content of this chapter generally is developed and agreed in close cooperation between the States concerned.

Chapter 5 contains aggregated information at State level covering the overall level of implementation, implementation per SESAR Essential Operational Change and implementation of ICAO ASBUs. In addition, it provides the high-level information on progress and plans of each Implementation Objective. The information for each Implementation Objective is presented in boxes giving a summary of the progress and plans of implementation for each Stakeholder. The conventions used are presented at the beginning of the section.

The information contained in Chapter 5 – Implementation Objectives Progress is deemed sufficient to satisfy State reporting requirements towards ICAO in relation to ASBU (Aviation System Block Upgrades) monitoring.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1. National ATM Environment

1.1. Geographical Scope

International Membership

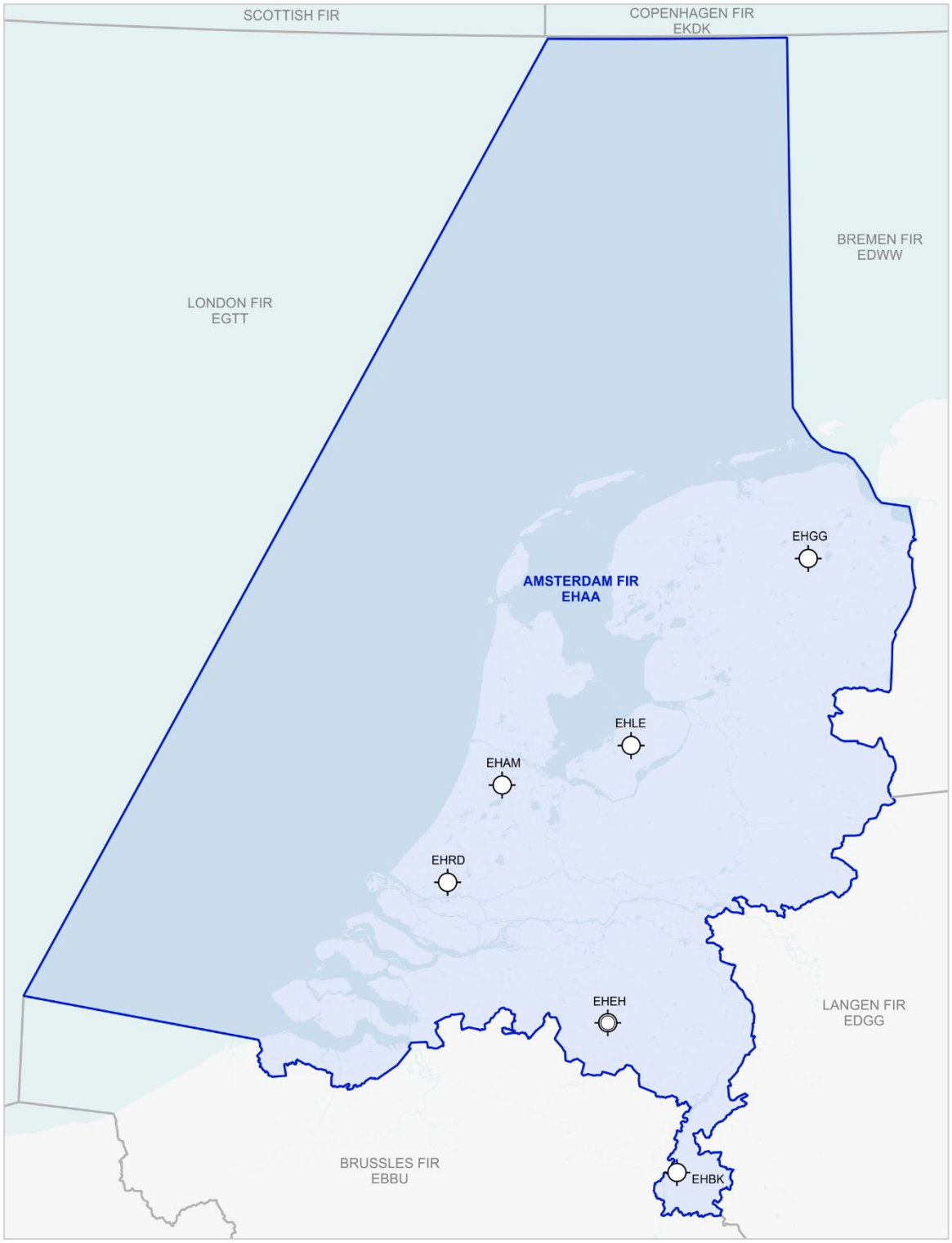
Netherlands is a Member of the following international organisations in the field of ATM:

Organisation		Since
ECAC	✓	1955
EUROCONTROL	✓	13/12/1960
European Union	✓	1951
EASA	✓	2003
ICAO	✓	26/03/1947
NATO	✓	04/04/1949
ITU	✓	01/01/1866
EDA	✓	April 2004

Geographical description of the FIR(s)

The geographical scope of the Netherlands LSSIP addresses the Amsterdam FIR below FL245. Additionally, the regulatory responsibilities above FL245 with regard to GAT and OAT are laid down in the MUAC LSSIP, in agreement with the other States involved.

The following map shows the geographical situation of the Netherlands airspace.



Airspace Classification and Organisation

Amsterdam FIR extends from GND/SEA level up to unlimited. Airspace classification above FL195 is compliant with regulation (EC) No. 730/2006 (Class C). Airspace organisation at and below FL195, including the corresponding procedures, have been assessed by the Regulator, Military and LVNL. Further developments will be part of the Netherlands Airspace Committee processes, which involve all the ASP, REG and MIL stakeholders.

The situation of the classification of the air traffic services airspaces as published in AIP Netherlands is as follows:

Classification	**ATS Airspaces**
Class A	1. Amsterdam CTA East 1, East 2, West, South 1 and South 2 2. Nieuw Milligen CTA North 3. Schiphol TMA 1, 2, 3, 4, 5 and 6 4. Airway L179
Class B	1. Maastricht TMA 2 2. Nieuw Milligen TMA A and C above FL 065 (FL 095 [1]) 3. Nieuw Milligen TMA D above FL 065 Nieuw Milligen TMA E above FL 065 [2] [1]) FRI 1600 to SUN 2300 (FRI 1500 to SUN 2200) and Holidays. [2]) SUN 2300 to FRI 1600 (SUN 2200 to FRI 1500), excluding Holidays.
Class C	1. Amsterdam UTA 2. CTRs: Schiphol, Rotterdam, Eelde and Maastricht 3. Eindhoven TMA 1, 2, 3 and 4 4. Brussels CTA East Four A, Liege TMA One and Two
Class D	1. Maastricht TMA 1 2. Military CTRs: Deelen, De Kooy, De Peel, Eindhoven, Gilze Rijen, Leeuwarden, Volkel, Woensdrecht 3. Niederrhein CTR in Amsterdam FIR 4. Kleine Brogel CTR in Amsterdam FIR
Class E	1. Eelde TMA 2. Rotterdam TMA 1, 2 and 3 3. Nieuw Milligen TMA A, C, E at or below FL 065 (FL 095 [1]) 4. Nieuw Milligen TMA B, G1 and G2 5. Nieuw Milligen TMA D at or below FL 065 [1] FRI 1600 to SUN 2300 (FRI 1500 to SUN 2200) and Holidays.
Class F	Nil
Class G	All other airspace not mentioned above

ATC Units

The ATC units in the Netherlands airspace, which are of concern to this LSSIP, are the following:

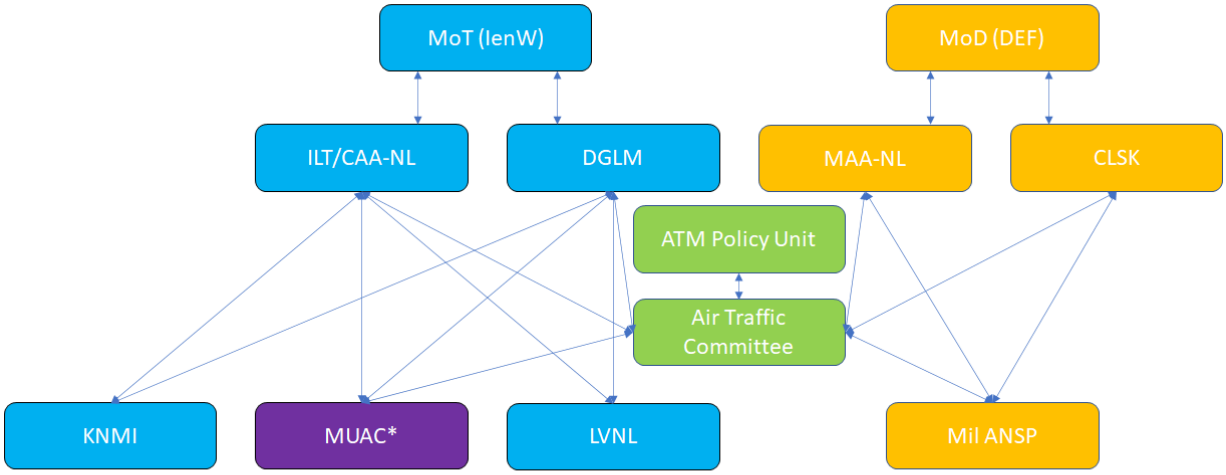
ATC Unit	Number of sectors		Associated FIR(s)	Remarks
	En-route	TMA		
EHAA ACC	5	n/a	FIRNL	
Approach				3 units EHAM EHBK EHGG
Dutch Mil		7	FIRNL	ATS to GAT below FL 245 and OAT in the assigned airspace
RAPCON		5	FIRNL	Unit South, West and North providing approach services for EHKD EHLW EHDL EHVK EHWO EHGR EHBD EHTE EHTW and EHEH

1.2. National Stakeholders

The main National Stakeholders involved in ATM in the Netherlands are the following:

- Ministry of Infrastructure and Water Management (MoT, "Ministerie van Infrastructuur en Waterstaat");
- Human Environment and Transport Inspectorate (ILT /CAA-NL, "Inspectie Leefomgeving en Transport");
- Ministry of Defence (MoD, "Ministerie van Defensie");
- Military Aviation Authority the Netherlands (MAA-NL, "Militaire Luchtvaart Autoriteit");
- Air Traffic Control the Netherlands (LVNL, "Luchtverkeersleiding Nederland");
- Royal Netherlands Air Force (RNLAF; Commando Luchtstrijdkrachten (CLSK));
- EUROCONTROL Maastricht Upper Area Control Center (MUAC);
- Netherlands Air Traffic Committee (LVC, "Luchtverkeerscommissie");
- Airspace and Flow Management Unit (AFMU);
- Dutch Safety Board (OVV, "Onderzoeksraad voor Veiligheid");
- Amsterdam Airport Schiphol (AAS);
- Royal Netherlands Meteorological Institute (KNMI, "Koninklijk Nederlands Meteorologisch Instituut").

Their activities are detailed in the following subchapters and the relationship between the ANSPs and their governing bodies is shown in the diagram below.



*MUAC is operated by EUROCONTROL on behalf of four states – Belgium, Germany, Luxembourg and the Netherlands. This diagram only shows the relation between the Dutch governing bodies and MUAC.

1. The Ministry of Infrastructure and Water Management (MoT, "Ministerie van Infrastructuur en Waterstaat") is the State authority for civil aviation in the Netherlands. Within MoT, the Directorate General for Civil Aviation and Maritime Affairs (DGLM, "Directoraat-Generaal Luchtvaart en Maritieme Zaken") is responsible for the development of aviation policy and legislation, including transport, environment and safety.

2. Policy implementation and supervision are delegated to the Human Environment and Transport Inspectorate (ILT/CAA-NL, "Inspectie Leefomgeving en Transport"), also a part of MoT. Within the framework of the Single European Sky (SES), a part of ILT/CAA-NL performs as the National Supervisory Authority (NSA).

3. The Ministry of Defence (MoD, "Ministerie van Defensie") is the State military authority for military aviation in the Netherlands. As established in the Aviation Act, airspace regulation is a shared responsibility between the civil and military authorities and is effected by MoT in agreement with MoD.

4. Within MoD, the Military Aviation Authority the Netherlands (MAA-NL, "Militaire Luchtvaart Autoriteit") is on behalf of the Minister of Defence responsible for policy, regulation, certification and auditing of the military aviation system. The MAA-NL closely co-operates with the civil authorities DGLM and ILT/CAA-NL. All military units involved with ATS provision are certified by the MAA-NL. The military training organization was certified in 2016. As part of the service provision to military traffic operating as OAT has been transferred to MUAC, this service provider has been accredited in 2017.

5. Air Traffic Control the Netherlands (LVNL, "Luchtverkeersleiding Nederland") is the national civil air navigation service provider (a corporatized public entity since January 1993 – Independent Administrative Body (ZBO)). While accountable to MoT for its performance, LVNL is functionally separated from DGLM and ILT/CAA-NL. The Aviation Act stipulates that LVNL, together with the military ATS provider and MUAC share the responsibility for the provision of ATS to all air traffic within the Amsterdam FIR, each for its own Area of Responsibility. LVNL is certified for ATS, CNS, ASM, ATFM and AIS provision and is designated as ANSP in the Aviation Act. Air Traffic Services on Amsterdam Airport Schiphol are provided by two control units (Schiphol Tower and Schiphol Approach). Rotterdam Approach is located in the LVNL building at Schiphol. ATS and all other herewith directly related activities for Groningen Airport Eelde and Maastricht Aachen Airport are part of the ATM Service Provision of the LVNL Regional Unit.

6. The Royal Netherlands Air Force (RNLAF; "Commando Luchtstrijdkrachten" (CLSK)) is one of the operational commands within the MoD and provides ATS, on behalf of the Minister of Defence, in part of the airspace formally assigned, including all the military aerodromes.

7. For the services provided, the EUROCONTROL Maastricht Upper Area Control Center (MUAC) is a certified ATSP for the upper airspace, based in the Netherlands and designated in the Aviation Act. The foundation of MUAC lies in the Maastricht Agreement, involving Belgium, Germany, Luxembourg, Netherlands and EUROCONTROL. MUAC is outside the scope of this LSSIP and delivers its own LSSIP document. The activities of these main National Stakeholders are detailed in the following sub-chapters and their organizational charts are shown in Annexes. MUAC arrangements with military relevance are subject for coordination between MUAC/NL MoT/NSA with the MAA-NL.

8. The Royal Netherlands Meteorological Institute (KNMI, "Koninklijk Nederlands Meteorologisch Instituut") is an agency within MoT responsible for the provision of meteorological services in the Amsterdam FIR. KNMI is certified as ANSP for meteorology and designated in the 'Regeling luchtvaartmeteorologische inlichtingen 2006' under the Aviation Act. MET ANSP KNMI provides the ICAO/WMO/EU function of Meteorological Watch Office (MWO) for the Amsterdam FIR, and the functions of Aeronautical Meteorological Station (AMS) and Aerodrome Meteorological Office (AMO) for the airports Amsterdam Airport Schiphol, Rotterdam The Hague Airport, Groningen Airport Eelde, Maastricht Aachen Airport and Lelystad Airport. As well as the AMS function for several offshore structures in the North Sea and for Budel Airport. The Military provides the AMS and AMO function for the military airports with civil use of Eindhoven and de Kooy. Coordination between KNMI and the Joint Meteorology Group of the Military is in place. KNMI coordinates with European MET ANSPs via EUMETNET and the MET Alliance.

9. The Netherlands Air Traffic Committee (LVC, "Luchtverkeerscommissie") functions as a joint civil/military advisory body for the two Ministers responsible for aviation (MoD and MoT). It consists of representatives of both ministries – involving the MAA-NL, DGLM and ILT (CAA-NL) – and the service providers while also other ad-hoc stakeholders, such as airlines, are invited. It is also responsible for ASM Level 1

10. ATM Policy Unit: both ministries (MoT and MoD) established a joint ATM policy unit consisting of MoT and MoD staff. This unit is mainly responsible for the coordination and joint preparation of a national, state point of view regarding ATM dossiers.

11. Netherlands Airspace Management Cell (NL AMC): the LVC formulates the national ASM policy and carries out the necessary strategic planning work, taking into account national and international airspace users' requirements and Single European Sky regulation. The LVC is tasked with the continuous reassessment of national airspace, the progressive establishment of new and more flexible airspace structures, and the introduction of procedures for the allocation of these airspace structures on a daily basis. The NL AMC will be led by the -Head-AMC (H-AMC) and consists of 2 Flexible Use of Airspace (FUA) cells, FUA Cell LVNL (FC-L) and FUA Cell MUAC (FC-M). Pre-tactical ASM consists of the day-to-day management and temporary allocation of airspace. This is achieved through the two FUA Cells within the NL AMC. The FC-L is responsible for handling and coordinating all airspace requests related to the non-nominal airspace of the Amsterdam FIR. The responsibility for handling and coordinating nominal airspace request at ASM Level 2 is shared between FC-L and FC-M. Flexible Use of Airspace is fully applied by NL.

Other important national stakeholders involved in ATM in the Netherlands are as follows:

12. The Dutch Safety Board (OVV, "Onderzoeksraad voor Veiligheid") carries out the investigations for civil aviation accidents. The OVV is an independent body within the meaning of Art 4(1) of Regulation (EU) No 996/2010 of the European Parliament and of the Council, which means that the investigations following civil aviation accidents and/or incidents are carried out by a permanent body functionally independent in particular of the National Aviation Authorities (part of the 'safety chain') and of any other entity (e.g., ANSPs, airport operators, etc.) whose interests could conflict with the investigations themselves.

13. Amsterdam Airport Schiphol (AAS) is the major airport in the Netherlands; it is part of the Royal Schiphol Group, in the ownership of the State of the Netherlands, the City of Amsterdam and the City of Rotterdam– details regarding Schiphol Group and the ownership of AAS are provided in Annexes.

Civil Regulator(s)

General Information

Civil Aviation in The Netherlands is the responsibility of the Ministry of Infrastructure and Water Management (MoT, "Ministerie van Infrastructuur en Waterstaat"). The different national entities having regulatory responsibilities in ATM are summarised in the table below. The CAA-NL is further detailed in the following sections.

Within MoT, the Directorate General for Civil Aviation and Maritime Affairs (DGLM, "Directoraat-Generaal Luchtvaart en Maritieme Zaken") is responsible for the development of aviation policy and legislation, including transport, environment and safety.

The Netherlands civil aviation regulatory framework consists of:
1. Convention on International Civil Aviation (Chicago Convention)
2. European Union (EU) regulations, which are directly applicable and binding in the Netherlands, and European Union directives, which need to be implemented in Netherlands regulation;
3. National laws (acts) – enacted by government and parliament;
4. Royal decrees ("Koninklijke besluiten"); and
5. Ministerial regulations ("ministeriële regelingen").

The legal framework is further complemented by Ministerial orders ("ministeriële besluiten") and Policy rules ("beleidsregels"), which may have a legal binding status and require publication.

At its higher level, the regulatory framework consists of three basic laws:
1. The Act on Aviation ("Wet luchtvaart"), enacted in 1992 by Parliament, which addresses LVNL, MUAC, KNMI and the military;
2. The Aviation act ("Luchtvaartwet"), enacted in 1959;
3. The Kingdom act concerning Safety Investigation Board, enacted in 2005.

MoT (civil) and MoD (military) are both the regulators for the Aviation act, the Act on aviation and the decrees and

regulations based on those acts.

The different national entities having regulatory responsibilities with respect to ATM/ANS are specified in the table on the next page.

Activity in ATM:	Organisation responsible	Legal Basis
Rule-making	(MoT/DGLM) (MoD)	Act on aviation (Wet luchtvaart), chapter V; Regulations (EC) 549/2004, 550/2004, 551/2004, 552/2004 and 1070/2009. (EU) 2017/373 and 2018/1139.
Safety Oversight	ILT (CAA-NL) MLA (MAA-NL) Supervision is in the remit of the ILT for civil aviation Supervision is in the remit of the MAA-NL for military aviation	Act on aviation, article 11.1, par. 1, sub section b; Ministerial order regarding the appointment of aviation supervisors (Besluit aanwijzing toezichthouders luchtvaart); Ministerial order for the determination of military aviation safety (Regeling houdende vaststelling kader Veiligheid Militaire luchtvaart), 1 October 2016; Ministerial order regarding the establishment of ILT (Instellingsbesluit Inspectie Leefomgeving en Transport), article 2, par. 2, subsection c. ILT is the nominated NSA as from 1 January 2012 (article 2, par. 3, subsection b).
Enforcement actions in case of non-compliance with safety regulatory requirements	ILT (CAA-NL) MLA (MAA-NL) Enforcement is in the remit of the ILT for civil aviation Enforcement is in the remit of the MAA-NL for military aviation	Act on aviation, article 11.15, subsection b, under 2 up to and including 5, and article 11.16, par. 1, subsection c; Ministerial order regarding the establishment of ILT, article 2, par. 2, subsection c. ILT is the nominated NSA as from 1 January 2012 (article 2, par. 3, subsection b); Ministerial order for the determination of military aviation safety (Regeling houdende vaststelling kader Veiligheid Militaire luchtvaart), 1 October 2016; Act on aviation, Aviation act and General act on administrative law; Act on aviation, art. 11.9-11.10, Aviation act, art. 62-70, Economic offences act, art. 1.

Activity in ATM:	Organisation responsible	Legal Basis
Airspace	MoT/DGLM together with MoD/MAA-NL Supervision and enforcement are in the remit of ILT (CAA-NL) and MoD/MAA-NL respectively	Act on aviation, chapter V, complemented by ministerial decrees and regulations; Rules of the air: Decree on air traffic rules (Besluit luchtverkeer 2014) and Regulation (EU) Nr. 923/2012 (Standardized European rules of the air); ATM/ANS: Regulations (EC) 549/2004, 550/2004, 551/2004, 552/2004 and 1070/2009 and Regulation (EU) Nr. 923/2012 (Standardized European rules of the air), 2017/373 and 2018/1139.
Economic	MoT/ DGLM and ILT (CAA-NL)	Act on aviation, article 5.43, par. 3; In providing its function as an NSA, ILT uses economic expertise from MoT/DGLM, which has such expertise as being responsible for the content of the economic/financial and performance regulation.
Environment	MoT/ DGLM Supervision and enforcement are in the remit of ILT (CAA-NL)	The Airport traffic decree for Schiphol Airport (Luchthavenverkeerbesluit Schiphol), chapters III en IV, provides rules for route and runway use, which service provider LVNL must comply with. This decree also provides rules to comply with the values for noise maximum, third risk party and local air pollution. Handling air traffic within limit values is a common responsibility of LVNL, the airlines and Schiphol Airport.
Security	Ministry of Security and Justice, MoD and MoT/DGLM Supervision and enforcement are in the remit of police and customs officers, and of MoD respectively	Aviation act (Luchtvaartwet), chapter IV, section 3A, holds the Minister of Security and Justice responsible for security of civil aviation; Decree on air traffic rules (Besluit luchtverkeer 2014); Regulation (EU) Nr. 923/2012 (Standardized European rules of the air); Ministerial regulation on interception of aircraft (Regeling onderschepping luchtvaartuigen).
Accident investigation	The Dutch Safety Investigation Board (OvV)	Kingdom act concerning the Safety Investigation Board (Rijkswet Onderzoeksraad voor veiligheid), article 4, par. 1, subsection e.

Directorate General for Civil Aviation and Maritime Affairs (DGLM) and the Human Environment and Transport Inspectorate (ILT/CAA-NL)

By provision of law, MoT is the competent civil ATM regulator. This responsibility is further broken down within the remit of two MoT departments, DGLM and ILT (CAA-NL) as follows:

1. The Directorate-General for Civil Aviation and Maritime Affairs (DGLM, "Directoraat-Generaal Luchtvaart en Maritieme Zaken") is responsible for the development of aviation policy and legislation, including transport, environment and safety. The acting Director-General of civil aviation represents the Netherlands in the EUROCONTROL (Provisional) Council. Airspace regulation is a shared responsibility between civil and military authorities. Therefore, airspace regulation in respect of civil aviation is established by MoT/DGLM in agreement with the MoD/MAA-NL.

2. CAA-NL, as part of Human Environment and Transport Inspectorate, (ILT, "Inspectie Leefomgeving en Transport") is responsible for aviation policy implementation, oversight and enforcement. Part of CAA-NL performs the role and tasks of the NSA NL. CAA-NL may also issue Ministerial orders and grant temporary exemptions of aviation regulations. ILT (including CAA-NL) is ISO 9001:2015 certified.

DGLM and ILT/CAA-NL are functionally separated from the ANSPs LVNL,MUAC and KNMI. ILT/CAA-NL and LVNL are both under the regulatory authority of the Minister of Infrastructure and Water Management.

The Netherlands, together with Belgium, Germany and Luxembourg agreed in the Maastricht Agreement for the provision and operation of air navigation services by EUROCONTROL from the Maastricht Upper Area Control Centre (MUAC). Based on the Chicago Convention and the Maastricht Agreement, each of the four States retains its specific responsibilities with regards to regulation and oversight within its own airspace serviced by MUAC. Regulation and oversight of MUAC are nevertheless exercised in a highly coordinated manner among the four concerned States. The Maastricht Agreement was changed on 01.07.2022. This resulted in adaptations in the roles and responsibilities of the 4 MUAC States and the responsibilities and competencies of Director MUAC. The Maastricht Coordination Group (MCG) has been transformed into the Maastricht Decision Making Body (MDMB).

At regulatory level, decision-making and coordination between the MUAC States is mainly ensured through the Maastricht Decision Making Body (MDMB).

At supervisory level, the service as provided at MUAC, as a NL-based ATS provider, was SES-certified by the NSA NL in cooperation with the NSAs of the three other States. On the basis of the agreement of the 4 States NSAs regarding the oversight activities on MUAC (including the 4 NSA's Manual), the four States' NSAs work together concerning the Single European Sky-related supervision of MUAC. They cooperate within an NSA-Committee (NSA-C), which is responsible for all supervisory activities on MUAC and a Common Supervisory Team (CST), which exercises the applicable oversight functions.

Note: The Netherlands have established a Military Aviation Authority the Netherlands (MAA-NL) and subsequently embedded a joint civil military policy unit in the NetherlandsMinistry of Transport. MUAC arrangements with military relevance are subject for coordination between MUAC/NL MOT/NSA with the MAA-NL. MUAC as service provider to OAT is accredited by the MAA-NL.

Annual Report published:	Y	https://www.ilent.nl/over-ilt/publicaties

The organisation chart of the Ministry of Infrastructure and Water Management is provided in Annexes. The Internet site of MoT/DGLM may be accessed at address: https://www.rijksoverheid.nl/ministeries/ienw.

The Internet site of ILT/CAA-NL may be accessed at address:
https://www.ilent.nl/onderwerpen/themas/luchtvaart

ATC The Netherlands (LVNL, "Luchtverkeersleiding Nederland")

Services provided

The legal basis for the establishment and provision of air traffic services in the Netherlands is in the Act on Aviation, Chapter 5. The conditions are detailed in the Governmental Decree on Air Traffic (Besluit luchtverkeer 2014) and the Ministerial Regulation on air traffic service provision (Regeling luchtverkeersdienstverlening).

Cross-border provision of services is possible under the Regulation (EC) No 550/2004 and has its legal basis in the Act on aviation. Aside from cross-border service agreements between service providers, the Regulation on ATS delegation to foreign service providers (Regeling aanwijzing gebieden voor luchtverkeersdienstverlening door instanties) deals with specific areas, i.e., Brussels ATC, Langen ATC, London ATC, Copenhagen ATC and Mil ATCC Semmerzake.

Governance:	LVNL has been an independent administrative body (ZBO) since 1 January 1993. As such, LVNL is accountable for its performance to the MoT and LVNL staff members are civil servants. In the sense of the Central and Local Government Personnel Act, LVNL applies the Code of Good Governance for Implementing Organizations as a directive.	**Ownership:**	LVNL is an Independent Administrative Body (ZBO, "Zelfstandig Bestuursorgaan").

Services provided	**Y/N**	**Comment**
ATC en-route	Y	ATS below FL245 is in the responsibility of LVNL with the exception of the areas under control by MILATC Schiphol and also Amsterdam FIR above FL245, which is delegated to MUAC.
ATC approach	Y	ATC approach services at Schiphol, Rotterdam, Groningen and Maastricht are provided by LVNL.
ATC Aerodrome(s)	Y	Aerodrome ATC services at Schiphol, Rotterdam, Groningen and Maastricht are provided by LVNL.
AIS	Y	All AIS provided to GAT within the area of scope of this LSSIP are delivered by LVNL in close coordination with RNLAF.
CNS	Y	All CNS services provided to GAT within the area of responsibility and scope of this LSSIP are delivered by LVNL.
MET	N	KNMI is certified and designated as the provider for meteorological services (MET ANSP).
ATCO training	Y	All ATCO training for the services provided by LVNL are in the full responsibility of LVNL.
Others	N	
Additional information:		
Provision of services in other State(s):	Y	LVNL provides services in the UK, Germany and Belgium by ATS cross-border delegation.
Annual Report published:	Y	https://jaarverslag.lvnl.nl/media/n4savmqb/lvnl-jaarverslag-2021-final.pdf

The Internet site of LVNL may be accessed at address: https://www.lvnl.nl.

The organization chart is available in Annex B.

Maastricht Upper Area Control Center

The LSSIP information concerning MUAC, the 2nd main NL-based and certified ATS provider, is available in the LSSIP 2022 document of MUAC.

Military service provider

Royal Netherlands Air Force ("Koninklijke Nederlandse Luchtmacht") on behalf of the Minister of Defence

Governance:	RNLAF is as one of the operational commands part of the Netherlands MoD organization.	**Ownership:**	RNLAF is as one of the operational commands part of the Netherlands MoD organization.

Services provided	**Y/N**	**Comment**
ATC en-route	Y	ATS inside the Amsterdam FIR in areas designated by national legislation.
ATC approach	Y	ATC approach services at De Kooy, Leeuwarden, Deelen, Gilze-Rijen, Volkel, Woensdrecht, Eindhoven, Budel, Teuge, Lelystad and Twente.
ATC Aerodrome(s)	Y	Aerodrome ATC services at De Kooy, Leeuwarden, Deelen, Gilze-Rijen, Volkel, Woensdrecht, Eindhoven.
AIS	Y	All AIS provided to OAT and GAT within the area of responsibility and in close coordination with LVNL.
CNS	Y	All CNS services provided to OAT and GAT within the area of responsibility.
MET	Y	The Joint Meteorological Group (JMG) provides in close cooperation with MET ANSP KNMI the MET services for traffic in the area of responsibility. JMG is certified by the MAA-NL.
ATCO training	Y	All ATCO training for the services provided by RNLAF are under the full responsibility of RNLAF.
Others	Y	The provision of Tactical ATS during special events in designated areas.
Additional information:		
Provision of services in other State(s):	Y	RNLAF provides services in Germany and Belgium by ATS cross-border delegation.
Annual Report published:	N	

ATC systems in use

Main ANSP part of any technology alliance[2]	Y	iCAS/iTEC

FDPS

Specify the manufacturer of the ATC system currently in use:	Raytheon/Indra
Upgrade[3] of the ATC system is performed or planned?	
Replacement of the ATC system by the new one is planned?	Winter 2023-2024
ATC Unit	EHAA ACC

SDPS

Specify the manufacturer of the ATC system currently in use:	EUROCONTROL (ARTAS), SAAB (ASTRA) and DFS (Phoenix)
Upgrade of the ATC system is performed or planned?	2020
Replacement of the ATC system by the new one is planned?	2022
ATC Unit	EHAA ACC

[2] Technology alliance is an alliance with another service provider for joint procurement of technology from a particular supplier (e.g. COOPANS alliance)

[3] Upgrade is defined as any modification that changes the operational characteristics of the system (SES Framework Regulation 549/2004, Article 2 (40))

Airports

General information

Amsterdam Airport Schiphol (AAS), part of the Royal Schiphol Group, is the major airport in the Netherlands. Other relevant ATS controlled civil airports are Rotterdam, The Hague Airport, Maastricht Aachen Airport and Groningen Airport Eelde. Eindhoven is a military aerodrome with civil co-use where ATS, CNS and AIS services are provided by the Military Air Traffic Control Centre (MilATCC) Schiphol and the military control tower. Air Traffic Services on Amsterdam Airport Schiphol are provided by two control units (Schiphol Tower and Schiphol Approach). Rotterdam Approach is located in the LVNL building at Schiphol. ATS, CNS, AIS and all other herewith directly related activities for Groningen Eelde Airport and Maastricht Aachen Airport are part of the ATM Service Provision of the LVNL Regional Unit.

The revised Aviation Act of 2002 dictates environmental rules for Amsterdam Airport Schiphol. The Airport Traffic Decree Schiphol, a governmental decree based on the Aviation Act, provides rules for route and runway use that LVNL must comply with. This decree also provides the responsibility to comply with the limit values for noise, third party risk and local air pollution. Handling air traffic within maximum values is a common liability of LVNL, the airlines and the airport. Transgressions of these maximum values results in financial penalties and measures from ILT (CAA-NL).

More information on Amsterdam Airport Schiphol is available in Annexes, Organisation of the national stakeholders.

Annual Report published:	Y	For 2022, Amsterdam Airport Schiphol published the Annual Report: https://www.annualreportschiphol.com

Airport(s) covered by the LSSIP

Referring to the List of Airports in the European ATM Master Plan Level 3 Implementation Plan Edition 2022 – Annex 3, it is up to the individual State to decide which additional airports will be reported through LSSIP for those Objectives.

The LSSIP for the Netherlands focuses mainly on Amsterdam Airport Schiphol.

The information on individual airports is also available in the Airport corner at:
https://ext.eurocontrol.int/airport_corner_public/

Military Authorities

The Military Authorities in the Netherlands are composed of:

1. The Military Aviation Authority the Netherlands (MAA-NL, "Militaire Luchtvaart Autoriteit") has an independent position directly under the Minister of Defence. The Director MAA-NL is the military supervisory authority and is responsible for the development of aviation policy. The MAA-NL consists of three operational divisions (operations, certification and airports/airspace) and one supporting staff division. These divisions have specialist and military knowledge that is relevant to each area of expertise. The operational divisions reflect the MAA-NL philosophy of a "Total Aviation System" in which the interrelation of all aspects of (military) aviation becomes clearly visible. MAA-NL closely cooperates to this purpose with the civil authorities of DGLM within the joint civil/military ATM Policy Unit. On oversight, the MAA-NL closely cooperates with ILT/CAA-NL.

2. The military ATS provider organization consists of all entities acting on behalf of the Minister of Defence providing ATS. These entities are divided into fixed stations, consisting of Air Operations Control Station Nieuw Milligen (AOCS NM) (Fighter Control), Military Air Traffic Control Center Schiphol (Area Control and Centralized Approach Control) and the control towers on Military aerodromes, and mobile stations consisting of naval vessels or mobile towers.

As part of an extensive civil-military cooperation process all ATS below FL245, excluding the local ATS provided in the respective military controlled airspace, has been collocated at LVNL premises on the 7th of December 2017. The service provision to OAT above FL245 has been transferred to MUAC by the 27th of April 2017.

Their regulatory, service provision and user role in ATM are detailed further below.

The organisation chart of the Ministry of Defence is available in Annexes. The Internet site of MoD may be accessed at address:https://www.rijksoverheid.nl/ministeries/ministerie-van-defensie.

Regulatory role

Regulatory framework and rule-making

The legal basis for the regulatory elements of military aviation originates from the Aviation Act; in particular: Article 1.4 empowering the Ministry of Defence (MoD) to issue regulations and to coordinate MoD regulations applicable to civil traffic/air navigation with the MoT; Article 3.14 regarding certificates of airworthiness for military aircraft; and Chapter 10, which is entirely dedicated to military aviation. The Ministerial order for the determination of military aviation safety (Regeling houdende vaststelling kader Veiligheid Militaire luchtvaart), 1 October 2016 designates the MAA-NL as the entity responsible for the safety of military aviation empowered to act on behalf of the Minister of Defence.

Airspace regulation is a shared responsibility of the civil and military authorities; Coordination between the two authorities is ensured at all levels.

OAT		GAT	
OAT and provision of service for OAT governed by national legal provisions?	Y	Provision of service for GAT by the Military governed by national legal provisions?	Y
Level of such legal provision: Aviation Act (law), Ministerial Decree and Air Force Regulation		Level of such legal provision: Aviation Act (law)	
Authority signing such legal provision: Parliament (for the Aviation Act) and Minister of Defence (for the Decrees and regulations below the level of the Aviation Act)		Authority signing such legal provision: Parliament (for the Aviation Act) and Minister of Defence (for the Decrees and regulations below the level of the Aviation Act)	
These provisions cover:		These provisions cover:	
Rules of the Air for OAT	Y		
Organisation of military ATS for OAT	Y	Organisation of military ATS for GAT	Y
OAT/GAT Co-ordination	Y	OAT/GAT Co-ordination	Y
ATCO Training	Y	ATCO Training	Y
ATCO Licensing	Y	ATCO Licensing	Y
ANSP Certification	Y	ANSP Certification	Y
ANSP Supervision	Y	ANSP Supervision	Y
Aircrew Training	Y		
Aircrew Licensing	Y		
Additional Information: the MAA-NL is in the process of transposing the regulations and requirements applicable for Civil Aviation into equivalent Military Aviation Requirements (MAR/ATM)		ILT/CAA-NL has informed EASA that the MAA-NL and its MARs are fully compliant with the requirements of EASA.	
Means used to inform airspace users (other than military) about these provisions:		Means used to inform airspace users (other than military) about these provisions:	
National AIP	Y	National AIP	Y
National Military AIP	Y	National Military AIP	Y
EUROCONTROL eAIP	N	EUROCONTROL eAIP	Y
Other:	N/A	Other:	N/A

Oversight

OAT	GAT
National oversight body for OAT: MAA-NL	In accordance with IR 2018/1139 MAA-NL is the oversight body for GAT in case the service is provided by military personnel. ILT/CAA-NL has confirmed that the level of safety and interoperability with civil systems that is as effective as that resulting from the application of the essential requirements set out in Annexes VII and VIII to the Basic Regulation, is provided by the MAA-NL regulations.
Additional information:	MAA-NL is functionally separated from the military Service Provision; both entities are under the direct responsibility of the MoD. The MAA-NL has certified all ATS providers providing services to military air traffic.

Service Provision role

OAT			GAT	
Services Provided:			Services Provided:	
En-Route	Y	Note: Provided by MilATCC Schiphol	En-Route	Y
Approach/TMA	Y	Note: Provided by MilATCC Schiphol for all Military Aerodromes and Mil TMAs	Approach/TMA	Y
Airfield/TWR/GND	Y	Note: Provided at all RNLAF Military Aerodromes	Airfield/TWR/GND	Y
AIS	Y	Note: Provided at all RNLAF and RNNavy Military Aerodromes	AIS	Y
MET	Y	Note: Provided at all RNLAF and RNNavy Military Aerodromes	MET	Y
SAR	Y	Note: All	SAR	Y
TSA/TRA monitoring	Y	Note: Provided by MilATCC Schiphol	FIS	Y
Other:		N/A	Other:	N/A
Additional Information:			Additional Information:	

Military ANSP providing GAT services SES certified?	N	If YES, since:	N/A	Duration of the Certificate:	N/A
Certificate issued by:	N/A		If NO, is this fact reported to the EC in accordance with SES regulations?		Y
Additional Information: The Military Requirements have been formulated and published and are based on the existing civil requirements (i.e. ICAO and the Common Requirements). In line with the EASA Basic Regulation, it is established by ILT/CAA-NL in 2021 with a written Statement to EASA, that the Netherlands' Military Requirements for Air Navigation Services providers (MAR.ANS), Air Traffic Services Personnel Licensing (MAR.APL), and Air Traffic Services Training Organisation (MAR.ATO), as established by the Minister of Defence of The Netherlands, offer a level of safety and interoperability with civil systems that is as effective as that resulting from the application of the essential requirements set out in Annexe VIII to the EASA Basic Regulation.					

User role

IFR inside controlled airspace, Military aircraft can fly?	OAT only		GAT only		Both OAT and GAT	Y

If Military fly OAT-IFR inside controlled airspace, specify the available options:			
Free Routing	Y	Within specific corridors only	Y
Within the regular (GAT) national route network	Y	Under radar control	Y
Within a special OAT route system	Y	Under radar advisory service	N

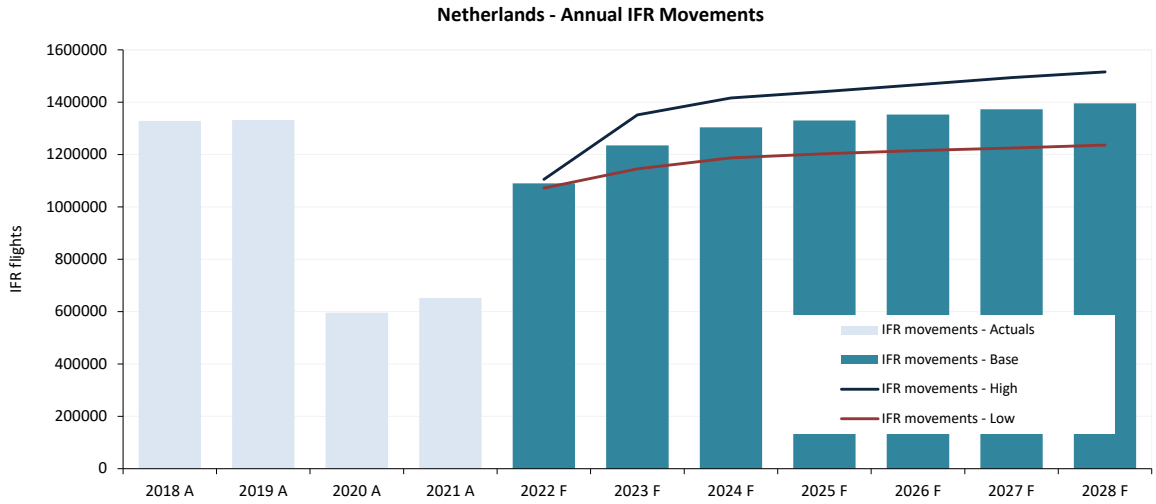
If Military fly GAT-IFR inside controlled airspace, specify existing special arrangements:								
No special arrangements					Exemption from Route Charges			Y
Exemption from flow and capacity (ATFCM) measures				Y	Provision of ATC in UHF			Y
CNS exemptions:	RVSM	Y	8.33	N	Mode S	N	ACAS	
Others:	CNS exemptions are granted only for combat aircraft, State aircraft can be exempted from ATFCM measures depending on the mission.							

Flexible Use of Airspace

Military in Netherlands applies FUA requirements as specified in the Regulation No 2150/2005: Y
FUA Level 1 implemented: Y
FUA Level 2 implemented: Y
FUA Level 3 implemented: Y

2. Traffic and Capacity

2.1. Evolution of traffic in Netherlands



EUROCONTROL Forecast Update 2022-2028 - October 2022											
IFR Movements (Growth)		2019 A	2020 A	2021 A	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F	2028 F
Netherlands	High				69%	22,0%	4,8%	1,7%	1,8%	1,9%	1,5%
	Base	0%	-55%	10%	67%	13,0%	5,6%	2,0%	1,7%	1,5%	1,7%
	Low				64%	6,8%	3,7%	1,3%	1,1%	0,8%	0,9%
ECAC	High				51%	18,0%	5,6%	3,0%	2,8%	2,3%	2,3%
	Base	1%	-55%	25%	49%	10,0%	6,3%	2,5%	2,2%	2,0%	2,1%
	Low				46%	5,0%	4,3%	1,6%	1,3%	1,2%	1,2%

2022

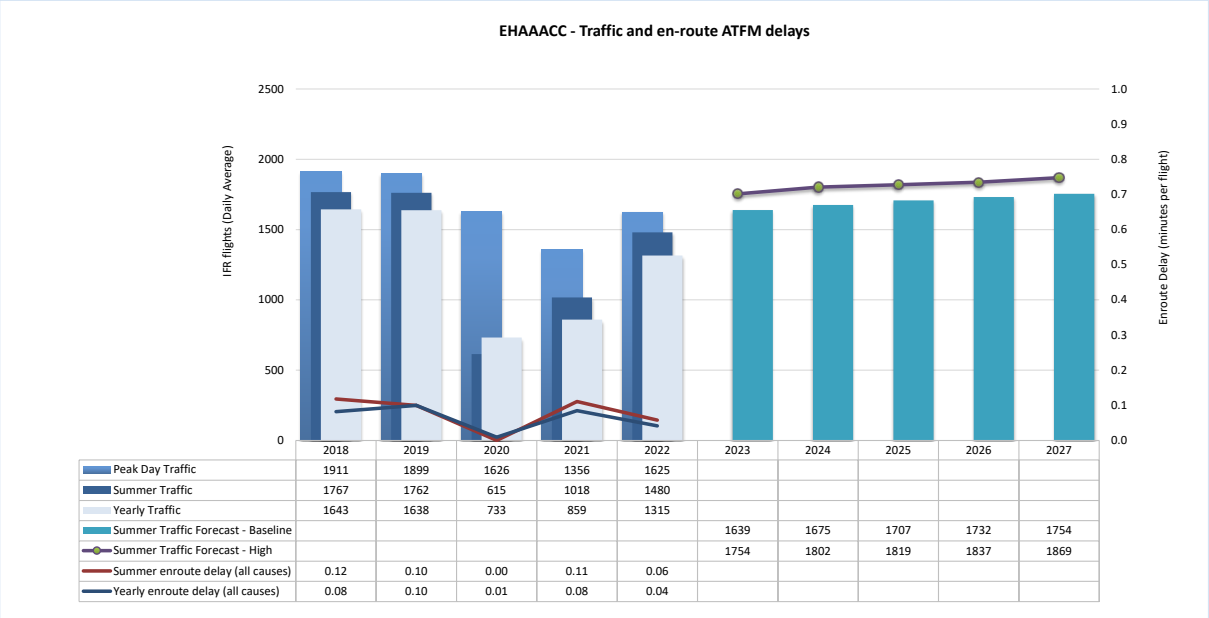
Traffic in The Netherlands increased by 51% compared to 2021 and recovery was at 82% of 2019.

2023-2028

The EUROCONTROL Seven-Year forecast predicts an average annual increase between 2.4% and 5.4% during the planning cycle, with an average baseline growth of 4.2%.

2.2.AMSTERDAM ACC

2.2.1. Traffic and en-route ATFM delays 2018-2027



	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Peak Day Traffic	1911	1899	1626	1356	1625					
Summer Traffic	1767	1762	615	1018	1480					
Yearly Traffic	1643	1638	733	859	1315					
Summer Traffic Forecast - Baseline						1639	1675	1707	1732	1754
Summer Traffic Forecast - High						1754	1802	1819	1837	1869
Summer enroute delay (all causes)	0.12	0.10	0.00	0.11	0.06					
Yearly enroute delay (all causes)	0.08	0.10	0.01	0.08	0.04					

2.2.2. 2022 performance

Amsterdam ACC	Traffic		En-route Delay (min. per flight)		Capacity	
	2022 vs.2021	% of 2019	All reasons	ACC Reference Value	Capacity Gap?	Baseline
Year	+53%	80%	0.04	0.09	No	
Summer	+45%	84%	0.06			116

Summer 2022 performance assessment		
The average delay per flight was 0.06 minutes per flight in Summer 2022. 59% of the Summer 2022 delays were due to the reason ATC Capacity, 21% due to the reason Weather and 20% due to Special Events.		
Operational actions	**Achieved**	**Comments**
AOP-NOP Information sharing	No	Initial AOP-NOP information sharing is an ongoing project of NM and Schiphol airport, delayed to the end of 2023.
Continuous recruitment and improved training with increased output to maintain levels of ATCOs, while many will retire in the coming years.	Yes	
Additional activities to eliminate the bow-wave effect of COVID-19 in operational training.	Yes	
AMAN 2.0 with high resolution weather	Yes	
Maximum configuration: 5 sectors	Yes	

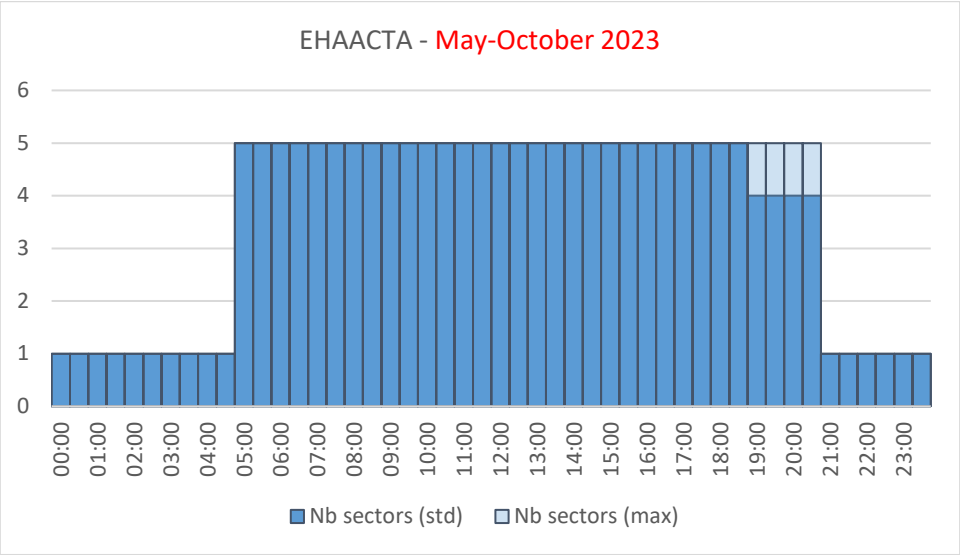
2.2.3. Planning Period – Summer 2023-2027

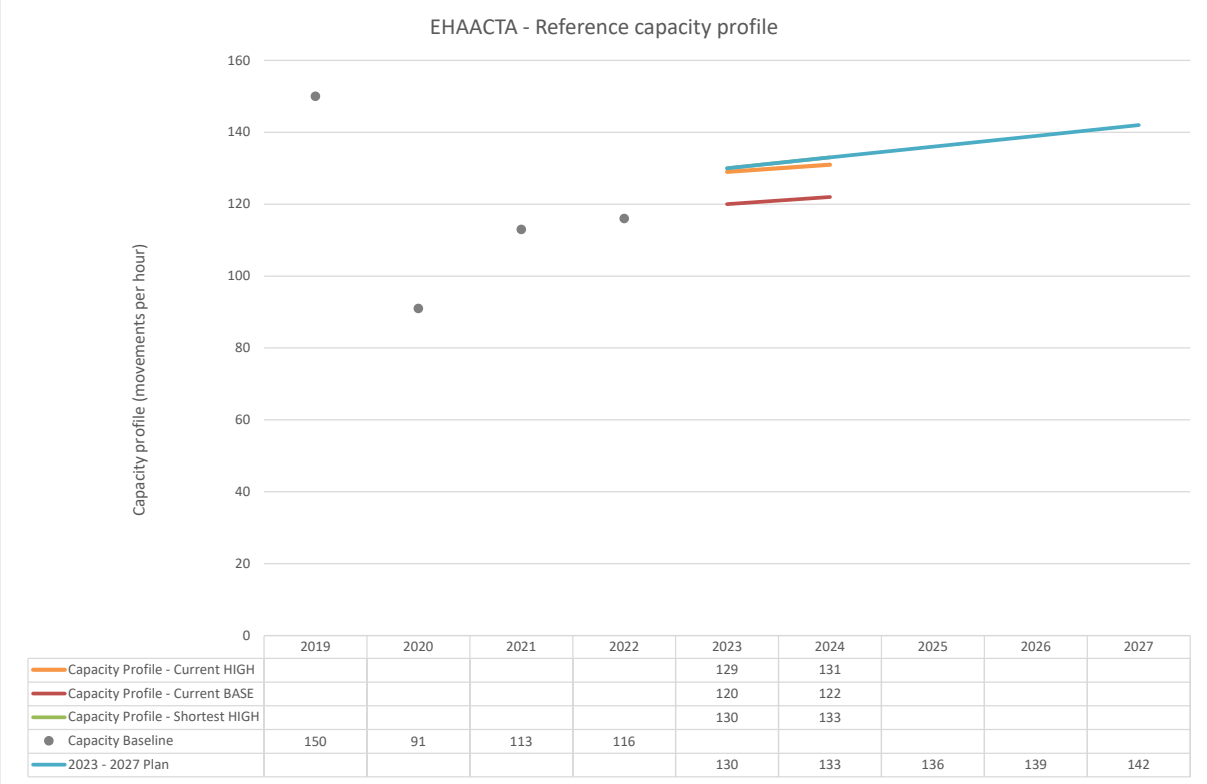
The planning focuses on the Summer season to reflect the most demanding period of the year from a capacity

perspective. This approach ensures consistency with the previous planning cycles.

The measures for each year are the measures that will be implemented before the summer season.

Summer Capacity Plan					
	2023	2024	2025	2026	2027
Free Route Airspace					
Airspace Management Advanced FUA			LARA		
Airport & TMA Network Integration		Initial AOP-NOP Information sharing for Schiphol Airport			
Cooperative Traffic Management					
Airspace				Redesign Dutch Airspace	
Procedures				Redesign Dutch Airspace	
			Performance Based Navigation approach procedures Schiphol (Redesign Dutch Airspace)		
Staffing	Additional activities to eliminate the bow-wave effect of COVID-19 in operational training.				
Technical		Implementation of new ATC system iCAS*	Extended AMAN (range 180 NM)		
Capacity					
Significant Events	Training for iCAS (after summer season)*	New OPS room for iCAS*			
Max sectors	5	5	5	5	5
Planned Annual Capacity Increase	12%**	2%	2%	2%	2%
Capacity Profile - Base Annual % Increase	3%	2%			
Capacity Plan v. Profile - Base	8%	9%			
Capacity Profile - High Annual % Increase	11%	2%			
Capacity Plan v. Profile - High	1%	2%			
Capacity Profile – High Shortest Annual % Increase	12%	2%			
Capacity Plan v. Profile – High Shortest	0%	0%			
Annual Reference Value (min)	0.09	0.10			
Additional information	* Planning of iCAS training and implementation is being reviewed. Results expected to be available end Q1 2023. ** Planned capacity increase reflects the pre-existing availability of capacity.				





	2019	2020	2021	2022	2023	2024	2025	2026	2027
Capacity Profile - Current HIGH					129	131			
Capacity Profile - Current BASE					120	122			
Capacity Profile - Shortest HIGH					130	133			
Capacity Baseline	150	91	113	116					
2023 - 2027 Plan					130	133	136	139	142

2023-2027 Outlook
No capacity issues are foreseen for Amsterdam ACC for the period 2023-2027.

3. Implementation Projects

The tables below presents the high-level information about the main projects currently ongoing in Netherlands. The details of each project are available in the LSSIP DB (extraction can be asked to LSSIP FP or LSSIP CP).

3.1. National projects

Name of project:	Organisation(s):	Schedule:	Progress Description:	Links:
1ATM (Civil Military Integration)	Commando Luchtstrijdkrachten (CLSK) (NL), LVNL - Luchtverkeersleiding Nederland (NL), Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart (NL)	Activities started in 2018. The integration will be completed during the period from 1 July 2023 to 1 July 2024. Once that is ready, work will be done on one operational concept with one unambiguous handling of all (civil and military) air traffic.	Implementation of the programme plan continued in 2022.	RP3 PP: Annex R: 1ATM: civil / military integration
Amsterdam Schiphol AMAN 2.0 (2015_166_AF1)	LVNL - Luchtverkeersleiding Nederland (NL)	01/01/2017 - 31/12/2024	AMAN 2.0 started in 2018, on 1 December 2021 the use of high resolution meteo (wind) information for AMAN was implemented to improve trajectory prediction. Due to the COVID-19 impact on the project and the knockoff effect during the following years, LVNL had to revise the project portfolio and prioritise some activities. As a result, the project was put on hold in 2022, due to human-resource shortages. The 2 remaining functionalities (speed advisories and flexible trajectory prediction) are currently scheduled to complete in 2024.	L3: ATC15.2, ATC15.1 DP: Project 2015_166_AF1; Family 1.1.1 RP3 PP: Annex R: Extended Arrival Management (AMAN/XMAN)
Final phase RNP APCH procedures Amsterdam Schiphol (2017_064_AF1)	LVNL - Luchtverkeersleiding Nederland (NL)	01/09/2018 - 12/08/2021	At Amsterdam Airport Schiphol (EHAM) RNP APCH procedures to runway ends 27, 18R, 24, 36C, 04 and 09 are implemented. The RNP APCH procedures for Schiphol RWY's 18R, 27, 36C are published in the national AIP on 12 august 2021.	L3: NAV10 DP: Family 1.2.1 - RNP APCH with vertical guidance RP3 PP: Annex R: Performance Based Navigation (PBN)

Name of project:	Organisation(s):	Schedule:	Progress Description:	Links:
Implementation of APOC Schiphol Airport (2015_179_AF4)	Amsterdam Airport Schiphol (NL)	01/01/2016 - 31/12/2022	The APOC building and interior are delivered to the Operations Department in December 2019. Since the start of the year 2020 the project was stopped because of the Covid-19 pandemic. A reorganisation within the company delayed the full deployment with two years. In 2021 and 2022 will be used for developing procedures and processes. In 2022 trials and training started in order to start the operational use. The APOC was opened on November 15th 2022.	DP: Project 2015_179_AF4; Family 4.2.2
LARA (PRJ2441)	LVNL - Luchtverkeersleiding Nederland (NL)	16/04/2019 - 31/12/2022	The project is ongoing, commissioning of the LARA NL cluster is scheduled for 31/12/2022.	L3: AOM19.4, INF10.3 DP: Family 3.1.1 – ASM tool to support AFUA RP3 PP: Annex R: Capacity Management and Replacement of AAA by iCAS and SESAR Deployment of Trajectory Based Operations.
Performance Based Navigation procedures and rationalisation of Air Navigation infrastructure in the Netherlands (2016-NL-TM-0336-W)	LVNL - Luchtverkeersleiding Nederland (NL)	07/02/2017 - 30/06/2023	Phasing out of a number of beacons, introduction of new procedures. The new DVOR/DME Schiphol (part of the Minimum Operating Network) beacon was put into operation on 25 November 2021. In 2022 the decommissioned Locator and VOR HDR beacons are removed. In 2023 VOR SPY and VOR PAM will be removed.	L3: NAV03.1, NAV10 RP3 PP: Annex R: Performance Based Navigation (PBN).
RECAT-TBS (PRJ2462)	LVNL - Luchtverkeersleiding Nederland (NL)	01/07/2019 - 01/04/2023	The project is ongoing, the installation of the Intelligent Approach is finished and CWP modification is tested and validated. Meteorological information providing actual glide slope wind conditions is fed into the tool for TBS. Training of operational staff will take place in December 2022 and January 2023, after which operations can commission RECAT-TBS on 26 January 2023.	L3: AOP10 DP: Family 2.3.1 – Time Based Separation (TBS) RP3 PP: Annex R: Increasing peak hour capacity and sustainability
RNAV1 and RNP-APCH approaches Amsterdam Schiphol (107AF1)	LVNL - Luchtverkeersleiding Nederland (NL)	01/01/2014 - 31/12/2020	Project completed 31/12/2020	L3: NAV03.1, NAV10 DP: Project 107AF1; Family 1.2.3 RP3 PP: Annex R: Performance Based Navigation (PBN)

Name of project:	Organisation(s):	Schedule:	Progress Description:	Links:
RNP approaches to three main landing runways Amsterdam Schiphol (2015_186_AF1)	LVNL - Luchtverkeersleiding Nederland (NL)	02/01/2018 - 31/07/2020	RNP APCH procedures are implemented for three main runways at Amsterdam Airport Schiphol (06, 18C and 36R).	L3: NAV10 DP: 2015_186_AF1 RP3 PP: Annex R: Performance Based Navigation (PBN)
Realisation Centralized Base Beek en Eelde (EHBK en EHGG) (2017-NL-TM-0127-W)	LVNL - Luchtverkeersleiding Nederland (NL)	01/06/2018 - 31/12/2024	The Centralized Base project for ATC for Groningen and Maastricht Airports is ongoing but is delayed mainly due to COVID-19. The building of the mast at Groningen Airport has been completed. This includes construction works, realisation of shelter and realisation of mast. Preparations at Schiphol Airport for the Remote Tower facilities have been done.	L3: AOP14.1 RP3 PP: Annex R: Centralized Approach and remote tower Beek and Eelde
Replacement AAA (iCAS) (2015_190_AF3, 2016_026_AF3 and 2017_031_AF3)	LVNL - Luchtverkeersleiding Nederland (NL)	The iCAS partnership aims at the development and deployment of iCAS within LVNL ATC Centre and al four DFS ATC Centres during the period 2015-2024 in which operational cut-over at LVNL is planned for Q1 2024.	The iCAS system and CWPs are installed in the Polaris building. In 2022, the Preliminary Qualification Test was conducted for the iCAS system, followed by the Dry Run, the first phase of the Factory Acceptance Test (FAT). LVNL is working on Rules & Adaptation and testing iCAS's links with many other LVNL systems.	L3: ATC20, AOM21.3, ATC15.2, INF10.20, INF10.21, INF10.19 DP: - 2015_190_AF3 - 2016_026_AF3 - 2017_031_AF3 RP2 PP: Replacement AAA RP3 PP: Annex R: Replacement of AAA by iCAS and SESAR Deployment of Trajectory Based Operations
Replacement of secondary surveillance radars for Amsterdam Airport Schiphol and Groningen Airport Eelde by WAM/ADS-B (2017-NL-TM-0130-W)	LVNL - Luchtverkeersleiding Nederland (NL)	01/11/2018 - 30/06/2024	-	RP3 PP: Annex R: Maintenance investments
TWR System at Amsterdam Schiphol (CEF funded parts) (2015_187_AF2)	LVNL - Luchtverkeersleiding Nederland (NL)	16/02/2016 - 31/12/2025	An interface between the Electronic Flight Strip System as provided by Frequentis and the iCAS main center automation system is implemented. A message broker that will be used for the communication between modules of the new tower system is implemented. The realisation of a new DMAN is ongoing and is rescheduled to be completed in 2024.	DP: Family 2.5.1 RP3 PP: Annex R: Tower system

Name of project:	Organisation(s):	Schedule:	Progress Description:	Links:
Workload model for Amsterdam Area Control, Approach Control and Ground operations (2015_167_AF4)	LVNL - Luchtverkeersleiding Nederland (NL)	16/02/2016 - 31/03/2023	The workloadmodel of ACC and traffic distribution for Approach have been implemented and are in use. The project have quite heavily been affected by the developments of Covid-19. This has influenced the availability of resources (mainly technical and operational) and development-work with external suppliers had to be done remotely. This has affected the pace of the project in 2021. Next to that, management had to prioritize between all LVNL projects, resulting in a shift in planning to Q1 2023.	DP: Project 2015_167_AF4; Family 4.4.2 RP3 PP: Annex R: Capacity Management
XMAN Reims-MUAC-Belgocontrol-LVNL (PRA2406)	LVNL - Luchtverkeersleiding Nederland (NL)	29/11/2018 - 31/12/2024	Project plan drafted, from summer 2020 on hold due to COVID-19 related budget cuts.	DP: AF1, Family 1.1.2 RP3 PP: Annex R: Extended Arrival Management (AMAN/XMAN)

3.2. FAB projects

There are two main FABEC projects ongoing:

- XMAN (Extended Arrival Manager) and
- FRA (Free Route Airspace)

The tables below detail for each ongoing main FABEC project:

- which FABEC ANSPs and military partners are participating;
- a description, the scope and objectives;
- the schedule and implementation planning;
- the status end 2022;
- the link to the ATM Master Plan Level 3 (formerly ESSIP), if any and
- the expected performance contribution to the SES Key Performance Areas Capacity, Safety, Environment and Cost-Efficiency.

Project Name:	Extended Arrival Management	Project Code:	XMAN
Organisation(s)	skeyes (BE), DFS (DE), DSNA (FR), LVNL (NL), MUAC ANSP (MAS), skyguide (CH) and in direct coordination with NATS (UK).		

Description/Scope/Objectives

The XMAN project (Cross-Border Arrival Management, also referred to as Extended Arrival Management E-AMAN) aims at improving and optimising arrival management operations for major airports. To achieve this, the project develops and implements a harmonised approach to arrival management in the core area of Europe. This is a project at FAB level because it has to rely on cross-centre and cross-border processes and procedures. The implementation of XMAN will improve and optimise arrival management operations for the major five airports/TMAs (Munich, Amsterdam, Paris-CDG, Frankfurt, London-Heathrow) as well as for other selected intermediate airports within FABEC and FAB UK/IRL as defined by the Commission Implementing Regulation (EU) No 116/2021 (Zurich, Dusseldorf, Brussels, Berlin, Paris-Orly, Nice, London-Stansted, London-Gatwick, Manchester, Dublin). Additionally, airports outside these two FABs, e.g. Copenhagen and Italian airports, coordinate their plans through this XMAN project.
One of the main characteristics of the XMAN project is the extension of the planning horizon of arrival management systems (AMAN) from the local TMA into the airspace of upstream control centres.
The final extension of arrival management operations is expected to reach at least 180 NM in line with the CP1 (entered into force on 22 February 2021), depending on the operational environment and the needs of the stakeholders. These extended planning horizons will cover almost the entire FABEC airspace and, consequently, most of the FABEC control centres will be affected by extended AMAN operations and some feed several arrival streams for different airports/TMAs simultaneously.

Schedule/Implementation planning

The XMAN project envisaged two development and implementation steps: Basic – Advanced . The planning is now as follows:

1. Basic Step - From 2012 to 2024
The Basic Step uses the currently available systems and technologies in order to establish cross-centre arrival management in the airspace controlled by skeyes, DFS, DSNA, LVNL, MUAC and skyguide.

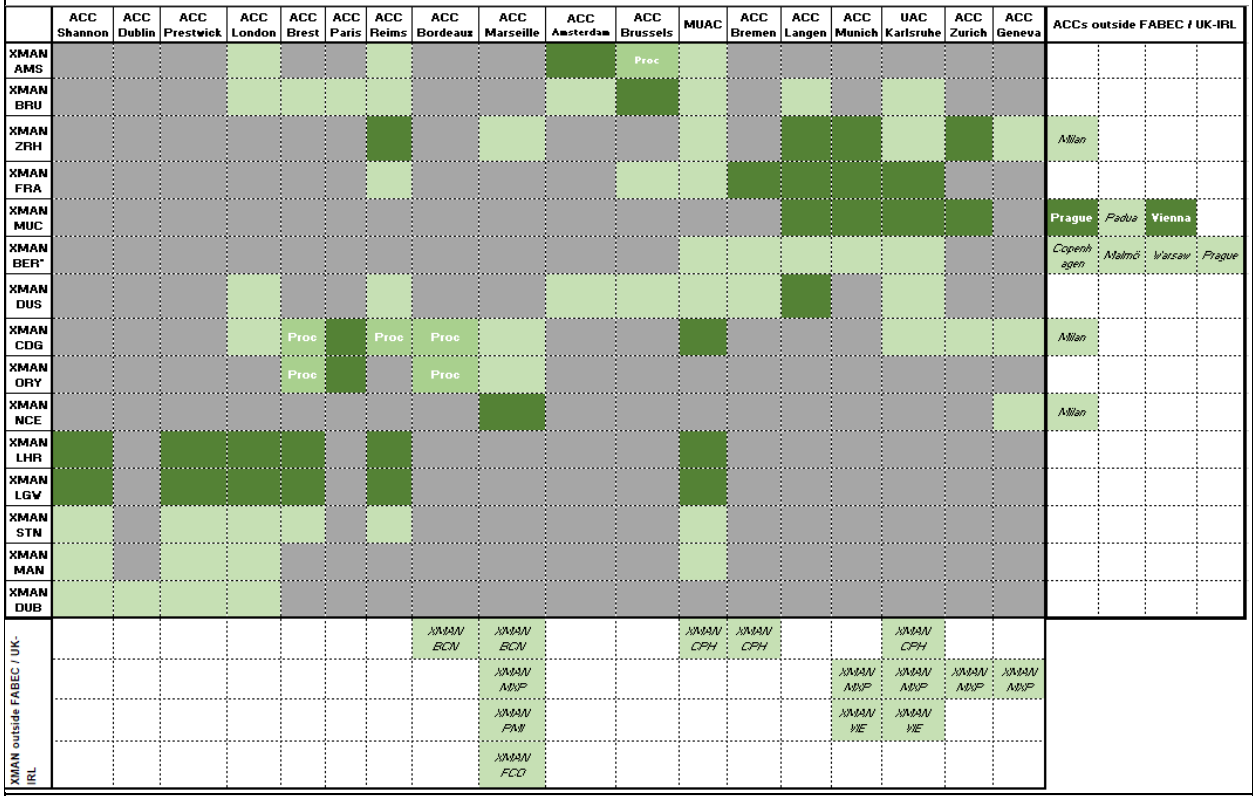
2. Advanced Step - From 2013 to 2024
The Advanced Step takes into account validated SESAR results in order to improve the en-route part of cross-centre arrival management in the overall FABEC airspace. This step requires enhanced data exchange between ACC/UAC in order to support a delay sharing strategy. Additional planning information related to departures and airborne flights will be provided by Airport-CDM and Network Management.
This step has an impact on all FABEC ACCs.
This step also takes into account further validated SESAR results and will optimise the cooperation between arrival management and Airport-CDM, Aircraft Operators and Network Management in order to

widely share Arrival Management (AM) information between all partners and to process and to apply Arrival Management information where needed.
Status

The FABEC XMAN has already been implemented at several ACCs for several airports.
The implementation phase will continue until at least end 2024.
The XMAN Portal (main feature of the Advanced Step of the XMAN project) Prototype used for the SESAR2020 trials in 2019 is technically at prototype stage at MUAC. The FABEC XMAN group is drafting new use cases to be potentially implemented in the XMAN Portal.
A complete XMAN review has been done. Following documents were updated and released:

- FABEC XMAN Implementation Roadmap: V5.8, 22.12.2022
- FABEC Extended Arrival management CONOPS Advanced: V1.5, 18.12.2020

Summary of current status (Dark green: Implemented; Light green: planned; Medium green: procedures applied without system support, Grey: not needed):



Link to ATM Master Plan Level 3 / OI Steps (ATM Master Plan Level 2) / Other references

ATM Master Plan Level 3 (formerly ESSIP): ATC15.2	
OI Steps: TS-0102, TS-0305	
Other References: CP1: - AF1: Extended AMAN and Integrated AMAN/DMAN in the high-density TMA SESAR Deployment Programme 2022: - Family 1.1.1: Arrival Management extended to en-route airspace	
Expected Performance Contribution (specific to the participating organisation(s))	
Capacity	Improved average punctuality: small positive effect. Better forecast for sector loads: small positive effect. Reduced controller workload in APP and ACC: no significant effect. Increased controller workload in UAC: effect depending on the number of airports to be served.
Safety	Improved situational awareness: small positive effect. Reduced tactical interventions: small positive effect.
Environment (including flight efficiency)	Reduction of: • Track miles and holdings: small to medium positive effect; • Fuel burn: large positive effect; • CO_2/NO_x emissions: large positive effect.
Cost-Efficiency	Investments at ANSP-level will deliver benefits in financial terms to users (e.g. less fuel burn), but not to ANSPs.
Cooperation Activities	
Collaboration with FAB UK/IRL, Italy, Spain and Denmark is included. Collaboration with other surrounding FABs is ongoing.	

Project Name:	**Free Route Airspace**	**Project Code:**	**FRA**
Organisation(s)	skeyes (BE), DFS (DE), DSNA (FR), LVNL (NL), MUAC ANSP (MAS), skyguide (CH), Mil. Authority (BE), Mil. Authority (DE), Mil. Authority (FR), Mil. Authority (NL)), Mil. Authority (CH)		
Description/Scope/Objectives			
The Free Route Airspace (FRA) Programme aims at developing and implementing a Free Route Airspace FABEC wide. The objective of the FRA implementation is to give users opportunities to improve the horizontal flight efficiency through both plannable direct routes and at a later stage defined volume/s of Free Route			

Airspace within FABEC airspace.
The FRA Programme defines a stepped and gradual implementation approach where FABEC ACCs will develop and implement various iterations of Free Route Airspace.

Schedule/Implementation planning

The FABEC FRA project was launched in 2011 with the objective of setting up a FABEC Free Route Airspace with Advanced Flexible Use of Airspace (A-FUA) at FL 365 (and lower when and where possible) in a stepped approach by the end of RP2.
In 2015, the project has been aligned with the requirements of the Pilot Common Project requirements. This induced an implementation of FABEC Free Route Airspace at FL310+ by 2022.
In 2016, the project was organised into two work streams

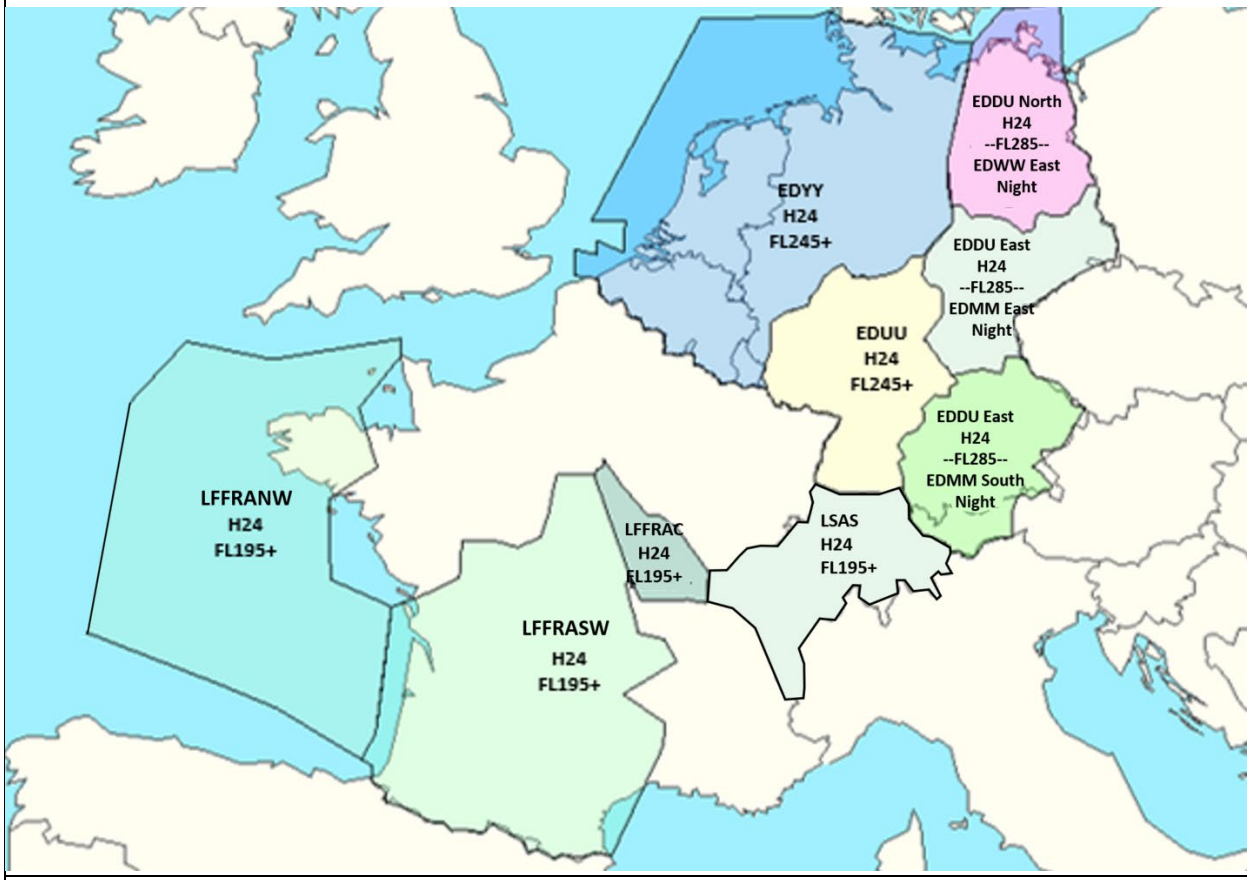
1. National and cross-border Direct Routes (DCT) including Long Range Direct Routings;
2. Free Routing.

All Free Route initiatives conducted locally, bilaterally or within a FABEC framework are under the FABEC FRA umbrella. Implementation activities are managed at ACC or national level using local management processes and are monitored at FABEC level.
In December 2017 the Project Management Plan version 4.0 has been approved. The project is now further supporting and monitoring the direct routing implementations and full FRA implementations.
In the CP1, entered into force on 22 February 2021, the deployment target date has been set as:

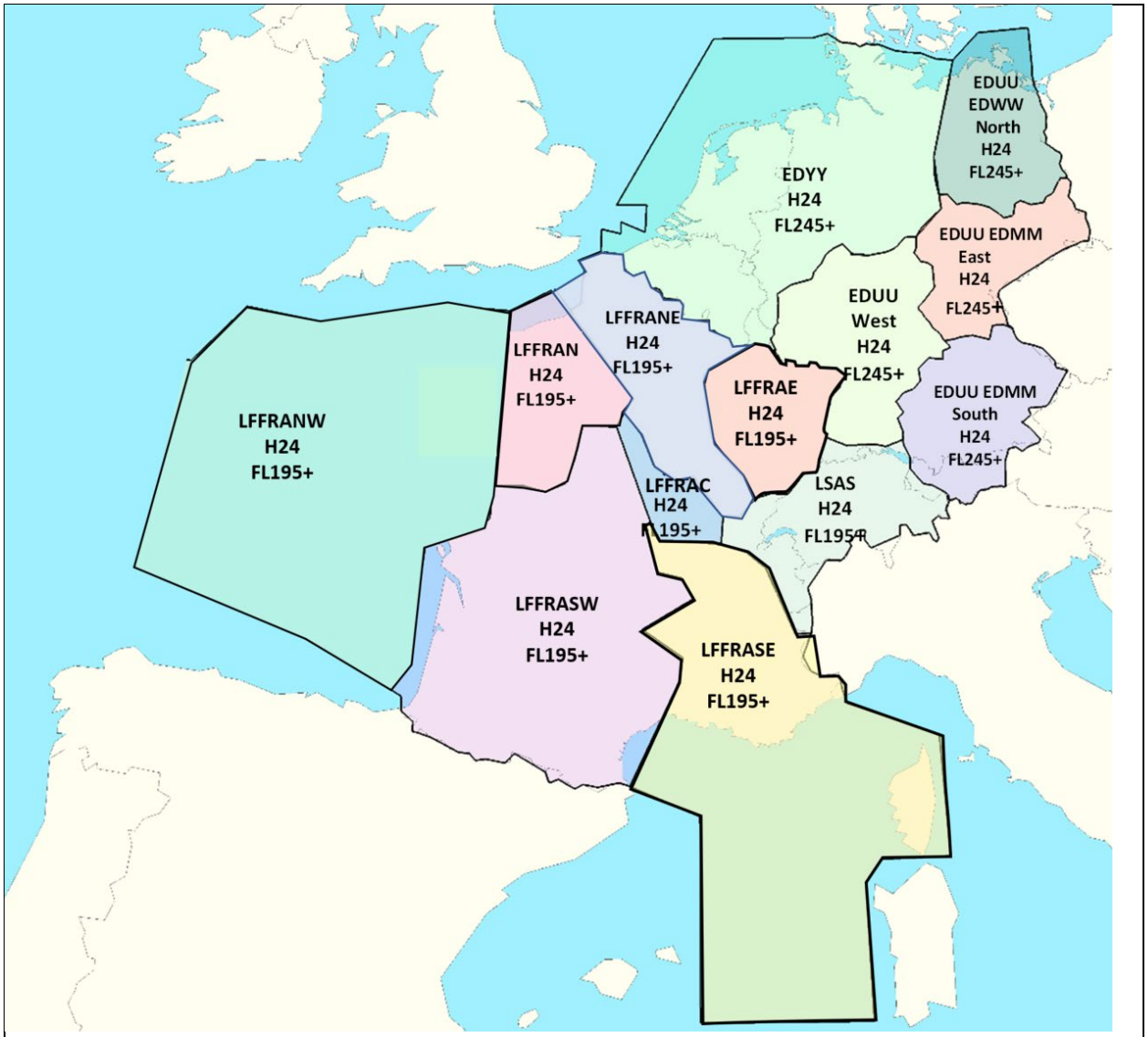
- Initial FRA by the implementation target date of 31 December 2022.
- Final FRA, including cross-border FRA with at least one neighbouring state and FRA connectivity with TMAs, by the implementation target date of 31 December 2025.

Status

The project work on Direct Routings and Free Route is in a rolling MS4 status with a yearly update of the implementation report and implementation plan.
In line with the new final target date of the CP1 the FABEC project will continue until end 2025.
The current implementation status (1 December 2022)is depicted in the figure below:



The final configuration by 2025 will be as depicted below:


EDUU
EDWW
North
H24
FL245+
EDYY
H24
FL245+
EDUU EDMM
East
H24
FL245+
EDUU
West
H24
FL245+
LFFRANE
H24
FL195+
LFFRAN
H24
FL195+
LFFRAE
H24
FL195+
EDUU EDMM
South
H24
FL245+
LFFRANW
H24
FL195+
LFFRAC
H24
195+
LSAS
H24
FL195+
LFFRASW
H24
FL195+
LFFRASE
H24
FL195+

Link to ATM Master Plan Level 3 / OI Steps (ATM Master Plan Level 2) / Other references	
ATM Master Plan Level 3 (formerly ESSIP): AOM21.1, AOM21.2, AOM21.3	
OI Steps: AOM-0401, AOM-0402, AOM-0500, AOM-0501, AOM-0505, AOM-0506, CM-0102-A	
Other References: CP1: - AF3.2: Free Route Airspace SESAR Deployment Programme 2022: - Family 3.2.1: Initial FRA - Family 3.2.2: Enhanced Free Route Airspace Operations	
Expected Performance Contribution (specific to the participating organisation(s))	
Capacity	Capacity benefits could be foreseen since reduced average transit times may result in an increase in capacity. Capacity benefits may also be possible if there is proven to be a reduced number of conflicts, fewer redirects, and the resulting impact on controller tools. However, it is also possible that in some cases conflicts may become more complex and other or new choke points may emerge. Hence the overall impact of FRA on sector capacity cannot be determined without simulations.
Safety	No impact
Environment (including flight efficiency)	FRA allows airspace users to fly more direct trajectories, thus potentially reducing flight distance flown, with consequent savings in fuel and direct and strategic operating costs. The environmental benefits from savings in CO_2-emissions might not be as significant in the core area as in the peripheral areas.
Cost-Efficiency	Investments at ANSP-level will deliver benefits in financial terms to users (e.g. less fuel burn), but not to ANSPs.
Cooperation Activities	
-	

3.3. Multinational projects

Name of project:	Organisation(s):	Schedule:	Progress Description:	Links:
European Meteorological Aircraft Derived Data Center (EMADDC) (2015_137_AF5)	Koninklijk Nederlands Meteorologisch Instituut (NL)	01/03/2016 - 31/12/2023	EMADDC v1.0 is operational since February 2019. As of 2021 EMADDC is a European service under the EUMETNET Aircraft Based Observation Programme (E-ABO). Release 2.2 (improved algorithms, larger geographical area) became operational in Q2 2022. In 2023 R3.0 is being developed that is intended to operate in the AWS cloud. Upper air wind and temperatures are being provided to EUMETNET Members and ECMWF, and by doing so improving the nowcasts and forecasts of numerical weather prediction models. See for more information emaddc.com.	L3: INF10.11, INF10.10 DP: Project 2015_137_AF5; Family 5.4.1 RP3 PP: Project 2015_137_AF5

4. Cooperation activities

4.1. FAB Co-ordination

FAB Europe Central (FABEC) is the functional airspace block established jointly by the Federal Republic of Germany, the Kingdom of Belgium, the French Republic, the Grand Duchy of Luxembourg, the Kingdom of the Netherlands and the Swiss confederation.

The objective of the FABEC, that formally entered into force on the 1st of June 2013, is to achieve optimal performance in the areas relating to safety, environmental sustainability, capacity, cost-efficiency, flight efficiency and military mission effectiveness, by the design of airspace and the organisation of air traffic management in the airspace concerned regardless of existing boundaries. FABEC offers a collaboration platform allowing all operational partners – civil and military ANSP, military and civil aircraft operators and staff - to work together to optimize daily cross border operations between the neighbouring FABEC states.

4.2. Multinational cooperation initiatives

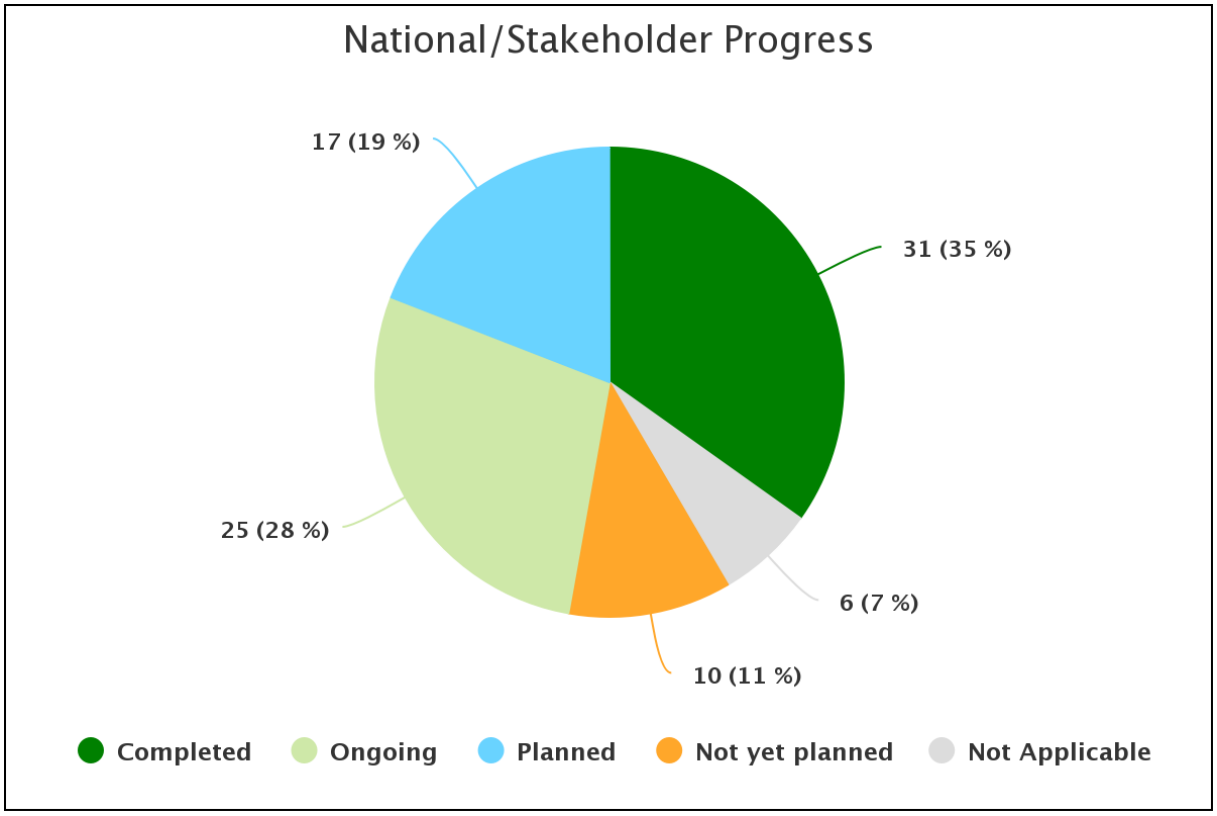
At the end of 2021, LVNL and RSG became founding members of the SESAR3 Joint Undertaking. The SESAR 3 Joint Undertaking is an institutionalised European partnership between private and public sector partners set up to accelerate through research and innovation the delivery of the Digital European Sky. To do so, it is harnessing, developing and accelerating the take-up of the most cutting-edge technological solutions to manage conventional aircraft, drones, air taxis and vehicles flying at higher altitudes.

MET ANSP KNMI is implementing a NewPENS connection in Q3 of 2023

5. Implementation Objectives Progress

5.1. State View: Overall Objective Implementation Progress

The graph below shows progress for all Implementation Objectives (applicable and not applicable to the State).



Source: LSSIP DB

Summary of the implementation of the objectives

The objective AOM19.4 “Management of Predefined Airspace Configurations” is completed. The MUAC FUA cell was implemented in June 2020. This cell is supported by a newly developed MUAC ASM tool (Scheduling App), which collects data from LARA NL. This objective is not applicable to LVNL.

The objective AOM19.5 “ASM and A-FUA” is completed. Implementation in the Netherlands was completed in November 2017 through a connection between LARA and the FDPS by Maastricht UAC, the objective is not applicable for LVNL.

The objective AOM21.2 “Initial Free Route Airspace” is completed. Initial FRA has been implemented by Maastricht UAC, the objective is not applicable for LVNL.

The objective AOM21.3 “Enhanced Free Route Airspace Operations” is completed. In December 2019, full free route H24 was implemented at Maastricht UAC, the objective is not applicable for LVNL.

The objective AOP10 “Time-Based Separation” will be fully completed at Amsterdam Airport Schiphol with the new Intelligent Approach tool, which is foreseen in early 2023. Time-based separation (TBS) consists in the separation of aircraft in sequence on the approach to a runway using time intervals instead of distances.

The objective ATC15.1 “Information Exchange with En-route in Support of AMAN” is ongoing with an implementation date later than the FOC data for the implementing Objective. The "Improved meteorological information for trajectory prediction" part of the project has already been implemented. The remaining part of ATC15.1, which is planned to be completed by December 2024 because of a shortage in resources.

The objective COM11.1 “Voice over Internet Protocol (VoIP) in En-Route” is ongoing with an implementation date later than the FOC data for the implementing Objective. COM11.1 will be completed with a new Voice Communication System, which is foreseen in 2023, and subsequently by VoIP ground-to-ground (inter-centre) connections. Which are planned to be completed (at the latest) 31 March 2025.

The objective COM11.2 “Voice over Internet Protocol (VoIP) in Airport/Terminal” will be completed with a new Voice Communication System, which is foreseen in 2023.

The objective ENV01 “Continuous Descent Operations (CDO)” is ongoing with an implementation date later than the FOC data for the implementing Objective. At Amsterdam Airport Schiphol CDOs for night time are already in use. There is still an issue concerning lower capacity for daytime use when RNAV1/RNP1 approaches are combined with CDOs. Therefore, full implementation of ENV01 is not foreseen until 2026;

The objective COM12 “New Pan-European Network Service (NewPENS)”, is ongoing at MET ANSP KNMI, it is expected to be completed in 2023.

The objective AOP19 “Departure Management Synchronised with Pre-departure sequencing” is completed. The objective is met with the Collaborative Pre Departure Sequence Planner (CPDSP). That system will be replaced by a new DMAN in the coming years as part of the overall replacement of the tower system at Amsterdam Airport Schiphol.

The objective FCM04.2 “Enhanced Short Term ATFCM Measures” is completed. A local system namely the Work Load Model (WLM) is in use, which is supplemented by the NM-provided STAM application. An additional tool namely the Decision Support Tool (DST) will be commissioned in 2023.

The objective FCM06.1 “Automated Support for Traffic Complexity Assessment and Flight Planning interfaces” is completed. The objective is met with a local system for complexity assessment namely the Work Load Model (WLM). In addition a Decision Support Tool (DST) will be implemented in Q1 2023.

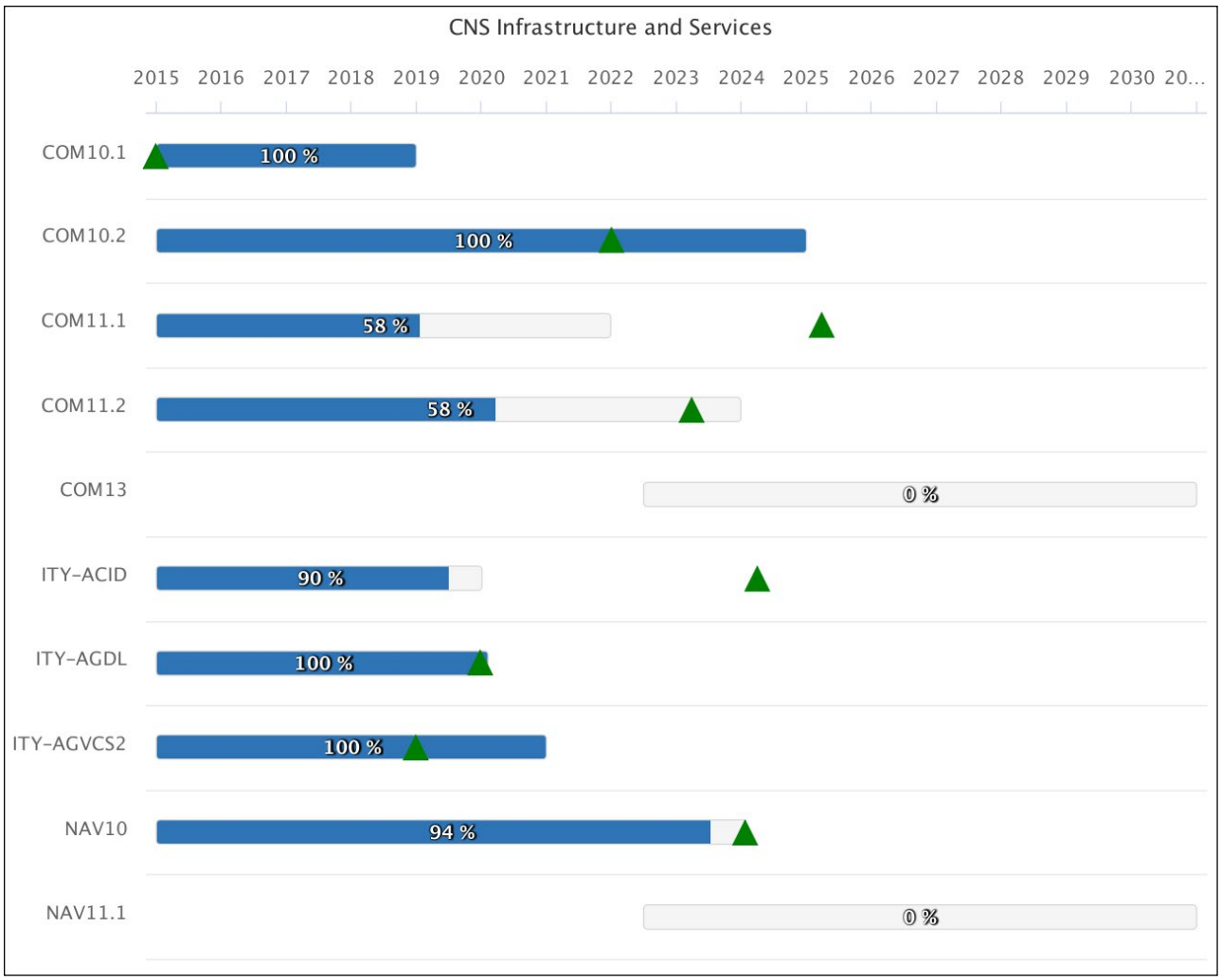
The objective FCM10 “Interactive Rolling NOP” is ongoing, it is expected to be completed in 2023.

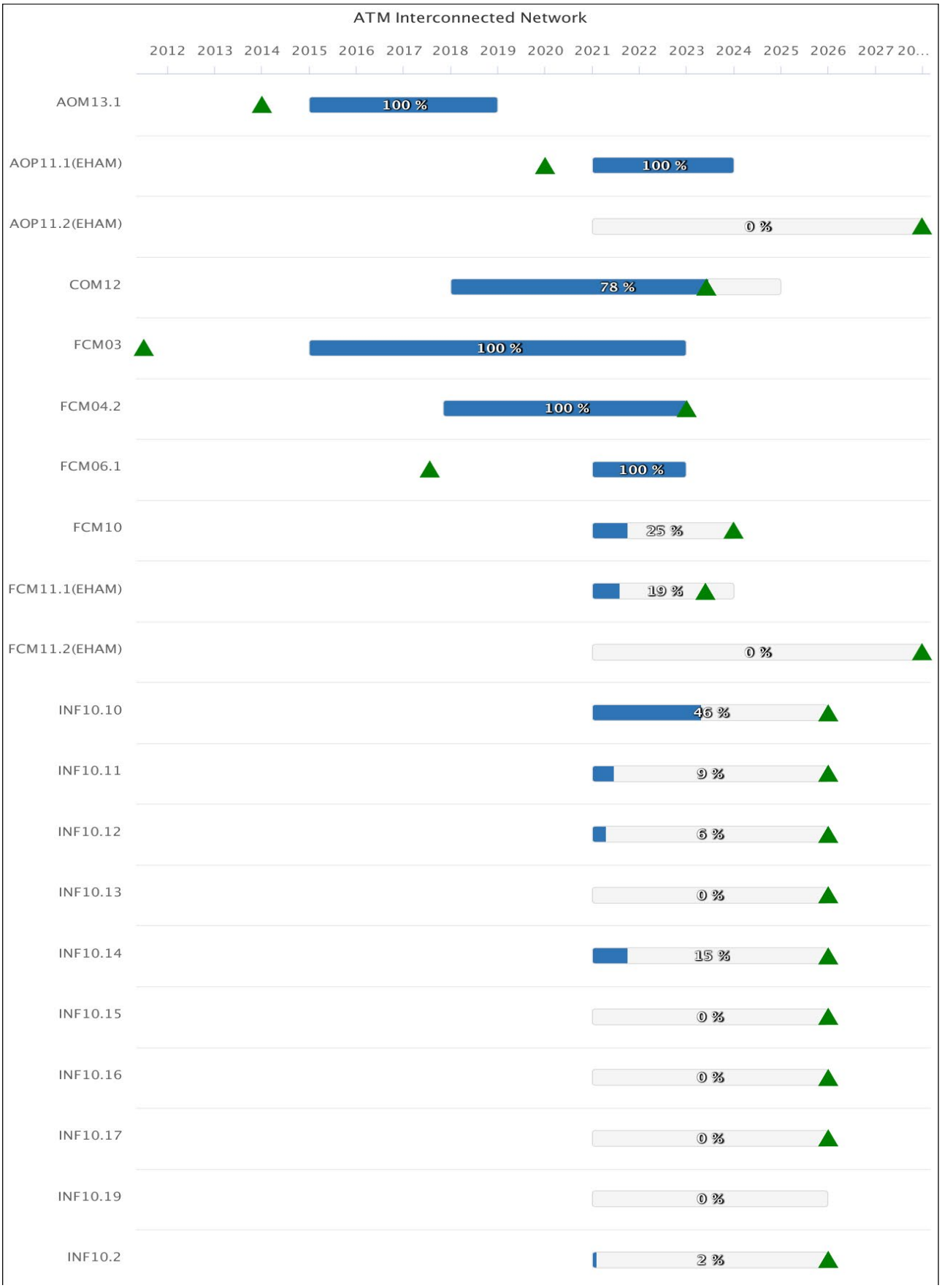
The objective FCM11.1 “Initial AOP/NOP Information Sharing is ongoing”, it is expected to be completed in 2023.

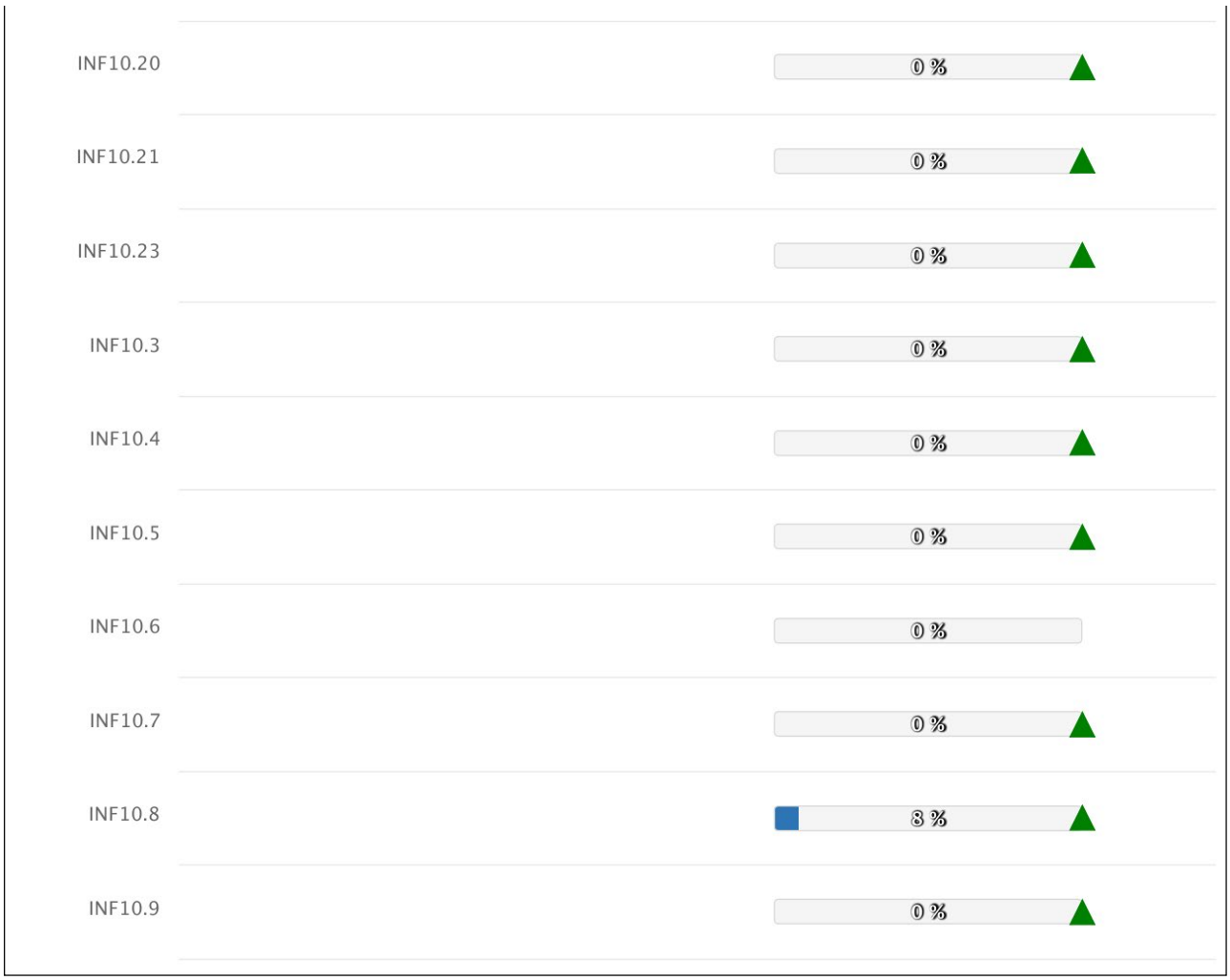
The objective INF07 “Electronic Terrain and Obstacle Data (eTOD)” is ongoing with an implementation date later than the FOC data for the implementing Objective. INF07 – which is planned to be completed in 2024 because of governance conditions which need to be put in place first. Data collection and availability are completed.

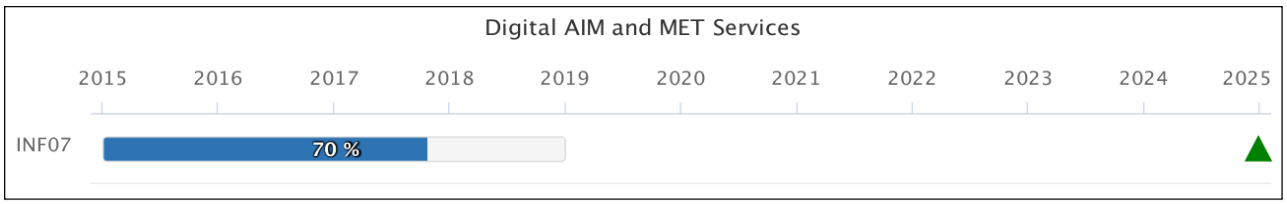
The Objective ITY-ACID related to Aircraft Identification is ongoing in the TMA's of Groningen-Eelde (EHGG) and Maastricht-Aachen (EHBK) with an implementation date later than the FOC. It is expected to be completed in 2024 because the system replacement required for this has been delayed.

5.2. Objective Progress per SESAR Essential Operational Changes

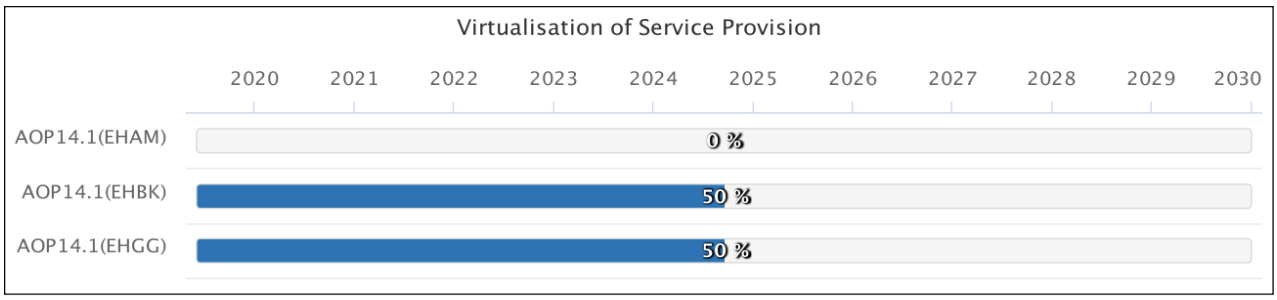



ATM Interconnected Network
2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 20...
AOM13.1
100 %
AOP11.1(EHAM)
100 %
AOP11.2(EHAM)
0 %
COM12
78 %
FCM03
100 %
FCM04.2
100 %
FCM06.1
100 %
FCM10
25 %
FCM11.1(EHAM)
19 %
FCM11.2(EHAM)
0 %
INF10.10
46 %
INF10.11
9 %
INF10.12
6 %
INF10.13
0 %
INF10.14
15 %
INF10.15
0 %
INF10.16
0 %
INF10.17
0 %
INF10.19
0 %
INF10.2
2 %

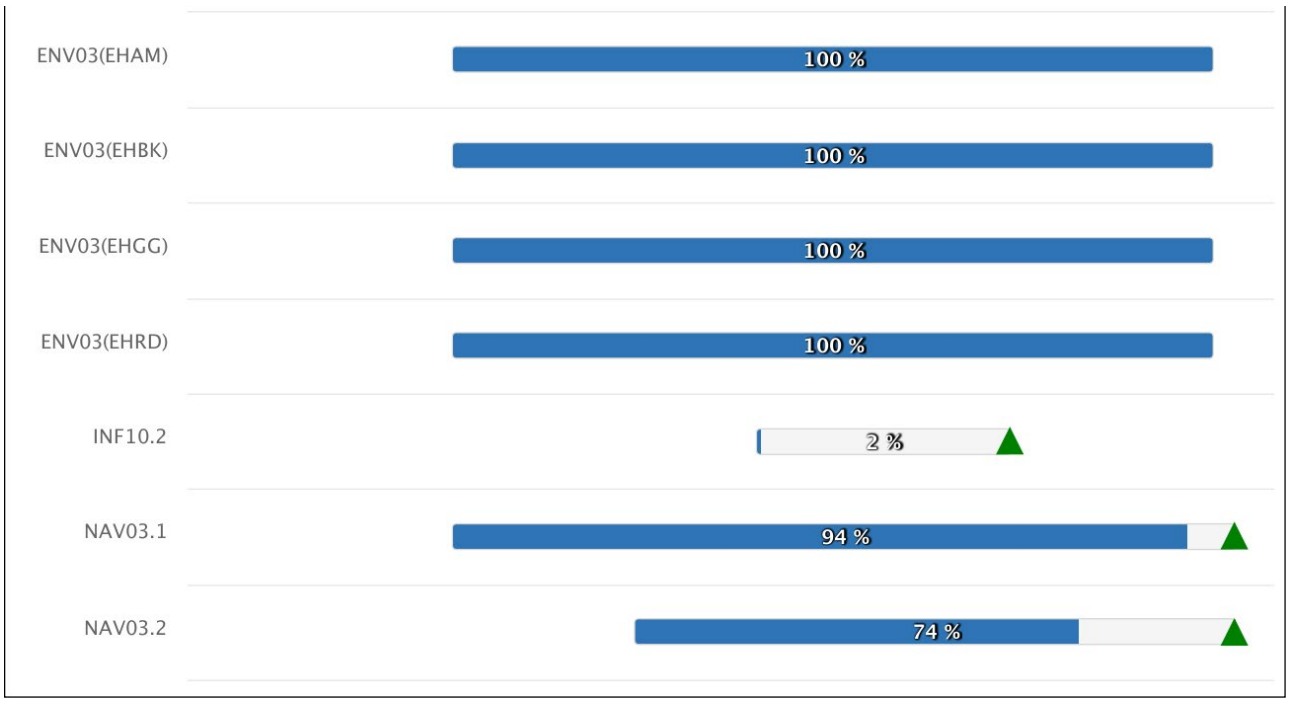




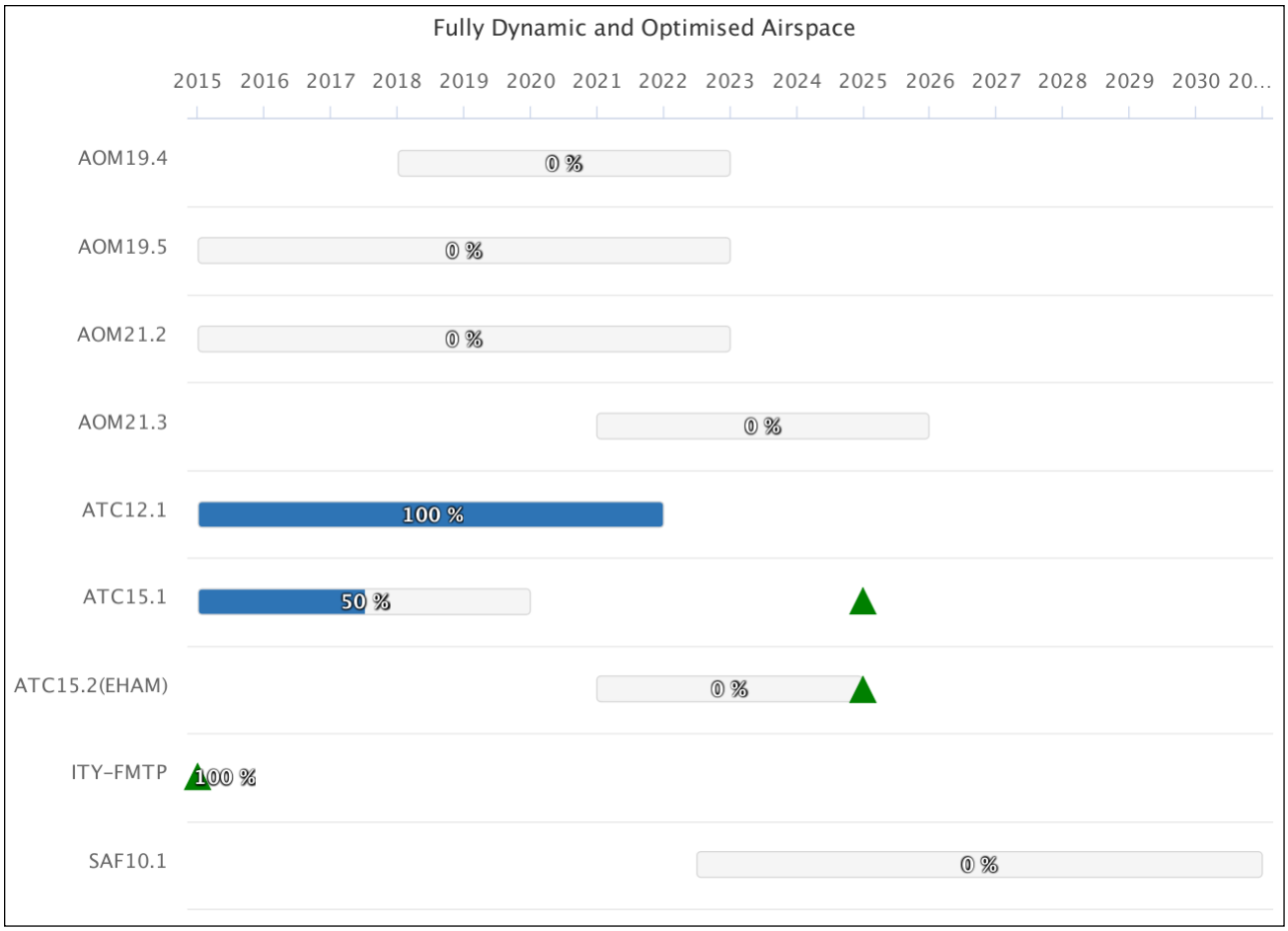
No implementation objectives are available yet for this EOC.

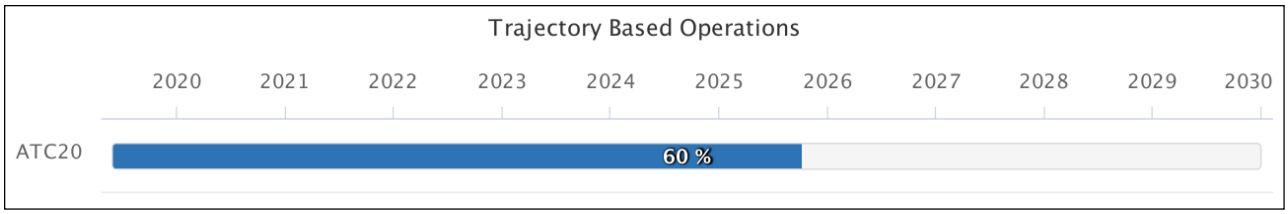

Virtualisation of Service Provision
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
AOP14.1(EHAM)
0 %
AOP14.1(EHBK)
50 %
AOP14.1(EHGG)
50 %


Airport and TMA performance
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
AOP04.1(EHAM)
100 %
AOP04.2(EHAM)
100 %
AOP05(EHAM)
100 %
AOP10(EHAM)
89 %
AOP12.1(EHAM)
62 %
AOP13(EHAM)
3 %
AOP15(EHAM)
0 %
AOP16(EHAM)
70 %
AOP18(EHAM)
0 %
AOP19(EHAM)
100 %
AOP25(EHAM)
0 %
ATC07.1(EHAM)
100 %
ATC26(EHAM)
0 %
ENV01(EHAM)
62 %
ENV02(EHAM)
100 %



dA Fully dynamic and optimised airspace





No implementation objectives are available yet for this EOC.

Source: EUROCONTROL LSSIP+ DB

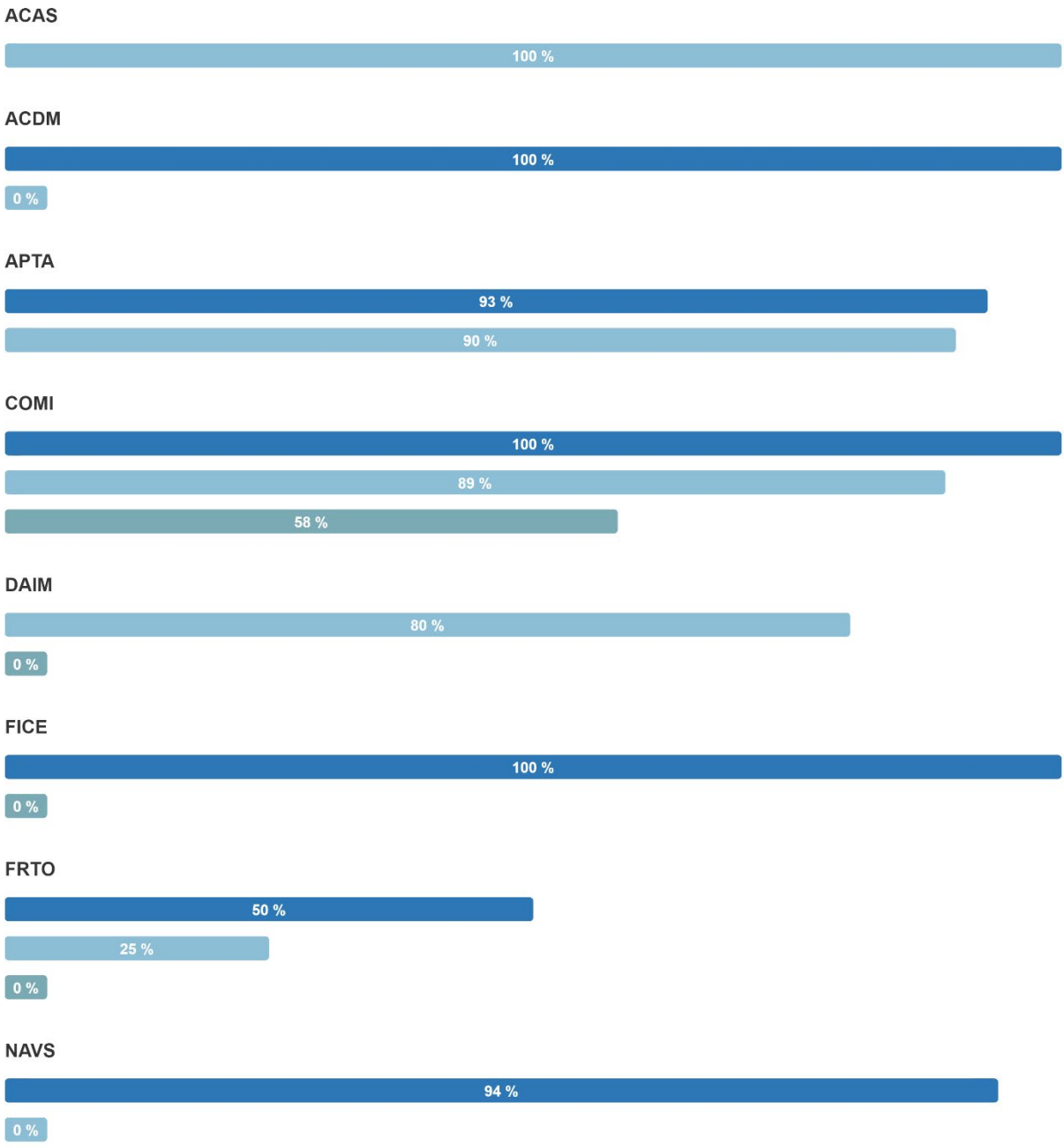
5.3.ICAO ASBU Implementation Progress

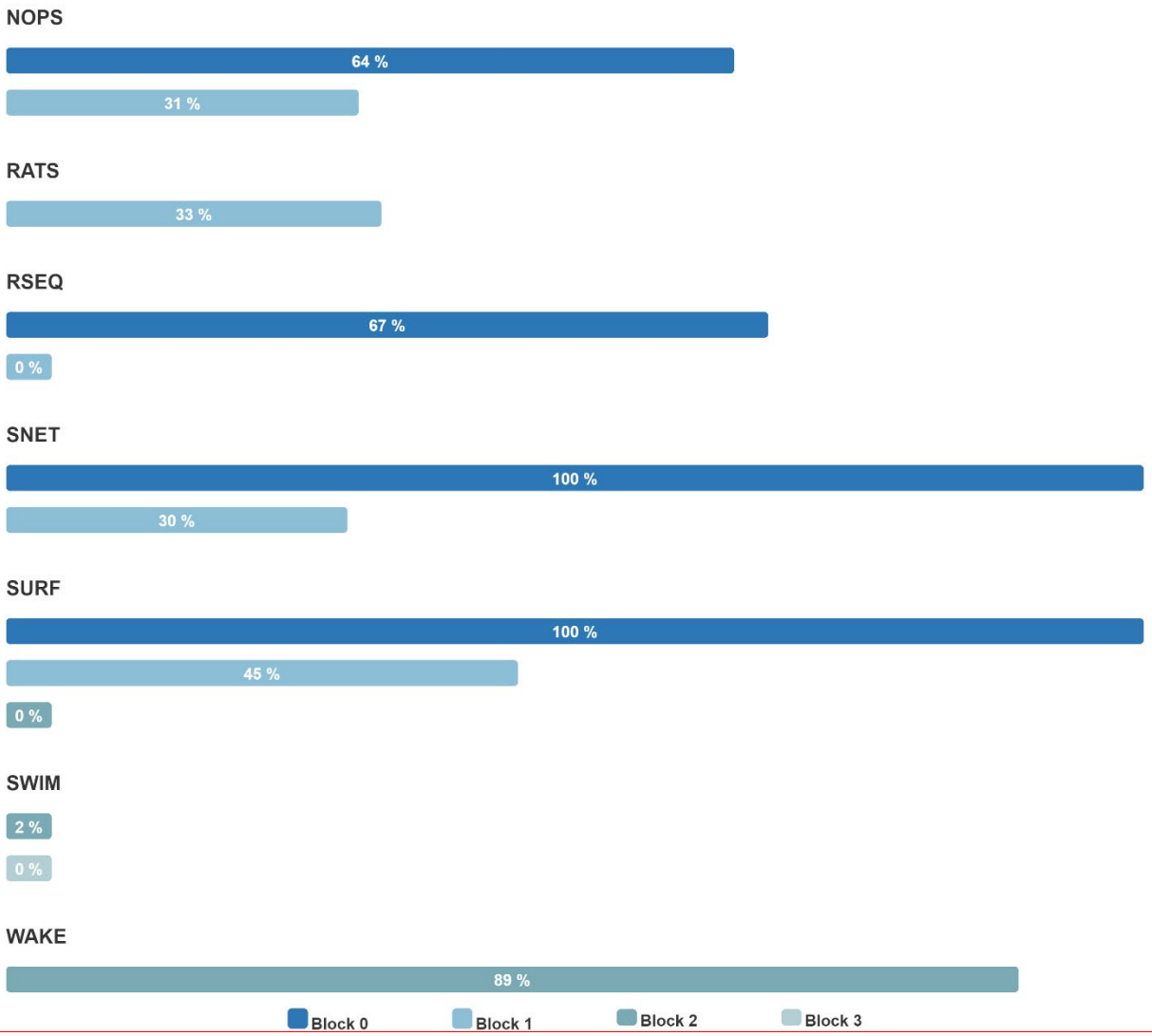
The tables below show for each ASBU Elements belonging to a particular ASBU Thread and Block, the overall status, the final date foreseen for completion and the percentage of progress achieved in the current cycle.

The final set of Block 0 and Block 1 ASBU elements to be monitored in ICAO EUR Region has been approved through written consultation by European Aviation System Planning Group (EASPG) in May 2022, based on the conclusions of the EUR Global Air Navigation Plan (GANP) Transition Project Team.

Results below were determined using the LSSIP Year 2022 declared statuses and progress of the relevant Implementation objectives in accordance with the updated mapping approved by the EASPG/3 meeting.

Note: Only the ASBU elements that are linked to an active implementation Objective are shown.





Source: EUROCONTROL LSSIP+ DB

5.4. Detailed Objectives Implementation progress

Objective/Stakeholder Progress Code:			
Completed		Not yet planned	
Ongoing		Not Applicable	
Planned		Missing Data	

Main Objectives

AOM13.1	**Harmonise Operational Air Traffic (OAT) and General Air Traffic (GAT) Handling** ***Timescales:*** Initial operational capability: 01/01/2012 Full operational capability: 31/12/2018	**100%**	**Completed**
	-		
Objective has been completed and implemented. Specific progress details are described in the stakeholder comment sections.			**31/12/2013**
REG (By:12/2018)			
Militaire Luchtvaart Autoriteit		100%	Completed
The Eurocontrol guidance material has been reviewed. No revisions have to be made.		-	30/06/2011
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart		100%	Completed
The Eurocontrol guidance material has been reviewed. No revisions have to be made.		-	30/06/2011
ASP (By:12/2018)			
Militaire Luchtvaart Autoriteit		100%	Completed
Harmonisation has been completed. LVNL can handle OAT as GAT.		-	31/12/2013
LVNL - Luchtverkeersleiding Nederland		100%	Completed
Harmonisation has been completed. LVNL can handle OAT as GAT. Training of staff is integrated in the LVNL ATM System development process.		-	31/12/2013
MIL (By:12/2018)			
Militaire Luchtvaart Autoriteit		100%	Completed
Procedure design has been finalised. MIL actions in this objective are planned and conducted in co-ordination with the civil ASP. No revisions to legislations have to be made.		-	31/12/2013

SDP 3.1.2 **AOM19.4**	**Management of Predefined Airspace Configurations** ***Timescales:*** Initial operational capability: 01/01/2018 Full Operational Capability / Target Date: 31/12/2022	**100%**	**Completed**
	-		
The Deployment Programme states in the geographical scope section of Family 3.1.2 "Management of Predefined Airspace Configurations" that there is a local limitation for the Dutch airspace below FL245 (LVNL). Therefore this objective and target date 31/12/2022 is not applicable to LVNL. **The MUAC FUA cell was implemented in June 2020. This cell is supported by a newly developed MUAC ASM tool (Scheduling App), which collects data from LARA NL**			**31/12/2022**
ASP (By:12/2022)			

LVNL - Luchtverkeersleiding Nederland	100%	Completed
The target date for this implementation objective is connected to the CP1 implementation of Airspace Management and Advanced Flexible Use of Airspace (S-AF3.1) however the Deployment Programme states in the geographical scope section of Family 3.1.2 "Management of Predefined Airspace Configurations" that there is a local limitation for the Dutch airspace below FL245 (LVNL). Therefore this objective and target date 31/12/2022 is not applicable to LVNL. For a possible non-mandatory implementation of AOM 19.4 the new iCAS system must first be implemented. The commissioning of iCAS is scheduled for winter 2023/2024, however the implementation of procedures is not yet planned. The operational commissioning of LARA will coincide with the commissioning of iCAS.	LARA	31/12/2022

SDP 3.1.1 AOM19.5	**ASM and A-FUA** ***Timescales:*** Initial Operational Capability: 01/01/2014 Full Operational Capability / Target Date: 31/12/2022	**100%**	**Completed**
	-		
Objective is not applicable to LVNL and CLSK. Specific progress details are described in the stakeholder comment sections. MUAC Implementation in the Netherlands was completed in November 2017 through a connection between LARA and the FDPS.			**31/12/2022**
ASP (By:12/2022)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
The target date for this implementation objective is connected to the CP1 implementation of Airspace Management and Advanced Flexible Use of Airspace (S-AF3.1) however the Deployment Programme states in the geographical scope section of Family 3.1.1 "ASM and A-FUA" that there is a local limitation for the Dutch airspace below FL245 (LVNL). Therefore this objective and target date 31/12/2022 is not applicable to LVNL.		-	31/12/2022
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to security limitations B2B exchange of data between Netherlands MOD and NM is not possible. In future, after integration of ANSP's, LVNL will provide the required data to NM.		-	-

SDP 3.2.1 AOM21.2	**Initial Free Route Airspace** ***Timescales:*** Initial operational capability: 01/01/2015 Full Operational Capability / Target Date: 31/12/2022	**100%**	**Completed**
	-		
Objective is not applicabe. Specific details are described in the stakeholder comment section. MUAC FRA has been implemented			**31/12/2022**
ASP (By:12/2022)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
The deadline for this implementation objective is connected to the CP1 implementation of S-AF3.2 Free Route with a geographical scope of airspace above flight level 305. LVNL is not responsible for flights above flight level 305, LVNL provides ANS below FL245. Therefore the deadline of 31/12/2022 is not applicable to LVNL. In addition no civil local FRA airspace has been identified in the Amsterdam FIR below FL245.		Free Route Airspace	31/12/2022

SDP 3.2.2 AOM21.3	**Enhanced Free Route Airspace Operations** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**100%**	**Completed**
	-		
Objective is not applicable for LVNL. Specific details are described in the stakeholder comment section. **In December 2019, full free route H24 was implemented at Maastricht UAC**			**31/12/2022**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
The deadline for this implementation objective is connected to the CP1 implementation of S-AF3.2 Free Route with a geographical scope of airspace at least above flight level 305. LVNL is not responsible for flights above flight level 305, LVNL provides ANS below FL245. Therefore the deadline of 31/12/2025 is not applicable to LVNL. In addition no civil local FRA airspace has been identified in the Amsterdam FIR below FL245.		Free Route Airspace / Replacement AAA (iCAS)	31/12/2022

AOP04.1	**Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance Service (former ICAO Level 1)** ***Timescales:*** Initial operational capability: 01/01/2007 Full operational capability: 31/12/2020	**100%**	**Completed**
	EHAM - Amsterdam Schiphol		
At Amsterdam Airport Schiphol, this Objective has been implemented under the responsibility of LVNL and not of AAS. A-SMGCS at Amsterdam Airport Schiphol is operational. Ground labels are used for both aircraft and ground vehicles. All vehicles which are allowed within the manoeuvring area are equipped with transponders. A slight increase of ground capacity during low visibility conditions has been recorded. The next step is to further increase both runway and manoeuvring surface capacity and to take full advantage of the availability of ground labels. Simultaneous use of two landing runways during LVC should take place within the next years. While primary ground surveillance does not have full coverage, it appears that the recently improved coverage and reliability of the Multilateration information no longer make full primary ground surveillance necessary. Further introduction of safety-significant changes to A-SMGCS are now subject to verification of compliance and acceptance by IVW (CAA-NL) in accordance with (EC) Regulation No 1315/2007.			**31/12/2009**
REG (By:12/2010)			
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart		100%	Completed
At the time when A-SMGCS became operational at Schiphol - before Nov 2007 (EC Regulation No 1315/2007 on safety oversight in ATM) - there was no legislation in force requiring for the approval of safety-significant changes to ATC systems by IVW (CAA-NL). Further introduction of safety-significant changes to A-SMGCS are now subject to compliance with this regulation (review and acceptance by CAA-NL of the safety arguments).		-	31/12/2009
ASP (By:01/2021)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
Same as in the overall comment.		-	31/12/2008
APO (By:01/2021)			
Amsterdam Airport Schiphol		100%	Completed
At Amsterdam Airport Schiphol, this Objective has been implemented under the responsibility of LVNL and not that of AAS. AAS has completed its participation in the local actions, where the case.		-	31/12/2008

AOP04.2	**Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (Airport Safety Support Service = former ICAO Level 2)** ***Timescales:*** Initial operational capability: 01/01/2021 Full operational capability: 31/12/2025	**100%**	**Completed**
EHAM - Amsterdam Schiphol			
RIASS (Runway Incursion and Alerting System Schiphol) has been implemented for Schiphol airport and is fully operational. RIASS was stepwise taken into operation from 2008 to 2010. At first the system was only used for a limited number of runways during reduced visibility. In phases the operational use has been extended to all runways and full time.			**31/12/2010**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
See general comment. Personnel has been trained in the use of the systems as part of the process of implementing changes.		-	31/12/2010
APO (By:12/2025)			
Amsterdam Airport Schiphol		100%	Completed
A multi-lateration system supporting the use of the labels in relation with the ground surveillance equipment by Tower control is operational at Schiphol airport. The implementation of a Runway Incursion Alerting System at Schiphol airport has been completed.		-	31/12/2010

AOP05	**Airport Collaborative Decision Making (A-CDM)** ***Timescales:*** Initial operational capability: 01/01/2004 Full operational capability: 31/12/2020	**100%**	**Completed**
EHAM - Amsterdam Schiphol			
LVNL and Schiphol Airport participate together with Dutch Airlines in a CDM Platform, which uses the Eurocontrol CDM manual as input for its activities. Both AAS and LVNL are reviewing performance on a regular basis. Schiphol Airline Operators Committee has endorsed CDM, all local handlers are bound by local regulations to participate. In Q2 2015 CPDSP was taken in operational use. The start of exchange of DPI messages with the Eurocontrol Network Manager was effectuated in May 2018. MIL has no plans for this objective and deems it "Not Applicable" for military ATC.			**31/05/2018**
ASP (By:01/2021)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
LVNL participates together with Schiphol Airport and Dutch Airlines in a CDM Platform. This platform uses the Eurocontrol CDM manual as input for its activities. LVNL is a member of the Eurocontrol CDM Taskforce. Implementation has started in 2009. In Q2 2015 CPDSP was taken in operational use. The start of exchange of DPI messages with the Eurocontrol Network Manager was effectuated in May 2018.		-	31/03/2012
APO (By:01/2021)			
Amsterdam Airport Schiphol		100%	Completed
LVNL and Amsterdam Airport Schiphol work together on a number of CDM activities. Implementation has started in 2009. In Q2 2015 CPDSP was taken in operational use. The start of exchange of DPI messages with the Eurocontrol Network Manager was effectuated in May 2018.		-	31/05/2018

AOP10	**Time-Based Separation** ***Timescales:*** Initial operational capability: 01/01/2015 Full operational capability: 31/12/2023	**89%**	**Ongoing**
EHAM - Amsterdam Schiphol			
The Ministry has funded research for the possible use of TBS at Schiphol. The results of these studies were ready in 2016, including a business case with possible benefits for Schiphol. **The change to the functional system to implement TBS was approved in February 2021. Implementation date will be determined by LVNL and is currently determined on 26/01/2023**			**26/01/2023**
REG (By:01/2024)			
Inspectie Leefomgeving en Transport		100%	Completed
The change to the functional system to implement TBS was approved in february 2021.		-	10/02/2021
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart		100%	Completed
The Ministry as funded research into the possible use of TBS at Schiphol. The results of these studies were ready in 2016, including a business case with possible benefits for Schiphol.		-	-
ASP (By:12/2024)			
LVNL - Luchtverkeersleiding Nederland		88%	Ongoing
The NATS intelligent approach tool will be used for RECAT EU and TBS. RECAT-TBS training for Tower and Approach air traffic controllers Schiphol has started. Publication of procedures in AIP Netherlands amendment 01/2023, effective 26 January 2023.		RECAT-TBS	26/01/2023

SDP 2.2.1 AOP11.1	**Initial Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023	**100%**	**Completed**
EHAM - Amsterdam Schiphol			
The project was completed 31/12/2019. Specific progress details are described in the stakeholder comment sections.			**31/12/2019**
ASP (By:12/2023)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
The initial Airport Operations Plan (iAOP) is implemented by Amsterdam Airport Schiphol. LVNL provide iAOP data and iAOP is being used by the operational department.		-	31/12/2019
APO (By:12/2023)			
Amsterdam Airport Schiphol		100%	Completed
Initial-AOP is implemented at Schiphol		-	31/12/2019

SDP 2.2.2 AOP11.2	**Extended Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027	**0%**	**Planned**
EHAM - Amsterdam Schiphol			
After the implementation of iAOP the next step will be to build the Extended AOP. The project will start in 2024 and will be implemented before 2027. Specific progress details are described in the stakeholder comment sections.			**31/12/2027**
ASP (By:12/2027)			
LVNL - Luchtverkeersleiding Nederland		0%	Not yet planned

The AOP is a single, common and collaboratively agreed rolling plan that will be the principal source of information used and shared by all involved Schiphol airport stakeholders, including LVNL. It is not yet clear what changes LVNL will have to make for its operations to use the AOP.	-	-
APO (By:12/2027)		
Amsterdam Airport Schiphol	0%	Planned
The project is planned to start in 2024 and will be implemented before 31/12/2027.	-	31/12/2027

SDP 2.3.1 AOP12.1	**Airport Safety Nets** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**62%**	**Ongoing**
EHAM - Amsterdam Schiphol			
Objective is completed for AAS. For LVNL, this objective is ongoing and has an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		23%	Ongoing
The Runway Monitoring and Conflict Alerting (RMCA) is implemented at Schiphol Airport by the RIASS (Runway Incursion and Alerting System Schiphol). Conflicting ATC Clearances (CATC) and Conformance Monitoring of Alerts for Controllers (CMAC) will be implemented in phases so that new functions are added over a number of years. In 2020 one safety net for Conflicting ATC Clearances (CATC) was implemented.		-	31/12/2025
APO (By:12/2025)			
Amsterdam Airport Schiphol		100%	Completed
The part for Schiphol Airport was already implemented. No further action is needed for realisation of this project.		-	31/10/2022

AOP13	**Automated Assistance to Controller for Surface Movement Planning and Routing** ***Timescales:*** Initial operational capability: 01/01/2016 Full operational capability: 31/12/2025	**3%**	**Ongoing**
EHAM - Amsterdam Schiphol			
For LVNL and DGLM, this objective is ongoing. DGLM has an expected implementation date of 31/12/2023. LVNL has an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
REG (By:12/2025)			
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart		10%	Ongoing
NLR has started doing research in 2018.		-	31/12/2023
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		2%	Ongoing

The objective AOP13 Automated Assistance to Controller for Surface Movement Planning and Routing will be implemented as one of the functional modules of the TWR system that will be implemented in a phased approach. The A-SMGCS Routing service provides the generation of taxi routes, with the corresponding estimated taxi times for planning considerations. This function calculates the most operationally relevant route, which permits the aircraft to go from stand to runway, from runway to stand or any other surface movement. Taxi routes may be modified by the air traffic controller before being assigned to aircraft and vehicles. The controller working position allows the controller to manage surface route modification and creation.	-	31/12/2025

SDP 2.1.1 AOP19	**Departure Management Synchronised with Pre-departure sequencing** ***Timescales:*** Initial Operational Capability : 01/01/2021 Full Operational Capability / Target Date: 31/12/2022	**100%**	**Completed**
EHAM - Amsterdam Schiphol			
The current Collaborative Pre Departure Sequence Planner (CPDSP) is compliant to CP1 regulation and full implementation and deployment is achieved on 06/12/2022. The new DMAN system will also comply to CP1 requirements and will provide better and more stable departure planning. Further details are in the comment section of LVNL.			**06/12/2022**
ASP (By:12/2022)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
The current Collaborative Pre Departure Sequence Planner (CPDSP), as part of the Schiphol TWR system, is calculating and metering the departure flow to Schiphol runways by managing Off-block Times, using Target Off-block Times (TOBT) information obtained from Airport CDM. The Pre-departure sequencing is calculated based on Target Take Off Time (TTOT) and Taxi-times resulting in Target Start Approval Time (TSAT) for each flight, taking multiple constraints and preferences into account when calculating TTOT and TSAT. The CPDSP system meets the DMAN requirements specified in CP1 (and DP Family Family 2.1.1) making it compliant. The Schiphol TWR system is being replaced to meet other requirements in the CP1 regulation. As part of the phased replacement of the TWR system, it is necessary to implement a new DMAN system. The new DMAN system will also comply to CP1 requirements and will provide better and more stable departure planning. However, the DMAN implementation project is delayed and will not be able to be completed until 2024 at the earliest, but with the CPDSP system, we are already compliant to CP1.		-	06/12/2022
APO (By:12/2022)			
Amsterdam Airport Schiphol		0%	Not Applicable
Based on separate responsibilities at EHAM, LVNL leads this project. Schiphol Airport supports on request of LVNL.		-	-

SDP 3.2.1 ATC02.8	**Ground-Based Safety Nets** **(Outside Applicability Area)** ***Timescales:*** - not applicable -	**0%**	**Not Applicable**
-			
Objective is not applicable for LVNL. Specific progress details are described in the stakeholder comment section.			**-**
ASP (By:12/2021)			

LVNL - Luchtverkeersleiding Nederland	0%	Not Applicable
Due to the flat landscape and the availability and use of ILS's, there is no use for a Minimum Safe Altitude Warning (MSAW) or Approach Path Monitor (APM) function in The Netherlands. LVNL will not provide services in FRA, therefore Area Proximity Warning (APW), is not a CP1 pre-requisite. .	-	-

ATC07.1	**AMAN Tools and Procedures** ***Timescales:*** Initial operational capability: 01/01/2007 Full operational capability: 31/12/2019	**100%**	**Completed**
EHAM - Amsterdam Schiphol			
LVNL has basic arrival management functions in line with the EUROCONTROL specifications in place. An advanced Arrival Manager for Schiphol, named AMAN 1.0, is implemented in nov 2018, this implemented improved Trajectory Predictor (TP), Delta-T indication and Preview Window. Specific progress details are described in the stakeholder comment section.			**31/12/2018**
ASP (By:01/2020)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
LVNL has basic arrival management functions in line with the EUROCONTROL specifications in place since 2009. An advanced Arrival Manager for Schiphol, named AMAN 1.0, is implemented in nov 2018. AMAN 1.0 implemented improved Trajectory Predictor (TP), Delta-T indication and Preview Window. As part of AMAN 1.0 a user friendly arrival manager is deployed which supports controllers to optimize traffic flows to Schiphol airport and is a good basis for further development of AMAN. To improve the quality of prediction of the arrival manager an new version under the name AMAN 2.0 will be implemented (see ATC15.1).		-	31/12/2018

SDP 3.2.1 ATC12.1	**Automated Support for Conflict Detection, Resolution Support Information and Conformance Monitoring** ***Timescales:*** Initial operational capability: 01/01/2015 Full operational capability: 31/12/2021	**100%**	**Completed**
-			
The Mil ANSP (AOCS NM) uses the MUAC system in a virtual center mode. Apart from the iFMP and the future Multi/Meta sector concepts both systems specs are identical. The LSSIP report provided by MUAC states on 12.1 reflects the status for the Dutch mil ANSP system. AAA has all the necessary functions on MTCD which are useful for the LVNL operation. All these functions will also be a part of the new iCAS system.			**-**
ASP (By:12/2021)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
AAA has all the necessary functions on MTCD which are useful for the LVNL operation. All these functions will also be a part of the new iCAS system.		-	-

ATC15.1	**Information Exchange with En-route in Support of AMAN** ***Timescales:*** Initial operational capability: 01/01/2012 Full operational capability: 31/12/2019	**50%**	**Ongoing**
-			
For LVNL, this objective is ongoing and has an expected implementation date of 31/12/2024. Specific progress details are described in the stakeholder comment section.			**31/12/2024**
ASP (By:12/2019)			

LVNL - Luchtverkeersleiding Nederland	50%	Ongoing
The AMAN 1.0 project implemented in 2018 the Advanced Schiphol Arrival Planner (ASAP). To complete the ATC15.1 implementation objective the AMAN 2.0 project is needed. This project is delayed because of a shortage in resources and tasks are more complicated and take more time than planned. The project AMAN 1.0 implemented improved Trajectory Predictor (TP), Delta-T indication and Preview Window. As part of AMAN 1.0 a user friendly arrival manager is deployed which supports controllers to optimize traffic flows to Schiphol airport. The deployment is combined with initial steps to improve sequence stability by extending the AMAN horizon (through earlier receipt of ACT messages and extending the correlation area). The Schiphol AMAN 2.0 project builds on the new arrival management system ASAP implemented through the Schiphol AMAN 1.0 project. The AMAN 2.0 project consists of a number of improvements which were placed out of scope of the AMAN 1.0 project for reasons of transition planning and phased deployment of improvements. The main improvements of AMAN 2.0 are: 1) Improved meteo information for trajectory prediction (implemented on 1 December 2021) This change involves adopting an improved meteo model and a more refined grid (high resolution) of meteo data in the TP. 2) Speed advisories This function provides the executive controller with an advised aircraft speed to meet a target time over the initial approach fix (TMA entry point) 3) Flexible trajectory prediction This function creates a feedback loop of route and speed options back to the TP. This enables controllers to evaluate the effect of route/speed combinations on the time over a merge point. The flexible TP function enables optimized descent profiles during off-peak hours.	Amsterdam Schiphol AMAN 2.0	31/12/2024

SDP 1.1.1 ATC15.2	**Arrival Management Extended to En-route Airspace** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2024	**0%**	**Planned**
EHAM - Amsterdam Schiphol			
The start of the LVNL Extended AMAN project is delayed due to COVID-19 budget cuts and effects on the project portfolio. Specific progress details are described in the stakeholder comment section.			**31/12/2024**
ASP (By:12/2024)			
LVNL - Luchtverkeersleiding Nederland		0%	Planned
In preparation for Extended AMAN, LVNL has implemented a new basic AMAN system (AMAN 1.0) and is working on improvements (AMAN 2.0) and the new air traffic control system iCAS that interfaces with the AMAN system. The start of the LVNL Extended AMAN project is delayed due to COVID-19 budget cuts and effects on the project portfolio. LVNL will upgrade its ATC systems to support extended AMAN in En-route sectors (including data exchange, data processing and information display at the ATCO working positions in support the handling of AMAN constrains). The ATM systems need to be upgraded in order to be able to generate, communicate, receive and display AMA OLDI messages or the extended AMAN data exchanges via SWIM service. Because it is more efficient, LVNL tries to use SWIM services right from the start, but if adjacent centres do not support it yet, OLDI can also be used.		Amsterdam Schiphol AMAN 2.0 / Extended Arrival Management / Replacement AAA (iCAS)	31/12/2024

SDP 1.2.1 ATC19	**AMAN/DMAN Integration** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027	**0%**	**Not Applicable**
EHAM - Amsterdam Schiphol			
Objective is not applicable to Amsterdam Airport Schiphol and LVNL. Specific details are described in the stakeholder comment sections.			-
ASP (By:12/2027)			
LVNL - Luchtverkeersleiding Nederland		0%	Not Applicable
Integrated Arrival and Departure management is not mandatory for Amsterdam Airport Schiphol (CP1). At Schiphol, runways are not used in mixed mode. However Schiphol has dependent runways which have departure runway linked with dependency to an arrival runway. LVNL is still investigating ways in which an AMAN/DMAN integration or link could bring benefits to the Schiphol situation.		-	-
APO (By:12/2027)			
Amsterdam Airport Schiphol		0%	Not Applicable
LVNL is leading this project.		-	-

COM10.2	**Extended AMHS** ***Timescales:*** Initial Operational Capability: 01/12/2011 Full Operational Capability: 31/12/2024	**100%**	**Completed**
-			
Due to co-location at Schiphol with LVNL and making use of the systems provided by LVNL. Compliance is depending on the implementation of this objective by LVNL. The objective was completed.			**31/12/2021**
ASP (By:12/2024)			
Commando Luchtstrijdkrachten (CLSK)		100%	Completed

Due to co-location at Schiphol with LVNL and making use of the systems provided by LVNL compliance is depending on the implementation of this objective by LVNL.	-	31/12/2021
LVNL - Luchtverkeersleiding Nederland	100%	Completed
LVNL upgraded the AMHS capability to Extended ATSMHS for the relevant services in 2014 and 2021 (Implementation of MR3). The AMHS systems and associated procedures comply with the AMHS Community Specification. LVNL developed and maintains operations manuals and trained personnel accordingly. AMC Procedures for Cooperating COM Centres (CCC) operators have been implemented and are used.	-	31/12/2021

COM11.1	**Voice over Internet Protocol (VoIP) in En-Route** ***Timescales:*** Initial operational capability: 01/01/2013 Full operational capability: 31/12/2021	**58%**	**Ongoing**
	-		
Due to the co-location with LVNL, CLSK is fully dependent on progress within LVNL. Objective is ongoing for LVNL and has an expected implementation date of 31/03/2025. Specific progress details are described in the stakeholder comment sections.			**31/03/2025**
ASP (By:12/2021)			
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to co-location at Schiphol with LVNL and making use of the systems provided by LVNL compliance is depending on the implementation of this objective by LVNL.		-	-
LVNL - Luchtverkeersleiding Nederland		58%	Ongoing
A CIV/MIL project to upgrade VCS to support VoIP is ongoing, this project realises a second main VCS system, this system will enable the use of VoIP for ground/ground communication. Commissioning of the new VCS system been delayed due to issues revealed during an operational trial and is now scheduled for March 2023. The existing VCS system will then be retrofitted with the VoIP capability for ground/ground communication. LVNL will implement VoIP ground-to-ground (inter-centre) telephony as a next step, this will be achieved by (at the latest) 31 March 2025. LVNL has no upgrade planned of its Voice Communication Systems to support VoIP links to the ground radio stations. For these connections, LVNL uses E1 over IP for voice. As a result, there is no issue with old ATM voice services that will soon no longer be supported by European telecom service providers.		-	31/03/2025

COM11.2	**Voice over Internet Protocol (VoIP) in Airport/Terminal** ***Timescales:*** Initial operational capability: 01/01/2013 Full operational capability: 31/12/2023	**58%**	**Ongoing**
	-		
Objective is ongoing for LVNL and has an expected implementation date of 31/03/2023. Specific progress details are described in the stakeholder comment section.			**31/03/2023**
ASP (By:12/2023)			
LVNL - Luchtverkeersleiding Nederland		58%	Ongoing

A CIV/MIL project to upgrade VCS to support VoIP is ongoing, this project realises a second main VCS system, this system will enable the use of VoIP for ground/ground communication. Commissioning of the new VCS system been delayed due to issues revealed during an operational trial and is now scheduled for March 2023. The existing VCS system will then be retrofitted with the VoIP capability for ground/ground communication. For Center-tower voice communications, as currently envisaged, VoIP will not be used because LVNL uses E1 over IP for voice and therefore there is no dependence on old (E1) ATM voice services provided by telecommunication service providers. LVNL has no upgrade planned of its Voice Communication Systems to support VoIP links to the ground radio stations. For these connections, LVNL uses E1 over IP for voice. As a result, there is no issue with old (E1) ATM voice services that will soon no longer be supported by European telecom service providers.	-	31/03/2023

COM12	**New Pan-European Network Service (NewPENS)** ***Timescales:*** Initial operational capability: 01/01/2018 Full operational capability (33 ANSPs): 31/12/2024	**78%**	**Ongoing**
	-		
Objective is not applicable to Amsterdam Airport Schiphol and regional airports. Objective was completed by LVNL. For KNMI, the objective is ongoing and has an expected implementation date of 01/06/2023. Specific progress details are described in the stakeholder comment sections.			**01/06/2023**
ASP (By:12/2024)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
LVNL is involved in a European NewPENS project which is led by Eurocontrol. The supplier of the newPENS gateway has been procured, the contract is signed in April 2018. The first phase, the implementation of the NewPENS connection is completed. Also the second phase, the migration of applications and services to the NewPENS environment, is completed.		-	31/12/2020
Koninklijk Nederlands Meteorologisch Instituut		10%	Ongoing
KNMI will migrate to NewPENS in 2023 and the CPA has been signed in Q4 2022. The connection to NewPENS is integral part of SESAR Deployments projects 2014_110_AF5 Meteorological Information Exchange by MET ANSP KNMI and 2015_137_AF5 European Meteorological Aircraft Derived Data Centre (EMADDC)		-	01/06/2023
APO (By:12/2024)			
Amsterdam Airport Schiphol		0%	Not Applicable
-		-	-

ENV01	**Continuous Descent Operations (CDO)** ***Timescales:*** Initial operational capability: 01/07/2007 Full operational capability: 31/12/2023	**62%**	**Ongoing**
	EHAM - Amsterdam Schiphol		
Objective has been completed for AAS. Objective is ongoing for LVNL and has an expected implementation date of 31/12/2026. Specific progress details are described in the stakeholder comment sections.			**31/12/2026**
ASP (By:12/2023)			
LVNL - Luchtverkeersleiding Nederland		53%	Ongoing

RNAV transitions to runways at Schiphol with CDO for night time are already in use. For these low-noise procedures a continuously descending flight path without level segments is to be flown in a low power and low drag configuration. Route and runway use is part of Dutch legislation, including the RNAV transitions for night time use. On 12 august 2021 new night approach procedures are published with a continuous descend path, the RNP APCH to Schiphol runways 06, 18R and 18C and also RNAV 1 procedures to ILS CAT II & III 06, 18R and 18C. Additional night time arrival routes are planned to be published for runways 27 and 36C. LVNL has planned actions for day time use of initial continuous descent operations enabled by PBN. There is still the issue concerning lower capacity when RNAV1/RNP1 approaches are combined with CDOs. Therefore, RNAV1/RNP1 approaches combined with CDOs are, according to current expectations, possibly only used during low density hours.	-	31/12/2026
APO (By:12/2023)		
Amsterdam Airport Schiphol	100%	Completed
	-	31/12/2013

FCM03	**Collaborative Flight Planning** ***Timescales:*** Initial operational capability: 01/01/2000 Full operational capability: 31/12/2022	**100%**	**Completed**
	-		
The implementation of CFMU software updates is part of the standard upgrade processes of LVNL. The level of GAT traffic controlled by Mil ANSP does not justify the implementation of the requested data exchange with the CFMU.			**30/06/2011**
ASP (By:12/2022)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
The implementation of CFMU software updates is part of the standard upgrade processes of LVNL. ASP11, usage of IFPLID (ASP11) is deemed not applicable because it cannot be justified by a business case.		-	30/06/2011

SDP 4.1.1 FCM04.2	**Enhanced Short Term ATFCM Measures** ***Timescales:*** Initial operational capability: 01/11/2017 Full Operational Capability / Target Date: 31/12/2022	**100%**	**Completed**
	-		
Objective is completed was implemented since 31/12/2022. Specific progress details are described in the stakeholder comment section.			**31/12/2022**
ASP (By:12/2022)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
LVNL primarily uses a local system for Enhanced Short Term ATFCM Measures namely the Work Load Model (WLM), which is supplemented by the NM-provided STAM application. LVNL use the associated procedures to ensure that the ATFCM planning at local level allows the STAM coordination process. LVNL is also working on an additional tool namely the Decision Support Tool (DST) which will be commissioned in 2023.		-	31/12/2022

SDP 4.3.1 FCM06.1	**Automated Support for Traffic Complexity Assessment and Flight Planning interfaces** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target date: 31/12/2022	**100%**	**Completed**
	-		
Full implementation and deployment achieved on 24/07/2017. Specific progress details are described in the stakeholder comment section.			**24/07/2017**
ASP (By:12/2022)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
LVNL implemented local systems for complexity assessment namely the Work Load Model (WLM) and in addition a Decision Support Tool (DST) that use NM B2B Services. The current AAA system of LVNL automatically provide IFPS with updated flight plan information on airborne flights by means of AFP message related to missing flights, change of route and diversion. The new iCAS system will provide IFPS with AFP message related to missing flights, change of route, diversion, change of flight rule, flight type, A/C type and equipment. The current AAA system of LVNL and the new iCAS system process ATC Flight Plan Change message (ACH) and ATC Flight Plan message (APL);		-	24/07/2017

SDP 4.2.1 FCM10	**Interactive Rolling NOP** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023	**25%**	**Ongoing**
	-		
Objective is not applicable to CLSK. The objective is ongoing for LVNL and has an expected implementation date of 31/12/2023. Specific progress details are described in the stakeholder comment sections.			**31/12/2023**
ASP (By:12/2023)			
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to security limitations B2B exchange of data between Netherlands MOD and NM is not possible. In future, after integration of ANSP's, LVNL will provide the required data to NM.		-	-
LVNL - Luchtverkeersleiding Nederland		3%	Ongoing
The new NM Portal (NMP) consists of NMP Airspace, NMP Flight and NMP Flow applications. - The NMP Flight application will replace and combine CIAO and NOP functionalities, the Aircraft Operator related functionalities into a single new interface/application. - The NMP Flow application will combine the existing CIFLO, CITO and NOP FLOW related functionalities into a single new interface/application. NMP Flight is made available from NM Rel 25.1 (on 20 July 2021). NMP Flow v1.0 is available from NM Rel 26.0 (on 26 April 2022) onwards. The current AAA and the new iCAS ATC systems can handle Slot an Allocation Message (SAM) and Slot Revision Message (SRM) messages. But extraction of Target Times (TTs) is not yet implemented, LVNL is still investigating whether showing target times to the controller makes sense.		-	31/12/2023
APO (By:12/2023)			
Amsterdam Airport Schiphol		100%	Completed
-		-	31/12/2018

SDP 4.2.2 FCM11.1	**Initial AOP/NOP Information Sharing** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023	**19%**	**Ongoing**
EHAM - Amsterdam Schiphol			
iAOP-NOP integration expected in Q2 2023. Objective will be implemented by AAS. Specific progress details are described in the stakeholder comment sections.			**31/05/2023**
ASP (By:12/2023)			
LVNL - Luchtverkeersleiding Nederland		0%	Not Applicable
Initial AOP/NOP Information Sharing will be implemented by Amsterdam Airport Schiphol.		-	-
APO (By:12/2023)			
Amsterdam Airport Schiphol		15%	Ongoing
iAOP-NOP integration expected in 2023 after trial with Eurocontrol which are planned for beginning of 2023.		-	31/05/2023

SDP 4.4.1 FCM11.2	**AOP/NOP integration** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027	**0%**	**Planned**
EHAM - Amsterdam Schiphol			
The objective will be implemented by AAS before end of 2027. The project start for AAS is expected in 2024. For LVNL, the project has not been planned yet, once it has become clear what needs to be done, LVNL will be able to plan the necessary activities. Specific progress details are described in the stakeholder comment sections.			**31/12/2027**
ASP (By:12/2027)			
LVNL - Luchtverkeersleiding Nederland		0%	Not yet planned
The data that need to be exchanged between AOPs and NOP will be coordinated and planned with Amsterdam Airport Schiphol. That includes precise definition, purpose, responsibility and procedure to use every data element exchanged. Only once it has become clear what needs to be done can LVNL plan the necessary activities.		-	-
APO (By:12/2027)			
Amsterdam Airport Schiphol		0%	Planned
The project will start in 2024		-	31/12/2027

INF07	**Electronic Terrain and Obstacle Data (eTOD)** ***Timescales:*** Initial operational capability: 01/11/2014 Full operational capability: 31/12/2018	**70%**	**Ongoing**
-			
Regulatory framework is established and changes to State legislation are initiated. All relevant stakeholders are involved and the implementation process is ongoing. Implementation details are being worked out by LVNL, AAS and Kadaster. Specific progress details are described in the stakeholder comment sections.			**31/12/2024**
REG (By:01/2019)			
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart		78%	Ongoing

The process for terrain and obstacle data collection and for establishing an eTOD database in accordance with the requirements laid down in ICAO Annex 15 and EASA IR 2017/373 (consolidated version of 27-01-2022) in the Netherlands is on-going. During this establishing phase, oversight is carried out by the regulator on the relevant stakeholders (e.g. ANSP, aerodrome operators). Implementation of the entire eTOD database comprising terrain and obstacle data for all four areas is foreseen for mid to end 2024. Prior to implementation, reports covering the verification results and compliance to the regulatory material will be approved by the competent authority.	-	31/12/2024
ASP (By:01/2019)		
LVNL - Luchtverkeersleiding Nederland	70%	Ongoing
The AIM Roadmap is used to create an LVNL plan. Service Level Agreement (SLA) with LVNL and Kadaster regarding Electronic Terrain and Obstacle Database has been signed in 2019. Good progress has been made on technical and institutional terrains. National law has been updated to reflect the new responsibilities of the land registry office. First eTOD delivery to the ANSP has been made consisting of AIXM5.1-data of Area1. Several testing and implementation activities had to be postponed due to the pandemic situation. Implementation of the entire eTOD database comprising terrain and obstacle data for all four areas is foreseen for mid to end 2024.	-	31/12/2024
APO (By:01/2019)		
Amsterdam Airport Schiphol	55%	Ongoing
The project is under development together with other partners. The expected end date is mid-2024.	-	01/07/2024

SDP 5.2.1 INF10.2	**Stakeholders' SWIM PKI and cyber security** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**2%**	**Ongoing**
	-		
Due to the co-location with LVNL, CLSK is fully dependent on progress within LVNL. LVNL has started connecting systems to new internal networks and the NewPENS network. Project has been planned by KNMI with an expected implementation date of 31/12/2025. Airports did not plan the project yet. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		4%	Ongoing
LVNL has started connecting systems to new internal networks and the NewPENS network. LVNL decided to use the European Common Aviation PKI (EACP) solution. LVNL will implement Public Key Infrastructure (PKI) management, audit programmes ensuring continuous compliance with policies and standards, adapt systems (equipment and procedures), train technical personnel and implement monitoring and control to protect the IT systems against cyber-attacks.		-	31/12/2025
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to the co-location with LVNL CLSK is fully dependent on progress within LVNL.		-	-
APO (By:12/2025)			
Amsterdam Airport Schiphol		0%	Planned
Project will complemented before 31/12/2025		-	31/12/2025

MET (By:12/2025)		
Koninklijk Nederlands Meteorologisch Instituut	0%	Planned
Several actions are on-going in this regard, but a formal activity or project to map all actions with the requirements has not been started yet. KNMI is implementing a new IT-strategy that is compliant with government standards and regulations. A decision to either use EACP policies, own PKI or combination has not been made yet. MET ANSP KNMI is in the process to install a NewPENS connection in 2023 (under 2015_147_AF5 EMADDC). Coordination with LVNL regarding the SWIM KPI is on-going in 2023. Meteorological services including EMADDC output will be made available in line with SWIM specifications.	-	31/12/2025

SDP 5.3.1 INF10.3	**Aeronautical Information Exchange - Airspace structure service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Planned**
	-		
Due to the co-location with LVNL, CLSK is fully dependent on progress within LVNL. LVNL has planned this project with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to the co-location with LVNL CLSK is fully dependent on progress within LVNL.		-	-
LVNL - Luchtverkeersleiding Nederland		0%	Planned
The LVNL ASM support system LARA, and possibly other systems involved, will be adapted to consume airspace information needed for interoperability with NM via the NM B2B Airspace Structure Service. The Airspace Structure Service will be used for management of the AUP/UUP by the local ASM support systems which requires that the same airspace data is used by both NM and the ASM support systems. The airspace data will be available via NM B2B Airspace Structure Service, which allows to obtain in AIXM 5.1 all the airspace data needed by the local ASM support systems for the management of the AUP (AIRAC data and the live updates).		LARA	31/12/2025

SDP 5.3.1 INF10.4	**Aeronautical Information Exchange - Airspace Availability Service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Planned**
	-		
Due to the co-location with LVNL, CLSK is fully dependent on progress within LVNL. LVNL has planned this project with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		0%	Planned
LVNL will adapt its local ASM support system to provide the AUP/UUP to NM via the NM B2B Airspace Availability Services. The Airspace Availability Service is part of the NM B2B Services, this allows the LVNL ASM support systems to provide the AUP and its dynamic updates UUP to NM in a timely manner. It also allows NM the publication of the consolidated European AUP/UUP (EAUP/EUUP) to all stakeholders, AUs, for use in the flight planning systems.		-	31/12/2025

Commando Luchtstrijdkrachten (CLSK)	0%	Not Applicable
Due to the co-location with LVNL CLSK is fully dependent on progress within LVNL.	-	-

SDP 5.3.1 INF10.5	**Aeronautical Information Exchange - Airspace Reservation (ARES)** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Planned**
	-		
Due to the co-location with LVNL, CLSK is fully dependent on progress within LVNL. LVNL has planned this project with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to the co-location with LVNL CLSK is fully dependent on progress within LVNL.		-	-
LVNL - Luchtverkeersleiding Nederland		0%	Planned
The LVNL ASM support system will be adapted to provide SWIM services for the exchange of ARES information at local and FAB level, with civil and military stakeholders, as required, in support of ASM level 2 and level 3 processes and procedures. This concerns the pre-tactical reservation of the airspace structures and the tactical activation and deactivation of the airspace structures. The following service support the ASM level 2 (pre-tactical reservation of the airspace structures): o Airspace Reservation (ARES) information: this service allows the exchange of information regarding ARES between local ASM support systems, in particular to support cross-border operations; The following services support the ASM level 3 (tactical activation and deactivation of the airspace structures): o Notification of the activation of an Airspace Reservation/Restriction (ARES) o Notification of the de-activation of an Airspace Reservation/Restriction (ARES) o Pre-notification of the activation of an Airspace Reservation/Restriction (ARES) o Notification of the release of an Airspace Reservation/Restriction (ARES) o Query Airspace Reservation/Restriction (ARES) information LVNL will provide a description of ARES information services made available in the Registry. If it turns out to be relevant LVNL will adapt the local ATM system to consume the ARES information made available via SWIM services by ASM support systems; in particular the ATC systems consume the information concerning the real-time activation and deactivation of ARES.		-	31/12/2025

SDP 5.3.1 INF10.6	**Aeronautical Information Exchange – Digital NOTAM service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Not yet planned**
	-		
Due to the co-location with LVNL, CLSK is fully dependent on progress within LVNL. The project has not been planned yet for LVNL. Specific progress details are described in the stakeholder comment sections.			-
ASP (By:12/2025)			
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to the co-location with LVNL CLSK is fully dependent on progress within LVNL.		-	-
LVNL - Luchtverkeersleiding Nederland		0%	Not yet planned
Although LVNL has included implementation in its investment plans, we believe that the current AIXM standard is not yet suitable for Digital NOTAM application. The transition from legacy to Digital Notam is also still unclear. We are therefore waiting to start a project until these issues are resolved. LVNL will then adapt its system(s) to consume and use the information provided by the Digital NOTAM Service. The Digital NOTAM Service provides event (Digital NOTAM) information as a data service. The service enables dynamic data sharing of aeronautical information updates and propose them for Digital NOTAM processing. Digital NOTAM service output is a small data set that contains digitally coded data about changes related to aeronautical information, which are temporary nature or provided on short notice.		-	-
AIS (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		0%	Not yet planned
Although LVNL has included implementation in its investment plans, we believe that the current AIXM standard is not yet suitable for Digital NOTAM application. The transition from legacy to Digital Notam is also still unclear. We are therefore waiting to start a project until these issues are resolved. LVNL will then implement a SWIM Service that enables the provision of Digital NOTAM event information to other stakeholders. The Digital NOTAM Service provides event (Digital NOTAM) information as a data service. The service enables dynamic data sharing of aeronautical information updates and propose them for Digital NOTAM processing. Digital NOTAM service output is a small data set that contains digitally coded data about changes related to aeronautical information, which are temporary nature or provided on short notice.		-	-

SDP 5.3.1 INF10.7	**Aeronautical Information Exchange - Aerodrome mapping service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Planned**
	-		
Due to the co-location with LVNL, CLSK is fully dependent on progress within LVNL. LVNL has planned this project with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
AIS (By:12/2025)			
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to the co-location with LVNL CLSK is fully dependent on progress within LVNL.		-	-

LVNL - Luchtverkeersleiding Nederland	0%	Planned
LVNL will implement a SWIM Service that enables the provision of Aerodrome Mapping information to other stakeholders. Schiphol Airport is the primary data provider supporting the Aerodrome mapping service. The Aerodrome Mapping Service provides on-request airport layout features and maps as a data service. The service aims to deliver Aerodrome digital maps to operational stakeholders. The service supports information filtering with spatial, temporal and logical operators. Digital Aerodrome Map can be used to present actual/real-time information about closure of runway, taxiway, work in progress on aerodrome movement area, temporary erected obstacles.	-	31/12/2025

SDP 5.3.1 INF10.8	**Aeronautical Information Exchange - Aeronautical Information Features service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**8%**	**Ongoing**
	-		
Due to the co-location with LVNL, CLSK is fully dependent on progress within LVNL. LVNL has planned this project with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to the co-location with LVNL CLSK is fully dependent on progress within LVNL.		-	-
LVNL - Luchtverkeersleiding Nederland		0%	Planned
LVNL will implement a SWIM Service that enables the provision of aeronautical information features to stakeholders and publish it in the SWIM Registry as a SWIM compliant service. LVNL will adapt its system(s) to consume the Aeronautical information feature Service which provides on-request aeronautical information features as a data service. It allows to query and retrieve aeronautical data based on optional filters that may include feature type, feature name and spatial, temporal and logical operators.		-	31/12/2025
AIS (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		10%	Ongoing
This activity was started with the project "Implementation of Aeronautical Data Quality (ADQ) at LVNL". Subsequently LVNL will implement a SWIM Service that enables the provision of aeronautical information features to other stakeholders and publish it in the SWIM Registry as a SWIM compliant service.		-	31/12/2025

SDP 5.4.1 INF10.9	**Meteorological Information Exchange - Volcanic Ash Mass Concentration information service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Planned**
-			
Project has been planned by LVNL and KNMI with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		0%	Planned
LVNL will adapt its system(s) to consume the volcanic ash SWIM information services published by the Volcanic Ash Advisory Centres (VAACs) and/or a national service provided by KNMI.		-	31/12/2025
MET (By:12/2025)			
Koninklijk Nederlands Meteorologisch Instituut		0%	Planned
This information on Volcanic Ash Mass services is to be provided by the Volcanic Ash Advisory Advisories (VAACs, in the European situation these are VAAC Toulouse and VAAC London. MET ANSP KNMI aims to implement this service and make this information available to stakeholders but is dependent on the provision of the information by the VAACs, see MET01. Implementation will start late in 2023 or early in 2024. This also requires the implementation of common SWIM PKI and cyber security which is still pending. To note: volcanic ash information is being made available by MET ANSP KNMI based on current ICAO and EU regulations but not in a SWIM compliant manner. To note: Alternatively, stakeholders may go direct to the SWIM Registry or SADIS to access the QVA information once made available by the VAACs.		-	31/12/2025

SDP 5.4.1 INF10.10	**Meteorological Information Exchange - Aerodrome Meteorological information Service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**46%**	**Ongoing**
-			
Project has been planned by LVNL with an expected implementation date of 31/12/2025.CLSK did not plan the project yet. KNMI has started the project in 2020 and the project it is an on-going process. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
Commando Luchtstrijdkrachten (CLSK)		0%	Not yet planned
-		-	-
LVNL - Luchtverkeersleiding Nederland		3%	Ongoing

As a first step LVNL carried out a project "Initial (I)WXXM implementation on CCIS Amsterdam ACC and Schiphol", with this project the LVNL application CCISv2 was updated, in 2019 with the software needed to support the data exchange with KNMI the Dutch MET Office using the iWXXM protocol. LVNL will collaborate with other airport users and KNMI (the MET provider) to jointly define requirements for new advanced MET service(s) to better support operations specific to Amsterdam Airport Schiphol. In further steps LVNL has planned to be able to access and consume the aerodrome MET SWIM information services published by KNMI (the certified MET provider) at Amsterdam Airport Schiphol. This concerns information such as (AUTO) METAR, TAF, TREND, AIRMET and SIGMET and may also include enhanced information services that will be agreed locally.	-	31/12/2025
APO (By:12/2025)		
Amsterdam Airport Schiphol	0%	Planned
Project is expected to start in 2024	-	31/12/2025
MET (By:12/2025)		
Koninklijk Nederlands Meteorologisch Instituut	57%	Ongoing
This is an on-going process. Regular ICAO OPMET products such as (AUTO) METAR, TAF, TREND, AIRMET and SIGMET are being made available in SWIM compliant format (IWXXM), but not always using SWIM compliant distribution networks, and organized via 2014_110AF5 meteorological information exchange by MET ANSP KNMI. This also includes providing the Schiphol Probabilistic Forecast as well as weather dependent deployment of the Meteorological Advisor Mainport Schiphol. Via 2015_137_AF5 EMADDC derived upper air observations near airports will be provided to the MET community and to aeronautical stakeholders. Development is on-going to improve the quality of the meteorological services provided. Coordination is in place with LVNL, Schiphol Group, AUs and, through EUMETNET coordination, with the EUROCONTROL Network Manager	European Meteorological Aircraft Derived Data Center (EMADDC)	31/12/2025

SDP 5.4.1 INF10.11	**Meteorological Information Exchange - En-Route and Approach Meteorological information service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**9%**	**Ongoing**
	-		
CLSK did not plan the project yet. For LVNL and KNMI, this objective is ongoing and has an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
Commando Luchtstrijdkrachten (CLSK)		0%	Not yet planned
-		-	-
LVNL - Luchtverkeersleiding Nederland		3%	Ongoing

As a first step LVNL carried out a project "Initial (I)WXXM implementation on CCIS Amsterdam ACC and Schiphol", with this project the LVNL application CCISv2 was updated, in 2019 with the software needed to support the data exchange with KNMI the Dutch MET Office using the iWXXM protocol. LVNL will collaborate with other ANSPs operating in the En-Route and approach domains (CLSK, MUAC), AUs and the MET provider(s) to jointly define requirements for new advanced MET service(s) to better support operations specific to that airspace. In further steps LVNL has planned to be able to access and consume the En-Route and approach MET SWIM information services published by KNMI (the certified MET provider).	-	31/12/2025
MET (By:12/2025)		
Koninklijk Nederlands Meteorologisch Instituut	10%	Ongoing
This is an on-going process. Regular ICAO OPMET products such as (AUTO) METAR, TAF, TREND, AIRMET and SIGMET are being made available in SWIM compliant format (IWXXM), but not always using SWIM compliant distribution networks, and organized via 2014_110AF5 meteorological information exchange by MET ANSP KNMI. Via 2015_137_AF5 EMADDC derived upper air observations result in improved nowcasts and forecasts to feed into AMAN/DMAN applications. Development is on-going to improve the quality of the meteorological services provided. Coordination is in place with LVNL, MUAC, AUs and, through EUMETNET coordination, with the EUROCONTROL Network Manager.	European Meteorological Aircraft Derived Data Center (EMADDC)	31/12/2025

SDP 5.4.1 INF10.12	**Meteorological Information Exchange - Network Meteorological Information** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**6%**	**Ongoing**
	-		
Project has been planned by LVNL with an expected implementation date of 31/12/2025. KNMI has started together a process between European MET ANSPs and the EUROCONTROL Network Manager (NM) to determine and identify the requirements of NM. This is coordinated by the aviation support program of EUMETNET. CLSK did not plan the project yet. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		0%	Planned
LVNL is operating in the ATFM and network domains and will collaborate with NM, AUs and the MET provider(s) to jointly define requirements for new advanced MET service(s) to better support operations specific to the NM. LVNL has planned to be able to access and consume relevant network MET SWIM information services published by the MET provider(s). This may also include enhanced information services that are agreed under INF10.12-ASP01.		-	31/12/2025
Commando Luchtstrijdkrachten (CLSK)		0%	Not yet planned
-		-	-
MET (By:12/2025)			
Koninklijk Nederlands Meteorologisch Instituut		7%	Ongoing

A process is in place between European MET ANSPs and the EUROCONTROL Network Manager (NM) to determine and identify the requirements of NM. This is coordinated by the aviation support program of EUMETNET. A first result is the provision during the summer period of the Cross Border Convection Forecast (CBCF) jointly produced by 23 MET ANSPs. The CBCF is at the moment not provided in a SWIM compliant manner. Discussions between the MET community and NM on the meteorological requirements are on-going. Once finalized the services will be provided to the NM in a SWIM compliant manner.	-	31/12/2025

SDP 5.5.1 INF10.13	**Cooperative Network Information Exchange - ATFCM Tactical Updates Service (Airport Capacity and Enroute)** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Planned**
	-		
Project has been planned by LVNL with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment section.			**31/12/2025**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		0%	Planned
LVNL systems will be upgraded to use the NM B2B Services in order to provide to NM the ATFCM tactical and pre-tactical updates: sector configuration activation, sector and airport capacity values, runway configuration activation, traffic volume activation (when applicable), the monitoring values (OTMVs when used) and hotspots (when used).		-	31/12/2025

SDP 5.5.1 INF10.14	**Cooperative Network Information Exchange – Flight Management Service (Slots and NOP/AOP integration)** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**15%**	**Ongoing**
	-		
LVNL has planned the project with an implementation date of 31/12/2025. AAS has started the project and has an expected implementation date of 31/12/2023. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		0%	Planned
LVNL will upgrade its systems to consume the flight updates relative to the flights in their AOR/AOI, which are published by NM via the NM B2B Flight Management Service, which publishes flight information, including the ATFCM slots for flights subject to regulations.		-	31/12/2025
APO (By:12/2025)			
Amsterdam Airport Schiphol		30%	Ongoing
The project is part of iAOP-NOP integration and is under development. The API and P-DPI data will be send to NM via B2B-services.		-	31/12/2023

SDP 5.5.1 INF10.15	**Cooperative Network Information Exchange – Measures Service (Traffic Regulation)** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Planned**
	-		
Project has been planned by LVNL with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment section.			**31/12/2025**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		0%	Planned

LVNL will upgrade its systems to use the NM B2B Services in order to provide NM with traffic regulation proposals. The NM Measures Service, allows to manage regulation proposals and to publish ATFCM measures updates and also allows making proposals of cherry-pick regulations in support of STAM.	-	31/12/2025

SDP 5.5.1 INF10.16	**Cooperative Network Information Exchange - Short Term ATFCM Measures services (MCDM, eHelpdesk, STAM measures)** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Planned**
-			
Project has been planned by LVNL with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment section.			**31/12/2025**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		0%	Planned
LVNL will upgrade its systems to use the NM B2B Services (as a consumer) in order to collaborate with NM on the definition and application of STAM measures by using the following NM B2B Services: o The Measure Collaborative Decision Making (MCDM) Service, which supports the collaborative decision making for the implementation of a measure or individual flight actions o The eHelpdesk Service, for requesting NMOC to apply actions to individual flights o The Measures Service, which allows making proposals of cherry-pick regulations in support of STAM.		-	31/12/2025

SDP 5.5.1 INF10.17	**Cooperative Network Information Exchange – Counts service (ATFCM Congestion Points)** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Planned**
-			
Project has been planned by LVNL with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment section.			**31/12/2025**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		0%	Planned
LVNL will upgrade its systems to compute the ATFCM congestion points based on the information received via the NM B2B Counts service, which provides data supporting the assessment of the ATFCM congestions and hotspot detection.		-	31/12/2025

SDP 5.6.1 INF10.19	**Flight Information Exchange (Yellow Profile) - Flight Data Request Service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Not yet planned**
-			
Due to the co-location with LVNL, CLSK is fully dependent on progress within LVNL. The project has not been planned yet for LVNL. Specific progress details are described in the stakeholder comment section.			-
ASP (By:12/2025)			
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to the co-location with LVNL CLSK is fully dependent on progress within LVNL.		-	-

LVNL - Luchtverkeersleiding Nederland	0%	Not yet planned
It is still unclear whether using this service to retrieve a flight plan makes sense in the context of FF-ICE/R1 (pre-departure) and LVNL is still investigating when it will be possible to use this information in the new air traffic control system iCAS. If it makes sense LVNL will upgrade its systems to be able to consume the NM FF-ICE/R1 Flight Data Service (pre-departure) when requiring access to the information of a particular eFPL. The service allows to retrieve data about a flight such as the whole eFPL, search and rescue data or the filing status.	Replacement AAA (iCAS)	-

SDP 5.6.1 INF10.20	**Flight Information Exchange (Yellow Profile) - Notification Service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Planned**
	-		
Due to the co-location with LVNL, CLSK is fully dependent on progress within LVNL. LVNL has planned this project with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		0%	Planned
LVNL planned to upgrade its systems to be able to send the departure and arrival information about eFPLs through the NM FF-ICE/R1 Notification Service, to notify FF-ICE-enabled stakeholders about flight departure and arrival events (replacement of DEP and ARR). LVNL is still investigating when it will be possible to send this information by the new air traffic control system iCAS, the planned implementation date is therefore still uncertain.		Replacement AAA (iCAS)	31/12/2025
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to the co-location with LVNL CLSK is fully dependent on progress within LVNL.		-	-

SDP 5.6.1 INF10.21	**Flight Information Exchange (Yellow Profile) - Data Publication Service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Planned**
	-		
Due to the co-location with LVNL, CLSK is fully dependent on progress within LVNL. LVNL has planned this project with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to the co-location with LVNL CLSK is fully dependent on progress within LVNL.		-	-
LVNL - Luchtverkeersleiding Nederland		0%	Planned

LVNL will upgrade its systems to be capable of receiving and processing eFPLs distributed by the NM FF-ICE/R1 Publication Service, in addition to ICAO 2012 FPLs. By the way, approval of specifications for FF-ICE R1 are still pending at ICAO and have not yet been published (expected in 2024). Validations of FF ICE R1 data are also ongoing in Europe and the software needed for airlines to create FF-ICE R1 flight plans is still under development. LVNL is still investigating when it will be possible to receive and process this information by the new air traffic control system iCAS, the planned implementation date is therefore still uncertain.	Replacement AAA (iCAS)	31/12/2025

SDP 5.6.1 INF10.23	**Flight Information Exchange (Yellow Profile) - Extended AMAN SWIM Service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025	**0%**	**Planned**
	-		
Due to the co-location with LVNL, CLSK is fully dependent on progress within LVNL. LVNL has planned this project with an expected implementation date of 31/12/2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2025**
ASP (By:12/2025)			
LVNL - Luchtverkeersleiding Nederland		0%	Planned
LVNL will upgrade its systems for Amsterdam Airport Schiphol to provide extended AMAN data exchanges via a SWIM service (eg.: as described in EUROCAE ED254 Arrival Sequence Service Performance Standard) to associated En-Route sectors to coordinate the actions to be taken by the cooperative ATSUs to get the best and most efficient arriving flight sequence. LVNL will also upgrade its systems to consume the extended AMAN data exchanges via a SWIM service. Because it is more efficient, LVNL tries to use Extended AMAN SWIM services right from the start, but if adjacent centres do not support it yet, OLDI can also be used.		-	31/12/2025
Commando Luchtstrijdkrachten (CLSK)		0%	Not Applicable
Due to the co-location with LVNL CLSK is fully dependent on progress within LVNL.		-	-

ITY-ACID	**Aircraft Identification** ***Timescales:*** Entry into force of the Regulation: 13/12/2011 System capability: 02/01/2020	**90%**	**Ongoing**
	-		
CLSK has completed the objective. For LVNL, the objective is ongoing and has an expected implementation date of 01/04/2024. Specific progress details are described in the stakeholder comment sections.			**01/04/2024**
ASP (By:01/2020)			
Commando Luchtstrijdkrachten (CLSK)		100%	Completed
The military ANSP has completed the required procedures and system introduction as of 09 October 2013. The declaration of the applicable airspaces as required by the IR1206 and 1207/2011 is ongoing		-	11/10/2013
LVNL - Luchtverkeersleiding Nederland		80%	Ongoing

Downlinked aircraft identification is completely integrated in systems, procedures, training and operational use for ACC and the Amsterdam Schiphol and Rotterdam TMA. The implementation in the TMA's of Groningen-Eelde (EHGG) and Maastricht-Aachen (EHBK) is ongoing and will be effectuated when iCAS is in place or earlier if it is decided to replace the current RDS system with Phoenix radar before the commissioning of iCAS. LVNL has received an exemption (regarding the conspicuity code 1000) from ILT (NSA) for the implementation on regional airports Beek and Eelde until the commissioning of iCAS.	-	01/04/2024

ITY-AGDL	**Initial ATC Air-Ground Data Link Services** ***Timescales:*** Entry into force: 06/02/2009 ATS unit operational capability: 05/02/2018 Aircraft capability: 05/02/2020	**100%**	**Completed**
	-		
The Netherlands will provide initial ATC air-ground data link services above FL285 through Maastricht UAC. Details and progress of implementation of this objective are presented in the Maastricht UAC LSSIP. This objective is not applicable in the context of the NL LSSIP as only airspace below FL195 is being covered. All military airbus A330 MRTT A/C entering into service are equipped.			**31/12/2019**
REG (By:02/2018)			
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart		100%	Completed
Data Link Services are provided by MUAC from 2002 onwards. However, in light of the requirements for safety oversight of changes to the ATM system, when a change on the implementation of the Data Link Services is envisaged by the ANSP, it will be adequately addressed by the safety oversight process of ILT (CAA-NL) in collaboration with the other 3 MUAC States. Safety argumentation of the changes imposed by the implementation of the Data Link Services will be reviewed as appropriate. Only PM-CPDLC equipped aircraft will be able to log-on for ATN via VHF data link Mode 2 (VDL M2)-. Address management procedures follow the ICAO document EUR Doc 28, titled -EUR NSAP Address Registry-. Information in regard to Data Link Services have been published in the NL AIP (Gen 3.4).		-	28/02/2013
ASP (By:02/2018)			
LVNL - Luchtverkeersleiding Nederland		0%	Not Applicable
N/A, as only airspace below FL195 is being covered in the NL LSSIP. See also the LSSIP of Maastricht UAC.		-	-
MIL (By:01/2019)			
Militaire Luchtvaart Autoriteit		100%	Completed
N/A, as MIL ANSP does not provide GAT services above FL245. Mil Transport-type aircraft in service are equipped with data link capabilities and all new entries will be equipped.		-	31/12/2019

ITY-AGVCS2	**8,33 kHz Air-Ground Voice Channel Spacing below FL195** ***Timescales:*** Entry into force: 07/12/2012 New and upgraded radio equipment: 17/11/2013 New or upgraded radios on State aircraft: 01/01/2014 Interim target for freq. conversions: 31/12/2014 All radio equipment: 31/12/2017 All frequencies converted: 31/12/2018 State aircraft equipped, except those notified to EC: 31/12/2018 State aircraft equipped, except those exempted [Art 9(11)]: 31/12/2020	**100%**	**Completed**
	-		
MIL equipment is 8.33 kHz capable. LVNL has taken a new voice communication system that is 8.33 kHz capable into operation Q2 2015. The interim target for conversion to 8.33 kHz frequencies has been achieved. All ANSP frequencies were converted before 2016. MIL aircraft will be retrofitted or withdrawn.			**31/12/2018**
REG (By:12/2018)			
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart		100%	Completed
Exemptions from mandatory carriage of 8.33 equipment are described in NL AIP. In 2013 an AIC-A is issued containing obligations for operators following EC 1079/2012. Enforcement on 8.33 kHz channel spacing capability is executed. The Commission is informed concerning the 25% target and converted or not converted OPC frequencies. All frequency assignments in the Table COM 2 of ICAO Doc 7754 have been converted to 8.33 kHz.		-	31/12/2016
Militaire Luchtvaart Autoriteit		100%	Completed
Exemptions from mandatory carriage of 8.33 equipment are described in NL AIP ENR 1.8. AIC-A 06/2013 (dec 2013) is issued containing obligations of operators following EC 1079/2012. Oversight activities on 8.33 kHz channel spacing capability is executed during 2014 and will be continued as appropriate.		-	31/12/2016
ASP (By:12/2018)			
LVNL - Luchtverkeersleiding Nederland		100%	Completed
Full implementation of the 8.33 transition has been executed according planning.		-	30/06/2015
Militaire Luchtvaart Autoriteit		100%	Completed
Full implementation of the 8.33 transition has been executed according planning.		-	31/12/2016
MIL (By:12/2020)			
Militaire Luchtvaart Autoriteit		100%	Completed
The NL Defense organization is fully compliant and has completed the implementation of 8.33Khz. Ground and aerial systems are operational. Some aircraft type are not compliant and are exempted of the rule.		-	31/12/2018
APO (By:12/2018)			
Militaire Luchtvaart Autoriteit		100%	Completed
Conversion to 8,33 kHz is completed.		-	31/12/2015
Amsterdam Airport Schiphol		100%	Completed
-		-	31/12/2017

ITY-FMTP	**Common Flight Message Transfer Protocol (FMTP)** ***Timescales:*** Entry into force of regulation: 28/06/2007 All EATMN systems put into service after 01/01/09: 01/01/2009 All EATMN systems in operation by 20/04/11: 20/04/2011 Transitional arrangements: 31/12/2012 Transitional arrangements when bilaterally agreed between ANSPs: 31/12/2014	**100%**	**Completed**
	-		
The FMTP has been integrated in the civil ATM system since May 2009. All connections have been put into service. FMTP implementation over IPv6 has started in 2014. From a regulatory perspective, the relevant (EC) SES regulations, complemented by the Community specification for FMTP, apply directly and mandatorily in the Netherlands.			**31/12/2014**
ASP (By:12/2014)			
Militaire Luchtvaart Autoriteit		100%	Completed
The FMTP has been integrated in the civil ATM system since May 2009. All connections have been put into service according to an international plan. FMTP implementation over IPv6 has started in 2014.		-	31/12/2014
LVNL - Luchtverkeersleiding Nederland		100%	Completed
The FMTP has been integrated in the civil ATM system since May 2009. All connections have been put into service according to an international plan. FMTP implementation over IPv6 has started in 2014.		-	31/12/2014
MIL (By:12/2014)			
Militaire Luchtvaart Autoriteit		100%	Completed
FMTP was implemented with the introduction of the new ATC system SAS. After the co-location in dec 2017 the service is depending on the LVNL systems.		-	31/10/2013

NAV03.1	**RNAV 1 in TMA Operations** ***Timescales:*** Initial operational capability: 01/01/2001 One SID and STAR per instrument RWY, where established: 25/01/2024 All SIDs and STARs per instrument RWY, where established: 06/06/2030	**94%**	**Ongoing**
	-		
Objective is completed for ILT and MLA. The objective is ongoing for LVNL and has an expected implementation date of 06/06/2030. Specific progress details are described in the stakeholder comment sections.			**06/06/2030**
REG (By:06/2030)			
Inspectie Leefomgeving en Transport		100%	Completed
-		-	02/01/2020
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart		100%	Completed
The transition plan has been updated and all requirements following PBN IR will be implemented before the required implementation deadline.		-	02/01/2020
ASP (By:06/2030)			
Militaire Luchtvaart Autoriteit		100%	Completed
-		-	31/01/2010
LVNL - Luchtverkeersleiding Nederland		94%	Ongoing

RNAV1 SIDs in TMA Operations are implemented for Schiphol and regional airports. RNAV1 STARs to instrument RWYs at regional airports are implemented. One RNAV1 arrival (STAR) per landing runway at Schiphol has been published and is used for COM failure procedures and at ATC discretion. RNAV1 arrival routes for night time use are operational for RWYs 06, 18C and 18R permitting CDO procedures. Additional night time arrival routes are planned to be published for runways 27 and 36C. For the daytime use, a new airspace concept is designed in the National Airspace Review program. The Dutch minister of infrastructure and water management and the state secretary of defence sent their "Preferred Airspace Review Decision" to the House of Representatives on 14 October 2022. Part of the decision concerns the step-by-step introduction of a new operational concept (including RNAV 1 arrival and departure procedures) for aviation. In the further elaboration, RNAV1 arrivals (STARs) for daytime use, or RNP1 arrivals (STARs) if RF-legs are used, will be designed and published for Schiphol.	Performance Based Navigation procedures and rationalisation of Air Navigation infrastructure in the Netherlands / RNAV1 and RNP-APCH approaches Amsterdam Schiphol	06/06/2030

NAV03.2	**RNP 1 in TMA Operations** ***Timescales:*** Start: 07/08/2018 One SID and STAR per instrument RWY, where established: 25/01/2024 All SIDs and STARs per instrument RWY, where established: 06/06/2030	**74%**	**Ongoing**
-			
Objective has been completed by IL&T and DGLM. For LVNL, the objective is ongoing and has an expected implementation date of 06/06/2030. Specific progress details are described in the stakeholder comment sections.			**06/06/2030**
REG (By:06/2030)			
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart		100%	Completed
DGLM published a new PBN Roadmap for the Amsterdam FIR for 2020-2030 in Q2 2021. Together with the PBN transition plan (made by the ANSP) the PBN Roadmap 2020-2030 covers all PBN related plans and upcoming policy decisions for the years to come.		-	31/12/2020
Inspectie Leefomgeving en Transport		100%	Completed
-		-	02/01/2020
ASP (By:06/2030)			
LVNL - Luchtverkeersleiding Nederland		71%	Ongoing

Establishment of RNP1 SID or STAR is not imposed as obligatory requirement by the PBN Regulation (EU) 2018/1048, only where higher performance requirements than those of RNAV 1 are required for established SIDs or STARs. Some Schiphol SIDs use radius to fix (RF) legs (RWYs 18C and 24) for which RNP1 is required. RNAV1 transitions/approaches are already used at Schiphol (EHAM) for night time arrivals from IAFs (SUGOL, ARTIP, RIVER) to ILS on runways 06, 18R, 18C and are planned for 36C and 27. For the night approach form NIRSI to Schiphol RWYs 18R and 18C RF-legs are used and therefore RNP1 and RNP APCH are required. For Schiphol a RNAV1 transition from IAF ARTIP to ILS 36R is published for day time use. Where required for daytime, use of RNP1 arrival and departure procedures with Radius to Fix are part of a new airspace concept that is drafted in the National Airspace Review program. The Dutch minister of infrastructure and water management and the state secretary of defence sent their "Preferred Airspace Review Decision" to the House of Representatives on 14 October 2022. Part of the decision concerns the step-by-step introduction of a new operational concept, including RNAV1 or where required RNP1 arrival and departure procedures. LVNL is investigating possibilities to use RNAV1 or RNP1 arrival procedures without losing capacity for landings on SPL during busy traffic periods at day time.	-	06/06/2030

NAV10	**RNP Approach Procedures to instrument RWY** ***Timescales:*** Initial operational capability: 01/06/2011 Instrument RWY ends without precision approach in EU SES States.: 03/12/2020 Instrument RWY ends served by precision approach.: 25/01/2024	**94%**	**Ongoing**
	-		
The objective has been completed by DGLM. For LVNL the objective is ongoing and has an expected implementation date of 25/01/2024. Specific progress details are described in the stakeholder comment sections.			**25/01/2024**
REG (By:01/2024)			
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart		100%	Completed
From 15th November 2012 RNAV-1 is compulsory for EHAM IFR air traffic. In 2021 the new PBN Roadmap for the Netherlands 2020-2030 was published. Accordingly the PBN Transition plan was updated in 2021 as well. All RWY's at Schiphol have RNP procedures as of 2021. Maastricht Aachen airport is the last airport in the Netherlands where RNP procedures have yet to be implemented. This is planned for 2023.		-	30/06/2021
ASP (By:01/2024)			
LVNL - Luchtverkeersleiding Nederland		91%	Ongoing

At Schiphol Airport (EHAM) 7 RNP approach procedures for RWY's served by precision approach are required. The RNP approach procedures to RWY's 22, 06, 18C and 36R are published in the national AIP before 2021, the RNP procedures for RWY's 18R, 27, 36C are published in AIP on 12 august 2021. At Schiphol Airport (EHAM) 3 RNP approach procedures to RWY's without precision approach are required. The RNP approach procedure to RWY 24 is published in the national AIP in November 2019, the RNP procedures for RWY's 04 and 09 are published in the national AIP on 12 august 2021. At Lelystad Airport (EHLE) the RNP approach procedures to RWY's 05 and 23 are published in the national AIP. At Groningen Airport Eelde (EHGG) the RNP approach procedures to RWY's 05 and 23 are published in the national AIP. At Rotterdam The Hague Airport (EHRD) the RNP approach procedures to RWY's 06 and 24 are published in the national AIP. At Maastricht Aachen Airport (EHBK) the RNP approach procedure to RWY 21 is published in the national AIP on 14 July 2022. The RNP approach procedure to RWY 03 is delayed because this also requires a change at Belgian air traffic control and they could not realise this change in 2022.	Final phase RNP APCH procedures Amsterdam Schiphol / Performance Based Navigation procedures and rationalisation of Air Navigation infrastructure in the Netherlands / RNAV1 and RNP-APCH approaches Amsterdam Schiphol / RNP approaches to three main landing runways Amsterdam Schiphol	25/01/2024

NAV12	**ATS IFR Routes for Rotorcraft Operations** **(Outside Applicability Area)** ***Timescales:*** - not applicable -	**0%**	**Not Applicable**
-			
No national or international regulation and no need identified in the Netherlands. Therefore, this objective is not applicable to any stakeholder within the Netherlands.			-
REG (By:06/2030)			
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart		0%	Not Applicable
-		-	-
Inspectie Leefomgeving en Transport		0%	Not Applicable
-		-	-
ASP (By:06/2030)			
LVNL - Luchtverkeersleiding Nederland		0%	Not Applicable
-		-	-

Local Objectives

Note: Local Objectives are addressing solutions that are considered beneficial for specific operating environments, therefore for which a clear widespread commitment has not been expressed yet. They are characterised with no deadline and voluntary applicability area.

AOP14.1	**Remote Tower Services** ***Applicability and timescale: Local***		**0%**	**Not yet planned**
EHAM - Amsterdam Schiphol				
Remote Tower Services for Schiphol Airport is not yet planned.				-
REG (By:)				
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart	Remote Tower Services for Schiphol Airport is not yet planned. When LVNL planning is available, activities for the regulator will start.	-		Not yet planned -
Inspectie Leefomgeving en Transport	Remote Tower Services for Schiphol Airport is not yet planned. When LVNL planning is available, activities for the regulator will start.	-		Not yet planned -
ASP (By:)				
LVNL - Luchtverkeersleiding Nederland	Remote Tower Services for Schiphol Airport is not yet planned. But remote tower services for service provision of Maastricht Aachen (Beek) and Groningen (Eelde|) Airports will be provided from the Schiphol location. This will be realized by the project Centralized Base Beek and Eelde.	Realisation Centralized Base Beek en Eelde (EHBK en EHGG)		Not yet planned -
APO (By:)				
Amsterdam Airport Schiphol	This project is under the responsibility of LVNL	-		Not Applicable -

AOP14.1	**Remote Tower Services** ***Applicability and timescale: Local***		**50%**	**Ongoing**
EHBK - MAASTRICHT/MAASTRICHT AACHEN				
Project is ongoing for LVNL and the activities for ILT and DGLM are not yet planned. Specific progress details are described in the stakeholder comment sections.				**31/12/2024**
REG (By:)				
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart	Due to COVID-19, installation and commissioning of remote tower is planned for after the go-life of the new air traffic control system iCAS, While awaiting LVNL planning, activities for the regulator are not yet planned.	-		Not yet planned -
Inspectie Leefomgeving en Transport	Due to COVID-19, installation and commissioning of remote tower is planned for after the go-life of the new air traffic control system iCAS, While awaiting LVNL planning, activities for the regulator are not yet planned.	-		Not yet planned -
ASP (By:)				

LVNL - Luchtverkeersleiding Nederland	A Remote tower project as primary means of ATC for Maastricht Airports is ongoing. The remote tower services for Maastricht will be delivered from Schiphol. The purpose of our remote tower is for service provision. This project is delayed directly and indirectly due to COVID-19, installation and commissioning of remote tower is planned for after the go-life of the new air traffic control system iCAS, the planning date is provisional.	Realisation Centralized Base Beek en Eelde (EHBK en EHGG)		Ongoing 31/12/2024
APO (By:)				
Amsterdam Airport Schiphol	This project is under the responsibility of LVNL	-		Not Applicable -

AOP14.1	**Remote Tower Services** ***Applicability and timescale: Local***		**50%**	**Ongoing**
	EHGG - GRONINGEN/EELDE			
Project is ongoing for LVNL and the activities for ILT and DGLM are not yet planned. Specific progress details are described in the stakeholder comment sections.				**31/12/2024**
REG (By:)				
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart	Due to COVID-19, installation and commissioning of remote tower is planned for after the go-life of the new air traffic control system iCAS, While awaiting LVNL planning, activities for the regulator are not yet planned.	-		Not yet planned -
Inspectie Leefomgeving en Transport	Due to COVID-19, installation and commissioning of remote tower is planned for after the go-life of the new air traffic control system iCAS, While awaiting LVNL planning, activities for the regulator are not yet planned.	-		Not yet planned -
ASP (By:)				
LVNL - Luchtverkeersleiding Nederland	A Remote tower project as primary means of ATC for Groningen Airport is ongoing. The remote tower services for Groningen will be delivered from Schiphol. The purpose of our remote tower is for service provision. This project is delayed directly and indirectly due to COVID-19, installation and commissioning of remote tower is planned for after the go-life of the new air traffic control system iCAS, the planning date is provisional.	Realisation Centralized Base Beek en Eelde (EHBK en EHGG)		Ongoing 31/12/2024
APO (By:)				
Amsterdam Airport Schiphol	This project is under the responsibility of LVNL	-		Not Applicable -

AOP15	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers *Applicability and timescale: Local*		0%	Not yet planned
EHAM - Amsterdam Schiphol				
A project for an airport moving map in vehicles is not planned yet. Investigation must demonstrate if more tools on top of the existing safety procedures and tools are creating more safety.				-
REG (By:04/2019)				
Inspectie Leefomgeving en Transport	Pending the investigation results no actions are planned.	-		Not yet planned -
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart	Project is not yet planned.	-		Not yet planned -
APO (By:)				
Amsterdam Airport Schiphol	Project is not yet planned.	-		Not yet planned -

AOP16	Guidance assistance through airfield ground lighting *Applicability and timescale: Local*		70%	Ongoing
EHAM - Amsterdam Schiphol				
Schiphol Airport installed taxiway lighting on taxiway W5 (hotspot) and procedures were implemented. The lighting installation is not automated and a workaround was created. The ATCO needs to switch on the preferred taxiway light section which is related to the runway use. This Proof of Concept (CEF 2016_150_AF2_GND) shows how lightning infrastructure could be connected to Objective AOP-13 in the future. Ground Movement policy has yet to be made by local stakeholders. Project has been planned by LVNL.				**31/12/2025**
ASP (By:)				
LVNL - Luchtverkeersleiding Nederland	Schiphol's TWR system is being replaced in phases, one of which is the implementation of an A-SMGCS routing and planning function. An interface can then be used to control the aerodrome lighting infrastructure.	-		Not yet planned -
APO (By:)				
Amsterdam Airport Schiphol	Schiphol Airport installed taxiway lighting on taxiway W5 (hotspot) and procedures for ATCOs were implemented. The lighting installation is not automated and a workaround was created. The ATCO needs to switch on the preferred taxiway light section which is related to the runway use.	-		Ongoing 31/12/2025

AOP17	Provision/integration of departure planning information to NMOC *Applicability and timescale: Local*	0%	Not Applicable
EHAM - Amsterdam Schiphol			
Amsterdam Airport Schiphol already deployed A-CDM and therefore this objective is not applicable.			-
ASP (By:)			
LVNL - Luchtverkeersleiding Nederland	Not applicable for the airports that already deployed A-CDM.	-	Not Applicable -

AOP18	Runway Status Lights (RWSL) *Applicability and timescale: Local*	0%	Not yet planned
EHAM - Amsterdam Schiphol			
RWSL is taken up in a list of possible solutions to improve runway safety, but no decision was made yet. Therefore this objective is not yet planned.			-
REG (By:)			
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart	Pending a decision on implementation no actions are planned.	-	Not yet planned -
Inspectie Leefomgeving en Transport	Pending a decision on implementation no actions are planned.	-	Not yet planned -
ASP (By:)			
LVNL - Luchtverkeersleiding Nederland	Pending a decision on implementation no actions are planned.	-	Not yet planned -
APO (By:)			
Amsterdam Airport Schiphol	RWSL is taken up in a list of possible solutions to improve runway safety, but no decision was made yet.	-	Not yet planned -

AOP25	De-icing management tool *Applicability and timescale: Local*	0%	Planned
EHAM - Amsterdam Schiphol			
Project is planned for LVNL and AAS. The expectation is that the project will start in 2025. Specific progress details are described in the stakeholder comment sections.			**31/12/2027**
ASP (By:)			
LVNL - Luchtverkeersleiding Nederland	A project for a new DMAN is ongoing. LVNL will exchange DMAN information with the new de-icing management tool that Schiphol Airport has planned.	-	Planned 31/12/2027
APO (By:)			
Amsterdam Airport Schiphol	Some parts from the description of the de-icing tool are already active at Schiphol Airport but not combined in one tool. The goal is to implement a new de-icing tool connected to a new DMAN-system. The project is expected to start in 2025	-	Planned 31/12/2027

AOP26	Reduced separation based on local Runway Occupancy Time (ROT) characterisation *Applicability and timescale: Local*		0%	Not yet planned
EHAM - Amsterdam Schiphol				
Project is planned by LVNL. Specific progress details are described in the stakeholder comment section.				-
ASP (By:)				
LVNL - Luchtverkeersleiding Nederland	LVNL will implement an intelligent approach tool that can display a Runway Occupancy Time (ROT) Indicator if the ROT is the most restrictive constraint. In the future, this could also be used to increase runway throughput by taking into account the ROT of lead traffic in an arrival pair.	-		Not yet planned -

ATC18	Multi-Sector Planning En-route - 1P2T *Applicability and timescale: Local*		0%	Not Applicable
-				
LVNL does not operate in en-route airspace (lower center). Therefore this objective is not applicable.				-
ASP (By:01/2030)				
LVNL - Luchtverkeersleiding Nederland	-	-		Not Applicable -

ATC20	Enhanced STCA with down-linked parameters via Mode S EHS *Applicability and timescale: Local*		60%	Ongoing
-				
Project (iCAS) is ongoing by LVNL. Specific progress details are described in the stakeholder comment section.				**31/12/2025**
REG (By:01/2030)				
Inspectie Leefomgeving en Transport	For the Netherlands, the carriage requirement is addressed by the SPI Regulation (No 2017/386 amending Regulation (EU) No 1207/2011), therefore this SLoA is not relevant and is considered as not applicable.	-		Not Applicable -
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart	For the Netherlands, the carriage requirement is addressed by the SPI Regulation (No 2017/386 amending Regulation (EU) No 1207/2011), therefore this SLoA is not relevant and is considered as not applicable.	-		Not Applicable -
ASP (By:01/2030)				
		Replacement AAA (iCAS)		Ongoing

LVNL - Luchtverkeersleiding Nederland	The pilot selected flight level is currently not used as input to enhance the Short Term Conflict Alert (STCA) function. The STCA function in the AAA-system does take into account the Executive Flight Level (EFL) entered into the system by the controller but the STCA functionality does not know the pilot selected flight level. The STCA function in the new iCAS system will use the pilot selected flight level. Currently LVNL uses pilot selected flight level (PSL=SFL) information, down-linked from equipped aircraft via the Mode-S EHS protocol, for checking the cleared altitude. For this, the AAA-system checks whether the PSL is equal to the 'Executive Flight Level' (EFL). If the PSL differs from the EFL, the VKL then gets a warning that PSL and EFL are unequal.			31/12/2025

ATC26	**Point Merge in complex TMA** ***Applicability and timescale: Local***		**0%**	**Not yet planned**
EHAM - Amsterdam Schiphol				
Project is not yet planned.				-
ASP (By:)				
LVNL - Luchtverkeersleiding Nederland	-	-		Not yet planned -

COM13	**Air Traffic Services (ATS) datalink using SatCom Class B** ***Applicability and timescale: Local***		**0%**	**Not yet planned**
-				
Objective is not yet planned by the involved stakeholders.				-
REG (By:)				
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart	-	-		Not yet planned -
Inspectie Leefomgeving en Transport	-	-		Not yet planned -
ASP (By:)				
LVNL - Luchtverkeersleiding Nederland	-	-		Not yet planned -

ENV02	**Airport Collaborative Environmental Management** ***Applicability and timescale: Local***	**100%**	**Completed**
EHAM - Amsterdam Schiphol			

LVNL and Amsterdam Airport Schiphol participate in several Collaborative Environmental Management platforms, e.g. CROS (the Schiphol Regional Consultation Committee). CROS comprises responsible representatives of the aviation sector, local government and representatives of community groups. The Committee takes into discussion various aspects related to the operations at Schiphol Airport so as to accommodate the interests of all stakeholders concerned. Performance information is reported to the regulator. Airport Operational staff is made aware about the environmental implications of aircraft operations in trainings. The dedicated de-icing spots have facilities to separate the de-icing fluids from the regular sewage system.				**31/12/2012**
ASP (By:)				
LVNL - Luchtverkeersleiding Nederland	-	-		Completed 31/12/2012
APO (By:)				
Regional Airports	-	-		Completed 31/12/2012
Amsterdam Airport Schiphol	-	-		Completed 31/12/2012

ENV03	**Continuous Climb Operations (CCO)** ***Applicability and timescale: Local***	**100%**	**Completed**
EHAM - Amsterdam Schiphol			
Completely achieved. Amsterdam Schiphol airport has 100% PBN SIDs and RNAV1 mandate for all arriving and departing aircraft. The airspace structure facilitates CCO operations. CCO techniques are applied by ATC whenever possible.			**30/03/2017**
ASP (By:)			
LVNL - Luchtverkeersleiding Nederland	-	-	Completed 30/03/2017
APO (By:)			
Amsterdam Airport Schiphol	-	-	Completed 30/03/2017

ENV03	**Continuous Climb Operations (CCO)** ***Applicability and timescale: Local***	**100%**	**Completed**
EHBK - MAASTRICHT/MAASTRICHT AACHEN			
Partly achieved. Maastricht Aachen airport has 100% PBN SIDs. CCO techniques can only partly be applied by ATC (only a part of the flights and/or to a limited altitude) due to airspace limitations. No further actions to enhance CCO operations are planned.			**30/03/2017**
ASP (By:)			
LVNL - Luchtverkeersleiding Nederland	-	-	Completed 30/03/2017
APO (By:)			
Amsterdam Airport Schiphol	-	-	Not Applicable -
Regional Airports	-	-	Completed 30/03/2017

ENV03	Continuous Climb Operations (CCO) *Applicability and timescale: Local*		100%	Completed
EHGG - GRONINGEN/EELDE				
Partly achieved. Groningen Eelde airport has 100% PBN SIDs. CCO techniques can only partly be applied by ATC (only a part of the flights and/or to a limited altitude) due to airspace limitations. No further actions to enhance CCO operations are planned.				30/03/2017
ASP (By:)				
LVNL - Luchtverkeersleiding Nederland	-	-		Completed 30/03/2017
APO (By:)				
Amsterdam Airport Schiphol	-	-		Not Applicable -

ENV03	Continuous Climb Operations (CCO) *Applicability and timescale: Local*		100%	Completed
EHRD - ROTTERDAM/ROTTERDAM				
Partly achieved. Rotterdam The Hague airport has 100% PBN SIDs. CCO techniques can only partly be applied by ATC (only a part of the flights and/or to a limited altitude) due to airspace limitations. No further actions to enhance CCO operations are planned.				30/03/2017
ASP (By:)				
LVNL - Luchtverkeersleiding Nederland	-	-		Completed 30/03/2017
APO (By:)				
Amsterdam Airport Schiphol	-	-		Not Applicable -
Regional Airports	-	-		Completed 30/03/2017

NAV11.1	Implement precision approach procedures using GBAS CAT II based on GAST C *Applicability and timescale: Local*		0%	Not yet planned
-				
Objective is not yet planned by the involved stakeholders.				-
REG (By:)				
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart	-	-		Not yet planned -
ASP (By:)				
LVNL - Luchtverkeersleiding Nederland	-	-		Not yet planned -

SAF10.1	Implement measures to reduce the risk to aircraft operations caused by airspace infringements *Applicability and timescale: Local*	0%	Not yet planned
-			
Since January 2020, the Dutch airspace infringements taskforce has become operational and has since become involved in multiple activities which are related to preventing airspace infringements. As of 2022 there has been an increased urgency to this topic as the numbers are slowly going up. The taskforce has been successful in promoting this topic with aviators and is currently in the process of airspace changes. 2023 will be used to realign the national initiatives with the European Action Plan for Airspace Infringement Risk Reduction.			-
REG (By:)			
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart	Since January 2020, the Dutch airspace infringements taskforce has become operational and has since become involved in multiple activities which are related to preventing airspace infringements. As of 2022 there has been an increased urgency to this topic as the numbers are slowly going up. The taskforce has been successful in promoting this topic with aviators and is currently in the process of airspace changes. 2023 will be used to realign the national initiatives with the European Action Plan for Airspace Infringement Risk Reduction.	-	Not yet planned -
ASP (By:)			
LVNL - Luchtverkeersleiding Nederland	-	-	Not yet planned -
AIS (By:)			
LVNL - Luchtverkeersleiding Nederland	-	-	Not yet planned -

SAF11.1	Improve Runway Safety by Preventing Runway Excursions *Applicability and timescale: Local*	100%	Completed
-			
All relevant safety procedures to prevent runway excursions were implemented years ago already. Exact dates are not available anymore			**01/01/2000**
REG (By:)			
Ministerie van Infrastructuur en Waterstaat - Directie Luchtvaart	Recommendations have been reviewed and implemented where found relevant against the local conditions and specific context together with the local stakeholders	-	Completed -
ASP (By:)			
LVNL - Luchtverkeersleiding Nederland	-	-	Completed -
APO (By:)			
Amsterdam Airport Schiphol	All relevant safety procedures to prevent runway excursions were implemented years ago already. Exact dates are not available anymore	-	Completed 01/01/2000

6. Annexes

A. Specialists involved in the ATM implementation reporting for Netherlands

LSSIP Co-ordination

LSSIP Focal Points	Organisation	Name
LSSIP National Focal Point	Ministry of Infrastructure and Water Management (MoT)	Eric de Vries
LSSIP Focal Point for NSA/CAA	Human Environment and Transport Inspectorate (ILT)	Ron Slootbeek
LSSIP Focal Point for ANSP	Air Traffic Control the Netherlands (LVNL)	Michael Fidom
LSSIP Focal Point for Airport	Amsterdam Airport Schiphol (AAS)	Erik Derogee
LSSIP Focal Point for Military	Ministry of Defence (MoD)	Gert Jan van Kralingen
LSSIP Focal Point for MET	The Royal Netherlands Meteorological Institute (KNMI)	Jan Sondij
LSSIP Focal point for AIS		

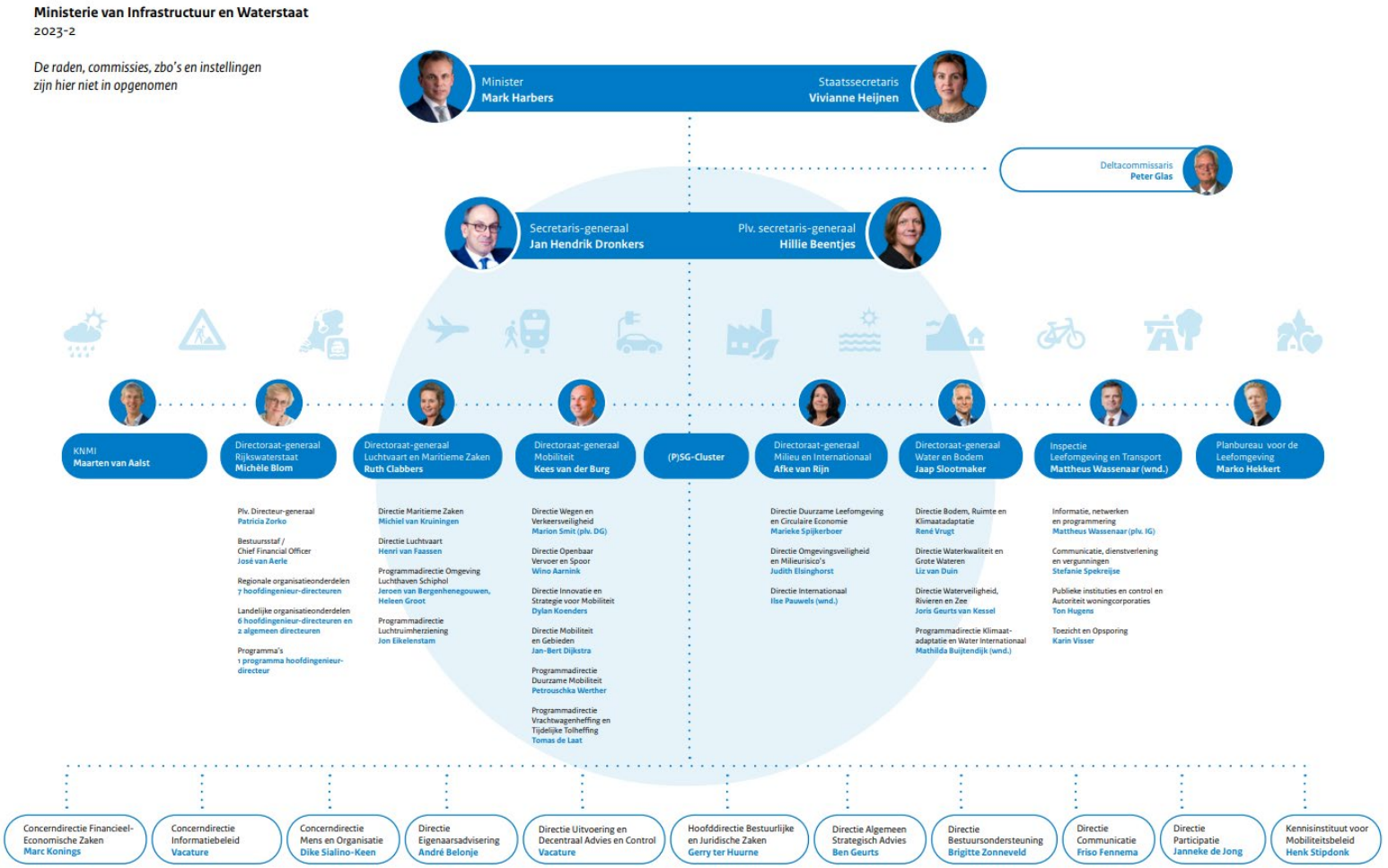
Other Focal Points	Organisation	Name
Focal Point for NETSYS	Air Traffic Control the Netherlands (LVNL)	Ilya Kraan
Focal Point for SUR	Air Traffic Control the Netherlands (LVNL)	Dick Helmer
Focal Point for SDP/CP1	Air Traffic Control the Netherlands (LVNL)	Michael Fidom
Focal Point for EDA		

B. National stakeholders organisation charts

The organisation charts of the following stakeholders can be found in this Annex:

- The Ministry of Infrastructure and Water Management (MoT)
- The Ministry of Defence (MoD)
- Air Traffic Control the Netherlands (LVNL)
- Royal Netherlands Meteorological Institute (KNMI)
- Royal Schiphol Group / Amsterdam Airport Schiphol (AAS)

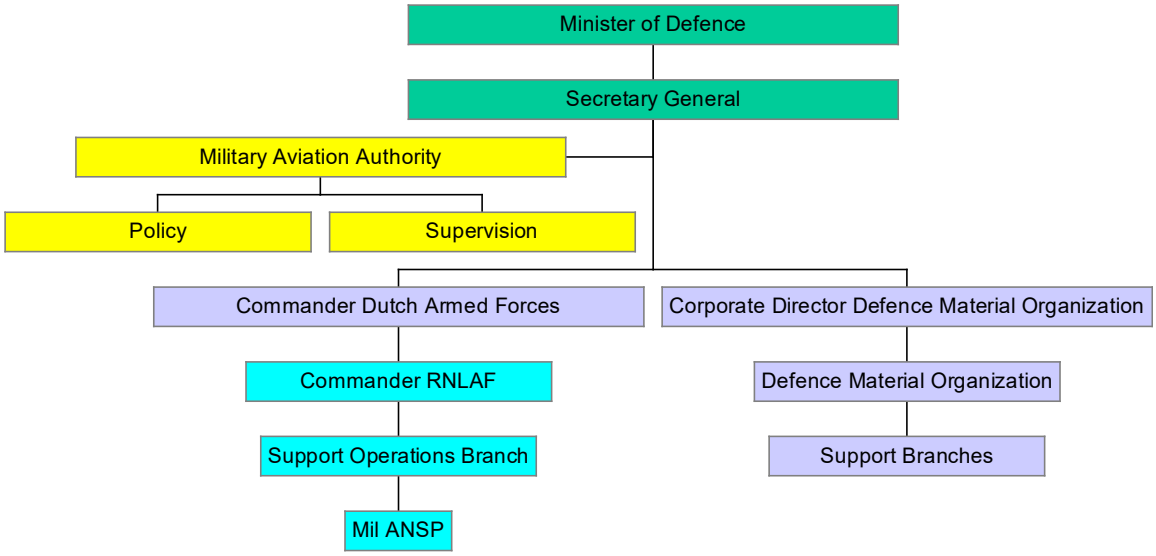
Organisation of the Ministry of Infrastructure and Water Management (MoT, "Ministerie van Infrastructuur en Waterstaat")



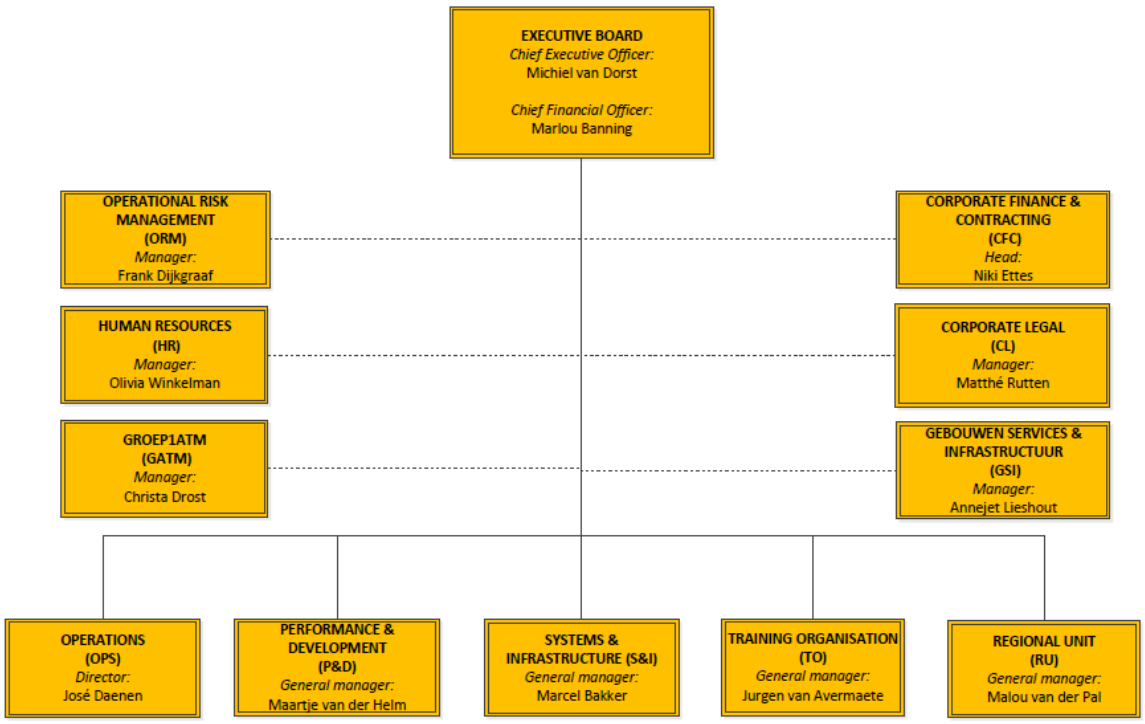
The Ministry of Infrastructure and Water Management is the State authority for civil aviation in Netherlands (See http://www.rijksoverheid.nl/ministeries/ienw).

Organisation of the Ministry of Defence in relation to ATM/ANS

MoD Organizational chart in relation to ATM



Organisation of Air Traffic Control the Netherlands (LVNL, "Luchtverkeersleiding Nederland")



Organisation of Royal Netherlands Meteorological Institute (KNMI, "Koninklijk Nederlands Meteorologisch Instituut")

Organisation of Royal Schiphol Group / Amsterdam Airport Schiphol

Royal Schiphol Group is an airport company with an important socio-economic function. Amsterdam Airport Schiphol is the main gateway connecting the Netherlands to the rest of the world. Though the operation of this hub airport is one of our principal activities, all airports in the Group create value for society and for the economy, with safety as a key enabler. Together with our international activities, Schiphol Group's Netherlands airports are part of 'Our Why' of *Connecting your world.* Schiphol Group's ambition is to create the most sustainable, high quality airports.

Structure of the organisation:

Since 1 June 2022, Schiphol Group's Management Board consists of three members, a President and Chief Executive Officer (CEO), an Executive Vice-President and Chief Financial Officer (CFO) and an Executive Vice-President and Chief Operations Officer (COO). The members of the Group's Management Board share responsibility for the management of Schiphol Group and for general affairs both within Schiphol Group and at its Group companies. Notwithstanding the foregoing, each member has accepted responsibility for a particular portfolio, which has been approved by the Supervisory Board. Royal Schiphol Group's main activities are concentrated within tree business areas: Aviation, Schiphol Commercial and Alliances & Participations. The organisation furthermore is supported by support units and staff departments.

Management Board:

Management Board

L.M. Sondag
(1962, Dutch nationality)

President & CEO a.i.[1]
Since 1 November 2022
Appointed for a term of one year
- Co-Chair of the Schiphol Security and Public Safety Platform
- Member Supervisory Board Stichting Bevordering kwaliteit leefomgeving Schipholregio
- Non-Exec Board Member, Eteck Energie Bedrijven
- Member Advisory Board, Scelta Mushrooms
- Member Advisory Board, Vos Logistics
- Senior Advisor to Board of Management ENECO/ Mitsubishi

Responsibilities
- Corporate Affairs[2]
- Corporate Legal[2]
- Human Resources[2]
- Airport Operations & Aviation Partnerships[3]
- Security[3]
- Strategy & Airport Planning[4]
- Regional airports

H.L. Buis
(1976, Dutch nationality)

Member of the Management Board and COO[5]
Since 1 June 2020
First term expired on 1 February 2023

- Supervisory Board member Stedin Holding N.V.
- Supervisor Dutch Bach Association
- Member of the board of the Hoogeschoolraad Erasmus University

Responsibilities
- Asset Management[3]
- Schiphol Projects[3]
- Pier A Project[3]
- Safety & Environment[3]

R.J. Carsouw
(1970, Dutch nationality)

Member of the Management Board and CFO
Since 1 April 2021
First term expires on 31 March 2025

- Non-executive member of the Board of Directors of Brisbane Airport Corporation PTY Ltd[6]

Responsibilities
- Finance[2]
- IT & Data[3]
- Procurement & Contracting[2]
- Risk & Audit[2]
- Schiphol Commercial[3]
- Schiphol International[3]

1. D.A. Benschop was President & CEO until 31 October 2022. He is still a non-executive member of the Board of Directors of Brisbane Airport Corporation PTY Ltd.
2. Governance structure: Support.
3. Governance structure: Operate.
4. Governance structure: Plan & innovate.
5. B.I. Otto was a Member of the Management Board & COO until 31 May 2022.
6. Any remuneration earned by Management Board (MB) members in relation to (Supervisory) Board positions in Group companies is received by the Company and not by individual MB Members.

Shareholders Schiphol Group:

Schiphol Group has three shareholders: the Netherlands state (69.8%), the municipality of Amsterdam (20.0%) and the municipality of Rotterdam (2.2%). The 8% of Royal Schiphol Group shares that have been bought back from Groupe ADP are currently held by the company (RSG) as Treasury stock.

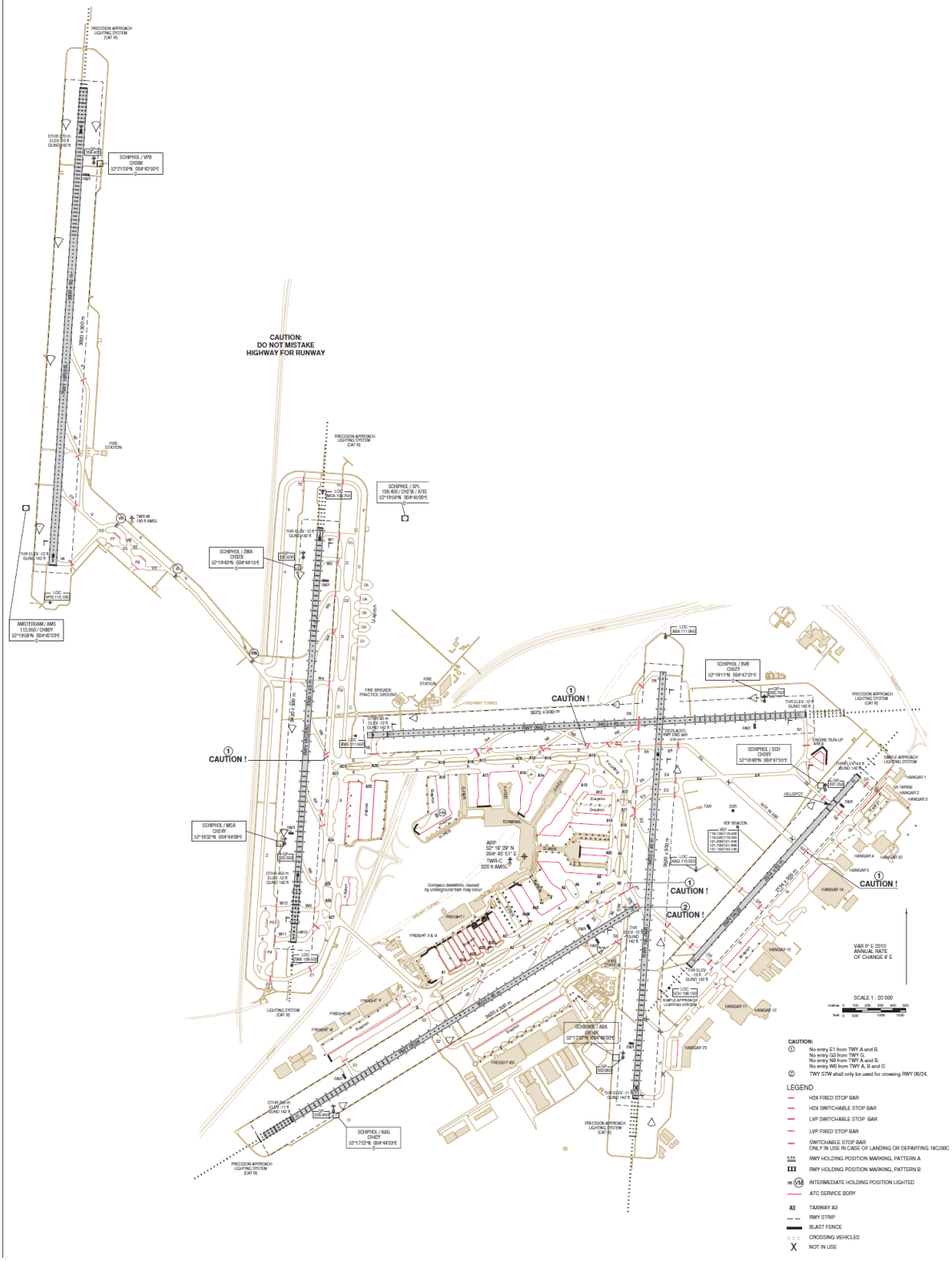
Amsterdam Airport Schiphol in 2022

In 2022, Amsterdam Airport Schiphol provided direct connections to 313 European and intercontinental destinations. In 2022 Schiphol welcomed 60.8 million passengers (2019: 71.7 million) and processed 1.4 million tonnes in 2022 (2019: 1.57 million tonnes). Air transport movements in 2021 totalled 397.646 (2019: 496,826).

The airport is an important location for businesses; in the beginning of 2022 more than 1.300 organisations were airport-related, located on the airport site or in close proximity, with a combined employee base of more than 68,000 people.

Airport Area:

The Amsterdam Airport Schiphol area comprises 2,787 hectares. See below a picture of the airport layout - source: www.ais-netherlands.nl.



Runway information:

Runway	Location	Length	Width
Polder Runway	18R-36L	3,800 metres	60 metres
Zwanenburg Runway	18C-36C	3,300 metres	45 metres
Kaag Runway	06-24	3,500 metres	45 metres
Aalsmeer Runway	18L-36R	3,400 metres	45 metres
Buitenveldert Runway	09-27	3,450 metres	45 metres
Schiphol-East Runway	04-22	2,014 metres	45 metres

Future developments:

Schiphol Group will continue to invest in safety, quality, capacity and sustainability

For more information:

www.schiphol.nl

www.annualreportschiphol.com

Amsterdam Airport Schiphol and SESAR:

Schiphol Airport is working on the deployment of CP1 projects, which were developed in SESAR. The projects (APOC, AOP-NOP Integration and A-SMCGS) will improve efficiency and create a better situational awareness for all stakeholders at the airport.

In SESAR2020 airports, ANSPs, military, airlines and aviation industry work together on the Air Traffic Management masterplan, funded by the European Union.

Amsterdam Airport Schiphol is, together with other large European airports, part of the SEAC Consortium. SEAC plays a major role in SESAR2020 and the further development of Air Traffic Management.

In 2023, SESAR2020 will be replaced by SESAR3. A new program with new projects but with the same goal to further develop the ATM system.

C. Implementation Objectives' links with other plans

The table below (extracted from the MPL3 Plan 2022) shows for each implementation objective, the mapping of the L3 implementation Objectives to the corresponding SESAR Essential Operational Changes, the SESAR Solutions, the Deployment Program families, the ICAO ASBU, the EASA EPAS, the Network Strategy Plan, the Airspace Architecture Study Transition Plan (AAS TP) Milestones and the SESAR Key Features.

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/ *Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
ATC21 – Composite surveillance ADS-B/WAM	#114	-	*CTE-S06, CTE-S05, CTE-S03a, CTE-S03b, CTE-S04a*	ASUR-B0/1 ASUR-B0/2	RMT.0679 RMT.0519	SO8/3 SO8/4	AM-1.17	EAI
COM10.2 – Extended AMHS	-	-	CTE-C06c	COMI-B0/7	-	SO7/4	-	EAI
COM11.1 – Voice over Internet Protocol (VoIP) in En-Route	-	-	*CTE-C05a* *CTE-C05b*	COMI-B2/1	-	SO8/4	AM-1.3	EAI
COM11.2 – Voice over Internet Protocol (VoIP) in Airport/Terminal	-	-	*CTE-C05a* *CTE-C05b*	COMI-B2/1	-	SO8/4	-	EAI
COM13 – Air Traffic Services (ATS) datalink using SatCom Class B	#109	-	POI-0018-COM	COMI-B1/3	-	-	AM-1.16	EAI
ITY-ACID – Aircraft identification	-	-	*GSURV-0101*	-	-	SO8/2	-	EAI
ITY-AGDL – Initial ATC air-ground data link services	-	-	AUO-0301	COMI-B0/4 COMI-B1/2	RMT.0524	SO4/1 SO8/3	AM-1.1	EAI

CNS infrastructure and services

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/ *Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
ITY-AGVCS2 – 8.33 kHz Air-Ground Voice Channel Spacing below FL195	-	-	*CTE-C01a*	-	-	SO8/1	-	EAI
NAV10 – RNP Approach Procedures to instrument RWY	#103	-	AOM-0602 AOM-0604 CTE-N06a CTE-N06b	APTA-B0/1 APTA-B1/1 NAVS-B0/2	RMT.0445 RMT.0643	SO6/5	-	AATS
NAV11.2 – Implement precision approach procedures using GBAS CAT II/III based on GPS L1 and/or GALILEO E1	#55	-	AO-0505-A	NAVS-B1/1	RMT.0682	-	-	HPAO

iN ATM interconnected network

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
AOM13.1 – Harmonise OAT and GAT handling	-	-	AOM-0301 AOM-0303	-	-	SO6/2	-	OANS
AOP11.1 – Initial Airport Operations Plan	#21	2.2.1	AO-0801-A	ACDM-B1/1	-	SO6/2	-	HPAO
AOP11.2 – Extended Airport Operations Plan	#21	2.2.2	AO-0801-A, AO-0802-A, AO-0803, DCB-0310	ACDM-B1/1	-	SO5/2	-	HPAO

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
AOP17 – Provision/integration of DPI to NMOC	#61	-	DCB-0304	NOPS-B0/4	-	-	-	HPAO
COM12 – NewPENS	-	-	*CTE-C06b*	COMI-B1/1	-	SO2/3, SO2/4, SO8/3, SO8/4	-	EAI
FCM03 – Collaborative flight planning	-	-	IS-0102	NOPS-B0/2	-	SO4/3	AM-1.14	OANS
FCM04.2 – Enhanced Short Term ATFCM Measures	#17	4.1.1	DCB-0308	NOPS-B1/1	-	SO4/5	AM-1.11	OANS
FCM06.1 – Automated Support for Traffic Complexity Assessment and Flight Planning interfaces	#19 PJ.18-02c	4.3.1	CM-0101 CM-0103-A IS-0102	NOPS-B0/2 NOPS-B1/4	-	SO4/3 SO4/5	AM-1.13	OANS
FCM10 – Interactive rolling NOP	#18 #20	4.2.1	DCB-0102	NOPS-B1/2 NOPS-B1/9	-	SO2/2, SO4/2, SO4/5	AM-1.9 AM-1.12	OANS
FCM11.1 – Initial AOP/NOP Information Sharing	#20 #21	4.2.2	DCB-0103-A AO-0801-A	NOPS-B0/4	-	SO4/4, SO4/5, SO5/2	AM-1.12	OANS
FCM11.2 – AOP/NOP integration	#18 #20 #21	4.4.1	AO-0801–A, AO-0802–A, AO-0803, DCB-0310, DCB-0103-A, DCB-0208	NOPS-B1/3	-	SO4/4, SO4/5, SO5/2	AM-1.12	OANS
INF10.2 – Stakeholders' SWIM PKI and cyber security	#46	5.2.1	IS-0901-A	SWIM-B2/3	RMT.0720	SO2/4	AM-1.5	EAI
INF10.3 – Aeronautical Information Exchange - Airspace structure service	#46	5.3.1	IS-0901-A	-	-	SO2/4	AM-1.5	EAI

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
INF10.4 – Aeronautical Information Exchange - Airspace availability service	#46	5.3.1	IS-0901-A	-	-	SO2/4	AM-1.5	EAI
INF10.5 – Aeronautical Information Exchange - Airspace Reservation (ARES) service	#46	5.3.1	IS-0901-A	-	-	SO2/4	AM-1.5	EAI
INF10.6 – Aeronautical Information Exchange - Digital NOTAM service	#34 #46	5.3.1	IS-0901-A IS-0205	-	-	SO2/4	AM-1.5	EAI
INF10.7 – Aeronautical Information Exchange - Aerodrome Mapping information exchange service	#34 #46	5.3.1	IS-0901-A IS-0205	-	-	SO2/4	AM-1.5	EAI
INF10.8 – Aeronautical Information Exchange - Aeronautical Information Features service	#34 #46	5.3.1	IS-0901-A IS-0205	-	-	SO2/4	AM-1.5	EAI
INF10.9 – Meteorological Information Exchange - Volcanic ash concentration service	#34 #35 #46	5.4.1	IS-0901-A IS-0205 MET-0101	-	-	SO2/4	AM-1.5	EAI
INF10.10 – Meteorological Information Exchange - Aerodrome Meteorological information Service	#34 #35 #46	5.4.1	IS-0901-A IS-0205 MET-0101	-	-	SO2/4	AM-1.5	EAI

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
INF10.11 – Meteorological Information Exchange - En-Route and Approach Meteorological information service	#34 #35 #46	5.4.1	IS-0901-A IS-0205 MET-0101	-	-	SO2/4	AM-1.5	EAI
INF10.12 – Meteorological Information Exchange - Network Manager Meteorological Information	#34 #35 #46	5.4.1	IS-0901-A IS-0205 MET-0101	-	-	SO2/4	AM-1.5	EAI
INF10.13 – Cooperative Network Information Exchange - ATFCM Tactical Updates Service	#46	5.5.1	IS-0901-A	-	-	SO2/4	AM-1.5	EAI
INF10.14 – Cooperative Network Information Exchange - Flight Management Service	#46	5.5.1	IS-0901-A	-	-	SO2/4 SO5/2	AM-1.5	EAI
INF10.15 – Cooperative Network Information Exchange - Measures Service	#46	5.5.1	IS-0901-A	-	-	SO2/4 SO4/5	AM-1.5	EAI
INF10.16 – Cooperative Network Information Exchange - Short Term ATFCM Measures services	#46	5.5.1	IS-0901-A	-	-	SO2/4 SO4/5	AM-1.5	EAI
INF10.17 – Cooperative Network Information Exchange - Counts service	#46	5.5.1	IS-0901-A	-	-	SO2/4	AM-1.5	EAI

iN ATM interconnected network

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
INF10.18 – Flight Information Exchange -Filing Service	#46	5.6.1	AUO-0207	FICE-B2/2	-	SO2/4	AM-1.5	EAI
INF10.19 – Flight Information Exchange - Flight Data Request Service	#46	5.6.1	AUO-0207	FICE-B2/4	-	SO2/4	AM-1.5	EAI
INF10.20 – Flight Information Exchange - Notification Service	#46	5.6.1	AUO-0207	FICE-B2/5	-	SO2/4	AM-1.5	EAI
INF10.21 – Flight Information Exchange - Publication Service	#46	5.6.1	AUO-0207	FICE-B2/6	-	SO2/4	AM-1.5	EAI
INF10.22 – Flight Information Exchange - Trial Service	#46	5.6.1	AUO-0219	FICE-B2/3	-	SO2/4	AM-1.5	EAI
INF10.23 – Flight Information Exchange - Extended AMAN SWIM Service	#46	5.6.1	AUO-0207	DAIM-B2/1 SWIM-B3/1	-	SO2/4	AM-1.5	EAI

dS Digital AIM and MET services

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*EnablerS*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
INF07 – Electronic Terrain and Obstacle Data (e-TOD)	-	-	*AIMS-16*	DAIM-B1/3 DAIM-B1/4	RMT.0703 RMT.0722	SO2/5	-	EAI

dS Digital AIM and MET services

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*EnablerS*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
INF11.1 – Enhanced Ground Weather Management System (GWMS) as local 4DWxCube	PJ.18-04b-01	-	POI-0044-MET	-	-	-	-	-
INF11.2 – Cb-global capability and service	PJ.18-04b-02	-	POI-0048-MET	-	-	-	-	-

ATp Airport and TMA performance

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
AOP04.1 – A-SMGCS Surveillance Service (former ICAO Level 1)	#70 #110	-	AO-0201 AO-0201-A POI-0071-SUR	SURF-B0/2	MST.0029	SO6/6	-	HPAO
AOP04.2 – A-SMGCS RMCA (former ICAO Level 2)	-	-	AO-0102	SURF-B0/3	MST.0029	SO6/6	-	HPAO
AOP05 – Airport CDM	-	-	AO-0501, AO-0601, AO-0602, AO-0603, TS-0201	ACDM-B0/1 ACDM-B0/2 NOPS-B0/4	-	SO6/4	-	HPAO
AOP10 – Time Based Separation	#64	-	AO-0303	WAKE-B2/7	-	SO6/5	-	HPAO
AOP12.1 – Airport Safety Nets	#02	2.3.1	AO-0104-A	SURF-B1/3	MST.0029	SP6/6	-	HPAO

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
AOP13 – Automated assistance to Controller for Surface Movement planning and routing	#22 #53	-	AO-0205 TS-0202	SURF-B1/4	MST.0029	SO6/6	-	HPAO
AOP15 – Safety Nets for vehicle drivers	#04	-	AO-0105 AO-0204	SURF-B2/2	MST.0029	-	-	HPAO
AOP16 – Guidance assistance through airfield lighting	#47	-	AO-0222-A	SURF-B1/1	MST.0029	-	-	HPAO
AOP18 – Runway Status Lights	#01	-	AO-0209	SURF-B2/2, SURF-B2/3-	MST.0029	-	-	HPAO
AOP19 – Departure Management Synchronised with Pre-departure sequencing	#53 #106	2.1.1	AO-0602 TS-0201	RSEQ-B0/2	-		-	HPAO
AOP20 – Wake Turbulence Separations for Departures based on Static Aircraft Characteristics (S-PWS-D)	PJ.02-01-06	-	AO-0323		RMT.0476		-	HPAO
AOP21 – Wake Turbulence Separations for Arrivals based on Static Aircraft Characteristics (S-PWS-A)	PJ.02-01-04	-	AO-0306		RMT.0476		-	HPAO
AOP22 – Minimum pair separations based on SRP	PJ.02-03	-	AO-0309	-	-		-	HPAO
AOP23 – Integrated runway sequence for full traffic	PJ.02-08-01	-	TS-0301	RSEQ-B2/1	-		-	HPAO

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
optimization on single and multiple runway airports								
AOP24 – Optimised use of runway configuration for multiple runway airports	PJ.02-08-02	-	TS-0313		-		-	HPAO
AOP25 – De-icing Management Tool	#116	-	POI-0070-AO	-	-	-	-	HPAO
AOP26 – Reduced separation based on local Runway Occupancy Time (ROT) characterisation	PJ.02-08-03	-	AO-0337	-	-	-	-	-
ATC07.1 – Arrival management tools	-	-	TS-0102	RSEQ-B0/1	-	SO4/1	-	AATS
ATC19 – Enhanced AMAN-DMAN integration	#54	1.2.1	TS-0308	RSEQ-B2/1	-	SO6/5 SO4/1	-	AATS
ATC26 – Point Merge in complex TMA	#107	-	AOM-0601	RSEQ-B0/3	-	-	-	AATS
ENV01 – Continuous Descent Operations	#11	-	AOM-0701 AOM-0702-A	APTA-B0/4 APTA-B1/4	-	SO6/5	-	AATS
ENV02 – Airport Collaborative Environmental Management	-	-	AO-0703, AO-0705, AO-0706	-	-	-	-	HPAO
ENV03 – Continuous Climb Operations	-	-	AOM-0703	APTA-B0/5 APTA-B1/5	-	SO6/5	-	AATS

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
NAV03.1 – RNAV1 in TMA Operations	#62	-	AOM-0601 *CTE-N08*	APTA-B0/2	RMT.0445	SO6/5	-	AATS
NAV03.2 – RNP1 in TMA Operations	#09 #51	-	AOM-0603 AOM-0605	APTA-B1/2	RMT.0445	SO6/5	-	AATS
NAV11.1 – GLS CAT II operations using GBAS GAST-C	#119	-	AO-0506	NAVS-B1/1	RMT.0682 RMT.379	-	-	HPAO
SAF11.1 – Improve runway safety by preventing runway excursions	-	-	-	-	-	-	-	HPAO

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
AOM19.4 – Management of Pre-defined Airspace Configurations	#31 #66	3.1.2	AOM-0202-A AOM-0206-A CM-0102-A	FRTO-B1/4, NOPS-B1/6	-	SO3/2 SO3/3	AM-1.10 AM-1.8-	OANS
AOM19.5 – ASM and A-FUA	#31 #66	3.1.1	AOM-0202 AOM-0202-A AOM-0206-A		-	SO3/2 SO3/3	AM-1.10 AM-1.8	OANS
AOM21.2 – Initial Free Route Airspace	#32 #33 #66	3.2.1	AOM-0501 AOM-0505 CM-0102-A	FRTO-B1/1	-	SO3/1 SO3/4	AM-1.10 AM-5.1	AATS

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
AOM21.3 – Enhanced Free Route Airspace Operations	#33 PJ.06-01	3.2.2	AOM-0501 AOM-0505	FRTO-B2/3	-	SO3/1 SO3/4	AM-1.6 AM-1.7	AATS
ATC12.1 – MONA, TCT and MTCD	#27 #104 # PJ.10-02a1	3.2.1	CM-0202, CM-0203, CM-0205, CM-0207-A	FRTO-B0/4 FRTO-B1/5	-	SO3/1 SO4/1	AM-1.15 AM-5.1	AATS
ATC15.1 – Initial Extension of AMAN to En-route	-	-	TS-0305	-	-	SO4/1	-	AATS
ATC15.2 – Arrival Management Extended to En-route Airspace	#05	1.1.1	TS-0305-A	RSEQ-B1/1 NOPS-B1/8	-	SO4/1	AM-1.3	AATS
ATC18 – Multi Sector Planning En-route – 1P2T	#63 #118 PJ.10-01a1	-	CM-0301	FRTO-B1/6	-	SO4/1	AM-4.3 AM-5.1	AATS
ITY-FMTP – Apply a common flight message transfer protocol (FMTP)	-	-	*CTE-C06*	-	-	SO8/3	AM-1.3	EAI
SAF10.1 – Implement measures to reduce the risk to aircraft operations caused by airspace infringements	-	-	-	-	SI.2025	-	-	AATS

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
ATC02.8 – Ground based safety nets	-	3.2.1	CM-0801	SNET-B0/2 SNET-B0/3 SNET-B0/4	-	SO4/1	-	AATS
ATC20 – Enhanced STCA with DAP via Mode S EHS	#69	-	CM-0807-A	SNET-B1/1	MST.0030	SO7/2	-	AATS
ATC22 – Initial Air-Ground Trajectory Information Sharing (Airborne Domain)	#115	6.1.1	IS-0303-A	-	RMT.0682	SO4/5	AM-1.2	EAI
ATC23 – Initial Air-Ground Trajectory Information Sharing (Ground Domain)	#115 PJ.18-06b1	6.1.2	IS-0303-A	-	RMT.0682	SO4/5	AM-1.2	EAI
ATC24 – Network Manager Trajectory Information Enhancement	PJ.18-06b1	6.2.1	POI-0011-IS POI-0013-IS	-	RMT.0682	SO4/5	-	EAI
ATC25 – Initial Trajectory Information Sharing ground distribution	#115	6.3.1	IS-0303-A	-	MST.0031		AM-1.2	EAI

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
NAV12 – ATS IFR Routes for Rotorcraft Operations	#113	-	AOM-0810	APTA-B0/6	MST.0031	SO6/5	-	AATS

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
-	-	-	-	-	-	-	-	-

Level 3 Implementation Objective	SESAR Solution	SDP Family	OI Steps/*Enablers*	ICAO ASBUs	EPAS	NSP	AAS TP	KF
AOP14.1 – Remote Tower Services	#12 #13 #52 #71	-	SDM-0201 SDM-0204 SDM-0205	RATS-B1/1	RMT.0624	SO6/5	-	HPAO
AOP14.2 – Multiple Remote Tower Module	PJ.05-02	-	SDM-0207	RATS-B1/1	RMT.0624	SO6/5	-	HPAO

D. SESAR Solutions implemented in a voluntary way[4]

These SESAR Solutions are not included yet in the ATM MP L3 Plan.

EUROCONTROL is tasked by the SJU to identify the implementation progress of functionalities corresponding to validated SESAR Solutions published in the SJU Solutions Catalogue (https://www.sesarju.eu/newsroom/brochures-publications/sesar-solutions-catalogue), for which there is no implementation Objective (yet) in the ATM MP L3 Plan. This will allow to identify early movers and to gauge the interest generated by some of these functionalities, with the view of potentially addressing them with new Implementation Objectives in the ATM MPL3 Plan.

For practical reasons, a facilitated questionnaire using the existing ATM MP L3 / LSSIP methodology is added in the LSSIP tool to capture information on non-committed SESAR solutions.

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
		CNS infrastructure and services				
#114	Composite Surveillance ADS-B / WAM https://www.sesarju.eu/sesar-solutions/composite-surveillance-ads-b-wam	By allowing the use of ADS-B data that has been validated against data derived in parallel by a WAM system, the system can help to reduce the number of interrogations and number of replies and therefore reduce the 1030/1090 MHz RF load and improve spectrum efficiency. It achieves this through the integration of validated data items into the WAM channel, thereby preventing a need to re-interrogate the data item. Since the two surveillance layers	Amsterdam FIR	Ongoing	12/31/25	WAM North Sea and WAM NL

[4] Referred as 'Non-committed' SESAR solutions in the MP L3 Report.

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
		share hardware components, the system offers improved cost efficiency. Furthermore, the use of the system contributes to an improved security by successfully mitigating associated ADS-B threats. SESAR has contributed to the relevant standards, such as EUROCAE technical specifications for WAM and ADS-B that are implementing this “composite” concept.				
PJ.14-02-06	AeroMACs integrated with ATN, Digital Voice and Multilink https://www.sesarju.eu/sesar-solutions/aeromacs-integrated-atn-digital-voice-and-multilink	The SESAR Solution PJ14.02.06 (“AeroMACS integrated with ATN, Digital Voice and Multilink”) builds upon Solution #102 (AeroMACS) published in the SESAR 1 catalogue. AeroMACS is part of the Future Communication Infrastructure supporting the Airport Surface Component and is reflected within the ICAO Global Air Navigation Plan (GANP) and the ICAO Communication Roadmap in the GANP.		Not yet planned		
PJ.14-03-04	RNP1 reversion based on DME-DME https://www.sesarju.eu/index.php/sesar-solutions/rnp1-reversion-based-	Alternative-Position, Navigation and Timing (A-PNT) is the technological enabler related with the need to introduce ground and airborne systems that can support currently defined and standardized PBN and other CNS-based operations and provide a backup with the required level of performance in case of degradation and absence/loss of GNSS. According to the existing regulations, RNP1		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	dmedme	navigation integrity requires the use of GNSS positioning. Therefore, the GNSS loss may become a critical issue for the design of TMA airspace complying with PBN-IR.				
PJ.16-04-01	Multi-touch inputs (MTI) for the human machine interface (HMI) of the controller working position (CWP) https://www.sesarju.eu/sesar-solutions/multi-touch-inputs-mti-human-machine-interface-hmi-controller-working-position-cwp	Providing the human machine interface (HMI) of the controller working position (CWP) with advanced technologies can help to minimise the workload and mental strain on controllers in area control centres and towers. This is especially true when managing high density traffic or complex operations. SESAR 1 research found multi-touch functionality including handheld or tablet devices are technically mature enough to be used in the ATC/ATM environment. In addition to providing faster input methods such as 'one-touch' cleared flights, the technology supports complex tools such as map manipulation and gestures recognition to enhance usability and controller productivity.		Not yet planned		
#55	Precision approach using GBAS Category II/III https://www.	GBAS has limited (GBAS Local Object Consideration Areas) or no protection areas, usually located outside aircraft movement areas. This allows the reduction of runway occupancy times in LVP, reducing spacing	Schiphol Airport	Not yet planned		A study will be conducted on the feasibility and benefits of GBAS CAT III.

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	sesarju.eu/sesar-solutions/precision-approaches-using-gbas-cat-iiiii	between arrival aircraft. Use of GBAS Cat II/III eliminates ILS critical zones, enables flexible approaches, offers PA where ILS cannot due to geography and signal stability (immune to signal bends inherent in ILS), complements ILS at airports with multiple RWYs during LVP, the rationalization of some ILS thus reducing operation and maintenance costs and optimizing spectrum; offers PA at aerodromes without SBAS coverage or where PA performances cannot be achieved with SBAS. GBAS CATII/II improves resilience of airport capacity with fewer flight cancellations due to LVP in force. GBAS CATII/III will enable runway ends that are not ILS CATII/III equipped to be used for CATII/III operations as long as the runway is CATII/III qualified.				
#102	Aeronautical mobile airport communication system (AeroMACS) https://www.sesarju.eu/index.php/sesar-solutions/aeronautical-mobile-airport-communication-system-aeromacs	The aeronautical mobile airport communication system (AeroMACS) offers a solution to offload the saturated VHF datalink communications in the airport environment and support new services. The technical solution AeroMACS is based on commercial 4G technology and uses the IEEE 802.16 (WiMAX) standard. Designed to operate in reserved (aeronautical) frequency bands, AeroMACS can be used for ANSPs, airspace users and airport authority communications, in compliance with SESAR's future communication infrastructure (FCI) concept. AeroMACS is an international standard and supports globally harmonised and		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
		available capabilities according to ICAO Global Air Navigation Plan (GANP).				
#110	ADS-B surveillance of aircraft in flight and on the surface https://www.sesarju.eu/sesar-solutions/ads-b-surveillance-aircraft-flight-and-surface	The SESAR solution consists of the ADS-B ground station and the surveillance data processing and distribution (SDPD) functionality. The solution also offers mitigation techniques against deliberate spoofing of the ground system by outside agents. These techniques can also be used to cope with malfunctioning of avionics equipment. SESAR has contributed to the relevant standards, such as EUROCAE technical specifications, incorporating new functionalities developed for the ADS-B ground station, ASTERIX interface specifications as well as to the SDPD specifications.	Groningen Airport (EHGG)	Ongoing	07/01/24	Project ongoing.
#110	ADS-B surveillance of aircraft in flight and on the surface https://www.sesarju.eu/sesar-solutions/ads-b-surveillance-aircraft-flight-and-surface	The SESAR solution consists of the ADS-B ground station and the surveillance data processing and distribution (SDPD) functionality. The solution also offers mitigation techniques against deliberate spoofing of the ground system by outside agents. These techniques can also be used to cope with malfunctioning of avionics equipment. SESAR has contributed to the relevant standards, such as EUROCAE technical specifications, incorporating new functionalities developed for the ADS-B ground station, ASTERIX interface specifications as well as to the SDPD specifications.	North Sea area	Completed	12/31/16	

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
#110	ADS-B surveillance of aircraft in flight and on the surface https://www.sesarju.eu/sesar-solutions/ads-b-surveillance-aircraft-flight-and-surface	The SESAR solution consists of the ADS-B ground station and the surveillance data processing and distribution (SDPD) functionality. The solution also offers mitigation techniques against deliberate spoofing of the ground system by outside agents. These techniques can also be used to cope with malfunctioning of avionics equipment. SESAR has contributed to the relevant standards, such as EUROCAE technical specifications, incorporating new functionalities developed for the ADS-B ground station, ASTERIX interface specifications as well as to the SDPD specifications.	Amsterdam Airport Schiphol (EHAM)	Ongoing	05/01/23	Project ongoing.
PJ.14-W2-84f	Surveillance Performance Monitoring – end-to-end https://www.sesarju.eu/sesar-solutions/surveillance-performance-monitoring-end-end	Surveillance Performance Monitoring – End-to-End aims at enabling an improved performance monitoring of surveillance systems in line with the Performance-Based Surveillance (PBS) approach. This Solution focuses on the development of Surveillance Performance Monitoring Tools for end-to-end surveillance chain. One of the objectives of the Solution is the harmonisation of the tools. Recognising there is a trend of the standards towards harmonisation, the choice has been made to harmonise the various metric assessment methods. Solution tasks include tools specification aligned with existing and developing Surveillance Standards, quasi real-time assessment, development of tool		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
		prototypes and verification of these prototypes. The results of tools verification are a potential input to the standardisation, in particular the ESASSP specification.				

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
		iN ATM interconnected network				
#57	User-driven prioritisation process (UDPP) departure https://www.sesarju.eu/sesar-solutions/user-driven-prioritisation-process-udpp-departure	Airspace Users are allowed to change among themselves (via the pre-departure management process in CDM airports) the priority order of flights in the pre-departure sequence. The departure time will be automatically communicated/coordinated with the Network Management Function (NMF) via the DPI message as described in the A-CDM concept.		Not yet planned		
#67	AOC data increasing trajectory	Europe's vision to achieve high-performing aviation by 2035 builds on the idea of		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	prediction accuracy https://www.sesarju.eu/sesar-solutions/aoc-data-increasing-trajectory-prediction-accuracy	trajectory-based operations – meaning that aircraft can fly their preferred trajectory while minimising constraints due to airspace and service configurations. SESAR has introduced an early version, which makes use of flight planning data sourced from airline operational control (AOC) to help controllers optimise aircraft flight paths. This solution represents an initial step towards the extended flight plan solution and flight and flow information for a collaborative environment (FF-ICE).				
PJ.09-03-02	AOP/NOP departure information integrated in EFPL https://www.sesarju.eu/sesar-solutions/aop-nop-departure-information-integrated-efpl	Some elements of AOP/NOP information are important to consider in AU flight planning in order to better align AU and NM trajectories, improve AU fuel prediction and support target times management. These elements are: • The departure taxi time • The planned departure runways • The planned SID. With the implementation of airport CDM procedures, NM receives from most of the major airports up-to-date and reliable information in DPI messages and updates much more dynamically than the FOC this information in its planned trajectory thanks to live information received from airports. Therefore, this solution defines new information flows for AUs to consider same information as NM related to the departure phase of the flight.		Not yet planned		
PJ.15-01	Sub-regional Demand	The purpose of the Sub-regional Demand		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	Capacity Balancing Service https://www.sesarju.eu/index.php/sesar-solutions/sub-regional-demand-capacity-balancing-common-service	Capacity Balancing (DCB) Service (Supporting the DCB capability within the ICAO Global Concept) is to facilitate an improved usage of the airspace at the sub-regional level, through enhanced planning and consequently more appropriate tactical intervention in support of AU and AO operations.				
PJ.17-01	SWIM TI purple profile for airground advisory information sharing https://www.sesarju.eu/index.php/sesar-solutions/swim-t1-purple-profile-airground-advisory-information-sharing	The SWIM-TI Purple Profile (PP) consists of open standards based on reliable and secure SWIM technical infrastructure enabling the integration of the aircraft into the SWIM network, thus giving it access to air/ground SWIM services (e.g. uplink and downlink of meteorological and aeronautical information). It will enable operational applications to uplink meteorological and aeronautical information using SWIM, as well as downlink (e.g. aircraft provided meteorological observations) of information using SWIM.		Not yet planned		
PJ.18-02b	Flight object interoperability	An essential component of the future system is ground-to-ground interoperability (IOP), a solution designed to enable the swift and	Amsterdam FIR	Not yet planned		Planned for future implementation in de new iCAS system when its development has

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	https://www.sesarju.eu/index.php/sesar-solutions/flight-object-interoperability	seamless exchange of flight trajectory information in real time between Europe's network of air traffic control centres.				reached a stage where it can be implemented.
#37	Extended Flight Plan https://www.sesarju.eu/sesar-solutions/extended-flight-plan	The extended flight plan is an extension of the ICAO 2012 FPL. New information encompasses: - The 4D trajectory as calculated by the FOC flight planning system in support to the generation of the operational flight plan. The 4D trajectory information in not limited to 4D points. It contains additional elements for each point of the trajectory such at speeds, and aircraft mass; - Flight specific performance data: the climbing and descending capabilities of the aircraft specific to the flight. Short term use cases for EFPL are: - Use extended flight plan information to improve the process of validation of flight plans by the Network Manager, in particular by reducing the number of flight plan rejections resulting from the low resolution of the ICAO 2012 flight plan; - Use extended flight plan information to improve traffic predictions for traffic flow/complexity management; - Use extended flight plan information to improve ATC processes (traffic prediction, detection/resolution of conflicts, AMAN		Not yet planned		Intent to implement FF-ICE R1.

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
		operations).				

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
		dS Digital AIM and MET services				
PJ.15-10	The common service for aeronautical information management https://www.sesarju.eu/index.php/sesar-solutions/common-service-aeronautical-information-management	The Common Service for Aeronautical Information Management significantly reduces the overall cost of providing AIM services by using a common, managed service instead of operating numerous individual national systems. Instead of duplicating aeronautical information and manually updating the aeronautical information in different Ground Systems, the Common Service for Aeronautical Information Management offers a means of maintaining and validating the aeronautical information once and centrally. The ground systems will have to replace their legacy data storage by an interface based on SWIM allowing direct access to quality assured and consistent aeronautical information.		Planned	12/31/25	
PJ.15-11	Aeronautical digital map	The Aeronautical Digital Map Common Service		Planned	12/31/25	

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	common service https://www.sesarju.eu/index.php/sesar-solutions/aeronautical-digital-map-common-service	(COSER) provides users the capability to retrieve graphical representation of aeronautical data/information. The output is a standardized/harmonised graphic information that can be retrieved by individual requests demanding specific geographical areas. The retrieval can be performed using regular internet protocols or through SWIM services. Instead of having to perform the rendering of aeronautical information as a visualisation in a GIS viewer or aeronautical map over and over again for different systems, generating tremendous development efforts and potentially diverging and unharmonized representations that could potentially lead to safety risks, a harmonized visualisation for different use-cases can be provided centrally.				
PJ.18-04a	Aeronautical dataset service https://www.sesarju.eu/index.php/sesar-solutions/aeronautical-dataset-service	The Aeronautical Dataset Service supports the provision of the aeronautical information product digital data set as defined by ICAO Annex 15: AIP data set, Obstacle data set, Terrain data set, Airport mapping data set, Instrument flight procedure data set. Providing dataset in digital format will improve the consistency and quality of the data and enhance the exchange of information. The Aeronautical Dataset Service will also help service providers meet the requirements for the provision of digital dataset information required by ICAO. The service is created fully in line with the requirements and guidelines		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
		defined in the EUROCONTROL SWIM Specifications.				
PJ.18-04b-01	Ground weather management system (GWMS) https://www.sesarju.eu/sesar-solutions/ground-weather-management-system-gwms	This solution addresses the provision of local MET information to airports and considers the use of existing sensors and MET capabilities for the measurement and generation of MET data. The Glide Wind Profile has been developed as the provider of glide wind data to the Ground Weather Management System (GWMS) using mature sources like Radar and Lidar sensors. The purpose is to enhance separation procedures based on the collected wind data. The METForTAM is an information service that provides enhanced local MET information (e.g. METEO forecasts and observations) to a specific airport (airport operational centre, APOC). The developed capability and information service aim at enhancing MET data provision capabilities in order to improve the accuracy and timely delivery of expected Meteorological conditions at an airport.		Not yet planned		
PJ.18-04b-02	Improved MET information services https://www.sesarju.eu/sesar-solutions/improved-met-information-	Cb-global capability uses data from geostationary satellites to detect, track, and nowcast thunderstorms in order to provide pilots an overview of the current weather hazard situation beyond the limited view of the on-board radar. It is relevant for the upper airspace En-route and enables a pilot to strategically plan a safe and smart flight route around the thunderstorms well ahead in time		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	services	instead of flying tactical manoeuvres and searching for gaps between the thunder cells.				

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
		ATp Airport and TMA performance				
#11	Continuous descent operations (CDO) using point merge https://www.sesarju.eu/sesar-solutions/continuous-descent-operations-cdo-using-point-merge	Progressive implementation of procedures for Continuous Descent Operations (CDO) and Continuous Climb Operations (CCO) in higher density traffic or to higher levels, optimised for each airport arrival/departure procedure		Not yet planned		
#23	D-TAXI service for controller-pilot datalink communicatio	Use of data link communications between the Tower Controllers and the flight crew during surface movement. It is based on the D-TAXI		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	ns (CPDLC) application https://www.sesarju.eu/sesar-solutions/d-taxi-service-controller-pilot-datalink-communications-cpdlc-application	service from the CPDLC application, as standardised by RTCA SC214/EUROCAE WG78 (DO-350 & DO-351). It also includes the access to this service for end users, through the Tower CWP for the ATCO and through the aircraft DCDU for the flight crew.				
#26	Manual taxi routing function https://www.sesarju.eu/sesar-solutions/manual-taxi-routing-function	Presenting a graphical display of the taxi route instructions received from air traffic control provides another means for the flight crew to check they are following the right route. The on-board moving map of the airfield can be overlaid with the taxi route so the pilot can see exactly where the aircraft is in relation to the cleared route. If the taxi clearance is sent via datalink, through the D-TAXI service, the corresponding message is interpreted and translated as a graphical path by the on-board moving map database. If the taxi clearance is sent via voice, the flight crew can enter it manually into the airport moving map.		Not yet planned		
#48	Virtual block control in low visibility procedures (LVPs)	In low visibility conditions, the tower controller working positions are provided with Virtual Stop Bars (VSB) to improve low visibility operations and enhance controllers' situational		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	https://www.sesarju.eu/sesar-solutions/virtual-block-control-low-visibility-procedures-lvps	awareness. Virtual Stop Bars can be used by the controller to reduce block-sizes once procedural control applies. Additional controller safety nets will be available to indicate violations of Stop Bars (including Virtual Stop Bars) and to monitor aircraft for any kind of unauthorised movement (Watch Dog).				
#117	Reducing Landing Minima in Low Visibility Conditions using Enhanced Flight Vision Systems (EFVS) https://www.sesarju.eu/sesar-solutions/reducing-landing-minima-low-visibility-conditions-using-enhanced-flight-vision	The SESAR Solution "Reducing landing minima in low visibility conditions using enhanced Flight vision systems (EFVS)" is intended for flight crews, and corresponds to the use of EFVS visual based technologies displayed in HUD or an equivalent display system. The objective is to provide operational credit in approach as permitted per EASA EU 965/2012 and its coming amendments (NPA 2018-06 AWO) to face to Low visibility conditions. Enabling EFVS operations with operational credits provides a greater availability of suitable destination and alternate aerodromes during periods of reduced visibility. This effectively reduces the number of weather-related delays, cancellations or diversions of flights to CAT II/III aerodromes, permits shorter routings and reduced fuel costs, a faster return to scheduled operations, and less passenger inconveniences. A unique advantage of the EFVS on board solution is that it is mainly supported by the aircraft system instead of airports and the need		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
		of complex and costly ground infrastructures as those implemented in CATII/III airports. From a global ATM network standpoint, the EFVS operation allows to retain traffic at most of secondary aerodromes by providing operational credit at most of runway ends with precision or non-precision landing minima (LPV, LNAV/ VNAV, ILS CAT1, etc.). The operational credit provided by EFVS is particularly important regarding secondary aerodromes because they usually have CAT1 or higher than CAT 1 RVR - DA/DH minima and are therefore potentially more frequently impacted by adverse weather conditions. In addition, EFVS capability is a key operational advantage more especially for the business aviation community that is mainly composed of small/ medium operators with limited resources and operating frequently at small/ medium airports. Beyond operational credit, the Vision Systems such as the EFVS improves situational awareness in all weather conditions for all operators at all airports contributing supporting decision-making and increasing safety margin all the time.				
PJ.02-01-01	Optimised Runway Delivery on Final Approach https://www.sesarju.eu/ses	Optimised Runway Delivery (ORD) tool is the ATC support tool to enable safe, consistent and efficient delivery of the required separation or spacing between arrival pairs on final approach to the runway-landing threshold. The ORD tool can be used to support the application of	Amsterdam Airport Schiphol	Completed	01/26/23	An intelligent Approach tool is in use at Schiphol for RECAT-EU and TBS.

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	ar-solutions/optimised-runway-delivery-final-approach	Distance Based and Time Based wake separation rules e.g. ICAO, RECAT-EU, PWS-A and WDS-A wake separation schemes, and aims at consistently and efficiently managing the spacing compression that occurs on short final from the lead aircraft crossing the deceleration fix.				
PJ.02-01-06	Wake Turbulence Separations (for Departures) based on Static Aircraft Characteristics https://www.sesarju.eu/sesar-solutions/wake-turbulence-separations-departures-based-static-aircraft-characteristics	The Static PairWise Separation for Departures (S-PWS-D) concept optimises wake separations between departures on the initial departure path by moving from schemes defined by a small number of wake categories (4 to 7 wake categories) to a scheme defined between aircraft type pairs for the 96 aircraft types frequently at European major airports, together with a scheme defined by a larger number of wake categories (20-CAT (6-CAT + 14-CAT)) for other aircraft type combinations. S-PWS for departures are applied using the OSD tool; the pairwise separations will be used as input into the OSD tool.		Planned		This item is about departures!
PJ.02-01-07	Wake Vortex Decay Enhancing Devices https://www.	PJ.02-01-07 is a technological solution reducing the Wake Turbulence Risk via positioning of decay enhancing devices that accelerate the Wake Vortex Decay in Ground Proximity. Wake Vortex Decay Enhancing Devices, so-called		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	sesarju.eu/sesar-solutions/wake-decay-enhancing-devices	plate lines, can be installed at any major European airport in order to increase safety by reducing the risk of low-altitude wake encounters.				
PJ.02-03	Minimum-pair separations based on required surveillance performance (RSP) https://www.sesarju.eu/sesar-solutions/minimum-pair-separations-based-required-surveillance-performance-rsp	This solution has a technical aspect and an operational aspect. On the technical aspect, the solution has validated to V3 that the application of 2NM minimum radar separation (MRS) between two aircraft established on the final approach course to the same runway sufficiently mitigates the risk of collision between them, provided the required surveillance performance (RSP) are complied with. In addition to the MRS, runway occupancy time and wake separation constraints need to be considered when determining the minimum separation or spacing required to be applied between two aircraft (the largest of the constraints will need to be applied). The routine application of the 2NM minimum on final approach may require an increased consistency and accuracy in the separation delivery service on final approach. More specifically, the maximum acceptable rate of under-separated pairs on final approach may be lower if the minimum radar separation that is applied is 2NM than if it were to be 2.5 NM, because the consequences of an under-separation event are potentially more severe. For ATC facilities with a separation monitoring function (SMF) that		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
		alerts the supervisor, and also possibly the final approach controller, of a significant separation infringement on final approach, where there is currently a spacing minimum margin of 0.5 NM before the alert is triggered, consideration should be given to reducing this margin, e.g., to 0.2NM.				
PJ.02-08-01	Integrated Runway Sequence for full traffic Optimization on Single and Multiple Runway Airports https://www.sesarju.eu/sesar-solutions/integrated-runway-sequence-full-traffic-optimisation-single-and-multiple-runway	Trajectory based Integrated RWY Sequence function establishes an integrated arrival and departure sequence by providing accurate Target Take off Times (TTOTs) and Target Landing Times (TLDTs), including dynamic balancing of arrivals and departures while optimising the runway throughput. It supports TWR and APP ATCOs. The look ahead Time Horizon is the time at which flights become eligible for the integrated sequence. The Stable Sequence Time Horizon is the time horizon within which no automatic swapping of flights in the sequence will occur, but landing and departure time will still be updated. The value of these time horizons is determined by the local implementation and they are not necessarily the same for arrivals and departures. The Integrated Runway Sequence is planned before Arrival flights top of decent and linked with Airport CDM procedures for departures.		Not yet planned		
PJ.02-08-02	Optimised use of runway configuration	Runway Manager (RMAN), is a support tool for the Tower Supervisor to determine the optimal		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	for multiple runway airports https://www.sesarju.eu/sesar-solutions/optimised-use-runway-configuration-multiple-runway-airports	runway configuration and distribution of demand according to capacity and local constraints. During the Planning Phase, the RMAN checks the intentional demand versus the available capacity and it is capable of forecasting imbalances, raising alarms and alerts based on the indicators provided. In the Execution Phase, the RMAN monitors departure, arrival and overall delay and punctuality, in addition to the capacity shortage proposing changes if necessary. RMAN continuously computes the optimal runway configuration and the associated Forecasted Landing (FLDT) and Take Off (FTOT) Times of arrival and departures flights that maximises the runway throughput. The Forecasted Times calculated by the RMAN are provided to the Integrated Runway Sequence using them to calculate the final Target Times. As a conclusion TLDT and TTOT calculated by the Integrated Sequence, follow the Runway DCB Plan allowing the feedback to the RMAN to monitor the status of the Runway and to detect possible imbalances.				
PJ.03a-04	Enhanced visual operations https://www.sesarju.eu/sesar-solutions/enhanced-visual-	“Enhanced Visual Operations” are enabled by enhanced vision systems (EVS), synthetic vision systems (SVS), which make more aircraft capable of LVC operations and enable more efficient approach, landing and taxi and operations in LVC. This is applicable to all platforms, even if the main airline platforms		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	operations	have auto land capabilities to facilitate approaches in LVC. The solution consists of 3 activities focusing on:• HMD fitted with taxi routing and traffic information for easing taxi operation in degraded weather conditions.• HMD equipment as an alternative to HUD equipment for EFVS operations using legacy EFVS sensors.• Use of active sensor with improved performance to overcome the observed limitation of EVS legacy sensors. The Vision based System is an on board alternative solution to heavy and expensive ground infrastructures for approach in LVC.				
PJ.03b-05	Traffic alerts for pilots for airport operations https://www.sesarju.eu/sesar-solutions/traffic-alerts-pilots-airport-operations	Although TCAS has been in use since long time ago, there is currently no aircraft system to prevent runway collisions. “Traffic alerts for pilots for airport operations” improves safety during airport operations. The flight crew is provided with alert when the on-board system detects a risk of collision with an aircraft on runway or taxiways. The improvement is further split into 2 implementations:• The mainline aircraft implementation consists of an on-board system, which detects risk of collision with other traffic during runway operations and provides the Flight Crew with aural alerts (mostly ‘warning’ alert level). • The business aircraft implementation consists of an on-board system, which detects potential and actual risk of collision with other traffic during		Not yet planned		

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		runway and taxiway operations and provides the Flight Crew with visual and aural alerts (indication, caution and warning alert levels).				
PJ.15-02	E-AMAN Service https://www.sesarju.eu/sesar-solutions/e-aman-common-service	The E-AMAN Common Service provides functions necessary to operate Arrival Management with an extended horizon in an environment where multiple actors are involved e.g. multiple Airports, AMANs, ACCs, UACs and other interested parties, e.g. NM (i.e. Cross Boarder Arrival Management).The capability provided by the E-AMAN Federation Common Service is the capability of harmonising the output of local E-AMAN technical capabilities on different geographic or organisational levels (ECAC, FAB, however any other scaling could be considered in principle). The output of the Common Service is delivered to the end-users (e.g. adjacent ACCs / UACs). By this, relocation of functions between stakeholders is performed.		Not yet planned		
PJ.02-01-02	Optimised Separation Delivery for Departure https://www.sesarju.eu/sesar-solutions/optimised-separation-delivery-	“Optimised Separation Delivery for Departure” (OSD) is the ATC support to enable safe, consistent and efficient delivery of the required separation or spacing between departure pairs from the follower aircraft becoming airborne. Different variants of the tool have been developed in SESAR 2020 Wave 1. These variants include an automatic wake count down timer and a distance indicator displayed on the tower controller’s radar screen. The OSD tools		Not yet planned		Departure wake separations of RECAT-EU will be introduced simultaneously with the introduction for approaches, but there is no count down timer or a distance indicator for departures planned.

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	departure	can be used to support the tower controllers in the delivery of time or distance separations. This includes the departure wake separations of ICAO, RECAT-EU, PWS-D and WDS-D as well as departure route separations such as the SID separations and MDIs and ADIs. In airports that require support for both TB and DB separation and spacing rules a combined TBS / DBS variant of the OSD tool may be necessary.				
PJ.02-01-03	Weather-Dependent Reductions of Wake Turbulence Separations for Departures https://www.sesarju.eu/sesar-solutions/weather-dependent-reductions-wake-turbulence-separations-departures	Weather Dependent Separations (WDS) for departures is the conditional reduction or suspension of wake separation minima on path of departures over the straight-out initial departure path, applicable under pre-defined wind conditions, so as, to enable runway throughput increase compared to the applicable standard weather independent wake separation minima. This is on the basis that under the pre-defined wind conditions the wake turbulence generated by the lead aircraft is either wind transported out of the path of the follower aircraft on final approach or has decayed sufficiently to be acceptable to be encountered by the follower aircraft. The solution covers WDS cross wind concept for departures in segregated mode runway operations.		Not yet planned		
PJ.02-01-04	Wake Turbulence Separations (for Arrivals)	Static PairWise Separation for arrivals (S-PWS-A) is the efficient aircraft type pairwise wake separation rules for final approach consisting of		Not yet planned		

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	based on Static Aircraft Characteristics https://www.sesarju.eu/sesar-solutions/wake-turbulence-separations-arrivals-based-static-aircraft-characteristics	both the 96 x 96 aircraft type based wake separation minima (for the most common aircraft in ECAC area) and the twenty wake category (20-CAT) based wake separation minima for arrival pairs involving all the remaining aircraft types. The S-PWS are applied using a separation delivery tool; the pairwise separations will be used as input into the separation delivery tool.				
PJ.02-01-05	Weather-Dependent Reductions of Wake Turbulence Separations for Final Approach https://www.sesarju.eu/sesar-solutions/weather-dependent-reductions-wake-turbulence-separations-	"Weather-Dependent Reductions of Wake Turbulence Separations for Final Approach" aims at the optimisation of the ICAO wake turbulence separation by use of weather-dependent separation minima on arrivals (WDS-A), applicable under given wind conditions. This allows conditional reduction or suspension of separation minima for most aircraft pairs, enabling runway throughput increase compared to ICAO scheme, whilst maintaining acceptable levels of safety. This is on the basis that under the pre-defined wind conditions the wake turbulence generated by the lead aircraft is either wind transported out of the path of the follower aircraft on final approach or has decayed sufficiently to be acceptable to be encountered by the follower		Not yet planned		This is envisaged as a future improvement of the intelligent Approach tool that will be used at Schiphol for RECAT-EU and TBS.

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	final-approach	aircraft.				
PJ.25-01	Collaborative Decision Making (CDM) between airports, TMAs and ACCs for Overlapping AMANs https://www.sesarju.eu/sesar-solutions/collaborative-decision-making-cdm-between-airports-tmas-and-accs-overlapping-amans	The solution aims at balancing demand on XMAN Services with air traffic controller workload in order to make best use of the available ACC/UAC resources. The information regarding the demand/availability of the Arrival Manager (AMAN) service is shared, via a portal, between TMAs/airports and ACCs: with the advent of multiple Extended AMAN (E-AMAN) operations in the core area of Europe it will become necessary to coordinate these especially between ATS units and the E-AMAN units. The solution increases the situational awareness of what is going-on at various airports by providing information on the current arrival situation and provides a collaboration platform with multi-lateral communication mechanism for information sharing and decision making enabling the application of XMAN strategies. These XMAN strategies are defined and prepared per flow regarding sector airspace design, coordinated through a CDM process between all ATSUs involved and activated per flow and per period of time when required. The solution contributes to make a better use of available resources, reduce vectoring and holding and fuel consumption.		Not yet planned		
PJ.25-02	Target Time of Arrival	The solution optimises the Target Time of		Not yet planned		

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	(TTA) management for seamless integration of out-of-area arrival flights https://www.sesarju.eu/sesar-solutions/target-time-arrival-tta-management-seamless-integration-out-area-arrival-flights	Arrival (TTA) management at an airport to better integrate the out-of-area inbound flights. TTAs for long-haul flights departing from airports outside of the European Regulation Area are computed by the FMP at the arrival TMA relatively to the Estimated Times of Arrival provided by the FOC before departure, for the aircraft to adjust their take-off time. Once the aircraft is airborne, the FMP at the arrival TMA receives a new TTA though the FOC. If needed, a revised TTA is sent though the FOC to the aircraft for the aircraft to adjust their speed in flight. NM is in the loop all along this process, thereby ensuring that the network always has the most up-to-date information from long-haul flights: • Estimated Time Over (ETOs) received from long hauls outside IFPS zone are sent via B2B uplink channel to the NM to update ETFMS flight profiles; • Target Time Over (TTOs) are sent via B2B uplink channel to update ETFMS flight profiles and for NM to have full awareness of the airport targeted landing sequence; • Archive flight data from NM is retrieved via B2B downlink to establish a post-analysis treatment and presentation for statistics and analysis purposes				

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#10	Optimised route network using advanced RNP https://www.sesarju.eu/sesar-solutions/optimised-route-network-using-advanced-rnp	Based on Advanced-RNP navigation specification, design of optimised routes e.g. spaced parallel routes, Fixed Radius Transition (FRT) and Tactical Parallel Offset (TPO) further enhanced by onboard performance monitoring and alerting and the execution of more predictable aircraft behaviour		Not yet planned		
#118	Basic EAP (Extended ATC Planning) function https://www.sesarju.eu/sesar-solutions/basic-extended-atc-planning-beap	The basic Extended ATC Planner aims at bridging the gap between Air Traffic Flow and Capacity Management (ATFCM) and Air Traffic Control (ATC) providing real-time and fine-tuning measures to solve ATFCM hotspots, and to perform early measures to alleviate complexity closest to ATC activities. The solution consists of an automated tool and associated procedures supporting the basic communication between the Local DCB position and the Controllers' Work Positions allowing the EAP and the ATC team in identifying, assessing and resolving local complexity		Not yet planned		

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		situations. The basic EAP relies on a real time integrated process for managing the complexity of the traffic with capability to reduce traffic peaks through early implementation of fine-tuned solutions to solve workload imbalances at the local level, compatible with the short-term timeframe of execution phase of the flights.				
PJ.10-01a1	High Productivity Controller Team Organisation in En-Route (including eTMA) https://www.sesarju.eu/sesar-solutions/high-productivity-controller-team-organisation-en-route-including-etma	"High Productivity Controller Team Organisation in En-route (including eTMA)" consists of developing new concepts of operation and identifying the nature of system support required for operating in team structures that are not the usual Planner/Executive (1PC – 1EC) two-person ATC sector team. In particular, the Multi-Sector Planner (MSP) where a Planner Controller has responsibility for the airspace under the executive control of two independent Executive Controllers (1PC – 2ECs). The SESAR Solution "High Productivity Controller Team Organisation in En-route (including eTMA)" focused on the typical one Planner Controller to 2 Executive Controllers MSP organization and team organisation in eTMA (lower En-route sectors) as well as in En-route.		Not yet planned		

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TBO Trajectory -based operations						
#06	Controlled time of arrival (CTA) in medium-density/medium-complexity environments https://www.sesarju.eu/sesar-solutions/controlled-time-arrival-cta-medium-densitymedium-complexity-environment	The CTA (Controlled Time of Arrival) is an ATM imposed time constraint on a defined point associated with an arrival runway, using airborne capabilities to improve arrival management. When a time constraint is needed for a flight, the ground system may calculate a CTA as part of the arrival management process, and then it may be proposed to the flight for achievement by avionics within required accuracy. Airborne information may be used by the ground system in determining the CTA (e.g., ETA min/max) and in monitoring the implementation of the CTA.		Not yet planned		
#08	Arrival management into multiple airports https://www.sesarju.eu/sesar-solutions/arri	The system provides support to coordination of traffic flows into multiple airports to enable a smooth delivery to the runways. The 'Center Manager' (CMAN) which accompanies the AMANs of the airports generates a combined planning for several arrival streams into different airports by calculating the sequence of		Not yet planned		

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	val-management-multiple-airports	aircraft flying towards an area where their routes intersect. By imposing an adequate spacing of the aircraft in that area, a Time To Lose (TTL) for the appropriate upstream E-TMA sector is calculated to meet this constraint. Both AMAN-TTL for the runway and TTL for the E-TMA sector are superimposed and presented to the upstream En-route sector controllers.				
#100	ACAS Ground Monitoring and Presentation System https://www.sesarju.eu/index.php/sesar-solutions/acas-ground-monitoring-and-presentation-system	The ACAS provides resolution advisories (RAs) to pilots in order to avoid collisions. Controllers rely on pilots to report RAs by radio as they occur in accordance with ICAO regulations. However, these reports can come late, incomplete or are, absent in some instances. This solution consists of a set of monitoring stations and a server system, which enable the continuous monitoring and analysis of ACAS RAs and coordination messages between airborne units from the ground.		Not yet planned		
#101	Extended hybrid surveillance https://www.sesarju.eu/index.php/sesar-solutions/extended-hybrid-surveillance	This solution consists of an enhanced TCAS capability, adding passive surveillance methods and reducing the need for active Mode-S interrogations. By making fewer active interrogations, this solution allows the aircraft to significantly reduce the usage of the 1090 MHz frequency.		Not yet planned		
PJ.07-01-01	Reactive flight			Not yet planned		

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	delay criticality indicator (FDCI) https://www.sesarju.eu/sesar-solutions/reactive-flight-delay-criticality-indicator-fdci	The Flight Delay Criticality Indicator (FDCI) information, for a flight having an ATFCM delay, is provided by the Airspace User to both NM and FMPs to indicate that the concerned flight is critical for his business and that he requested that the flight progresses and arrives as much as possible on time. • The resolution of an FDCI request is NMOC driven upon the reception of the FDCI improvement request and when more than one regulation is affecting the flight, alternatively in the case there is only one regulation affecting the flight the local FMP can requests the resolution to NMOC. • The resolution is mostly a regulation exclusion or delay reduction (force slot) by NMOC. In this, the focus is put on reactive FDCI that means the FDC flight has an ATFCM delay and slot issued.				
PJ.10-02a1	Improved performance in the provision of separation without use of ADS-C/p data https://www.sesarju.eu/sesar-solutions/improved-performance-provision-	Integrated tactical and medium conflict detection & resolution (CD&R) services and conformance monitoring tools for En-Route and TMA aims at improving the separation (tactical layer) in the En-Route and TMA (but not APP) operational environments through improved ground trajectory prediction. This is achieved using existing information on lateral and vertical clearances that are known by the ground system and airborne information such as Mode S data. This solution is built on SESAR 1 Sol. #27. New features and enhancement brought by PJ10.02a1 are : • Extension of TCT to all environments :		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	separation-without-use-ads-cepp-data	TMA & ER • Improvement of the MTCD to handle level segments • Enhanced resolution features for MTCD & TCT including what-if and what-else probes. • Conformance monitoring tool, based on improved ground trajectory prediction and enriched with additional alerts, such as rate monitoring.				
#115	Extended Projected Profile (EPP) availability on ground https://www.sesarju.eu/sesar-solutions/extended-projected-profile-epp-availability-ground	Trajectory management is a key cornerstone of the ATM system. The better the trajectory prediction is, the better the whole ATM system will be. Nowadays there are multiple trajectory predictions held and maintained by air and ground actors. They take into account different parameters (e.g., aircraft model, route/restrictions, operating preferences & weather forecast) leading to inconsistencies and different accuracy levels depending on flight phases. These inconsistencies lead to an inefficient ATM system as a whole. 'EPP availability on ground' technological solution is a first step towards a full ground-air trajectory synchronization required for the implementation of the targeted Trajectory based operations. It allows the provision to the ground systems of the aircraft view on the planned route and applicable restrictions known to the airborne system, together with the corresponding optimal planned trajectory computed on-board and speed preferences,. This information is automatically downlinked		Planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
		from the airborne Flight Management System via ADS-C data link to the ground ATC unit which has subscribed to the needed service contract (e.g., Extended Projected Profile & Speed Schedule Profile contracts) and made available to the controllers.				
PJ.18-06b1	NM Profile Improvement using ADS-C https://www.sesarju.eu/sesar-solutions/tactical-and-nm-trajectory-performance-improvement	ATFCM and early ATC planning rely on the trajectory computed by the NM systems. In order to get to the best possible trajectory, the NM fuses data from different sources: e.g., correlated radar data or ATC system computed trajectories at activation. The airborne trajectory is considered as being another important information to use in order to further improve the trajectory. This solution studies the possible improvements brought by the ADS-C report data elements in order to improve the NM profiles.				

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
						
PJ.05-02	Multiple			Not yet planned		Planned step after

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	remote tower module https://www.sesarju.eu/sesar-solutions/multiple-remote-tower-module	The main driver for MRTM (multiple remote tower module) is increased cost efficiency. The objective is to implement a MRTM that allows the ATCO to maintain situational awareness for 2 or 3 airports simultaneously (including traffic mix of IFR and VFR, as well as aerodrome vehicles). MRTM requires advanced features of the visual reproduction as well as additional voice services. It is assumed that an ATCO can hold endorsements for up to 3 (single) different airports. There is a fixed allocation of airports to a set of MRTMs. However, in case of high workload, due to e.g., emergency, high traffic volumes or degraded mode, the ATCO can split one airport into a spare MRTM if required. The prerequisite for multiple remote tower operations is the single remote tower operations.				introduction of single remote towers for Groningen (EHGG) and Maastricht (EHBK) Airports.
PJ.16-03	Enabling rationalisation of infrastructure using virtual centre based technology https://www.sesarju.eu/index.php/sesar-solutions/enabling-rationalisation-	This solution enables the separation of the data centre where the data is produced (the ATM Data Service Provider - ADSP) from the ATCOs location (the Virtual Centre ATSU). Virtual Centre is a grouping of Air Traffic Service Units (ATSU), possibly geographically separated, sharing ATC operations amongst themselves using data services provided by one or more ADSPs through interfaces defined in Service Level Agreements, in a safe and secure manner. This decoupling delivers the flexibility and performance aspects of the services to ensure the ability of the virtual centre solution to at		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	infrastructure-using-virtual-centre-based-technology	least support or to improve the operational performance.				
PJ.10-W2-96 UPMS	User Profile Management System https://www.sesarju.eu/sesar-solutions/user-profile-management-system	The objective is to ensure a complete and instant personalization of work stations according to ATCOs' individual operational needs, requirements and preferences so that, for instance, ATCOs will be prevented from accidentally overlooking potential misalignments of key functionalities or tools. Additionally, the UPMS shall also eliminate the currently existing risk of distraction of ATCOs' attention from operational situation due to the need for customisation. The concept consists of two main packages: the 'Identification (authentication) system' and 'UPMS configuration system.		Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
M3 Multimodal mobility and integration of all airspace users						
PJ.02-05	Independent rotorcraft			Not yet planned		

SESAR Solution Code	SESAR Solution Title(hyper link)	Solution Description	Location	Status	(Planned) Date of implementation	Comment
	operations at the airports https://www.sesarju.eu/sesar-solutions/independent-rotorcraft-operations-airports	This solution refers to simultaneous and non-interfering operations through SBAS (and GBAS as an optional enabler) approach/departure procedures independent from the main runway and dedicated only to rotorcraft operations. The aim is to move rotorcraft operations from the active runway to facilitate fixed wing aircraft. Specific PBN RNP0.3 IFR procedures to/from an existing VFR FATO shall be deployed to reach a point-in-space (PinS) to access FATO. The solution targets, in particular, relatively large and very large airports and high complexity airspaces.				
PJ.01-06	Enhanced rotorcraft operations in the TMA https://www.sesarju.eu/sesar-solutions/enhanced-rotorcraft-operations-tma	"Enhanced Rotorcraft operations in the TMA" integrate pilot support of both EVS (enhanced vision systems) including visual segments and automated flight path following by autopilot system. Advanced Point-In-Space RNP approaches and departures to/from FATO are based on SBAS navigation. The corresponding rotorcraft specific contingency procedures in case of loss of communication are defined. The pilot is supported during these operations by dedicated symbology presented on a Head Mounted Display system.		Not yet planned		

E. Surveillance (SUR) Questionnaire

European ATM Surveillance data are captured to enable Network performance improvements and ensure global interoperability.
This Annex includes Surveillance implementation information related to projects, sensors and data integration. The data is used to provide a consolidated view of the Surveillance evolution in Europe, at local and Network level. It supports the application of best practices enabling the modernisation and optimisation of the Surveillance infrastructure.
The objective for the inclusion of this information in LSSIP is to consolidate the data collection process and increase efficiency by avoiding parallel survey.

Surveillance Projects

This section includes Surveillance system projects covering the full chain from Sensor to Surveillance data integration into SDPS and CWP.

Activity Description **Area / Airspace**	**System Description** (for new system, replacement/upgrade or decommissioning)	**Expected contribution to the Key Performance Areas**	**Schedule**
Area/Name: North Sea **Activity type:** Replacement/upgrade **Relationship with other projects:** **Will these projects lead to the decommissioning of legacy sensors (how many):** **Objective:** Coverage **Airspace**: Class-G (ADS-B: GND-FL30) **Service**: FIS	**Type:** WAM with ADS-B capabilities **Number of sites**: Rx: 28, Rx/Tx: 8 **Provider**: Saab (Era) **Coverage:** ADS-B: GND-FL30	**Capacity:** **Operational-Efficiency:** **Safety:** **Security:** **Environment:** **RF/Spectrum:** **Cost-Efficiency:**	**Sensor installation date:** 2010 **Operational date:** 2016 **ADS-B operational integration date (ATCO CWP) where applicable:** 2016 **Estimated End of Life: The various system components have different LifeCycle times. E.g. Remote Units on the platforms and antenna's will be replaced in 2024/2025 while the central cores have already been replaced.**
ANSP: LVNL			

Activity Description Area / Airspace	System Description (for new system, replacement/upgrade or decommissioning)	Expected contribution to the Key Performance Areas	Schedule
Area/Name: MLT Schiphol **Activity type:** Replacement/upgrade **Relationship with other projects:** **Will these projects lead to the decommissioning of legacy sensors (how many):** **Objective:** Coverage, ground control and A-CDM **Airspace**: Schiphol airport **Service**: TWR	**Type:** MLAT with ADS-B capabilities **Number of sites**: Rx: 29, Rx/Tx: 6 (2022) **Provider**: SaabSensis **Coverage:** Schiphol airport surface	**Capacity:** **Operational-Efficiency:** **Safety:** **Security:** **Environment:** **RF/Spectrum:** **Cost-Efficiency:**	**Sensor installation date:** 2002 **Operational date:** 2003 **ADS-B operational integration date (ATCO CWP) where applicable:** 2005, vehicles only. **Estimated End of Life: The various system components have different LifeCycle periods. The Remote Units are replaced in 2022 while the network equipment and core units have been replaced already.**
ANSP: LVNL			

Activity Description Area / Airspace	System Description (for new system, replacement/upgrade or decommissioning)	Expected contribution to the Key Performance Areas	Schedule
Area/Name: Area WAM Schiphol (SPL) TMA, Project WAM-NL **Activity type:** New system **Relationship with other projects:** New WAM system related to decommissioning of TAR1 radar **Will these projects lead to the decommissioning of legacy sensors (how many):** **Objective:** Coverage **Airspace**: CTR/TMA **Service**: APP	**Type:** WAM with ADS-B capabilities **Number of sites**: Rx: 8, Rx/Tx: 3 **Provider**: Frequentis / Comsoft **Coverage:** Schiphol CTR and TMA's	**Capacity:** **Operational-Efficiency:** **Safety:** **Security:** **Environment:** **RF/Spectrum:** **Cost-Efficiency:**	**Sensor installation date:** 2021/2022 **Operational date:** 2023 **ADS-B operational integration date (ATCO CWP) where applicable:** 2025 **Estimated End of Life: The various system components have different LifeCycle periods. For the remote units, antenna's and network infrastructure we asses 15 years, for core (CPU) units we expect 5 – 6 years**
ANSP: LVNL			

Activity Description Area / Airspace	System Description (for new system, replacement/upgrade or decommissioning)	Expected contribution to the Key Performance Areas	Schedule
Area/Name: TAR Eelde **Activity type:** Decommissioning **Relationship with other projects:** Project WAM-NL **Will these projects lead to the decommissioning of legacy sensors (how many):** **Objective:** Decommissioning **Airspace**: CTR/TMA Eelde **Service**: TWR/APP Eelde	**Type:** Mode A/C radar **Number of sites**: 1 **Provider**: Crossair **Coverage:** CTR/TMA Eelde	**Capacity:** **Operational-Efficiency:** **Safety:** **Security:** **Environment:** **RF/Spectrum:** **Cost-Efficiency:**	**Sensor installation date:** 1997 **Operational date:** 1998 **ADS-B operational integration date (ATCO CWP) where applicable:** **Estimated End of Life:** **Decommissioning end 2023**
ANSP: LVNL			

Activity Description Area / Airspace	System Description (for new system, replacement/upgrade or decommissioning)	Expected contribution to the Key Performance Areas	Schedule
Area/Name: Area WAM Eelde TMA. Project WAM-NL **Activity type:** New system **Relationship with other projects:** New WAM system related to decommissioning of TAR Eelde 1 radar **Will these projects lead to the decommissioning of legacy sensors (how many):** **Objective:** Coverage **Airspace**: CTR/TMA Eelde **Service**: CTR/APP Eelde	**Type:** WAM with ADS-B capabilities **Number of sites**: Rx: 5, Rx/Tx: 2 **Provider**: Frequentis/ Comsoft **Coverage:** Eelde CTR and TMA	**Capacity:** **Operational-Efficiency:** **Safety:** **Security:** **Environment:** **RF/Spectrum:** **Cost-Efficiency:**	**Sensor installation date:** 2021/2022 **Operational date:** November 2023 **ADS-B operational integration date (ATCO CWP) where applicable:** 2025 **Estimated End of Life: The various system components have different LifeCycle periods. For the remote units, antenna's and network infrastructure we asses 15 years, for core (CPU) units we expect 5 – 6 years**
ANSP: LVNL			

Activity Description Area / Airspace	System Description (for new system, replacement/upgrade or decommissioning)	Expected contribution to the Key Performance Areas	Schedule
Area/Name: TAR1 **Activity type:** Decommissioning **Relationship with other projects:** Project WAM-NL **Will these projects lead to the decommissioning of legacy sensors (how many):** **Objective:** Decommissioning **Airspace**: CTR/TMA/ENR **Service**: APP/ENR	**Type:** Mode S radar **Number of sites**: 1 **Provider**: Raytheon **Coverage:** Schiphol TMA and ENR	**Capacity:** **Operational-Efficiency:** **Safety:** **Security:** **Environment:** **RF/Spectrum:** **Cost-Efficiency:**	**Sensor installation date:** 2003 **Operational date:** 2004 **ADS-B operational integration date (ATCO CWP) where applicable:** **Estimated End of Life: Decommissioning end 2023**
ANSP: LVNL			

Surveillance sensors (just numbers, no technical/ops details)

This section summarises the number of Surveillance sensors per state. This covers all current and planned sensors intended for operational use.

Sensor Type		2022	2023	2024	2025	2026	2027
Mode A/C	ENR/TMA	1	1				
Mode A/C	ENR only						

Sensor Type		2022	2023	2024	2025	2026	2027
Mode A/C	TMA only	1					
CMB PSR Mode A/C	ENR/TMA						
CMB PSR Mode A/C	ENR only						
CMB PSR Mode A/C	TMA only						
Mode S	ENR/TMA	1	1				
Mode S	ENR only						
Mode S	TMA only	1					
CMB PSR Mode S	ENR/TMA	1 (+5 Military)	1 (+6 Military)	1 (+6 Military)	1 (+6 Military)	1 (+6 Military)	1 (+6 Military)
CMB PSR Mode S	ENR only						
CMB PSR Mode S	TMA only						
PSR stand alone	ENR/TMA						
PSR stand alone	ENR only			1 Militairy	1 Militairy	1 Militairy	1 Militairy
PSR stand alone	TMA only						
WAM	Systems/Clusters	1	2	2	2	2	2
WAM	Sensors (Rx, Tx, Rx/Tx)	36	55	56	61	61	61
ADS-B receivers (not part of MLAT/WAM)							
Space-based ADS-B							
Surface Movement Radar (SMR)		2	2	2	2	2	2
Airport MLAT	Systems/Clusters	1	1	1	1	1	1
Airport MLAT	Sensors (Rx, Tx, Rx/Tx)	29	30	35	35	35	35

Sensor Type		2022	2023	2024	2025	2026	2027
ADS-B equipped Vehicles		350-400	350-400	350-400	350-400	350-400	350-400
ANSP: LVNL							

Surveillance Data Use

This section provides and overview of the use of Surveillance data. This includes usage of Downlinked Aircraft derived Parameters (DAP) / Aircraft Derived Data (ADD) and ADS-B data.

ADD/DAP data usage

ADD/DAP data item	Usage of DAP/ADD			
	Indicate if and how the data is used by ATCOs: - not used - Displayed for information - Part of operational procedure - Other (please indicate) **Indicate Initial operational date or planned ops date** **Indicate source(s) (Mode S, ADS-B, WAM)**	**Indicate if and how the data is used by TOOLS:** - Please indicate tools and status per tool (e.g. operational, evaluation, other) **Indicate Initial operational date or planned ops date** **Indicate source(s) (Mode S, ADS-B, WAM)**	**Indicate if and how the data is used by the Tracker:** - Operational usage - Evaluation - Other **Indicate Initial operational date or planned ops date** **Indicate source(s) (Mode S, ADS-B, WAM)**	**Other**
Selected Altitude	Displayed for information Source ModeS & WAM		Operational usage in FDP, distribution by SDPS	
Barometric pressure setting	Displayed for information Source ModeS & WAM		Operational usage in FDP, distribution by SDPS	

ADD/DAP data item	Usage of DAP/ADD			
	Indicate if and how the data is used by ATCOs: - not used - Displayed for information - Part of operational procedure - Other (please indicate) **Indicate Initial operational date or planned ops date** **Indicate source(s) (Mode S, ADS-B, WAM)**	**Indicate if and how the data is used by TOOLS:** - Please indicate tools and status per tool (e.g. operational, evaluation, other) **Indicate Initial operational date or planned ops date** **Indicate source(s) (Mode S, ADS-B, WAM)**	**Indicate if and how the data is used by the Tracker:** - Operational usage - Evaluation - Other **Indicate Initial operational date or planned ops date** **Indicate source(s) (Mode S, ADS-B, WAM)**	**Other**
Roll angle	Not used		Not applicable	
True track angle	Other, Source Mode S		Not applicable	On behalf of KNMI wind information calculations
Ground speed	Other, Source Mode S		Not applicable	On behalf of KNMI wind information calculations
Track angle rate	Not used		Not applicable	
Magnetic heading	Other, Source Mode S		Not applicable	On behalf of KNMI wind information calculations
Indicated airspeed	Displayed for information Source Mode S & WAM		Operational usage in FDP, distribution by SDPS	Offline usage for ASAP (AMAN) adaptation tuning purposes
Mach No	Other, Source Mode S & WAM		Not applicable	Offline usage for ASAP (AMAN) adaptation tuning purposes
Vertical rate (Baro, Inertial)	Displayed for information Source Mode S & WAM		Operational usage in FDP, distribution by SDPS	
True Airspeed	Source Mode S & WAM		Not applicable	Offline usage for ASAP (AMAN) adaptation tuning purposes, also on behalf of KNMI wind

ADD/DAP data item	Usage of DAP/ADD			
	Indicate if and how the data is used by ATCOs: - not used - Displayed for information - Part of operational procedure - Other (please indicate) **Indicate Initial operational date or planned ops date** **Indicate source(s) (Mode S, ADS-B, WAM)**	**Indicate if and how the data is used by TOOLS:** - Please indicate tools and status per tool (e.g. operational, evaluation, other) **Indicate Initial operational date or planned ops date** **Indicate source(s) (Mode S, ADS-B, WAM)**	**Indicate if and how the data is used by the Tracker:** - Operational usage - Evaluation - Other **Indicate Initial operational date or planned ops date** **Indicate source(s) (Mode S, ADS-B, WAM)**	**Other**
				information calculations
Other data items	Not applicable		Not applicable	
ANSP: LVNL				

ADS-B integration

ADS-B use case and integration date	Operational or planned ops date	Sites
ACC ATC integration ENR	2026	ACC
ACC ATC integration TMA	Not planned	
ATC integration TWR CTR/TMA	Not planned	
Flight Information Service	Operational	Helicopter operations below 3000ft
ATCO Traffic Awareness	Not planned	
Traffic planning e.g. Arrival Manager	2025, 2026	Schiphol APP
Conflict Alerting, e.g. STCA	Not planned	
Airport surveillance e.g. Traffic awareness, Target identification support	Operational	Vehicles on Schiphol airport
Other:	Not planned	
ANSP: LVNL		

F. EAPAIRR and GAPPRE Questionnaire

- **European Action Plan for Airspace Infringement Risk Reduction**

This section aims at gathering data/information in order to monitor, and therefore try reducing the risk of mid-air collision caused by infringement. Tackling airspace infringements is a high priority for many European ANSPs, based on the data from the ECR (European Central Repository for Aviation accident and Incident Reports), and retrieved by EASA.

EAPAIRR Recommendation Code	EAPAIRR recommendation	Recommendation Description	Location	Status	(Planned) Date of implementation	Comment
Airspace Design (AD)						
AD1	The design principles should encompass the safety, environmental and operational criteria, and the strategic policy objectives that the change sponsor seeks to achieve in developing the airspace change proposal.	Design principles must be set through a two-way process and involve effective engagement. The change proposal should include the maintenance of a high level of safety and avoid overflying densely populated areas where possible. The proposal should also include other design principles that reflect local considerations or impacts on other airspace users so that they are considered as part of the design process. The development of these design principles can be undertaken by the change sponsor without additional engagement. All design options will need to demonstrate how they meet (or don't meet) the design principles. The design principles should consider U-Space and UAS operations.	LVNL	Completed		This is the way route and airspace design is done within the Dutch Airspace Redesign Programme (DARP).
AD2	Any change must be transparent and involve stakeholder engagement throughout the entire process.	Those potentially affected by a change in airspace design should feel confident that their voice has a formal place in the process if trust is not to be eroded. Openness also allows change sponsors to see more clearly what is expected from them. The change should include assessing the impact of airspace	LVNL	Ongoing		This is the approach that is taken within the Dutch Airspace Redesign Programme

EAPAIRR Recommendation Code	EAPAIRR recommendation	Recommendation Description	Location	Status	(Planned) Date of implementation	Comment
		changes on certified navigation systems and apps.				(DARP)
AD3	Maintain and enhance safety by design	States should perform an assessment of the impact of airspace complexity on the workload for all affected airspace users and publish the results of an agreed objective measurement either for each airspace change or at regular intervals.	LVNL	Completed		This is the basis for every change within DARP.
AD4	Where possible, design airspace boundaries with ground features that are not susceptible to significant change, and do not delimit airspace by national borders	Features such as roads, railways and major topographical features aid navigation and situational awareness. This is less true of towns, cities, and industrial parks as they grow with economic expansion.	LVNL	Not Applicable		This is valid for VFR routes. Within DARP, IFR routes are developed that are not limited by ground features.
AD5	Where new airspace is established provision should be made for ATS outside of controlled airspace to facilitate airspace infringement prevention. See also recommendation ANSP8	ATS should provide airspace infringement warning and navigational assistance.	LVNL	Completed		Depending on Airspace Classification this provided or not.
AD6	The design should be as simple as possible to avoid confusion or pilot overload in interpreting the airspace.	Complex airspace with multiple CTAs or differing levels and complex shapes are inherent airspace infringement hot spots. The design should consider adjacent controlled airspaces to avoid creating narrow corridors that increase funnelling and risk of airspace infringement and mid-air collision.	LVNL	Completed		This is the way route and airspace design which is done within the Dutch Airspace Redesign Programme (DARP) Complexity is avoided as much

EAPAIRR Recommendation Code	EAPAIRR recommendation	Recommendation Description	Location	Status	(Planned) Date of implementation	Comment
						as possible.
AD7	Base levels of CTA should be as high as possible to allow containment of SIDs and STARs but also elevate lower limits of TMAs where possible.	Enable the retention of as much uncontrolled airspace as possible.	LVNL	Completed		This is the way route and airspace design which is done within the Dutch Airspace Redesign Programme (DARP) The result is also depending on all other design principles and requirements that have to be fulfilled.
AD8	National authorities should play the leading role in establishing and promoting local implementation priorities and actions in consultation with airspace users and service provider organisations.	While airspace infringement is an important operational risk across much of Europe, the nature and scale of the problem varies between States. There are several key factors which will shape the local airspace infringement risk reduction strategies. These will determine the most appropriate and effective actions to be taken by individual States. These are: the complexity of the airspace structure; the scale of military flying activity; the scale and maturity of both commercial and general aviation sectors; the scope and nature of air traffic service provision; and the State's regulatory and legislative frameworks. Therefore, the number of Action Plan recommendations that can be implemented is likely to vary from State to State.	LVNL	Completed		LVNL is chair and participates proactive in the National Airspace Infringements Taskforce. Military, GA community and national regulator is also participating in this taskforce.
AD9	Review the controlled airspace structure and simplify boundaries where possible.	A safety assessment must be made for all changes at the functional system level with regard to the Airspace Structure. This action is particularly relevant to areas of dense VFR traffic. It should aim to simplify, where possible, the numerous boundary level changes of TMAs and CTRs that can contribute to vertical navigation error. It should also aim	LVNL	Ongoing		That is an ongoing part of the LVNL Change process.

EAPAIRR Recommendation Code	EAPAIRR recommendation	Recommendation Description	Location	Status	(Planned) Date of implementation	Comment
		to ensure the protection of the IFR traffic established on the extended runway centreline and within 15 NM from the runway threshold from nearby uncontrolled VFR traffic. This would reduce the number of operationally unnecessary RAs generated by TCAS. Alignment of the <FL195 airspace structure, boundaries and of ATS routes for VFR flights (hereinafter referred to VFR routes) with prominent ground features and landmarks should be sought to make them more easily identifiable by pilots during flights. The review should be informed by identification of hot spots based on the analysis of incident reports (e.g. airspace infringements) or other appropriate methods. Automated tools may also be used to plot actual flight tracks in a particular area onto the existing airspace structures in order to identify potential inconsistencies in the design of protected (controlled) airspaces. Such methods will also facilitate the identification of under-utilised portions of controlled or restricted airspaces that may be released for use by GA VFR flights. This action concerns ANSPs that have been delegated the responsibility of developing and implementing changes to the airspace organisation subject to the approval of the National authorities.				
AD10	Harmonise airspace classification below FL195 in line with the strategic airspace design principles.	An appropriate strategic design of the airspace is crucial in permitting the ATM System to provide the right services, at the right time and in the right places decreasing routine tasks and the requirement for tactical intervention. Harmonisation of airspace classification below FL195 should be based on the ICAO-defined airspace classes. It should aim for the establishment of common vertical limits, as far as practicable. It should also include harmonised application of associated rules, procedures, and air traffic services. It is highly recommended deploying airspace structures that provide a greater degree of strategic de-confliction with particular consideration of cross-border operations. The EUROCONTROL Agency should support and facilitate the harmonisation efforts of the Member States within the framework of the existing EATM working arrangements	LVNL	Ongoing		

EAPAIRR Recommendation Code	EAPAIRR recommendation	Recommendation Description	Location	Status	(Planned) Date of implementation	Comment
		(NETOPS and sub-groups) providing the required expertise, and in line with the approved Strategic Guidance in support of the execution of the European ATM Master Plan and SES regulations.				
AD11	Eliminate class A from TMAs and airspace below FL195 wherever and whenever possible.	This increases the availability of airspace for General Aviation while providing a more tailored approach to retaining the necessary controlled airspace for commercial flights to operate.	LVNL	Not Applicable		Not yet applicable. Elimination of class A in itself is not a goal of the DARP. The airspace classification will be determined based on all relevant factors.
AD12	Resize CTRs and TMAs on a case-by-case basis, especially at lower levels.	This increases the availability of airspace for General Aviation while providing a more tailored approach to retaining the necessary controlled airspace for commercial flights to operate.	LVNL	Planned		Is part of Dutch Airspace Redesign Programme (DARP)
AD13	Create VFR routes in the CTRs if they are deemed beneficial in accordance with the needs of all stakeholders in this area.	This may lead to a more predictable traffic behaviour for both pilots and controllers, with routes between easily identifiable points.	LVNL	Completed		VFR routes are available in all LVNL controlled CTR's.
AD14	Resize special activities airspace to limit them to the minimum required and restrict their activation to what is strictly necessary.	This increases the availability of airspace for General Aviation and reduces the frequency of 'technical' airspace infringements, i.e., those 'infringements' where the airspace is notified as restricted but eventually no activity is taking place in it. This concerns: Prohibited, Restricted and Danger Areas Military Exercise Area, Military Training Area, Air Defence	LVNL	Planned		This needs to be mostly done by the Military. Is a subject that is part of the Dutch Airspace Redesign

EAPAIRR Recommendation Code	EAPAIRR recommendation	Recommendation Description	Location	Status	(Planned) Date of implementation	Comment
	Eliminate those areas/zones that are no longer needed.	Identification Zone (ADIZ), Cross-Border Area (CBA), Temporary Reserved Area (TRA), Temporary Segregated Area (TSA) Flight plan Buffer Zone (FBZ)				Programme (DARP)
ANSPs						
ANSP1	Ensure ATCO and FISO communication skills and discipline is included in FIS training and licensing/certification. See also recommendation AU8	This action reinforces the objectives and provisions of the Action Plan for Air Ground Communications, focusing on the aspects that are of particular importance in the communication exchange between ATS units and VFR flights. ATS staff should be trained to: Strictly apply the readback/hearback procedure; Actively seek confirmation in case of doubt; Use unambiguous call-signs - full call-sign or call-sign coupled with type of aircraft; Use published reference points in ATS messages to pilots as far as possible; Use simple ATC clearances and instructions; Use more concise transmissions, if necessary broken into shorter segments; Use reduced rate of speech and better articulation when talking to VFR pilots; Issue pre-warning of instructions to be passed; Provide FIS in English language; Acquire adequate knowledge of and apply communication failure procedures as required. Improve and harmonise FISO training curriculum. The training curriculum should be improved to adequately match the level of service to be provided. FIC staff should receive dedicated training to improve their awareness and understanding of VFR flights' needs, specificities, and light aircraft performances. Best practices already exist (e.g., in Germany) to deliver emergency situation training to FIC staff and VFR pilots in a coordinated manner. A sufficient number of FIC staff should be made available to support the provision of enhanced FIS. A number of ATS providers have already implemented dedicated training programmes for staff that become redundant or underutilised due to the increasing automation of ATS provision (e.g.,	LVNL	Completed		In our ATCO and FISO training these items are all covered.

EAPAIRR Recommendation Code	EAPAIRR recommendation	Recommendation Description	Location	Status	(Planned) Date of implementation	Comment
		implementation of OLDI). See also 6.20 and 6.23 above. Add familiarization basic training for: ATCO and FISO in training meetings; for Pilots at ATC/FIS Centres.				
ANSP2	Implement a properly tuned Area Proximity Warning function.	The objective is to implement an automated safety net function that should systematically alert controllers of airspace infringements, i.e., of unauthorised entries into controlled and restricted airspaces. Implementation decision should be based on positive cost-benefit-analysis and safety assessment. Area Proximity Warning (APW) is a ground-based safety net intended to warn the controller of unauthorised penetration into an airspace volume by generating, in a timely manner, an alert of a potential or actual infringement. Use APW Safety net data to highlight “hotspots” where potential or actual airspace infringements have occurred. This can in turn be used to focus work on airspace infringement causes and mitigations This can also be used for the investigation of the causes of the potential airspace infringements and later for the mitigations. It is recommended that a survey is undertaken to determine the relevant implementation of this function and its effectiveness.	LVNL	Completed		APW-function implemented for alerts on infringement of non transgression zone area’s between parallel runways of Amsterdam Airport.
ANSP3	Establish a platform to discuss procedures, incidents and hotspots between aerodromes, local ATS units and flying clubs. See also recommendation AU7.	This action aims to establish standard coordination procedures between closely located ATS units, military, and user sites. The implementation of such procedures will reduce the volume of routine coordination, and thus controller and pilot workload. The FUA concept implementation work should also take account of the specific needs of the GA VFR flights with regard to the timely dissemination of information about the activation/deactivation of reserved airspaces (including those for glider activity). Implementation of (direct) communication lines or means between local ATS units, military units and GA airports/airfields should be considered in this respect. The implementation of the above referred coordination procedures, which would enhance the FUA procedures in <FL195 airspace at local level, should be	LVNL	Completed		LVNL actively participates in the Schiphol and Rotterdam Runway Safety teams and in the Lelystad safety team. Regional airports Groningen and Maastricht have similar arrangements. LVNL is also

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		preceded by careful safety assessment Establish Local Airspace Infringement Teams (LAITs) to be run by the airspace owner. Participants should be included from ANSP's, airspace users (GA, CA and MA), local airports and regulators. Provide more general information on hotspots and ways of communication.				active in the national Airspace Infringement Task Force.
ANSP4	The ANSP & Regulator should establish a procedure to provide feedback on individual incidents to the 'Airspace Infringer'.	Set up a process to allow direct access to individual pilots to acquire the relevant information immediately after an incident. Be aware that information provided «right after an incident» may not be sufficiently considered. It is useful to have information as soon as possible in order to avoid repeated mistakes if the infringer continues operating. However, all parties should assess whether the completeness of the available information might risk cancelling out the advantages brought by immediate access to the pilot. This direct process should respect Just Culture principles to avoid any negative consequences e.g., TXPD off. Anonymous ways of providing the relevant safety information could be considered.	LVNL	Completed		
ANSP5	Enhance and harmonise FIS provision to VFR flights	Harmonisation of FIS provided to VFR flights should be based on European IRs/AMCs/GMs, ICAO SARPs and existing best practices. Examples of best practices are thus the Low Airspace Radar Service provided in UK airspace and the radar information services provided in German airspace. Radar-derived information available at ATS units should be used to enhance the information passed to pilots. It should include, as appropriate, navigational assistance, coordination of controlled airspace entry/crossing clearance, passing traffic information and information about restricted airspace activation/deactivation and concerned traffic, as well as provision of other aeronautical information and information about potentially hazardous conditions. The service could include provision of warnings to pilots of any unfavourable factors including airspace infringement and traffic warnings. FIS "level" could be raised to enable proactive prevention of potential conflict situations. The	LVNL	Ongoing		

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		scope of this action should include the harmonisation of services provided by civil and military FIS provider organisations. Provision of FIS across Europe is not consistent. There are good reasons for different levels of service provision under FIS. Level of service is a decision that rests with the state. As long as the service meets the minimum required by the state then the state is deemed compliant. At the moment there are no ongoing initiatives to harmonise FIS at the European level. EASA is waiting for the implementation of Part ATS and will review this later to see if any further action is needed. The principles and fundamentals of provision of FIS are established in Commission Implementing Regulation No. 923/2012. The upcoming PART-ATS which will be included in Commission Implementing Regulation 2017/373, will further detail the specific technical requirements for FIS and provide harmonization to the suitable extent. Based on the implementation feedback, consideration for further refinement of existing FIS provision could be undertaken.				
ANSP6	Review the controlled airspace structure and simplify boundaries where possible	This action is particularly relevant to areas of dense VFR traffic. It should aim to simplify, where possible, the numerous boundary level changes of TMAs and CTRs that can contribute to vertical navigation error. It should also aim to ensure the reliable protection of the IFR traffic established on the extended runway centreline and within 15 NM from the runway threshold from the nearby VFR traffic. This would reduce the number of operationally unnecessary RAs generated by TCAS. Alignment of <FL195 airspace structure boundaries and of VFR routes (corridors) with prominent ground features and landmarks should be sought to make them more easily identifiable by pilots during flights. The review should be informed by identification of hot spots based on the analysis of incident reports (e.g. airspace infringements) or other appropriate methods. Automated tools may also be used to plot actual flight tracks in a particular area onto the existing airspace	LVNL	Ongoing		Also done for reducing complexity.

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		structures in order to identify potential inconsistencies in the design of protected (controlled) airspaces. Such methods will also facilitate the identification of underutilised portions of controlled or restricted airspaces that may be released for use by GA VFR flights. This action concerns ANSPs that have been delegated the responsibility of developing and implementing changes to the airspace organisation subject to the approval of the National authorities. Introduce, where necessary, standard VFR entry, exit and crossing procedures and/or routes in busy controlled airspaces. Meet with relevant stakeholders for review of proposals, e.g., Airlines, ANSP's, GA, etc. Add the promotion of implementing VFR routes/corridors in controlled airspace – if they are deemed beneficial – where simplification is not possible.				
ANSP7	Facilitate the exchange of information and operational experience between ATCOs/FISOs and pilots at local level.	"Open doors days" at ATS units and familiarisation visits by ATS staff to flying clubs and military sites should improve the understanding of each other's operational needs, capabilities, and concerns. ATS staff will improve their awareness of single-pilot aircraft operation (pilot workload, limits, priorities, etc.) and mission/training requirements (for military). Pilots will improve their knowledge of controllers' tasks, ways of working and the assistance that may be provided to them by ATS. Other approaches that could be adopted are dedicated safety seminars with the participation of all airspace user types, service provider organisations and regulatory authorities, or periodic safety analyses (e.g., bi-annual) of the common use of airspace. Pilot associations and flying clubs could play a role in improving the interface with ATC. Knowledge exchange programmes should include pilots with different experience from the various type of operations, e.g., pilots of light aircraft, gliders, helicopters, etc.	LVNL	Not Applicable		We do not have structural "open doors days". We have spontaneous visits from pilots to the Tower and to the radar-sections. At these visits there is a two-way exchange of operational experiences. We participate in RWY- and Ground safety-teams We have all kind meetings (some

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						regularly (i.a. daily briefings), some if required (i.a. sectorbriefing) with airlines and APOC to discuss operational items We have a so called “chief pilot meeting” to discuss operational items with chief of pilots and ATC-management and operational ATC-experts; at this meetings also the procedures dept. is present. We have a regular meetings with General Aviation ("GA Overleg").
ANSP8	Ensure adequate Radio and Surveillance data coverage in the airspace where FIS is provided. See also recommendation AD5	Review and improve, if necessary, the low-level radio coverage in particular around CTRs/TMAs and of airspaces containing high density VFR routes and choke points. Some receiver/transmitter sites, built for IFR traffic, may not be appropriate for FIS provision due to the terrain. Subject to availability, the number of ATS frequencies for the provision of FIS in busy areas may need to be reviewed and increased to ensure the required quality of service provision and better controlled airspace protection. There are new and increasing options available in non-radar surveillance available, e.g. Non-cooperative Radar Air Target	LVNL	Completed		Surveillance coverage off-shore: WAM & ADS-B. Surveillance on-shore by civil and military radars and WAM is being developed to provide increased

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		Identification radar detection, ADS-B, multi-static primary, RadNet etc.				coverage on lower levels.
ANSP9	For VFR traffic in uncontrolled airspace, transfer services from ATC sectors to dedicated FIS positions at ACCs, Mil centres or aerodromes.	The objective is to ensure provision of FIS from dedicated positions that will not reduce the level of service to VFR flights when there is a high level of IFR traffic in the airspace assigned to the ATC sector(s). Procedures may be established for the delegation of services to VFR flights in class E airspace from the control sectors to FIC, if appropriate and depending on the specific operational environment and regulatory framework. The aim should always be to have a dedicated FIS position at an ACC ideally with a Surveillance display, including offshore services.	LVNL	Completed		Separate FISO positions and service provided.
ANSP10	Include a dedicated and harmonised VFR services training module in ATCO/FISO training curriculum.	The objective is to ensure that ATS staff: Are aware of the different levels of training and experience of PPL holders, military, and airline pilots: • Have improved knowledge of light aircraft, ultra-light, gliders and balloons and their performance characteristics, which will ensure correct understanding and communication with GA pilots. (ATS/FIC controllers should be trained to ask, not to assume). • Are familiar with the cockpit workload of VFR flights (mostly single-pilot operated aircraft) in the various conditions and flight phases. • Are aware of the fact that a VFR GA flight might not be able to follow the clearance due to the need to stay in VMC. Inclusion of dedicated limited training in VFR flying may be considered. It will improve ATCO/FISO understanding of VFR flying	LVNL	Completed		In our ATCO/FISO training there are lessons included focusing on cockpit workload, flying procedures, etc. By familirisation fligths a better insight in cockpit procedures and workload is achieved.
ANSP11	Optimise SSR code assignment procedures to make best use of transponders' MODE-S, MODE A/C data and other surveillance	Better utilisation of SSR codes can assist in the identification of traffic in congested airspace. Existing best practices should be applied as widely as possible. For example, a "FIR or AC lost" SSR code applied by FIS units to aircraft when pilots are unsure of their position draws attention to the aircraft and its predicament without multiple communications taking place across sectors. MODE-S data, and ADS-B are all useful tools for reducing the	LVNL	Ongoing		

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	methods, e.g., ADS-B, etc.	risk of airspace (and even separation) infringements by increasing the controller's ability to monitor and anticipate aircraft intentions. Implementing Frequency Monitoring SSR codes would identify that the aircraft is listening on their frequency should the ATCO/FISO wish to call them. It is specifically valuable for aircraft operating outside of a busy CTR. Other examples are: implementation of mandatory transponder areas or zones (e.g., at and above a certain altitude or flight level); SSR codes and frequency coupling; GA single event codes; dedicated codes for VFR routes etc.				
ANSP12	Improve tactical coordination procedures between adjacent civil/military control units.	Improved civil - military coordination (ASM level 3) will enable: The provision of up-to-date, correct information to all flights about current airspace restrictions and their use; Timely action by the controllers/officers (in the control units concerned) in the case of imminent or actual infringement of controlled or restricted airspace to reduce the severity of the possible consequences. Implementation of this action should be considered within the scope of efforts for further enhancement of the FUA concept.	LVNL	Ongoing		
ANSP13	Early provision of weather data to assist GA pilots in avoiding adverse weather in accordance with SERA.9005.	Additional navigation support should be provided to VFR flights in compliance with ICAO Doc 4444 PANS-ATM, section 15.4.1 "Strayed VFR flights and VFR flights encountering adverse meteorological conditions" in order to help pilots avoid flying into meteorological conditions not conforming with the required minima Technology now allows for data uplink with weather information directly to the aircraft, although it should be noted that this kind of ADS-B is not yet mandated in Europe. The requirement to provide relevant weather information as part of the FIS is already included in SERA.9005, without specifying the means of transmission. An EASA Best Intervention Strategy to promote existing methods to facilitate the availability of weather information to pilots (CA and GA) in flight is being developed and will be submitted to stakeholders for consultation.	LVNL	Completed		Upon request by pilots or adjacent centres, our FISO supplies METEO information for airports, offshore platfors and along a flight path. When relevant, our FISO will also supply AIRMET or SIGMET information to airmen. Furthermore, on request the

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						following information will be provided to airmen: ACTUALs, METARs, TAFs, NAFs and LLFCs.
ANSP14	Promote the use of SSR and/or radio mandatory airspace in the vicinity of busy and/or complex controlled airspace.	The objective of this action is to ensure the protection of high-density controlled airspaces, like busy TMAs and CTRs. Implementation decisions should be taken following analysis of safety data and records. It should be noted that establishing mandatory R/T buffer zone may not always be possible. Indeed, the feasibility of implementing such buffer airspace depends on the typology of adjacent airspace (continuous controlled airspace, military airspace, etc.) and relevant consultation with other stakeholders and airspace users. Implementation of mandatory R/T buffer zones should also include a review of existing «buffer airspace» at the TMA or CTR boundaries and corresponding optimisation of such airspace to the necessary minimum due to the additional protection provided by the R/T buffer zone. A possible implementation may include tracking all flights operating within a certain range of the controlled airspace in question. Depending on the operational need a minimum altitude/level above which the requirement will be applicable may be defined. Since radio communication is not required in class G airspace, an alternative means of reducing the probability of severe airspace infringement incidents occurring is to require GA flights to maintain listening watch on 121.5 MHz, except when in contact with an ATS unit. This would help ATC contact an airspace infringing aircraft early enough to prevent the infringement from evolving into high-risk incident. A potential solution for a buffer is the use of Transponder Mandatory Zones around/below Controlled Airspace, with a co-located Radio Mandatory Zone.	LVNL	Ongoing		
ANSP15	Harmonise the requirements for the	Improve and harmonise FISO training curriculum. Training curriculum should be improved to adequately match the	LVNL	Completed		

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	provision of FIS and licensing of ATCOs/ FISOs, including: a harmonised FISO training curriculum and improved communication training of FISOs.	level of service to be provided. FIC staff should receive dedicated training improving their awareness and understanding of the VFR flights' needs, specialties, and light aircraft performance characteristics. Best practices already exist to deliver emergency situation training to FIC staff and VFR pilots in a coordinated manner. Enough FIC staff should be made available to support the provision of enhanced FIS. Several ATS providers have already implemented dedicated training programmes for staff that become redundant or underutilised due to the increasing automation of ATS provision. This action reinforces the objectives and provisions of the Action Plan for Air Ground Communications, focusing on the aspects that are of particular importance in the communication exchange between ATS units and VFR flights. ATS staff should be trained to: Strictly apply the readback/hearback procedure; Actively seek confirmation in case of doubt; Use unambiguous call-signs - full call-sign or call-sign coupled with type of aircraft; Use published reference points in ATS messages to pilots, to the extent possible; Use simple ATC clearances and instructions; Use more concise transmissions, if necessary broken in segments; Use reduced rate of speech when talking to VFR pilots; Issue pre-warning of instructions to be passed; Provide FIS in English language; Acquire adequate knowledge of and apply communication failure procedures as required Harmonisation of FIS provided to VFR flights should be based on European IRs/AMCs/GMs, ICAO recommendations and existing best practices. Examples of best practices are i.e the Low Airspace Radar Service provided in UK airspace and the radar information services provided in German airspace. Radar-derived information available at ATS units should be used to enhance the information passed to pilots. It should include, as appropriate, navigational assistance, coordination of controlled airspace entry/crossing clearance, passing traffic information and information about restricted				

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		airspace activation/deactivation and concerned traffic, as well as provision of other aeronautical information and information about potentially hazardous conditions. The service could include provision of warnings to pilots of any unfavourable factors including airspace infringement and traffic warnings. FIS level could be raised to enable proactive prevention of potential conflict situations. The scope of this action should include the harmonisation of services provided by civil and military FIS provider organisations. In some states, this is believed to be urgently required, including the provision of FIS with Surveillance data by FIS staff (not ATC).				
ANSP16	Ensure all MORs are timely and comprehensive to enable review/ investigation and collation of causal factors.	This is particularly important in states where there is post-infringement communication between the ANSP and the pilot. Timely reporting and investigation allow for greater accuracy in causal factor identification when recollections are fresh in the memories of all parties.	LVNL	Completed		
AIM/MET						
AIM1	Examine ways of making AIS available to pilots, with real-time information, in a format that is suitable for handheld devices.	Real-time AIS information increases the situational awareness of the pilot. By providing ways to have this information available in the cockpit, activation of various types of special airspace and other NOTAMs can be pushed by the software. Careful and thorough flight preparation is still key to a safe flight execution, tools like this will help to reduce the risk of airspace infringements.	LVNL	Completed		Completed: NOTAM information suitable for handheld devices. Not yet planned: Implementation of Digital NOTAM.

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						NOTAM can be viewed on handheld devices using LVNL's FSC home briefing website. 'Real-time' AIS information in the cockpit is dependent on the development and implementation of Digital NOTAM. Implementation of the digital NOTAM is depending on the development of the EAD.
AIM2	Standardise (harmonise) VFR en-route charts.	Improved VFR publications will contribute to better IFR traffic protection. Standardisation of VFR en-route charts is considered the highest priority. The products provided by commercial sources (different from the State AIS organisations) should be considered within the scope of this standardisation effort. There must be a standard representation of airspace to prevent confusion in cross-border flights. Compliance with and common interpretation of ICAO Annex 4 requirements needs to be achieved. This includes common map layout conventions, consistent use of colour coding, symbols etc. High priority should be assigned to the standardisation of the most commonly used ICAO VFR chart (1:500 000). The action aims to improve the readability	LVNL/Kadaster	Completed		Completed: LVNL/Kadaster produces the ICAO 1:500.000 in line with ICAO Annex 4, and when possible. Not applicable: • Commercial sources are

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		and simplify VFR en-route charts as much as possible. Only information relevant to VFR flights should be printed. There are instances of VFR en-route charts saturated by the volume of printed information. It takes the pilot too long to consult during flight and may lead to distraction. However, simplification should not lead to loss of important features. The clarity of frequency information should be improved. Frequencies should be indicated clearly on electronic and paper maps, allowing easy reference by pilots during flights. Harmonisation may include a review of needs and an agreement to publish charts with more appropriate scales (e.g., 1:250 000) for local flights. Harmonisation of VFR AIPs (manuals) should also be considered. The involvement of GA representatives in such reviews and in the process of VFR publications' standardisation is essential. The EUROCONTROL Agency should support and coordinate AIS providers' chart harmonisation efforts through the existing working arrangements.				not involved in chart harmonization studies. • LVNL does no longer publish a VFR guide A chart user consultation was organized in 2022. The outcome is implemented in the ICAO 1:500.000 and VFR viewer where feasible. Furthermore, LVNL has developed a VFR viewer which is also in line with ICAO Annex 4 where practicable. LVNL plans to publish in 2023 (non ICAO) datasets on a portal.
AIM3	Investigate the feasibility of providing	The action aims to make aeronautical and MET information, that is relevant to airspace and airports/ airfields open to VFR flights, freely available to the GA VFR flying community.	LVNL	Ongoing		Partially completed: The online LVNL

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	aeronautical information free of charge for GA.	This would reduce the probability of inadequate pre-flight preparation. For example, VFR en-route charts should be freely accessible and downloadable via internet from the service provider sites. There is a need for a dedicated study to identify what kind of information will bring the highest benefit to the users of the concerned airspace. EUROCONTROL, national authorities and AIS service providers should support GA establishments in their efforts to improve the briefing facilities on airfields (for example feeding them with the relevant aeronautical data, making necessary HW/SW available, etc.). A variety of solutions and business models (or combinations thereof) could be considered in this context. For instance, the service provision cost could be recovered through license fees or public (state or European Community) funds. The development of the SES2 package offers an opportunity to support the implementation of a high quality and «publicly accessible» AIS portal.				aeronautical information products, including (downloadable) chart/ VFR viewer, and home briefing system are available free of charge The printed ICAO 1:500.000 is NOT free of charge.
AIM4	Provide and enhance on-line (web-based) accessibility of aeronautical information services	NOTAMs, maps, charts, and current weather information should be made easily accessible at the service provider websites. Dedicated pages for GA VFR flights that provide access to all information needed for a flight could be designed. Visualisation of information should be improved: it should be user-friendly and intuitively comprehensible. The mechanisms, processes and means for delivery of the actual airspace structures' status to users (in particular GA) should be reviewed and optimised. Online AIS provision should not totally replace the traditional methods. Pilots should be provided with the option to obtain pre-flight briefing materials in hard copy or to contact the appropriate briefing office whichever is the preferred method of preparing for the flight.	LVNL	Ongoing		Partially completed. LVNL publishes online: • aeronautical information products including printable charts and online viewers. • home briefing tools, including NOTAM and pre-flight information bulletins. • a link to the KNMI

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						weather site. Not applicable: LVNL does no longer publish a VFR guide. Apart from the ICAO 1:500.000 and the VFR viewer, since 2009 LVNL no longer publishes aeronautical information products specifically for the VFR-community.
AIM5	Harmonise, enhance, and classify AIS provision to VFR flights and promote classification rules and usage of keywords.	The implementation of this action should include: Provision of dedicated VFR sections in the AIPs or VFR AIPs (manuals); Provision of up-to-date VFR charts; Implementation of a user-friendly NOTAM system for VFR flights. The NOTAM briefing facilities should provide for: Graphical visualisation of information about changes to airspace structures and activation/deactivation of restricted airspaces; Narrow route briefing for (long distance) route flights; NOTAM selection and prioritisation tool; Grouping NOTAMs by topic. Enabling the generation of briefing packages tailored to the needs of the various user types may be considered (e.g., a glider pilot would need different information to a pilot planning a cross country flight). In case of generation of NOTAM update packages, the type of users the update is intended for should be taken into account (e.g., GA VFR flight). It would be desirable to include a short summary outlining the changes in traffic schemes and airspace. The	LVNL	Ongoing		Partially completed: VFR information is published in the AIP Completed: The online home briefing system provides the required pre-flight information.

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		readability of NOTAMs and other publications (AIC) of potential interest to VFR flights should be improved using plain language rather than encoded text where possible. The names of towns, villages and other well-known geographic notions should be used instead of coordinates, which most of pilots cannot use in-flight. In the case of military ATS providers, the airspace status information should be made available to the units providing services to the VFR flights. Military controllers should pass this information to concerned flights which maintain radio contact. In cases where FIS is provided by a civil entity, the airspace status information should be made available according to the implemented FUA procedures. Concerned FIC(s) may be informed directly or through the responsible FUA structures.				
AIM6	Improve availability of and access to VFR en-route charts and dissemination of updates to pilots.	Both electronic and hard copy (paper) versions of maps/charts should be maintained in order to provide the preferred means of flight briefing to the different generations of GA pilots. Enabling downloads of current charts or sections thereof is an improved service requested by pilots. Further improvement could be achieved by alerting subscribers (users) to implemented changes/updates, for example by means of e-mail notification messages. In addition, site visits and seminars should be considered in the case of major airspace changes.	LVNL/Kadaster	Completed		Completed: The ICAO 1:500.000 is available online and published once a year in hard copy. The online version, or parts thereof, is printable according to user requirements. When applicable, pen corrections for the ICAO 1:500.000 are published in AIP GEN 3.2 every 28 days according to the AIRAC cycle.

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						The VFR viewer is typically updated on an AIRAC effective date. Other updates are announced in the viewer. Not applicable: Email notifications. Site visits and seminars are only organized when required. For example, when an uncontrolled airport is converted into a controlled airport including its required route and airspace changes.
AIM7	Include geographical coordinates in information items containing position details wherever possible.	Geographical coordinates are a major issue in GPS systems. Most GPS systems provide an extensive data file including all kinds of way points, navigational aids etc. The availability of LAT/LONG information on VFR maps would support the crosscheck and input of correct data in the GPS set. However, increasing clutter on VFR en-route charts must be avoided. Therefore, more appropriate vehicle appears to be ENR and/or AD part of the AIP, rather than charts. This information can also be provided on-line (on the service provider or CAA website) and can be picked up by commercial data providers.	LVNL	Completed		Completed: LAT/LONG information is published in the aeronautical information products when available.

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AIM8	Implement MET products tailored to low level VFR flights in line with ICAO requirements.	The recommendation concerns the implementation of weather reports and forecasts in line with ICAO Annex 3 requirements, e.g., GAMET and AIRMET. Where possible, integrated on-line provision of aeronautical and meteorological information should be ensured, for example on the AIS/ATS providers websites.	KNMI/LVNL	Completed		Completed: LVNL's online home briefing system provides a link to the applicable KNMI weather site. Check with KNMI for additional information.
AIM9	Promote standard and free maps on GPS. Promote standards to describe maps and add-ons.	GPS moving maps on portable devices provide the pilot with real time information on position and airspace. When used correctly, the increase in situational awareness is a benefit to the safety of air traffic. By providing free maps, according to set standards, the number of users is likely to increase.	LVNL	Not Applicable		LVNL is as AISP currently responsible for the provision of static and dynamic aeronautical data. Based on that data, third parties are welcome to provide additional chart products in any form.
Regulators						
REG1	Increase harmonisation for navigation and communication licensing requirements for	Basic navigation and communication skills training requirements for all private pilot licences should be harmonised. Knowledge and use of GPS systems should be addressed as well. A minimum adequate level of pilot navigation and communication skills should be achieved and maintained by the introduction of mandatory refresher	DGLM	Not yet planned		

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	private pilots, to include the use of VFR Moving Maps in PPL training.	training. Competence checks should include exercises on basic navigation and communication exchange (e.g., requests for clearance to cross controlled airspace) irrespective of the pilot's qualification. The flight check should include "pass/fail" criteria and could include some basic theory as well. Oversight of the pilot training process should be improved by strengthening the regulatory oversight of flying schools, training, and licensing process. The competency and proficiency of instructors and examiners will need to be assessed and appropriate standards established. The currency of instructors' knowledge of aviation regulations should be ensured. Integrate the use of VFR Moving maps in PPL training curriculums. Enable pilots to use mobile devices like smartphones and tablets with VFR Moving maps effectively during training. By learning to use the devices and software in a training environment, pilots will be better prepared to use them in flight while not compromising lookout, scan, or pilot capacity.				
REG2	Harmonise the licensing of FIS staff and ATC staff across the Europe in the use of Surveillance data to provide FIS. See also recommendation ANSP15	Harmonisation of FIS provided to VFR flights should be based on European IRs/AMCs/GMs, ICAO recommendations and existing best practices. Examples of best practices are i.e. the Low Airspace Radar Service provided in UK airspace and the radar information services provided in German airspace. Radar-derived information available at ATS units should be used to enhance the information passed to pilots. It should include, as appropriate, navigational assistance, coordination of controlled airspace entry/crossing clearance, passing traffic information and information about restricted airspace activation/deactivation and concerned traffic, as well as provision of other aeronautical information and information about potentially hazardous conditions. The service could include provision of warnings to pilots of any unfavourable factors including airspace infringement and traffic warnings. FIS level could be raised to enable proactive prevention of potential conflict situations. The scope of this action should include the harmonisation of services	LVNL	Completed		Our FIC uses radar data and all personnel is properly trained in the use of surveillance data.

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		provided by civil and military FIS provider organisations. Other types of surveillance data (e.g., ADS-B) are now available in addition to Radar. The use of these new sources of available information can increase the situational awareness of the FISO or ATCO. To support the best practices and information sharing in this area, a working Group on FIS provision has been created. According EASA, at the time of writing, there is no initiative to establish a harmonised FISO licensing and training scheme. Additionally, the qualification and training of ATCOs and FISOs is a national prerogative, with observed noteworthy differences. Moreover, the use of ATS surveillance in FIS provision is a subject for which various practices are observed throughout the EU Member States, and for which a thorough technical debate is being initiated. The proposed harmonization should be verified and addressed carefully.				
REG3	The National Regulator should form an Airspace Infringement Strategic Working Group to review airspace infringement risk dimensions and establish national safety improvement priorities.	The responsible national authority should review in consultation with the concerned airspace user and service provider organisations the dimensions of airspace infringement risk in their particular operational environment and establish local safety measure implementation priorities. This will enable the identification of the most relevant (for the given operational environment) recommended and proposed actions contained in this plan for implementation at national and local level. Risk awareness should be raised by dedicated safety seminars and workshops with the participation of the service providers and all airspace user types. The safety related efforts of GA organisations should be supported. Strengthening the voice and influence of GA organisations and establishments will help proactively shape pilot safety culture by campaigning on different safety issues. Various means and best practices could be used to this effect: publications (safety letters, notices, magazines), dedicated	LVNL	Completed		LVNL is chair and participates proactive in the National Airspace Infringements Taskforce since 2020. Military, GA community and national regulator is also participating in this taskforce.

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		safety evenings at flying clubs, participation at flight safety seminars, dedicated safety webpages, etc. This brings together GA Associations, ANSPs, Airport Operators, Weather Service Providers, and safety partners to develop strategies. It should be an ongoing and permanent process. Promote the establishment of Local Airspace Infringement Teams (LAITs).				
REG4	Ensure that airspace change processes take due account of the different airspace users' requirements.	The applicable airspace change processes, methodology and practices should be reviewed and, as necessary, modified to ensure that the needs of the various airspace user categories are fairly considered in the process of designing and implementing changes to airspace organisation. All stakeholders affected by the intended change should be afforded the chance to (at best) influence the shapes and volumes of airspace structures, or (at least) to make change sponsors aware of airspace user requirements so that the impacts of an airspace change can be minimised or mitigated through, for example, operating arrangements (that in effect be in the spirit of the FUA concept). Changes to airspace structures should be introduced following consultation with GA user representatives and organisations. See also 6.50 below. It is important to have a transparent and comprehensive consultation/engagement process in line with national practices.	LVNL/DGLM	Completed		Withing the Dutch Airspace Redesign Programme (DARP), the Airspace User Requirements have been collected and will be taken into account in the design process. Besides the Netherlands has processes in place where particpation needs to be done in order to initiate airspace change.
REG5	Harmonise airspace classification below FL195 in line with the strategic airspace design principles.	An appropriate strategic design of the airspace is crucial in permitting the ATM System to provide the right services, at the right time and in the right places decreasing routine tasks and the requirement for tactical intervention. Harmonisation of airspace classification below FL195 should be based on the ICAO-defined airspace classes. It should aim for the establishment of common vertical limits, as far as practicable. It should also include harmonised application of	LVNL	Ongoing		Airspace classification is in line with the Criteria Catalogue Luchtruim (CCL) from the Ministry. The Dutch

EAPAIRR Recommendation Code	EAPAIRR recommendation	Recommendation Description	Location	Status	(Planned) Date of implementation	Comment
		associated rules, procedures, and air traffic services. It is highly recommended deploying airspace structures that provide a greater degree of strategic de-confliction with particular consideration of the cross-border operations. The design of airspace should be as simple as possible, whilst not compromising safety. Where possible, reduce the amount of controlled airspaces and mitigate risk through establishment of TMZ/RMZ.				Airspace re-design program will address this in the near future when re-designing airspaces and classifications of airspaces.
REG6	Establish a requirement for regular update of the on-board GPS systems database.	It is recognised that there is no mandatory requirement for VFR pilots to have a GPS set in their aircraft. However, a considerable number of incidents occurred due to use of out-of-date GPS maps or due to other GPS use related issues (e.g., power failure). Therefore, aircraft operators and pilots, who intend to use a GPS set in the planning and execution phases of a flight, should be required to operate a GPS system with the correct database only. The suitability of placing appropriate requirements on GPS database providers could be considered in this context.See also 6.2.	DGLM	Not yet planned		
REG7	Review and harmonise requirements for the carriage and use of transponders and other conspicuity devices by light aircraft.	To reduce the risk on a mid-air collision. The use of transponder equipment is recommended. It improves: • Situational awareness for pilots and FISOs/ATCOs • Occurrence reporting regarding airspace infringements • The ability to provide traffic information There are several options to be considered when reviewing the requirements for the use of transponders: • ADS-B • FLARM • Mode-S	DGLM	Not yet planned		The Netherlands is closely following the developments of ADS-L from EASA.
REG8	Optimise and harmonise occurrence reporting requirements and taxonomy, including those related to airspace	Regulation (EU) No. 376/2014 is clear in the ANSP and pilot reporting requirements. It is recommended to increase the scope to include ULMs, gliders and paragliders as reporting is currently not mandatory for these users. This type of airspace infringement is mainly notified if another pilot or ATC reports.	LVNL	Completed		Completed, all relevant occurances in LVNL controlled airspace are reported and investigated by LVNL.

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	infringement.					
REG9	Ensure updated maps and charts are made available to flying clubs and schools and encourage the use of VFR moving map technology.	Updated VFR en-route charts should be available on-line. Frequent changes should be avoided. Sponsorship should be considered to ensure that as a minimum the GA clubs directly affected by airspace changes (located in the vicinity) obtain the updated maps and charts for use by their members. Both electronic and hard copy (paper) versions of maps/charts should be maintained in order to provide the preferred means of flight briefing to the different generations of GA pilots. Enabling downloads of current charts or sections thereof is an improved service requested by pilots. Further improvement could be achieved by alerting subscribers (users) to implemented changes/updates, for example by means of e-mail notification messages. In addition, site visits and seminars should be considered in the case of major airspace changes. Moving maps provide enhanced situational awareness and timely warnings of airspace and airspace activity. The safe use of moving maps is beneficial to minimizing the risk of airspace infringements. Regulators should encourage the use, and work with ATOs and flying clubs on a safe concept to operate the devices in flight.	LVNL	Ongoing		vfchart.lvnl.nl This website is updated every month. Frequent changed cannot be avoided. When applicable, pen corrections for the ICAO 1:500.000 are published in AIP GEN 3.2 according to ICAO regulations. The VFR viewer is typically updated on an AIRAC effective date. Other updates are announced in the viewer. Site visits and seminars are only organized when required. For example, when an uncontrolled airport is converted into a controlled airport including its required route

EAPAIRR Recommendation Code	EAPAIRR recommendation	Recommendation Description	Location	Status	(Planned) Date of implementation	Comment
						and airspace changes.
REG10	Undertake periodic reviews of airspace allocation and structures within the respective FIRs and improve oversight of airspace management.	The action is designed to support the implementation of an optimised airspace organisation that takes into account, to the extent possible, the requirements of the different airspace user categories, while ensuring the safe use of airspace. Improved efficiency of airspace allocation and management will reduce the probability (hence the risk) of airspace infringements caused by the practice of 'cutting the corners' of controlled and restricted airspaces. It should include a review and optimisation of the number and volume of restricted airspace volumes according to their actual utilisation parameters. The regime of restricted airspaces should be reviewed, and tactical airspace management procedures improved, if needed. The review should include all airspace structures within the respective FIRs. It should be carried out in consultation with the concerned military organisations, airspace users and service providers. Given its scope and the amount of effort required, it is expected that the optimisation of the airspace structure will be performed in incremental steps over a number of years. Priorities may be established, as necessary (For example areas of dense VFR traffic maybe reviewed first).	LVNL	Ongoing		The Dutch Airspace re-design Program is designing an optimum airspace looking at all stakeholders and regarding issues such as safety, capacity, flexible use of airspace and airspace infringements.
REG11	Promote membership of flying clubs and GA associations among private pilots.	Encouraging private pilots to become members of flying clubs, schools and/or GA associations (for example AOPA, FAI, etc.) would support an improved downward flow of aeronautical information (e.g., notification of airspace changes), guidance materials and information supply in general. It would improve availability and accessibility of education and awareness materials and thus contribute to raising pilots' general knowledge and awareness of risk. However, flying schools and clubs may have to accept that this will place additional responsibility on them.	DGLM	Not yet planned		
REG12	Establish requirements for correct GPS	Implementation of the action should reduce the probability of GPS system failure, in particular due to loss of power supply or signal.	DGLM	Not yet planned		

EAPAIRR Recommendation Code	EAPAIRR recommendation	Recommendation Description	Location	Status	(Planned) Date of implementation	Comment
	equipment installation and maintenance.					
REG13	Harmonise the regulation of flights by ultra-lights, microlights and gliders (including hang-gliders and para gliders).	A minimum level of pilot navigation and communication skills should be achieved. While the operation and licensing of sailplane/glider pilots is under EASA's remit and action has already been taken, the other mentioned categories (e.g., micro-lights) are operated under national rules because they are Annex II aircraft. Subject to individual national air navigation orders/regulations.	DGLM	Not yet planned		
REG14	Introduce formal Just Culture and Human Factors training as part of all flight crew licensing training	By introducing a formal Just Culture and Human Factors training, as part of all flight crew licensing training, pilots will acquire information to help their performance in flight but also in briefing/debriefing, Topics to be included are: improved reporting, safety awareness, airmanship and Threat and Error Management.	DGLM	Not yet planned		
REG15	Introduce a process for Regulatory post-Infringement review and action.	Conduct this process under a "Just Culture", where blame is not apportioned for an infringement. Instead, the facts are sought to fully-understand why the infringement occurred and actions are identified to prevent a repeat.	DGLM	Completed		There is a periodic meeting of all relevant stakeholders including law enforcements, to analyse infringements and decide potential sanctions when just culture is not applicable.
REG16	National Regulators to reassess requirements for obtaining a private pilot license.	NSAs should consider other measures to enhance pilot skill levels. These measures are collated in the toolbox below. The necessity/applicability of these recommendations differs per country and therefore have no separate listing in the recommendations' list. 1. NSA's to review the competencies required to maintain for their licenses. Evidence would be needed to justify	DGLM	Not yet planned		

EAPAIRR Recommendation Code	EAPAIRR recommendation	Recommendation Description	Location	Status	(Planned) Date of implementation	Comment
		changes. 2. Pilot associations to encourage Pilots to consider voluntary hours with instructors to improve proficiency. 3. Pilot associations to recommend/suggest a list of items for the mandatory annual flight with an instructor (refresher training). To include R/T communication and navigation.				

- **Global Action Plan for Prevention of Runway Excursions**

This section aims at collecting data in order to monitor the Prevention of Runway Excursions. Following the IATAs global accident database reports majority of incidents/accidents involve Runway Excursion.

GAPPRE Recommendation Code	GAPPRE recommendation	Location	Status	(Planned) Date Of implementation	Comment
Aerodrome Operators					
ADR1	Ensure that runways are constructed, resurfaced and repaired in accordance with the national or regional (e.g. EASA) regulations, so that effective friction levels and drainage are achieved.	Schiphol Airport	Completed		
ADR2	An appropriate program should be effectively implemented to ensure the removal of contaminants from the runway surface as rapidly and completely as possible to minimize accumulation and preserve friction characteristics.	Schiphol Airport	Completed		
ADR3	If provided, ensure that approach radio navigation aids (e.g. ILS) and visual aids (e.g. AGL, PAPIs and surface markings) are maintained in accordance with ICAO Standards and Recommended Practices. An appropriate method for the inspection and assessment of markings deterioration should be implemented.	Schiphol Airport	Completed		
ADR4	Ensure that the runway holding positions are clearly marked, signed and if required, lit. If intersection takeoffs are conducted, install at the relevant runway holding positions signs to indicate the Takeoff Run Available (TORA).	Schiphol Airport	Completed		
ADR5	Ensure robust procedures are in place for calculating temporary reduced declared distances e.g. due to work in progress on the runway. When reduced declared distances are in operation, ensure that the temporary markings, lighting and signs accurately portray the reduced distances and that they are well communicated in a timely manner to the state's aeronautical information services for publication and to the relevant ATS units.	Schiphol Airport	Completed		

GAPPRE Recommendation Code	GAPPRE recommendation	Location	Status	(Planned) Date Of implementation	Comment
ADR6	Ensure that the procedures to assess runway surface conditions according to ICAO Global Reporting Format include reactive as well as proactive surface assessment to make sure hazardous changes are all identified and communicated in a timely manner.	Schiphol Airport	Completed		
ADR7	Ensure robust procedures are in place for communicating information regarding changing surface conditions as frequently as practicable to the appropriate services according to the ICAO Global Reporting Format. Roles, responsibilities of stakeholders and coordination procedures should be formalised.	Schiphol Airport	Completed		
ADR8	In accordance with ICAO standards (and regional, e.g. EASA regulations), wind sensors and wind direction indicators (wind socks) should be sited to give the best practicable indi-cation of conditions along the runway and touchdown zones.	Schiphol Airport	Completed		
ADR9	Consider equipping for digital transmission of ATIS as appropriate to ensure that ATIS information is updated in a timely manner.	Schiphol Airport	Completed		
ADR10	If installed, RWY centreline lights should also be used together with the runway edge lights whenever runway edge lights are switched on and when the runway is in use.	Schiphol Airport	Completed		
ADR11	Ensure appropriate coordination with the meteorological service provider, the ANSP and the aircraft operators to regularly assess the relevancy of weather data, in particular at large aerodromes where there could be spatial differences in weather data.	Schiphol Airport	Completed		
ADR12	Ensure runway exits are appropriately named according to a logic of succession of numbers and letters avoiding possible ambiguity.	Schiphol Airport	Completed		
ADR13	Runway surroundings should be considered when designing or modifying strips or RESA. It is necessary to consider the local constraints against ICAO provisions and regional (e.g. EASA) regulations so as to ensure relevant mitigation.	Schiphol Airport	Completed		
ADR14	Information related to air operations hazard or specificities in the airport vicinity	Schiphol Airport	Completed		

GAPPRE Recommendation Code	GAPPRE recommendation	Location	Status	(Planned) Date Of implementation	Comment
	should be identified and addressed to pilots in the Local Runway Safety Team (LRST) and published through an appropriate means.				
ADR15	Runway condition codes assessed should be compared against braking action reports by the pilots to ensure the accuracy of the information provided to the pilots.	Schiphol Airport	Completed		
ADR16	Consider using Approach Path Management (APM) in coordination with local ATC and aircraft operators. Associated issues should be addressed by the LRST.				
ANSPs					
ANSP1	ANSPs should ensure the importance of stabilised approach, its elements and compliance with final approach procedures and aircraft energy management are included in initial and refresher training of ATCOs conducted by ANSPs and ATCO Training Organisations, as well as in AFISOs training, as applicable.	LVNL	Ongoing		LVNL takes this into account when making procedures.
ANSP2	With regard to assignment of or change to runway assignment for arriving or departing traffic: ANSP2 a. Whenever the runway change is pre-planned, notify it as early as practicable together with the expected time of the change to flight crews, including by adding relevant information in ATIS, where available. ANSP2 b. As far as practicable, avoid changing the assigned runway to aircraft on approach or taxiing for departure. ANSP2 c. ANSPs should ensure ATCOs are aware that RWY changes create additional workload, increase vulnerability to error and flight crews need time to re-brief and prepare for it. ANSP2 d. ANSPs should ensure that the runway configuration change procedure/process takes account of the above points and of the tailwind information as appropriate. ANSP2 e. When operationally possible, accept the flight crew preference for a runway when requested “due to performance limitations”.	LVNL	Completed	23/04/2019	This has been implemented and performances are being monitored.

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ANSP3	ANSPS should: ANSP3 a. Review available data (e.g. occurrence reports, go-around / missed approach data etc.) with the aim of identifying the ANSP-related runway excursion contributing factors and relevant mitigations, for example enhanced airspace design and procedures and ATCO training and procedures. ANSP3 b. Share at network level the identified runway excursion contributing factors and relevant mitigations.	LVNL	Completed		Completed. All runway safety occurrences are discussed in Schiphol's Runway Safety Team. This includes the discussion on runway excursions. Contributing factors are actively follow by the ISMS core team and Standing Comittees.
ANSP4	Review processes covering the provision of essential information on aerodrome conditions such as weather, wind and runway surface conditions (e.g. when 'wet' or contaminated) to ensure: ANSP4 a. A consistent, timely and accurate broadcast of aerodrome information. ANSP4 b. The integrity of the essential information supply chain from the originator (e.g. Met Office/Aerodrome Operator) to the user (e.g. flight crews, ATS, Met Office, aerodrome operator and AIS provider). ANSP4 c. Training on the use of ATIS/D-ATIS is provided to relevant operational staff. ANSP4 d. Compliance with the ICAO Global Reporting Format for runway surface conditions assessment and reporting, including the training of the relevant ANSP personnel.	LVNL	Completed		Global reporting Format is implemented and The quality of the Meteo data is reviewed by OSD. This was done in 2021.
ANSP5	ANSP5 a. ANSPs should ensure that flight crews are informed of the Takeoff Run Available (TORA) or the Landing Distance Available (LDA) if these differ from the published data using appropriate means. The information should include any alter-native runways which may be available. ANSP5 b. ATS providers should collaborate with the aerodrome operators to determine the runway entries from which intersection takeoffs may be performed, and develop coordinated procedures for such operations.	LVNL	Completed		TORA and LDA are published in AIP and on CCIS. If and when necessary, eg. on request by the flight crew, the controller will provide the

GAPPRE Recommendation Code	GAPPRE recommendation	Location	Status	(Planned) Date Of implementation	Comment
					information. Publishing temporarily shortened TORA and LDA are airport responsibility; in coordination with ATC; the airport publishes this by NOTAM; LVNL mentions the differences on the frequency. Coordination with aerodrome operators is handled by the "coordinatieregeling AAS/LVNL" Procedures for intersection take-offs are in place.
ANSP6	Participate in runway excursion safety information sharing at network level to facilitate, using just culture principles, the free exchange of relevant information on actual and potential safety deficiencies.	LVNL	Completed		LVNL participates in the local Runway Safety Teams (and chairs the Schiphol RST) where runway excursions are a topic. At network level, LVNL participates in Eurocontrol Safety Team(s) to provide and enhance the

GAPPRE Recommendation Code	GAPPRE recommendation	Location	Status	(Planned) Date Of implementation	Comment
					knowledge about runway excursions.
ANSP7	If installed, RWY centreline lights should also be used together with the runway edge lights whenever runway edge lights are switched on and when the runway is in use.	LVNL	Completed		Centreline lights and Edge lights are on when the runway is in use.
ANSP8	Consider equipping for digital transmission of ATIS, as appropriate (e.g. via telephone or other means).	LVNL	Not yet planned		The part "...as appropriate (e.g. via telephone or other means)" is not clear. For D-ATIS in general, see the completion to ADR9.
Regulators					
REG1	Regulators should ensure that: • The national/regional regulations are in line with the relevant ICAO standards and recommended practices; and • All infrastructure, practices and procedures relating to runway operations are designed and remain in compliance with such national/regional regulations.	Schiphol Airport	Completed		
REG2	Regulators should enhance the focus on the prevention of runway excursions in their oversight activities by taking into account best practices (e.g. GAPPRE), in addition to their na-tional/regional regulatory requirements.	Schiphol Airport	Completed		
REG3	Ensure that the risk of runway excursion is included as part of runway safety in the State Safety Plan and provide safety performance indicators to monitor/demonstrate the effectiveness of any State or industry initiatives.				

GAPPRE Recommendation Code	GAPPRE recommendation	Location	Status	(Planned) Date Of implementation	Comment
REG4	As part of their oversight activities, Regulators should ensure close cooperation between ground handling service providers, aircraft operators, aerodrome operators and air navigation service providers, with regard to the prevention of runway excursions. This cooperation will be a part of an effective implementation of SMS of the relevant organisations, verified by the respective regulator through regular assessments and safety performance indicator monitoring.	Schiphol Airport	Completed		
REG5	Ensure that any noise mitigation rules required to be implemented by aerodromes should be subject to regular and coordinated hazard identification and risk assessment, to ensure they do not increase the likelihood of runway excursions, in particular in relation to operations on contaminated runways.	Schiphol Airport	Completed		
AIM6	Ensure a continued focus on training for pilots, air traffic controllers, AFISOs, and aerodrome personnel, which includes runway excursion prevention. Ensure the continuous review and improvement of the respective training programmes by the regulator and Training Organisations, through the use of performance indicators.	LVNL	Completed		Both in initial/unit training as in refreshertraining there is focus on the occurence and prevention of RWY Incursions
AIM7	Assess the performance of aircraft operators' processes for: • Safety data collection (e.g. flight data monitoring and reporting). • Identification and analysis of precursors and causal factors. Ensure that aircraft operators are participating in safety data sharing programs, e.g. Data4Safety.				This is not relevant for LVNL.
REG8	As part of safety promotion, ensure GAPPRE is shared with relevant stakeholders to ensure that the causal and contributory factors of runway excursion continue to be understood, enabling organisations to further enhance effective runway excursion prevention measures.	Schiphol Airport	Completed		
REG9	States should assess the performance and success of safety information sharing networks among all users of the aviation system including the extent of free exchange of information on actual and potential safety deficiencies.				

GAPPRE Recommendation Code	GAPPRE recommendation	Location	Status	(Planned) Date Of implementation	Comment
REG10	States should establish a national runway safety forum/network which includes representatives from aircraft operators, ANSPs, aerodromes and regulators where best practices and learning can be shared. The National forum/network should include key representatives from Local Runway Safety Teams. National best practices should be shared regional/globally through regional/global knowledge platforms.	Schiphol Airport	Completed		Local Runway Safety Team is available at Schiphol airport. At the moment there are no plans of creating an overarching body.
REG11	States should measure the effectiveness of the GAPPRE rec-ommendations, for example by collaboratively developing harmonised performance indicators or success factors.				
REG12	REG12 a. Regulators and ICAO should consider and adopt regulatory measures for preventing visual confusion during line-up between runway edge and centreline lights leading to misalignment with the runway centreline. This should also take into account the effects of low visibility and runway contamination and the effect of using various light colours and patterns to differentiate the runway centreline and edge lighting systems. REG12 b. Regulators and ICAO should consider the guidance needs of the individual aircraft, and adopt provisions that disassociate the installation of taxiway centreline lights from the aerodrome traffic density.	Schiphol Airport	Completed		
REG13	Except where runway TDZ lights are provided, regulators and ICAO should upgrade to a standard the use of simple TDZ lighting as an aid to enhance landing (touch down point) accuracy.	Schiphol Airport	Completed		

G. Glossary of abbreviations

This Annex mainly shows the abbreviations that are specific to the LSSIP Document for Netherlands.

Other general abbreviations are in the Acronyms and Abbreviations document in:

https://www.eurocontrol.int/airial/

Term	Description
AAA	Amsterdam Advanced ATC
AAS	Amsterdam Airport Schiphol
AMC	Airspace Management Cell (only to the purpose of this document)
ANSP	Air Navigation Service Provider
AOCS NM	Air Operations Control Station Nieuw Milligen
CAA-NL	Civil Aviation Authority The Netherlands
EASA	European Aviation Safety Agency
ECAC	European Civil Aviation Conference
DGLM	Directorate-General for Civil Aviation and Maritime Affairs (*"Directoraat-Generaal Luchtvaart en Maritieme Zaken"*)
DMO	Defense Material Organization
FAB	Functional Airspace Block
FABEC	Functional Airspace Block Europe Central
FT	Fast Track
ICAO	International Civil Aviation Organization
ILT/CAA-NL	Human Environment and Transport Inspectorate (*"Inspectie Leefomgeving en Transport"*)
KNMI	Royal Netherlands Meteorological Institute (*"Koninklijk Nederlands Meteorologisch Instituut"*)
LVC	Netherlands Air Traffic Committee (*"Luchtverkeerscommissie"*)
LVNL	ATC the Netherlands (*"Luchtverkeersleiding Nederland"*)
MCG	Maastricht Co-ordination Group
MilATCC	Military Air Traffic Control Centre
MAA-NL	Military Aviation Authority the Netherlands (*"Militaire Luchtvaart Autoriteit"*)
MoD	Ministry of Defence
MoT	Ministry of Infrastructure and Water Management
MUAC	EUROCONTROL Maastricht Upper Area Control Center
NATO	North Atlantic Treaty Organisation
NSA	National Supervisory Authority
OVV	Dutch Safety Board (*"Onderzoeksraad voor Veiligheid"*)
PCP	Pilot Common Project
DP	Deployment Programme
RNLAF	Royal Netherlands Air Force