EUROCONTROL

LSSIP 2021 - GERMANY

LOCAL SINGLE SKY IMPLEMENTATION

Implementation Overview

FOREWORD

The exceptional situation we are living in and its effects on aviation, shows the importance of a robust planning and monitoring process for the European ATM implementation in our evolving environment.

EUROCONTROL works with all operational stakeholders to manage a seamless European airspace, linking together the elements of the European ATM system into a single value chain. Focusing on performance of the European network, we partner with the operational stakeholders to enable flights to reach their destination safely, on time, with the least possible impact on environment and in a cost-efficient way.

This year, the EUROCONTROL Network Manager and the SESAR Deployment Manager (SDM) teams joined forces to achieve a unified planning and monitoring, critical to move towards our common goal of implementing a single value chain in aviation.

The famous quote: "What we cannot measure, cannot be improved", shows the importance of ATM implementation reporting. The EUROCONTROL Local Single Sky ImPlementation (LSSIP) process, methodology, tools and documents annually express the commitment of civil and military national organisations (Regulators and National Supervisory Authorities, Air Navigation Service Providers and Airport Operators), and their cooperation towards the implementation of the European ATM Master Plan Level 3, including the EC implementing regulation 2021/116 (Common Project 1).

The LSSIP documents provide an extensive, consolidated and harmonised picture, for the benefit of the ATM community at large, of how ECAC States and States having a Comprehensive Agreement with EUROCONTROL, and stakeholders concerned, are progressing in planning and deploying all mature elements of the European ATM Master Plan.

In addition, EUROCONTROL is promoting practices to avoid unnecessary duplication of reporting from the stakeholders. Our continuous cooperation with the SDM and the SESAR Joint Undertaking (SJU) ensures the optimisation of the reporting mechanisms bringing all the processes into a single value chain, without diverging monitoring results.

The reliability and quality of the data provided by national stakeholders also allows the LSSIP information to constitute the sole source of information for the development of ICAO's Aviation System Block Upgrades (ASBUs) Implementation Monitoring Report in the ICAO EUR Region. EUROCONTROL undertakes this work, on behalf of ICAO, for all 55 ICAO/EUR States in accordance with the Global Air Navigation Plan (GANP).

I would like to thank, once again, all our stakeholders for their engagement and substantial effort spent in contributing to the information shared in the LSSIP+ Tool and to the production of this LSSIP document. This is a proof of commitment to the principles of transparency and partnership, for the benefit of the entire Aviation community!

Enjoy the reading!

Iacopo Prissinotti
Director NM - Network Manager
EUROCONTROL

SESAR DEPLOYMENT MANAGER WORDS

The need for operational stakeholders to participate to multiple reporting cycles has been a long-standing issue for several years. Finally, there is a paradigm shift in this monitoring cycle thanks to the intense cooperation between EUROCONTROL and the SESAR Deployment Manager (SDM), as we become more efficient, consistent and save precious time and resources.

I thank all stakeholders for their participation and crucial contribution to the SESAR Deployment Programme (SDP) Monitoring View through the LSSIP+ Tool. This edition is particularly important, as it will show for the very first time the status of implementation of the Common Project 1 Regulation, at a time where stakeholders are still suffering from the difficult economic situation posed by the consecutive waves of Covid-19 pandemic. The results within the SDP Monitoring View will give SDM the opportunity to identify the risks, support stakeholders and accelerate deployment.

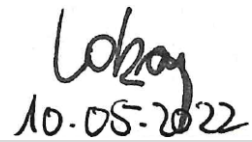
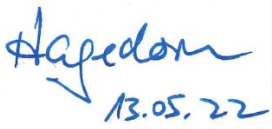
Mariagrazia La Piscopia
Chief Strategy and Programme
SESAR Deployment Manager

Document Title	LSSIP Year 2021 for Germany
Info Centre Reference	22/02/02/17
Date of Edition	17/05/2022
LSSIP Focal Point	Ralf Reiser – DFS internationales@dfs.de
LSSIP Contact Person	Goran Pavlović – EUROCONTROL/NMD/INF/PAS goran.pavlovic@eurocontrol.int
LSSIP Support Team	lssip.support@eurocontrol.int
Status	Released
Intended for	EUROCONTROL Stakeholders
Available in	https://www.eurocontrol.int/service/local-single-sky-implementation-monitoring

Reference Documents	
LSSIP Documents	https://www.eurocontrol.int/service/local-single-sky-implementation-monitoring
Master Plan Level 3 – Plan Edition 2021	https://www.eurocontrol.int/publication/european-atm-master-plan-implementation-plan-level-3
Master Plan Level 3 – Report Year 2021	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	Paper or online publications may be ordered from https://www.eisenschmidt.aero or https://secais.dfs.de/pilotservice/home.jsp?lang=en or in pilot shops.
FAB Performance Plan	https://www.fabec.eu/performance/performance-plan

APPROVAL SHEET

The following authorities have approved all parts of the LSSIP Year 2021 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 2021.

Stakeholder / Organisation	Name	Position	Signature and date
Federal Ministry for Digital and Transport	Michael LOKAY	Director Air Navigation Services Division (LF 17)	
Federal Ministry for Digital and Transport	Petra MENGELKOCH	Director Aerodromes Division (LF 15)	
DFS Deutsche Flugsicherung GmbH	Arndt SCHOENEMANN	Chief Executive Officer	
DWD Deutscher Wetterdienst	Dr. Renate HAGEDORN	Director Weather Forecasting Services	
Federal Ministry of Defence	Oberst i.G. Armin HAVENITH	Branch Chief Policy on Flight Regulations Air Traffic Management and Flight Safety	

DOCUMENT PRODUCTION

The following table shows the experts who have co-ordinated the different contributions, produced and reviewed this LSSIP Document.

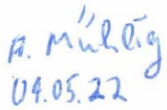
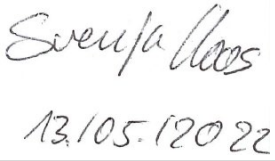
Stakeholder / Organisation	Name	Position	Signature
Federal Office of the Bundeswehr for Military Aviation (LufABw, DEU MAA)	Benjamin SEVERIN	LSSIP Focal Point German Military	
Federal Supervisory Authority for Air Navigation Services (BAF)	André MÜHLIG	LSSIP Focal Point German NSA	
DFS Deutsche Flugsicherung GmbH	Ralf REISER	LSSIP Focal Point DFS (German FP)	
DWD Deutscher Wetterdienst	Svenja KOOS	LSSIP Focal Point DWD	
EUROCONTROL Agency	Goran PAVLOVIĆ	LSSIP Contact Person for Germany	

TABLE OF CONTENTS

Executive Summary

National ATM Context

Germany (DE) is a member state of the European Union. Germany participates also in all relevant major international organisations in the field of ATM/ANS, both civil and military.

Civil aviation, including ATS (Air Traffic Services) for civil and military air traffic in Germany, falls under the responsibility of the Federal Ministry for Digital and Transport (MoT, "Bundesministerium für Digitales und Verkehr"). At times of tension or war, this responsibility is to be taken over by the Federal Ministry of Defence (MoD, "Bundesministerium der Verteidigung"). The MoD is nevertheless responsible at all times for ATM/ANS at military aerodromes and air defense matters and delegates responsibilities to its subordinate military entities.

The regional civil and military ATS are integrated within the DFS Deutsche Flugsicherung GmbH, the main air navigation service provider in Germany, a company organised under private law.

Military personnel released to the DFS have the same legal status as other DFS staff and are thus subject to civil safety oversight and civil certification.

The Deutscher Wetterdienst (DWD) is the designated aeronautical meteorological service provider for the airspace of the Federal Republic of Germany and, as a certified provider of air navigation services, supplies meteorological information and services to ensure the safety of aviation.

The Federal Supervisory Authority for Air Navigation Services (BAF, "Bundesaufsichtsamt für Flugsicherung"), a federal body subordinate to the MoT, acts as the NSA for Germany. BAF covers all tasks pertaining to an NSA/Competent Authority under the SES regulations. The NSA is fully separated from German ANS providers.

The Federal Office of the Bundeswehr for Military Aviation (LufABw, DEU MAA, "Luftfahrtamt der Bundeswehr") is a federal office subordinate to the MoD. LufABw is tasked to set the standards for the provision of military ANS and is acting as the Military Supervisory Authority (MSA) for all military ANSPs in Germany. The function of LufABw as MSA for Germany was reported to European Commission in 2015. LufABw and BAF cooperate based on a bilateral written agreement. As agreed between MoT and MoD, a common liaison office has been established and also reported to the European Commission.

The German Federal Bureau of Aircraft Accident Investigation (BFU, "Bundesstelle für Flugunfalluntersuchung") is a federal agency organisationally subordinated to the MoT, yet independent, responsible for the investigation of civil aircraft accidents and serious incidents within Germany.

Based on an interdepartmental agreement between the German MoT and the German MoD from September 1999, the BFU responsibilities were transferred to the Director, Bundeswehr Aviation Safety (GenFlSichhBw, "General Flugsicherheit in der Bundeswehr", an independent branch within the LufABw) for all accidents and incidents when solely military aircraft are involved. Investigations of accidents and malfunctions involving civil and military aircraft are conducted under the responsibility of the BFU, with participation of the Director, Bundeswehr Aviation Safety.

The German aerodrome landscape consists of, among others, larger international and smaller so-called regional airports (see Chapter 1.2). Frankfurt Main, Munich, Berlin Brandenburg and Düsseldorf airports are covered in this LSSIP edition as well as the airports Hamburg, Hannover, Cologne-Bonn, Nuremberg and Stuttgart. According to Article 6 of the German Aviation Act (LuftVG), the construction and operation of aerodromes are subject to prior approval, issued by the competent

aeronautical authority of the federal state acting on federal commission relating to civil aerodromes. 16 federal states (Länder) make up the Federal Republic of Germany. As principle enshrined in the German Basic Law this federal system means that many political decisions are taken in the Länder. In accordance with Article 87d (1) Basic Law civil air transport administration shall be conducted under federal administration.

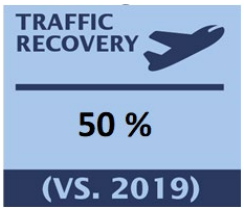
By a federal law requiring the consent of the German Bundesrat (upper house of the German parliament), responsibilities for air transport administration may be delegated to the Länder acting on federal commission (Article 87d (2) Basic Law).

In this regard § 31 (2) of the German Aviation Act delegates parts of the air transport administration responsibilities on federal commission to the Länder (so i.a. § 31 (2) point 4 relating to the approval of aerodromes, see above). Therefore, there are aviation authorities at federal level and at Federal State level.

Specific airspace blocks of the German upper airspace are served by Maastricht Upper Area Control Centre (MUAC), as established under the Maastricht Agreement by the four participating states (Belgium, Germany, Luxembourg and the Netherlands) and EUROCONTROL. MUAC, which is a NL-based ATS and CNS provider and directorate of EUROCONTROL, is specifically addressed in its own LSSIP document. The German MoT and NSA participate in the Maastricht Coordination Group (MCG) and the four states NSA Committee, which deal with regulatory and supervisory aspects as regards MUAC in a highly collaborative and coordinated manner.

Traffic and Capacity

Traffic was once again significantly influenced by the COVID-19 pandemic during 2021. During the first half of the year merely 33% of the total traffic in 2019 was registered. Traffic increases in 2021 were largely a result of positive trends in touristic traffic following the relinquishment of Corona restrictions from summer 2021 for continental traffic. Traffic fell by 49.7% in 2021 compared to 2019 within the area of responsibility of DFS.



Level of traffic compared to 2019

The graph indicates that the overall traffic in 2021 has reached 50% of 2019 level.

(The sources of traffic and delay data in this summary are NMIR and STATFOR)

The lowest traffic level was achieved in February 2021 with 27.9% of 2019 traffic. The traffic level expressed as a percentage of 2019 traffic was at its highest during the last quarter of 2021, rising to 72.7% in December 2021.

Traditional and low-cost airlines were particularly affected by the pandemic, amounting to only 41.9% and 39.2% of 2019 traffic, whereas business aviation reached 99.2%. On the other hand, freight traffic exceeded the 2019 traffic level by 12.9% in 2021 (these figures refer to the German airspace, including Hannover UIR).

The en-route Average Delay per Movement (ADM) "all causes" reached 0.24 minutes per flight in 2021; remaining low due to the pandemic with the resulting low traffic levels; this figure cannot realistically be compared with the 2019 value of 1.61 minutes per flight since values for 2021 are to date not post ops adjusted. The main causes of en-route ATFM delay in 2021 were "ATC Capacity" (50.7%), "Weather" (28.4%) and "ATC Staffing" (16.5%). The ACC with the highest share of en-route ATFM delay was Karlsruhe UAC (71.0%).

Summer En-Route Delay Bremen ACC was 0.35 min per flight

In Bremen ACC, ADM "all causes" reached 0.27 min per flight for the whole of 2021. The main causes of en-route ATFM delay were "ATC Capacity" (62.8%), "ATC Staffing" (16.4%) and "ATC Equipment" (12.0%). The implementation of the new ATM system iCAS is currently planned for 2025.

Summer En-Route Delay Langen ACC was 0.04 min per flight

In Langen ACC, ADM "all causes" amounted to 0.03 min per flight for the whole of 2021.

Summer En-Route Delay Munich ACC was 0.02 min per flight

In Munich ACC, ADM "all causes" amounted to 0.02 min per flight for the whole of 2021. The implementation of the new ATM system iCAS is scheduled for 2023.

Summer En-Route Delay Karlsruhe UAC was 0.38 min per flight

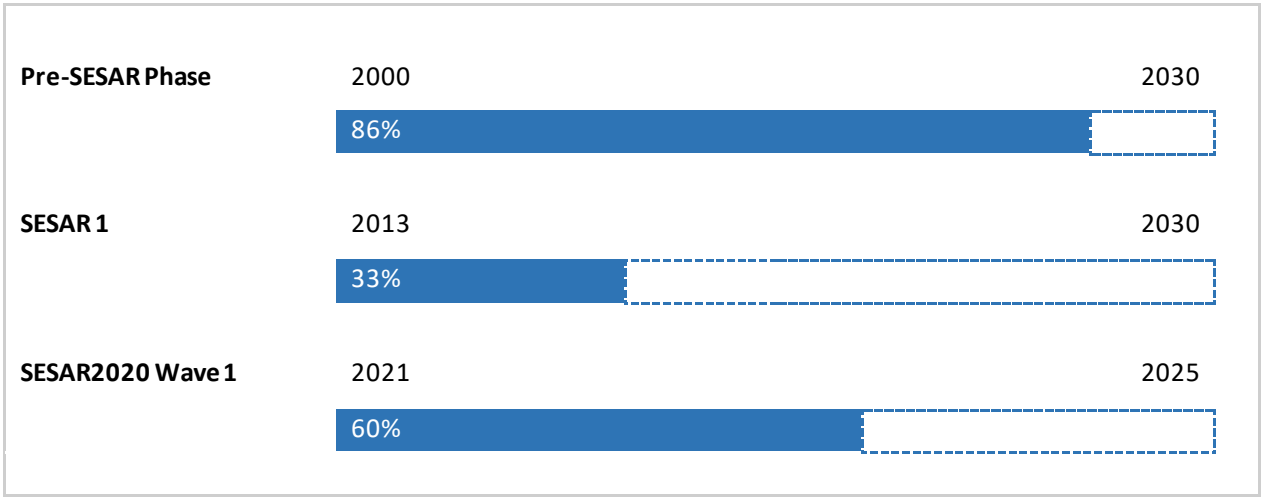
In Karlsruhe UAC, ADM "all causes" amounted to 0.26 min per flight for the whole of 2021. The main causes of en-route ATFM delay were "ATC Capacity" (48.1%), "ATC Staffing" (16.3%) and "Weather" (34.7%).

The EUROCONTROL seven-year forecast, published in October 2021, forecasts between 71.4% and 93.0% of 2019 traffic in Germany for 2022. In 2027, a range of between 98.5% and 116.0% of 2019 traffic is forecast.

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).

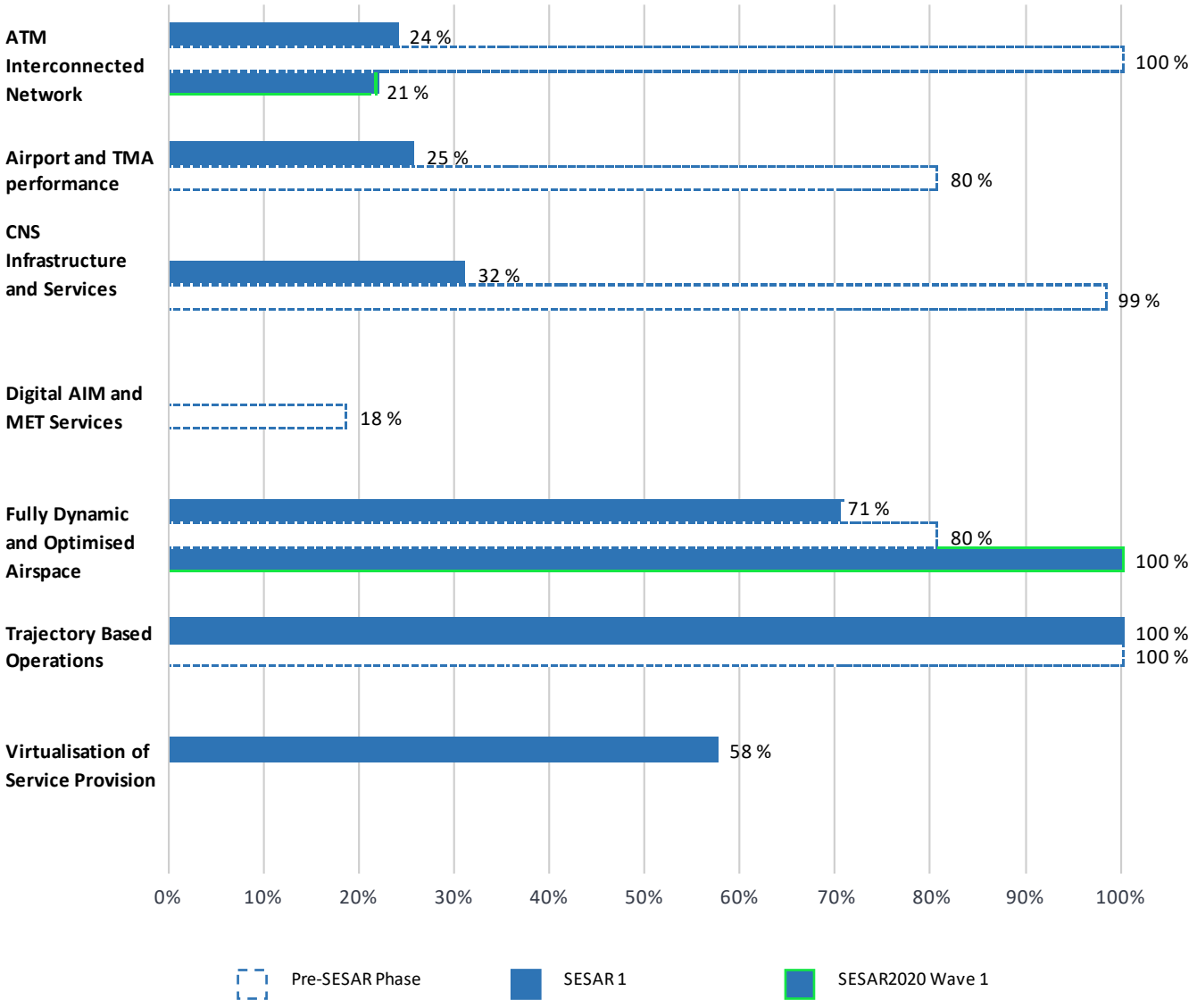
It shows the average implementation progress for all objectives grouped by SESAR Phase, excluding those for which the State is outside the applicability area as defined on a yearly basis in the European ATM Master Plan (Level 3) 2021, i.e. disregarding the declared "NOT APPLICABLE" LSSIP progress status.



Source: LSSIP DB

Progress per SESAR Essential Operational Changes and Phase

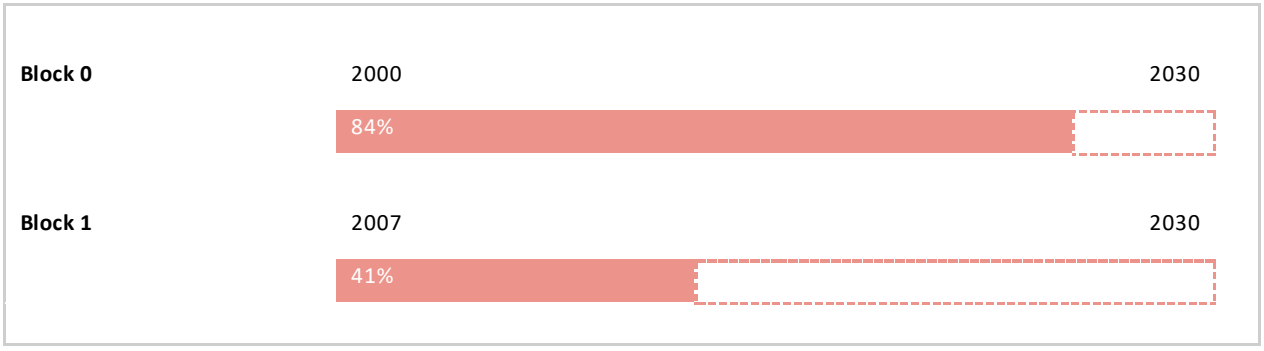
The figure below shows the progress made so far, per SESAR Essential Operational Changes, in the implementation of the SESAR phases. The percentages are calculated as an average, per EOC, of the same objectives as in the previous paragraph.



Source: 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: LSSIP DB

ATM Deployment Outlook

State Objectives

✓ **Deployed in 2020 - 2021**	**- Initial Free Route Airspace** AOM21.2 - 100 % progress **- Aeronautical Information Exchange - Airspace Availability Service** INF10.4 - 100 % progress **- Aeronautical Information Exchange - Airspace structure service** INF10.3 - 100 % progress **- Cooperative Network Information Exchange Measures Service (Traffic Regulation)** INF10.15 - 100 % progress **- Management of Predefined Airspace Configurations** AOM19.4 - 100 % progress **- 8,33 kHz Air-Ground Voice Channel Spacing below FL195** ITY-AGVCS2 - 100 % progress

By 2022	By 2023	By 2024	By 2025+
- Common Flight Message Transfer Protocol (FMTP) ITY-FMTP - 60 % progress **- Implementation of ground-ground automated co-ordination processes** ITY-COTR - 91 % progress **- Enhanced Short Term ATFCM Measures** FCM04.2 - 00 % progress **- Automated Support for Traffic Complexity Assessment and Flight Planning interfaces** FCM06.1 - 21 % progress	**- Interactive Rolling NOP** FCM10 - 00 % progress **- Electronic Terrain and Obstacle Data (eTOD)** INF07 - 18 % progress	**- RNP Approach Procedures to instrument RWY** NAV10 - 98 % progress	**- SWIM PKI and cyber security** INF10.2 - 17 % progress **- Aeronautical Information Exchange - Airspace Reservation (ARES)** INF10.5 - 25 % progress **- Meteorological Information Exchange - Aerodrome Meteorological information Service** INF10.10 - 03 % progress **- Meteorological Information Exchange - En-Route and Approach Meteorological information service** INF10.11 - 03 % progress

By 2022	By 2023	By 2024	By 2025+
			- Meteorological Information Exchange - Network Meteorological Information INF10.12 - 01 % progress **- Cooperative Network Information Exchange - ATFCM Tactical Updates Service (Airport Capacity and Enroute)** INF10.13 - 05 % progress **- Cooperative Network Information Exchange Flight Management Service (Slots and NOP/AOP integration)** INF10.14 - 07 % progress **- Cooperative Network Information Exchange - Short Term ATFCM Measures services (MCDM, eHelpdesk, STAM measures)** INF10.16 - 05 % progress **- Cooperative Network Information Exchange Counts service (ATFCM Congestion Points)** INF10.17 - 10 % progress **- Flight Information Exchange (Yellow Profile)** **- Extended AMAN SWIM Service** INF10.23 - 03 % progress **- Aircraft Identification** ITY-ACID - 98 % progress **- ASM and A-FUA** AOM19.5 - 58 % progress **- Voice over Internet Protocol (VoIP) in Airport/Terminal** COM11.2 - 20 % progress **- Voice over Internet Protocol (VoIP) in En-Route** COM11.1 - 43 % progress **- RNP 1 in TMA Operations** NAV03.2 - 68 % progress **- RNAV 1 in TMA Operations** NAV03.1 - 78 % progress

Airport Objectives - Erfurt-Weimar Airport

✓ **Deployed in 2020 - 2021** None

By 2022	By 2023	By 2024	By 2025+
- Remote Tower Services AOP14 - 50 % progress			

Airport Objectives - Cologne - Bonn Airport

✓ **Deployed in 2020 - 2021** None

By 2022	By 2023	By 2024	By 2025+
- Provision/integration of departure planning information to NMOC AOP17 - 50 % progress			

Airport Objectives - Nuremberg Airport

✓ **Deployed in 2020 - 2021** None

By 2022	By 2023	By 2024	By 2025+
	- Continuous Descent Operations (CDO) ENV01 - 78 % progress		

Airport Objectives - Dresden Airport

✓ **Deployed in 2020 - 2021** None

By 2022	By 2023	By 2024	By 2025+
	- Remote Tower Services AOP14 - 25 % progress		

Airport Objectives - Berlin - Brandenburg International Airport

✓ **Deployed in 2020 - 2021**

- Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)
AOP04.2 - 100 % progress
- Airport Collaborative Environmental Management
ENV02 - 100 % progress

By 2022	By 2023	By 2024	By 2025+
- Departure Management Synchronised with Pre-departure sequencing AOP19 - 95 % progress	**- Automated Assistance to Controller for Surface Movement Planning and Routing** AOP13 - 00 % progress **- Initial AOP/NOP Information Sharing** FCM11.1 - 03 % progress **- Initial Airport Operations Plan** AOP11.1 - 14 % progress	**- Arrival Management Extended to En-route Airspace** ATC15.2 - 34 % progress	**- Airport Safety Nets** AOP12.1 - 11 % progress **- AOP/NOP integration** FCM11.2 - 03 % progress **- Extended Airport Operations Plan** AOP11.2 - 01 % progress

Airport Objectives - Düsseldorf Airport

✓ **Deployed in 2020 - 2021** None

By 2022	By 2023	By 2024	By 2025+
- Departure Management Synchronised with Pre-departure sequencing AOP19 - 95 % progress **- Continuous Climb Operations (CCO)** ENV03 - 00 % progress **- AOP/NOP integration** FCM11.2 - 06 % progress	**- Initial AOP/NOP Information Sharing** FCM11.1 - 05 % progress **- Initial Airport Operations Plan** AOP11.1 - 63 % progress **- Automated Assistance to Controller for Surface Movement Planning and Routing** AOP13 - 00 % progress	**- Arrival Management Extended to En-route Airspace** ATC15.2 - 39 % progress	**- Airport Safety Nets** AOP12.1 - 02 % progress **- Extended Airport Operations Plan** AOP11.2 - 03 % progress

Airport Objectives - Stuttgart Airport

✓ **Deployed in 2020 - 2021** None

By 2022	By 2023	By 2024	By 2025+
- Departure Management Synchronised with Pre-departure sequencing AOP19 - 96 % progress	**- Initial Airport Operations Plan** AOP11.1 - 12 % progress **- Continuous Descent Operations (CDO)** ENV01 - 77 % progress **- Enhanced traffic situational awareness and airport safety nets for the vehicle drivers** AOP15 - 00 % progress		**- AOP/NOP integration** FCM11.2 - 11 % progress **- Extended Airport Operations Plan** AOP11.2 - 01 % progress

Airport Objectives - München Airport

✓ **Deployed in 2020 - 2021** None

By 2022	By 2023	By 2024	By 2025+
	- Initial AOP/NOP Information Sharing FCM11.1 - 01 % progress **- Initial Airport Operations Plan** AOP11.1 - 15 % progress **- Automated Assistance to Controller for Surface Movement Planning and Routing** AOP13 - 00 % progress		**- Airport Safety Nets** AOP12.1 - 09 % progress **- Extended Airport Operations Plan** AOP11.2 - 01 % progress

Airport Objectives - Frankfurt Airport

✓ **Deployed in 2020 - 2021** None

By 2022	By 2023	By 2024	By 2025+
- Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2) AOP04.2 - 50 % progress **- Departure Management Synchronised with Pre-departure sequencing** AOP19 - 95 % progress **- Continuous Climb Operations (CCO)** ENV03 - 00 % progress	**- Initial AOP/NOP Information Sharing** FCM11.1 - 03 % progress **- Initial Airport Operations Plan** AOP11.1 - 33 % progress **- Automated Assistance to Controller for Surface Movement Planning and Routing** AOP13 - 00 % progress **- Time-Based Separation** AOP10 - 06 % progress		**- Airport Safety Nets** AOP12.1 - 12 % progress **- Extended Airport Operations Plan** AOP11.2 - 01 % progress **- Continuous Descent Operations (CDO)** ENV01 - 82 % progress

Airport Objectives - Hannover Airport

✓ **Deployed in 2020 - 2021** None

By 2022	By 2023	By 2024	By 2025+
			- Continuous Descent Operations (CDO) ENV01 - 82 % progress

Airport Objectives - Hamburg Airport

✓ **Deployed in 2020 - 2021** None

By 2022	By 2023	By 2024	By 2025+
- Departure Management Synchronised with Pre-departure sequencing AOP19 - 96 % progress	**- Initial Airport Operations Plan** AOP11.1 - 17 % progress		**- Extended Airport Operations Plan** AOP11.2 - 01 % progress **- AOP/NOP integration** FCM11.2 - 11 % progress **- Continuous Descent Operations (CDO)** ENV01 - 82 % progress

Overall situation of Implementation Objectives

Main Objectives	Topic	Progress at the end of 2021	Status	2021		2022		2023		2024		2025		2026		>2026
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	58%	Ongoing				*									
AOM21.2	Initial Free Route Airspace	100%	Completed				*									
AOM21.3	Enhanced Free Route Airspace Operations	100%	Completed										*			
AOP04.1(EDDB)	Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance (former Level 1)	100%	Completed													
AOP04.1(EDDF)	Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance (former Level 1)	100%	Completed													
AOP04.1(EDDL)	Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance (former Level 1)	100%	Completed													
AOP04.1(EDDM)	Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance (former Level 1)	100%	Completed													
AOP04.2(EDDB)	Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)	100%	Completed										*			
AOP04.2(EDDF)	Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)	50%	Ongoing										*			
AOP04.2(EDDL)	Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)	100%	Completed										*			
AOP04.2(EDDM)	Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)	100%	Completed										*			
AOP05(EDDB)	Airport Collaborative Decision Making (A-CDM)	100%	Completed													
AOP05(EDDF)	Airport Collaborative Decision Making (A-CDM)	100%	Completed													
AOP05(EDDH)	Airport Collaborative Decision Making (A-CDM)	100%	Completed													

Main Objectives	Topic	Progress at the end of 2021	Status	2021		2022		2023		2024		2025		2026		>2026
AOP05(EDDL)	Airport Collaborative Decision Making (A-CDM)	100%	Completed													
AOP05(EDDM)	Airport Collaborative Decision Making (A-CDM)	100%	Completed													
AOP05(EDDS)	Airport Collaborative Decision Making (A-CDM)	100%	Completed													
AOP10(EDDF)	Time-Based Separation	6%	Ongoing							*						
AOP10(EDDL)	Time-Based Separation	0%	Not yet planned							*						
AOP10(EDDM)	Time-Based Separation	0%	Not yet planned							*						
AOP11.1(EDDB)	Initial Airport Operations Plan	14%	Ongoing						*							
AOP11.1(EDDF)	Initial Airport Operations Plan	33%	Ongoing						*							
AOP11.1(EDDH)	Initial Airport Operations Plan	17%	Ongoing						*							
AOP11.1(EDDL)	Initial Airport Operations Plan	63%	Ongoing						*							
AOP11.1(EDDM)	Initial Airport Operations Plan	15%	Ongoing						*							
AOP11.1(EDDN)	Initial Airport Operations Plan	0%	Not Applicable						*							
AOP11.1(EDDS)	Initial Airport Operations Plan	12%	Ongoing						*							
AOP11.1(EDDV)	Initial Airport Operations Plan	0%	Not Applicable						*							
AOP11.2(EDDB)	Extended Airport Operations Plan	1%	Ongoing													2027
AOP11.2(EDDF)	Extended Airport Operations Plan	1%	Ongoing													2027
AOP11.2(EDDH)	Extended Airport Operations Plan	1%	Ongoing													2027
AOP11.2(EDDL)	Extended Airport Operations Plan	3%	Ongoing													2027
AOP11.2(EDDM)	Extended Airport Operations Plan	1%	Ongoing													2027
AOP11.2(EDDS)	Extended Airport Operations Plan	1%	Ongoing													2027
AOP12.1(EDDB)	Airport Safety Nets	11%	Ongoing										*			
AOP12.1(EDDF)	Airport Safety Nets	12%	Ongoing										*			
AOP12.1(EDDL)	Airport Safety Nets	2%	Ongoing										*			
AOP12.1(EDDM)	Airport Safety Nets	9%	Ongoing										*			
AOP13(EDDB)	Automated Assistance to Controller for Surface Movement Planning and Routing	0%	Planned										*			

Main Objectives	Topic	Progress at the end of 2021	Status	2021	2022	2023	2024	2025	2026	>2026
AOP13(EDDF)	Automated Assistance to Controller for Surface Movement Planning and Routing	0%	Planned					*		
AOP13(EDDL)	Automated Assistance to Controller for Surface Movement Planning and Routing	0%	Planned					*		
AOP13(EDDM)	Automated Assistance to Controller for Surface Movement Planning and Routing	0%	Planned					*		
AOP14(EDDC)	Remote Tower Services	25%	Ongoing							2030
AOP14(EDDE)	Remote Tower Services	50%	Ongoing							2030
AOP14(EDDR)	Remote Tower Services	100%	Completed							2030
AOP15(EDDB)	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers	0%	Not yet planned							2030
AOP15(EDDF)	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers	100%	Completed							2030
AOP15(EDDH)	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers	0%	Not Applicable							2030
AOP15(EDDL)	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers	0%	Not yet planned							2030
AOP15(EDDM)	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers	0%	Not yet planned							2030
AOP15(EDDN)	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers	0%	Not Applicable							2030
AOP15(EDDS)	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers	0%	Ongoing							2030
AOP16(EDDB)	Guidance assistance through airfield ground lighting	0%	Not yet planned							2030
AOP16(EDDF)	Guidance assistance through airfield ground lighting	0%	Not yet planned							2030
AOP16(EDDH)	Guidance assistance through airfield ground lighting	0%	Not Applicable							2030
AOP16(EDDL)	Guidance assistance through airfield ground lighting	0%	Not yet planned							2030

Main Objectives	Topic	Progress at the end of 2021	Status	2021		2022		2023		2024		2025		2026		>2026
AOP16(EDDM)	Guidance assistance through airfield ground lighting	0%	Not Applicable													2030
AOP16(EDDN)	Guidance assistance through airfield ground lighting	0%	Not Applicable													2030
AOP16(EDDS)	Guidance assistance through airfield ground lighting	0%	Not Applicable													2030
AOP17(EDDC)	Provision/integration of departure planning information to NMOC	100%	Completed													2030
AOP17(EDDE)	Provision/integration of departure planning information to NMOC	100%	Completed													2030
AOP17(EDDG)	Provision/integration of departure planning information to NMOC	100%	Completed													2030
AOP17(EDDH)	Provision/integration of departure planning information to NMOC	0%	Not Applicable													2030
AOP17(EDDK)	Provision/integration of departure planning information to NMOC	50%	Ongoing													2030
AOP17(EDDL)	Provision/integration of departure planning information to NMOC	0%	Not Applicable													2030
AOP17(EDDM)	Provision/integration of departure planning information to NMOC	0%	Not Applicable													2030
AOP17(EDDR)	Provision/integration of departure planning information to NMOC	100%	Completed													2030
AOP17(EDDS)	Provision/integration of departure planning information to NMOC	0%	Not Applicable													2030
AOP17(EDDW)	Provision/integration of departure planning information to NMOC	100%	Completed													2030
AOP18(EDDB)	Runway Status Lights (RWSL)	0%	Not yet planned													2030
AOP18(EDDF)	Runway Status Lights (RWSL)	0%	Not yet planned													2030
AOP18(EDDH)	Runway Status Lights (RWSL)	0%	Not Applicable													2030

Main Objectives	Topic	Progress at the end of 2021	Status	2021		2022		2023		2024		2025		2026		>2026
AOP18(EDDL)	Runway Status Lights (RWSL)	0%	Not Applicable													2030
AOP18(EDDM)	Runway Status Lights (RWSL)	0%	Not yet planned													2030
AOP18(EDDN)	Runway Status Lights (RWSL)	0%	Not Applicable													2030
AOP18(EDDS)	Runway Status Lights (RWSL)	0%	Not Applicable													2030
AOP19(EDDB)	Departure Management Synchronised with Pre-departure sequencing	95%	Ongoing				*									
AOP19(EDDF)	Departure Management Synchronised with Pre-departure sequencing	95%	Ongoing				*									
AOP19(EDDH)	Departure Management Synchronised with Pre-departure sequencing	96%	Ongoing				*									
AOP19(EDDL)	Departure Management Synchronised with Pre-departure sequencing	95%	Ongoing				*									
AOP19(EDDM)	Departure Management Synchronised with Pre-departure sequencing	100%	Completed				*									
AOP19(EDDS)	Departure Management Synchronised with Pre-departure sequencing	96%	Ongoing				*									
ATC02.8	Ground-Based Safety Nets	100%	Completed		*											
ATC07.1(EDDB)	AMAN Tools and Procedures	100%	Completed													
ATC07.1(EDDF)	AMAN Tools and Procedures	100%	Completed													
ATC07.1(EDDL)	AMAN Tools and Procedures	100%	Completed													
ATC07.1(EDDM)	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	100%	Completed													
ATC15.2(EDDB)	Arrival Management Extended to En-route Airspace	34%	Ongoing								*					
ATC15.2(EDDF)	Arrival Management Extended to En-route Airspace	100%	Completed								*					

Main Objectives	Topic	Progress at the end of 2021	Status	2021		2022		2023		2024		2025		2026		>2026
ATC15.2(EDDL)	Arrival Management Extended to En-route Airspace	39%	Ongoing								*					
ATC15.2(EDDM)	Arrival Management Extended to En-route Airspace	100%	Completed								*					
ATC15.2bis	Arrival Management Extended to En-route Airspace (non CP1)	48%	Ongoing								*					
ATC18	Multi-Sector Planning En-route - 1P2T	0%	Not yet planned													2030
ATC19(EDDB)	AMAN/DMAN Integration	0%	Not yet planned													2027
ATC19(EDDL)	AMAN/DMAN Integration	0%	Not yet planned													2027
ATC20	Enhanced STCA with down-linked parameters via Mode S EHS	100%	Completed													2030
COM10.1	Migrate from AFTN to AMHS (Basic service)	100%	Completed													
COM10.2	Extended AMHS	100%	Completed								*					
COM11.1	Voice over Internet Protocol (VoIP) in En-Route	43%	Ongoing		*											
COM11.2	Voice over Internet Protocol (VoIP) in Airport/Terminal	20%	Ongoing						*							
COM12	New Pan-European Network Service (NewPENS)	100%	Completed								*					
ENV01(EDDB)	Continuous Descent Operations (CDO)	0%	Not yet planned						*							
ENV01(EDDF)	Continuous Descent Operations (CDO)	82%	Completed						*							
ENV01(EDDH)	Continuous Descent Operations (CDO)	82%	Completed						*							
ENV01(EDDK)	Continuous Descent Operations (CDO)	82%	Completed						*							
ENV01(EDDL)	Continuous Descent Operations (CDO)	78%	Completed						*							
ENV01(EDDM)	Continuous Descent Operations (CDO)	82%	Completed						*							
ENV01(EDDN)	Continuous Descent Operations (CDO)	78%	Ongoing						*							
ENV01(EDDS)	Continuous Descent Operations (CDO)	77%	Ongoing						*							
ENV01(EDDV)	Continuous Descent Operations (CDO)	82%	Completed						*							
ENV02(EDDB)	Airport Collaborative Environmental Management	100%	Completed													2030
ENV02(EDDF)	Airport Collaborative Environmental Management	100%	Completed													2030
ENV02(EDDL)	Airport Collaborative Environmental Management	100%	Completed													2030

Main Objectives	Topic	Progress at the end of 2021	Status	2021		2022		2023		2024		2025		2026		>2026
ENV02(EDDM)	Airport Collaborative Environmental Management	100%	Completed													2030
ENV03(EDDB)	Continuous Climb Operations (CCO)	0%	Not yet planned													2030
ENV03(EDDF)	Continuous Climb Operations (CCO)	0%	Planned													2030
ENV03(EDDL)	Continuous Climb Operations (CCO)	0%	Planned													2030
ENV03(EDDM)	Continuous Climb Operations (CCO)	0%	Not yet planned													2030
FCM03	Collaborative Flight Planning	100%	Completed				*									
FCM04.2	Enhanced Short Term ATFCM Measures	0%	Planned				*									
FCM06.1	Automated Support for Traffic Complexity Assessment and Flight Planning interfaces	21%	Ongoing				*									
FCM10	Interactive Rolling NOP	0%	Planned						*							
FCM11.1(EDDB)	Initial AOP/NOP Information Sharing	3%	Ongoing						*							
FCM11.1(EDDF)	Initial AOP/NOP Information Sharing	3%	Ongoing						*							
FCM11.1(EDDL)	Initial AOP/NOP Information Sharing	5%	Ongoing						*							
FCM11.1(EDDM)	Initial AOP/NOP Information Sharing	1%	Ongoing						*							
FCM11.2(EDDB)	AOP/NOP integration	3%	Ongoing													2027
FCM11.2(EDDF)	AOP/NOP integration	0%	Not yet planned													2027
FCM11.2(EDDH)	AOP/NOP integration	11%	Ongoing													2027
FCM11.2(EDDL)	AOP/NOP integration	6%	Ongoing													2027
FCM11.2(EDDM)	AOP/NOP integration	0%	Not yet planned													2027
FCM11.2(EDDS)	AOP/NOP integration	11%	Ongoing													2027
INF07	Electronic Terrain and Obstacle Data (eTOD)	18%	Ongoing													
INF10.10	Meteorological Information Exchange - Aerodrome Meteorological information Service	3%	Ongoing										*			
INF10.11	Meteorological Information Exchange - En-Route and Approach Meteorological information service	3%	Ongoing										*			

Main Objectives	Topic	Progress at the end of 2021	Status	2021	2022	2023	2024	2025	2026	>2026
INF10.12	Meteorological Information Exchange - Network Meteorological Information	1%	Ongoing					*		
INF10.13	Cooperative Network Information Exchange - ATFCM Tactical Updates Service (Airport Capacity and Enroute)	5%	Ongoing					*		
INF10.14	Cooperative Network Information Exchange – Flight Management Service (Slots and NOP/AOP integration)	7%	Ongoing					*		
INF10.15	Cooperative Network Information Exchange – Measures Service (Traffic Regulation)	100%	Completed					*		
INF10.16	Cooperative Network Information Exchange - Short Term ATFCM Measures services (MCDM, eHelpdesk, STAM measures)	5%	Ongoing					*		
INF10.17	Cooperative Network Information Exchange – Counts service (ATFCM Congestion Points)	10%	Ongoing					*		
INF10.19	Flight Information Exchange (Yellow Profile) - Flight Data Request Service	0%	Not yet planned					*		
INF10.2	Stakeholders' SWIM PKI and cyber security	17%	Ongoing					*		
INF10.20	Flight Information Exchange (Yellow Profile) - Notification Service	0%	Not yet planned					*		
INF10.21	Flight Information Exchange (Yellow Profile) - Data Publication Service	0%	Not yet planned					*		
INF10.23	Flight Information Exchange (Yellow Profile) - Extended AMAN SWIM Service	3%	Ongoing					*		
INF10.3	Aeronautical Information Exchange - Airspace structure service	100%	Completed					*		
INF10.4	Aeronautical Information Exchange - Airspace Availability Service	100%	Completed					*		
INF10.5	Aeronautical Information Exchange - Airspace Reservation (ARES)	25%	Ongoing					*		
INF10.6	Aeronautical Information Exchange – Digital NOTAM service	0%	Not yet planned					*		

Main Objectives	Topic	Progress at the end of 2021	Status	2021		2022		2023		2024		2025		2026		>2026
INF10.7	Aeronautical Information Exchange - Aerodrome mapping service	0%	Not yet planned										*			
INF10.8	Aeronautical Information Exchange - Aeronautical Information Features service	0%	Not yet planned										*			
INF10.9	Meteorological Information Exchange - Volcanic Ash Mass Concentration information service	0%	Not yet planned										*			
ITY-ACID	Aircraft Identification	98%	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)	60%	Ongoing													
NAV03.1	RNAV 1 in TMA Operations	78%	Ongoing													2030
NAV03.2	RNP 1 in TMA Operations	68%	Ongoing													2030
NAV10	RNP Approach Procedures to instrument RWY	98%	Ongoing							*						
NAV12	ATS IFR Routes for Rotorcraft Operations	0%	Not Applicable													2030
SAF11	Improve Runway Safety by Preventing Runway Excursions	100%	Completed													

LEGEND:

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

Source: LSSIP DB

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 2021, 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, taking into account the current aviation situation caused by the COVID-19 crisis;

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.

1. National ATM Environment

1.1. Geographical Scope

International Membership

Germany is a Member of the following international organisations in the field of ATM (in the order of joining):

Organisation		Since
ITU	✓	1866
WMO	✓	1954
ECAC	✓	1955
NATO	✓	1955
ICAO	✓	1956
European Union	✓	1958
EUROCONTROL	✓	1960
EUMETNET	✓	1995
EASA	✓	2003
EDA	✓	2004
FABEC	✓	2013

Geographical description of the FIR(s)

This LSSIP edition covers information about all German UIRs/FIRs, except Hannover UIR.

The German FIRs are:	The German UIRs are:
• Bremen FIR	• Rhein UIR
• Langen FIR	• Hannover UIR
• Munich FIR	

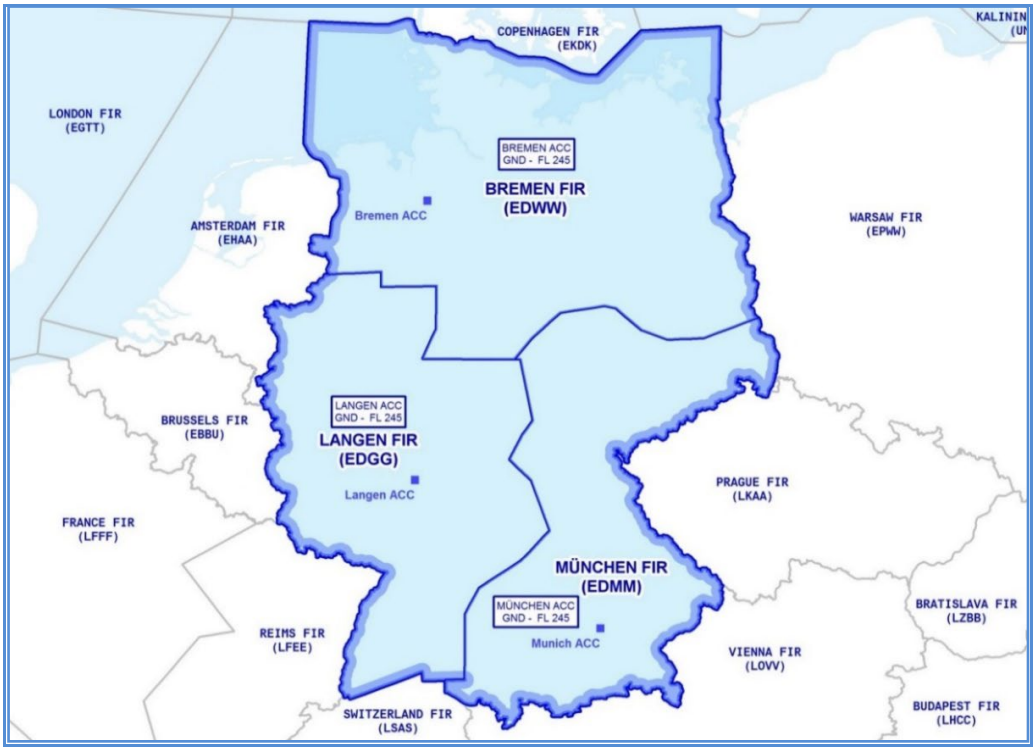
Germany FIRs for the lower airspace are surrounded by FIRs of 9 states, namely:	Germany UIRs for the upper airspace are surrounded by UIRs/FIRs of 9 states, namely:
• Copenhagen FIR (Denmark)	• Copenhagen FIR (Denmark)
• Sweden FIR	• Sweden FIR
• Warsaw FIR (Poland)	• Warsaw FIR (Poland)
• Prague FIR (Czech Republic)	• Prague FIR (Czech Republic)
• Vienna FIR (Austria)	• Vienna FIR (Austria)
• Switzerland FIR	• Switzerland UIR
• Reims FIR (France)	• France UIR
• Brussels FIR (Belgium)	• Brussels UIR (Belgium)
• Amsterdam FIR (The Netherlands)	• Amsterdam FIR (The Netherlands)

The FIR is separated from the UIR in flight level FL245.

Hannover UIR is controlled by MUAC. While the division flight level between Maastricht UAC and the Langen ACC / Bremen ACC is FL245, the division flight level between Karlsruhe UAC and Bremen ACC is FL285.

Munich ACC is responsible for the control of flights in Munich FIR to FL245 and in parts of the Rhein UIR to UNL. It is also responsible for Munich FIR and part of Rhein UIR to FL315.

For detailed information about the German FIRs and UIRs, especially their lateral limits and different ATS responsibilities within Rhein UIR, see IFR AIP Germany, Part 2 ENR 2.1.



DE – Lower Airspace - Chart supplied by DFS Aeronautical Information Management

DE – Upper Airspace - Chart supplied by DFS Aeronautical Information Management

Airspace Classification and Organisation

The classification of airspace in Germany is depicted in the diagram below.

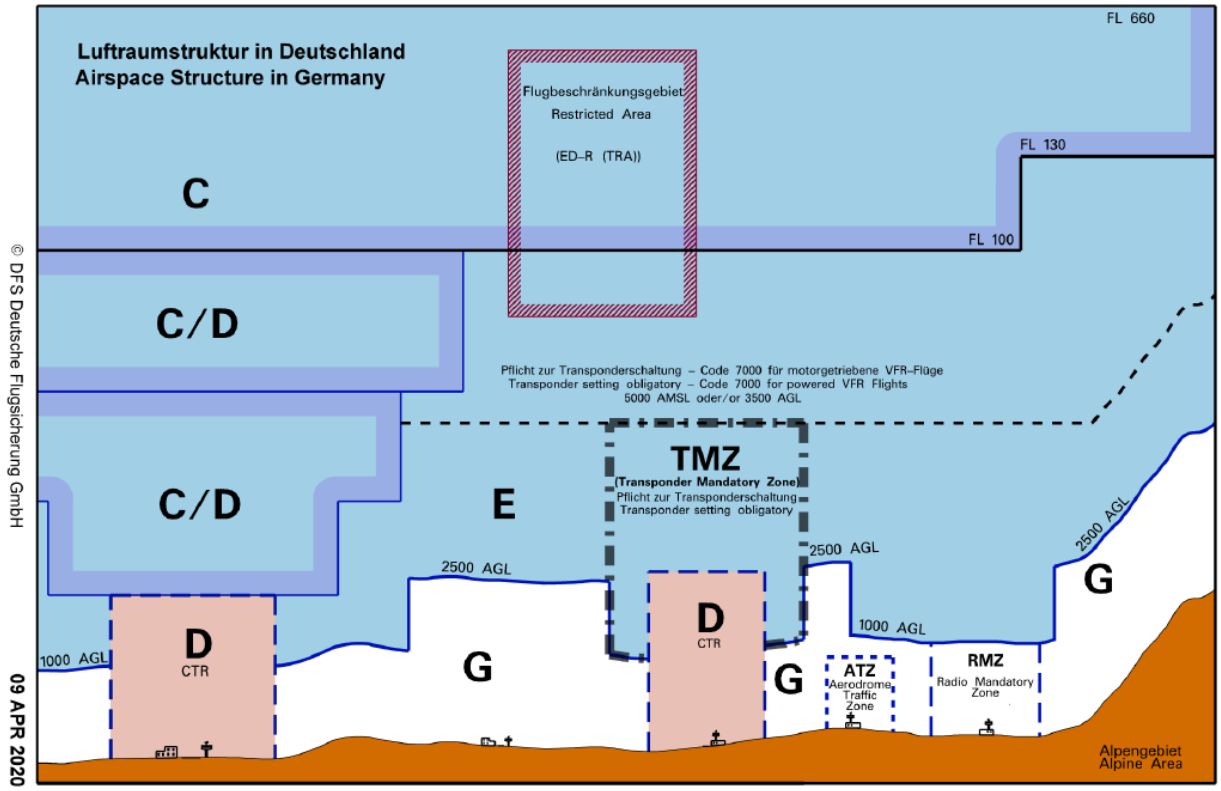


Chart supplied by DFS Aeronautical Information Management (AIP VFR ENR 1-1)

ATC Units

The chart below shows ANS units in Germany at international and regional airports as well as military airports with civil use and the respective service provider.

Federal Agency for Cartography and Geodesy

Federal Supervisory Authority for Air Navigation Services

Locations of ANSP provision in Germany (non-AFIS)

Date: 01.01.2022

Geodetic Basis: WGS 84
Projection: Lambert conformal conic projection

Scale 1:2.500.000
(when printed on DIN A3)
0 25 50 100 Kilometres

Sources: © GeoBasis-DE/BKG 2019, © EuroGeographics

Order number: 220317_013_003_P01d
© Federal Agency for Cartography and Geodesy (2022) BKG

List of ACCs/UACs/APPs

The following table lists the ACCs/UACs/APPs (with associated FIRs/UIRs) within the airspace for which the DFS Deutsche Flugsicherung GmbH is responsible. Note that the APP sectors are integrated into the ACCs. The figures for APP are given for the sectors responsible for the airports Berlin, Cologne/Bonn, Düsseldorf, Frankfurt, Hamburg, Hannover, Munich and Stuttgart. The number of sectors, as indicated in this table, is the maximum number of control sectors that can be operated simultaneously by the respective unit.

The ATC units within the airspace for which the DFS is responsible are as follows:

ATC Unit	Number of sectors		Associated FIR(s)	Remarks
	En-route	TMA		
Bremen (ACC)	12 ENR + 7 APP	The approach sectors are integrated in the ACC.	Bremen FIR	4 approach sectors in Berlin and the approach sectors Hamburg East, Hamburg West and Hannover. The maximum possible configuration consisted of 19 sectors. Berlin departure sectors north and south were always combined. The en-route sectors Eider East and Eider West are always combined except in case of military exercises.
Langen (ACC)	22 ENR + 10 APP	The approach sectors are integrated in the ACC.	Langen FIR	3 sectors APP Frankfurt, 2 sectors APP Stuttgart, 2 sectors APP Cologne/Bonn and 3 sectors APP Düsseldorf, 3 sectors with predominantly military traffic. The maximum possible configuration consisted of 32 sectors; the sectors Neckar High + Neckar Low were usually combined.
Munich (ACC)	19 ENR + 4 APP		Munich FIR	4 sectors APP Munich, 4 en-route sectors with a high share of APP traffic (Franken Low, Thüringen Low North and South, Sachsen Low). The maximum possible configuration consisted of 23 sectors; the sectors Thüringen Low North + Thüringen Low South and the sectors Sachsen Low + Meissen were usually combined.
Karlsruhe (UAC)	43 ENR	-	Rhein UIR	The maximum possible configuration consisted of 43 sectors.

1.2. National Stakeholders

The main National Stakeholders involved in ATM in Germany are:

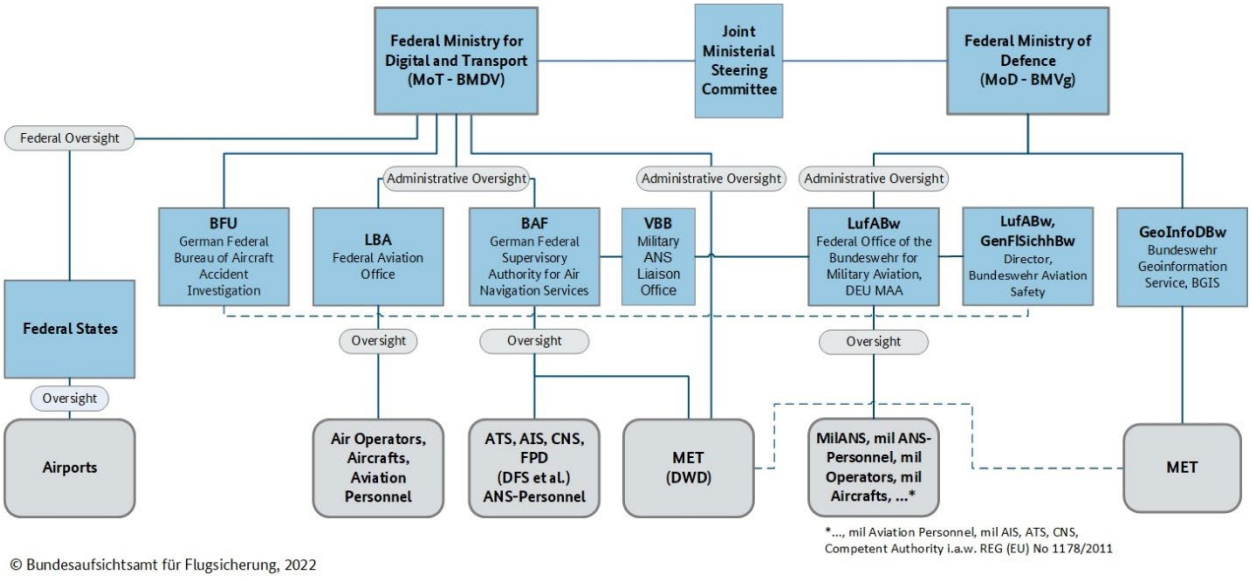
- **Federal Ministry for Digital and Transport, BMDV** (**MoT**, "Bundesministerium für Digitales und Verkehr") is the state federal authority for civil aviation in Germany. The **Directorate General for Civil Aviation (LF)** within the MoT is divided into nine divisions with "**LF 17 – Air Navigation Services, BAF"** being the division/office concerned with the regulatory tasks for air navigation services. The division/office responsibility for meteorology and the DWD (Germany's provider of aeronautical meteorological services) is allocated to the Directorate General for Digital Connectivity Division DK 22.
- **Federal Supervisory Authority for Air Navigation Services, BAF** (**NSA**, "Bundesaufsichtsamt für Flugsicherung"), a federal body subordinate to the MoT, acts as the **NSA for Germany**. BAF covers all tasks pertaining to a NSA under the SES regulations. The NSA is fully separated from German ANS providers. It has been established as the German National Supervisory Authority for Air Navigation Services by Federal Act, effective since August 2009.
- **Federal Office of Civil Aviation - Civil Aviation Authority** (**LBA**, "Luftfahrt-Bundesamt"). LBA has been charged by law with certain tasks in German civil aviation. Among others the LBA is responsible for the supervision of aviation industry, public transportation by air and General Aviation as well as licensing of airline transport pilots.
- **Federal Bureau of Aircraft Accident Investigation** (**BFU**, "Bundesstelle für Flugunfalluntersuchung"); an independent federal agency organisationally subordinate to the MoT, responsible for the independent investigation of civil aircraft accidents and serious incidents within Germany.
- **German Meteorological Service Provider** (**DWD**, „Deutscher Wetterdienst"); a public institution responsible for the German meteorological services, certified as meteorological air navigation service provider with partial legal capacity under the MoT.
- **DFS Deutsche Flugsicherung GmbH**; the main Air Navigation Service Provider in Germany, is a company organised under private law in full possession of the Federal Republic of Germany, responsible for the provision of air traffic control in Germany including the regional military air traffic services.
- **Federal Ministry of Defence, BMVg** (**MoD**, "Bundesministerium der Verteidigung"). The MoD is the state federal authority for military aviation in Germany. Within its overall function, MoD delegates responsibilities to its subordinate military entities.
- Federal Office of the Bundeswehr for Military Aviation (LufABw, "Luftfahrtamt der Bundeswehr") is the German **Military Aviation Authority (DEU MAA)** and has been established in 2015. It is a federal office subordinate to the MoD. LufABw is, besides other functions, tasked to set the standards for the provision of military ANS and is acting as the Military Supervisory Authority (MSA) for military ANSPs in Germany. In this role LufABw has been appointed to the European Commission as 'military equivalent" to the **Federal Supervisory Authority for Air Navigation Services** ("Bundesaufsichtsamt für Flugsicherung").
- The main military ANSP in Germany is the **Air Operations Command** ("Zentrum Luftoperationen") on behalf of German Air Force Headquarters (GAFHQ – "Kommando Luftwaffe"). Tasks of the operations organisation are delegated to the respective command units **Air Force Forces Command** ("Luftwaffentruppenkommando"), **Helicopter Command** ("Kommando Hubschrauber"), **Naval Air Command** ("Marinefliegerkommando") and **Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support** ("BAAINBw – "Bundesamt für Ausrüstung, Informationstechnik und Nutzung der Bundeswehr"). On their behalf **local military ANS units** (combined TWR/APP/AIS units with CNS component) provide services at military airfields on the basis of German Aviation Act § 30 (2). This includes the provision of ATS to civil and military air traffic (GAT and OAT) at the airfields and within defined areas of responsibility around the military airfields, covering as well major service provision at jointly military/civil used military airfields. In addition to the provision of local ATS at military airfields, centralised support services are provided by the **Air Operations Command** ("Zentrum Luftoperationen") in form of Airspace Management, NOTAM-Service, publication of aeronautical charts and military flight publications and aeronautical navigation.
- Investigations of accidents and malfunctions involving civil and military aircraft are conducted under the responsibility of the BFU, with participation of the **Director, Bundeswehr Aviation Safety** (**GenFlSichhBw**, "General Flugsicherheit in der Bundeswehr"), an independent branch within the LufABw.

- Investigations of accidents and incidents involving solely military aircraft are conducted under the responsibility of the **Director, Bundeswehr Aviation Safety**.
- **Bundeswehr Geoinformation Service** (**BGIS**, "Geoinformationsdienst der Bundeswehr"); an institution for meteorological services for military purpose. The Deputy Director of the Bundeswehr Geoinformation Service (Dep Dir BGIS) is acting as Military Supervisory Authority (MSA) for military air weather service.
- **Frankfurt, Munich, Berlin Brandenburg and Düsseldorf airports** are covered in this LSSIP edition. Furthermore, the airports **Hamburg, Hannover, Cologne-Bonn, Nuremberg and Stuttgart** are also covered.

Civil aviation, including ATS for civil and en-route services for military air traffic in Germany, is the responsibility of the MoT. In times of tension and war, responsibility for air traffic services is to be taken over by the MoD, which in times of peace also keeps responsibility for ATM services at military aerodromes and for air defence matters. MoT and MoD represent Germany in the EU Single Sky Committee and at the EUROCONTROL Provisional Council.

BAF and LufABw have been reported to the European Commission as the national supervisory authorities for air navigation services. They cooperate by means of a military liaison office on the basis of an undersigned bilateral agreement.

The relationship between the main national stakeholders is depicted in the diagram below.



Detailed organisation charts showing roles and responsibilities of the main German aviation stakeholders

- Federal Ministry for Digital and Transport,
- Federal Ministry of Defence,
- Federal Supervisory Authority for Air Navigation Services,
- Federal Office of the Bundeswehr for Military Aviation – Military Aviation Authority,
- Federal Office of Civil Aviation - Civil Aviation Authority,
- DFS Deutsche Flugsicherung GmbH,
- Deutscher Wetterdienst

are available in Annex B.

Civil Regulator(s)

General Information

Activity in ATM:	Organisation responsible	Legal Basis
Rule-making	German Federal Parliament, Federal Ministry for Digital and Transport (MoT)	German Constitution, German Aviation Act
Safety Oversight	NSA	BAF – Errichtungsgesetz, 29 July 2009, (Organisational Act), relevant EU legislation
Enforcement actions in case of non-compliance with safety regulatory requirements	NSA	Luftverkehrsgesetz §§ 58 ff. (German Aviation Act) and Luftverkehrs-Ordnung § 44 (Regulation on Aviation) Verordnung über das erlaubnispflichtige Personal in der Flugsicherung und seine Ausbildung § 46 (Regulation on the Qualification of ATS Personnel) Relevant EU legislation
Airspace	MoT	Luftverkehrs-Ordnung § 16 f. (Regulation on Aviation)
Economic	MoT and NSA *	German Constitution and relevant EU legislation BAF – Errichtungsgesetz, 29 July 2009, (Organisational Act)
Environment	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV)	German Constitution
Security	Federal Ministry of the Interior and Community (BMI) in cooperation with MoT NSA	German Constitution, Luftsicherheitsgesetz (Aviation Security Act), BSI-Gesetz (IT Security Act) Security oversight as an integral element of Commission Implementing Regulation (EU) 2017/373
Accident investigation	Federal Bureau of Aircraft Accident Investigation (BFU)	Gesetz über die Untersuchung von Unfällen und Störungen in der zivilen Luftfahrt (Act on the Investigation of Accidents and Incidents in Civil Aviation)

* The NSA is responsible for economic oversight over ANS providers. This encompasses establishment and monitoring of performance plans and targets which are adopted by Germany (the MoT).

Regulatory Authorities

The Regulatory Authorities are:

- **Federal Ministry for Digital and Transport, BMDV** (**MoT**, "Bundesministerium für Digitales und Verkehr")
  - The official website is: https://bmdv.bund.de
- **Federal Supervisory Authority for Air Navigation Services** (**BAF**, "Bundesaufsichtsamt für Flugsicherung" – German NSA)
  - The official website is: https://www.baf.bund.de
- **Federal Ministry of Defence, BMVg** (**MoD**, "Bundesministerium der Verteidigung")
  - The official website is: https://www.bmvg.de
- **Federal Office of the Bundeswehr for Military Aviation** (**LufABw**, DEU MAA, "Luftfahrtamt der Bundeswehr")
  - The official website is: https://www.luftfahrtamt.bundeswehr.de
- **Federal Office of Civil Aviation - Civil Aviation Authority** (**LBA**, "Luftfahrt-Bundesamt")
  - The official website is: https://www.lba.de
- **Federal Ministry of the Interior and Community** (**BMI**, "Bundesministerium des Innern und für Heimat")
  - The official website is: https://www.bmi.bund.de
- **The 16 States of Germany**

Detailed organisation charts showing roles and responsibilities of the Regulatory Authorities are available in Annex B.

Annual Report published:	Y	The regular reports of the German NSA are published on the following website: https://www.baf.bund.de/DE/BAF/Publikationen/publikationen_node.html

Air Navigation Service Provider(s)

DFS Deutsche Flugsicherung GmbH

Service provided

Governance:	Corporatised since 01.01.1993	Ownership:	100% state-owned
Services provided	**Y/N**	**Comment**	
ATC en-route	Y	ACC Bremen, ACC Langen ACC München UAC Karlsruhe UIR Hannover is performed by the EUROCONTROL Maastricht UAC (MUAC) based on an international treaty	
ATC approach	Y	All ATC approach sections are integrated in the ACCs.	
ATC Aerodrome(s)	Y	Provided for 15 international airports in Germany	
AIS	Y		
CNS	Y	DFS is the main CNS service provider. Others are indicated in the listing below.	
MET	N	Provided by DWD (see details further below)	
ATCO training	Y		
Others			
Additional information:			
Provision of services in other State(s):	Y	Letters of Agreement with the neighbouring states Austria, Belgium, Czech Republic, Denmark, France, Luxembourg, the Netherlands, Poland	
Annual Report published:	Y	The Annual Report of DFS is published on the following website: https://www.dfs.de/dfs_homepage/en/Press/Publications	

DFS is SES certified since 30.11.2006.

The official website of DFS is: https://www.dfs.de

The organisational chart of DFS is available in Annex B.

Deutscher Wetterdienst DWD

Services provided

Governance:	Public institution with partial legal capacity under MoT	Ownership:	100% public authority

Services provided	Y/N	Comment
MET	Y	DWD is responsible for meeting the meteorological requirements arising from all areas of economy and society in Germany including aviation purposes
Additional information:	Designated in accordance with Article 9 of Regulation (EC) No 550/2004	
Provision of services in other State(s):	N	
Annual Report published:	Y	The Annual Report of DWD is published on the following website: https://www.dwd.de/EN/ourservices/annual_reports_dwd/annual_reports_dwd.html The Annual Report for the Aeronautical Meteorological Service at DWD is published on the following website (only in German): https://www.dwd.de/DE/fachnutzer/luftfahrt/kufo/einf%C3%BChrung_und_rueckblick/jahresbericht_2020_node.html

DWD is SES certified since 14.03.2007.

The official website of DWD is: https://www.dwd.de

The organisational chart of DWD is available in Annex B.

Other ANSPs in Germany

The table below shows the details for the other certified Air Navigation Services Providers providing Air Navigation Services in Germany:

Name of the ANSP	Services for which it has been certified					Date of Last Certificate / Renewal	Valid until
	ATS		AIS	CNS	MET		
	ATC	AFIS					
Austro Control GmbH	Y	N	Y	Y	Y	16.12.2019	unlimited
BAN Flugsicherungssysteme GmbH	N	N	N	Y	N	15.06.2021	unlimited
DFS Aviation Services GmbH	Y	Y	N	N	N	17.12.2019	unlimited
ESPA GmbH	N	N	N	Y	N	17.12.2019	unlimited
MUAC Maastricht Upper Area Control	Y	N	N	Y	N	12.03.2020	unlimited
Rhein-Neckar Flugplatz GmbH	Y	N	N	N	N	17.12.2019	unlimited

ATC Systems in use

The chapter gives a generic overview of the ATM/ANS Systems and Constituents defined in European Regulation No 2018/1139, Annex VIII, point 3 (systems and procedures for air traffic services, in particular flight data processing systems, surveillance data processing systems and human-machine interface systems), their manufacturers and the major upgrade dates.

DFS operates different ATM/ANS systems for each of its centres and towers. The centres are located at Bremen, Langen, Munich and Karlsruhe and serve UAC, ACC and Approach services.

DFS provides Tower Services at 15 locations.

All these ATM/ANS Systems and their complex sub-systems are in a process of constant improvement. Most systems are developed in close cooperation with a variety of different manufacturing companies. For some subsystems DFS is the manufacturer itself. Anyhow, DFS system house and the respective centre and tower branches are always closely involved in the improvement processes of the DFS ATM/ANS.

EATMN System	Manufacturer	Major upgrade Year (Recent and Planned)
1. Systems and procedures for airspace management.	Multiple external Vendors	Planned upgrade 2018 to 2021 (ASM 2020+) 2020 to 2025
2. Systems and procedures for air traffic flow management.	Multiple external Vendors	Planned upgrade 2019/2025
3. Systems and procedures for air traffic services, in particular flight data processing, surveillance data processing and human-machine interface systems.	Multiple external Vendors	Major upgrade 2017 (iCAS I) Planned major upgrade 2023 to 2025 (iCAS I, iCAS II); 2027 to 2030 2018 to 2023 (RTC) 2023 to 2028 (TANGe)
4. Communications systems and procedures for ground-to-ground, air-to-ground and air-to-air communications.	Multiple external Vendors	Major upgrade between 2017 to 2024 2027 to 2030 (ADS-C)
5. Navigation systems and procedures.	Multiple external Vendors	Upgrade between 2018 to 2032 (VOR/DME) Upgrade between 2018 to 2030 (ILS)
6. Surveillance systems and procedures.	Multiple external Vendors	Planned Major upgrade 2019 to 2034
7. Systems and procedures for aeronautical information services.	Multiple external Vendors	Major upgrade 2019 to 2025
8. Systems and procedures for the use of meteorological information.	Multiple external Vendors	Upgrade 2017 to 2026
All dates are provisional and remain subject to alteration depending upon business and operational requirements.		

Airports

General information

Germany has a decentralised airport system. Overall, Germany's 15 international airports account for more than 70% of all flight passengers in Germany. Among these airports, there are two hub airports, Frankfurt Main and Munich.

The 2020 passenger numbers are significantly reduced compared to the 2019 numbers due to the ongoing COVID-19 pandemic, which has caused a significant reduction in passenger numbers and aircraft movements. For the German airports, this resulted in a decline of more than 74% of passengers. In 2021, the numbers have increased significantly compared to the first year of the crisis but are still more than 68% lower than in 2019 (ADV, German Airports Association; https://www.adv.aero/service/downloadbibliothek).

Frankfurt Main Airport (Frankfurt Airport) is Germany's main hub. Based upon the total number of passengers, Frankfurt is number six in the list of European airports.

Munich Airport is Germany's second hub and number fourteen in the list of European airports.

Berlin-Brandenburg Airport ranks in 20th place and Düsseldorf Airport is number 28 in the list of European airports (Airports Council International, 2020; https://en.wikipedia.org/wiki/List_of_the_busiest_airports_in_Europe).

The above rankings are based on the total number of passengers per year, including both terminal and transit passengers, according to the ACI Europe Air Traffic Report 2020.

These four airports are covered in detail in this LSSIP document.

Furthermore, the airports of Cologne-Bonn, Hamburg, Hannover, Nuremberg and Stuttgart are also addressed because they are referenced in CP1 Regulation. An overview of their contribution is shown in the table below.

The most important instrument for airport planning is the so called "Planfeststellung" (planning approval procedure), issued by the authorities of the Federal States ("Länder"). The Federal Government's Airport Strategy ("Flughafenkonzept der Bundesregierung", 2009) is based on a combination of hubs, large airports and a number of smaller airports distributed across the country. Airport capacity expansion focuses on the three major airports of Frankfurt, Munich and Berlin.

Most aerodromes in Germany are operated by private law companies with the municipal authorities holding shares in most cases, whereas the Federal States and the government have significantly withdrawn their shares in the past.

Airport(s) covered by the LSSIP

Referring to the List of Airports in the European ATM Master Plan Level 3 Implementation Plan Edition 2021 – Annex 2, it is up to the individual State to decide which additional airports will be reported through LSSIP for those Objectives.

On this basis, the German LSSIP reports on the following airports:

Code	Airport	AOP04.1	AOP04.2	AOP05	AOP10	AOP11.1	AOP11.2	AOP12.1	AOP13	AOP19	ATC07.1	ATC15.2	ATC19	ENV01	FCM11.1	FCM11.2
EDDB	Berlin Brandenburg	CP1	-	CP1	-	CP1	CP1	CP1	-	CP1	CP1	CP1	CP1	CP1	CP1	CP1
EDDF	Frankfurt Main	CP1	-	CP1	CP1	CP1	CP1	CP1	CP1	CP1	CP1	CP1	-	CP1	CP1	CP1
EDDH	Hamburg	-	-	CP1	-	CP1	CP1	-	-	-	-	-	-	CP1	-	CP1
EDDK	Cologne-Bonn	-	-	-	-	-	-	-	-	-	-	-	-	CP1	-	-
EDDL	Düsseldorf	CP1	-	CP1	CP1	CP1	CP1	CP1	CP1	CP1	CP1	CP1	CP1	CP1	CP1	CP1
EDDM	Munich	CP1	-	CP1	CP1	CP1	CP1	CP1	CP1	CP1	CP1	CP1	-	CP1	CP1	CP1
EDDN	Nuremberg	-	-	-	-	CP1	-	-	-	-	-	-	-	CP1	-	-
EDDS	Stuttgart	-	-	CP1	-	CP1	CP1	-	-	-	-	-	-	CP1	-	CP1
EDDV	Hannover	-	-	-	-	CP1	-	-	-	-	-	-	-	CP1	-	-

Source: LSSIP DB

The use of colours for CP1 symbols is based on the colour assignment of the statuses in the LSSIP.

CP1	Airport is referenced in list of airports in CP1 Regulation
Green	Completed
Light Green	Ongoing
Light Blue	Planned
Orange	Not yet Planned

For more information on the largest airports in this report check their websites:

- Frankfurt Airport (EDDF); official website: https://www.fraport.com/en.html
- Munich Airport (EDDM); official website: https://www.munich-airport.com
- Düsseldorf Airport (EDDL); official website: https://www.dus.com/en
- Berlin Brandenburg Airport (EDDB); official website: https://www.berlin-airport.de/en/index.php

The ownership structure of these airports is as follows:

Airport Name	Ownership
Frankfurt Airport	Fraport AG (March 2022) 31.31% State of Hesse 20.71% Stadtwerke Frankfurt am Main Holding GmbH 8.44% Deutsche Lufthansa AG 39,54% Shares owned by diverse shareholders Source: https://www.fraport.com/en/investors/the-fraport-share.html
Munich Airport	Flughafen München GmbH (March 2022) 51% Free State of Bavaria 26% Federal Republic of Germany 23% City of Munich Source: https://www.munich-airport.com/company-profile-263193
Düsseldorf Airport	Flughafen Düsseldorf GmbH (March 2022) 50% City of Düsseldorf 50% Airport Partners GmbH 40% AviAlliance GmbH 40% Aer Rianta International cpt 20% AviC GmbH & Co. KGaA Source: https://www.dus.com/en/corporation/company/flughafen-d%C3%BCsseldorf-gmbh/subsidiaries
Berlin Brandenburg International Airport	Flughafen Berlin Brandenburg GmbH (March 2022) 37% State of Berlin 37% State of Brandenburg 26% Federal Republic of Germany Source: https://corporate.berlin-airport.de/de/unternehmen-presse/fbb-tochterunternehmen/beteiligungsstruktur.html

Other airports when identified by the state in an applicability area of an Airport or Environment ATM MP L3 Objective – see Chapter 5. Implementation Objectives Progress.

Military Authorities

The Military Authorities involved in ATM/ANS in Germany are composed of the:

- Federal Office of the Bundeswehr for Military Aviation (LufABw, DEU MAA, "Luftfahrtamt der Bundeswehr")
- Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support (BAAINBw, „Bundesamt für Ausrüstung, Informationstechnik und Nutzung der Bundeswehr")
- German Air Force Headquarter (GAFHQ, "Kommando Luftwaffe")
- Air Operations Command („Zentrum Luftoperationen")
- Air Force Forces Command ("Luftwaffentruppenkommando")
- Helicopter Command ("Kommando Hubschrauber")
- Naval Air Command ("Marinefliegerkommando")
- Bundeswehr Geoinformation Service (BGIS, "Geoinformationsdienst der Bundeswehr")

They report to the Federal Ministry of Defence, Forces Policy I 5. Details to aspects of regulation, service provision and airspace use are outlined below.

An organisational chart depicting the main structure of military ATM/ANS in Germany is available in Annex B.

Regulatory role

Regulatory framework and rule making

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: - State Law: German Aviation Act, para 30 - Regulation for the Bundeswehr: ZV A1-272/2-8901 - Special ATS Directives - Regulation for the Bundeswehr: ZV A1-272/2-8910		Level of such legal provision: - State Law: German Aviation Act, para 30 - Regulation for the Bundeswehr: ZV A1-272/2-8901 - Special ATS Directives - Regulation for the Bundeswehr: ZV A1-272/2-8910	
Authority signing such legal provision: - State Law (German Aviation Act, para 30): signed by the Federal President of the Federal Republic of Germany - Regulation for the Bundeswehr (ZV A1-272/2-8901): approved by the Director LufABw - Regulation for the Bundeswehr (ZV A1-272/2-8905): approved by the Division Chief 3 LufABw - Regulation for the Bundeswehr (ZV A1-272/2-8910): approved by the Division Chief 3 LufABw - Regulation for the Bundeswehr (ZV A1-272/2-8921): approved by the Division Chief 3 LufABw - Special ATS Directives: signed by Division Chief 3 LufABw - Regulation for the Bundeswehr (ZV A1-271/1-8901): approved by the Director LufABw - Regulation for the Bundeswehr (ZV A1-271/2-8901): approved by the Director LufABw - Regulation for the Bundeswehr (ZV A1-271/4-8901): approved by the Director LufABw		Authority signing such legal provision: - State Law (German Aviation Act, para 30): signed by the Federal President of the Federal Republic of Germany - Regulation for the Bundeswehr (ZV A1-272/2-8901): approved by the Director LufABw - Regulation for the Bundeswehr (ZV A1-272/2-8905): approved by the Division Chief 3 LufABw - Regulation for the Bundeswehr (ZV A1-272/2-8910): approved by the Division Chief 3 LufABw - Regulation for the Bundeswehr (ZV A1-272/2-8921): approved by the Division Chief 3 LufABw - Special ATS Directives: signed by the Division Chief 3 LufABw - Regulation for the Bundeswehr (ZV A1-271/1-8901): approved by the Director LufABw - Regulation for the Bundeswehr (ZV A1-271/2-8901): approved by the Director LufABw - Regulation for the Bundeswehr (ZV A1-271/4-8901): approved by the Director LufABw	
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	N		
Aircrew Licensing	Y		
Additional Information: German Military Regulations on the provision of ATS (for OAT and GAT) cover to the widest possible extent civil regulations (ICAO, EU, EUROCONTROL, National), but supplement them by purely military issues, where absolutely required. Certification process in respect to a military QMS according to EU-Regulation No 550/2004 (Common requirements) for military ANSP has been completed in 2014. Recertification process is established.		Additional Information: German Military Regulations on the provision of ATS (for OAT and GAT) cover to the widest possible extent civil regulations (ICAO, EU, EUROCONTROL, National), but supplement them by purely military issues, where absolutely required. Certification process in respect to a military QMS according to EU-Regulation No 550/2004 (Common requirements) for military ANSP has been completed in 2014. Recertification process is established.	
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[1]	National Military AIP	Y[1]
EUROCONTROL eAIP	N	EUROCONTROL eAIP	N
Other: Military Publications (FLIP) Internet Website (https://www.milais.org/)	Y	Other:	Y

Oversight

OAT	GAT
National oversight body for OAT: The German NSA executes the oversight function to civil ATS providers. The LufABw has taken over the responsibility as Military Aviation Authority (MAA) and executes under the jurisdiction of the MoD the oversight function to military ATS providers.	NSA (as per EU-Regulation No 550/2004) for GAT services provided by the military: ATS provided by the Bundeswehr are provided mainly for OAT and only to a minor extent to GAT. Based on EU-Regulation No 550/2004, Art. 7, military service providers in Germany are thus not SES-certified. Oversight function comparable to SES-standards is executed by the LufABw for ATS (GAT and OAT) provided by the Bundeswehr. Close cooperation between this military supervisory authority and the German Civil NSA (Bundesaufsichtsamt für Flugsicherung) is established by a military liaison office co-located with the civil NSA.
Additional information: Equivalent to the civil NSA, the LufABw acts as national Military Supervisory Authority (MSA)	Additional information: Equivalent to the civil NSA, the LufABw acts as national Military Supervisory Authority (MSA)

[1] The German Military AIP is a Supplementary Volume to the German Aeronautical Information Publication (AIP)

Service Provision role

OAT			GAT	
Services Provided:			Services Provided:	
En-Route	N	DFS Deutsche Flugsicherung GmbH (for Hannover UIR services are provided by Maastricht UAC)	En-Route	N
Approach/TMA	Y		Approach/TMA	Y
Airfield/TWR/GND	Y		Airfield/TWR/GND	Y
AIS	Y		AIS	Y
MET	Y		MET	Y
SAR	Y		SAR	Y
TSA/TRA monitoring	N	DFS Deutsche Flugsicherung GmbH and selected military units (for Hannover UIR services are provided by Maastricht UAC)	FIS	Y
Other:	Air Weather Services, RAFIS, Alerting Service, CNS		Other:	Air Weather Services, RAFIS, Alerting Service, CNS
Additional Information: : Services provided by military ANSP at military airports and in airspaces delegated to the military for approach services			Additional Information: Services provided by military ANSP at military airports and in airspaces delegated to the military for approach services.	

Military ANSP providing GAT services SES certified?	Y (see add. Information)	If YES, since:	2014 by former AFSBw, recertification progress is established	Duration of the Certificate:	4 years
Certificate issued by:	LufABw		If NO, is this fact reported to the EC in accordance with SES regulations		
Additional Information: A formal SES certification is not foreseen by the military. However, Germany will, as far as practicable, ensure that any military facilities open to public use or services provided by military personnel to the public, offer a level of safety that is at least as effective as that required by the essential requirements as defined in Regulation (EC) No 1108/2009.					

User role

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

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

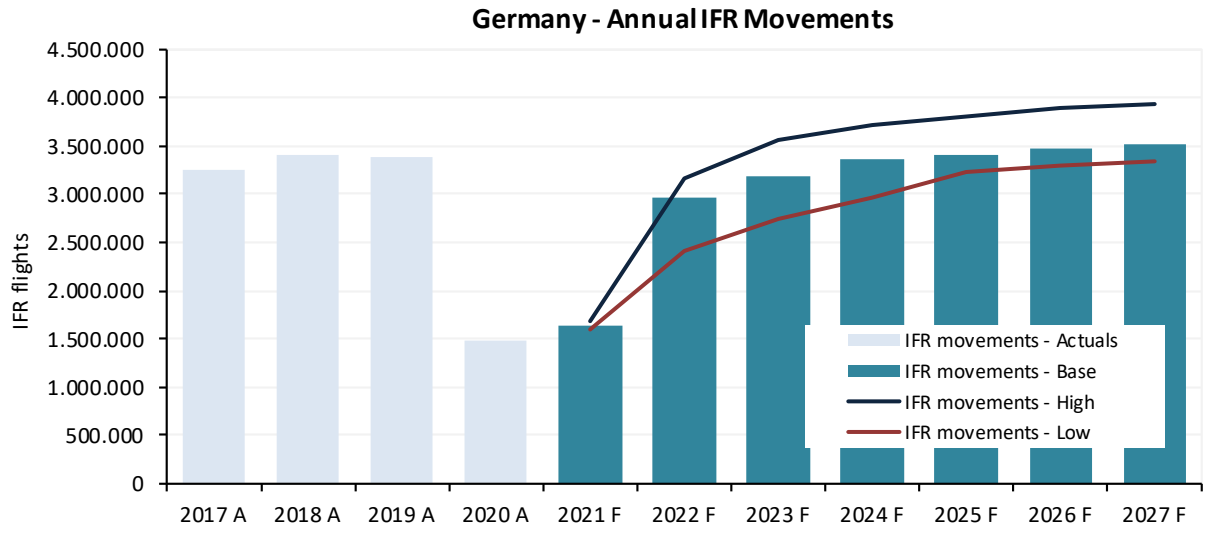
If Military fly GAT-IFR inside controlled airspace, specify existing special arrangements:								
No special arrangements		X			Exemption from Route Charges			
Exemption from flow and capacity (ATFCM) measures					Provision of ATC in UHF			
CNS exemptions:	RVSM	X	8.33	X	Mode S	X	ACAS	X
Others:	In minor cases CNS exemptions are specified for a certain type of aircraft, or on basis of an individual exemption request (e.g. Mode S).							

Flexible Use of Airspace (FUA)

Military in DE 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 Germany



Source: EUROCONTROL SEVEN-YEAR FORECAST OCT 2021 (STATFOR) and EUROCONTROL NMIR for actual data

EUROCONTROL Forecast Update 2021-2027 - October 2021											
IFR flights yearly growth		2018 A	2019 A	2020 A	2021 F	2022 F	2023 F	2024 F	2025 F	2026 F	2027 F
Germany	High				14%	87%	13%	4%	2%	2%	1%
	Base	4%	0%	-56%	11%	81%	7%	6%	2%	2%	1%
	Low				8%	52%	13%	8%	9%	2%	2%
ECAC	High				28%	62%	12%	4%	2%	3%	2%
	Base	4%	1%	-55%	25%	57%	8%	5%	2%	2%	2%
	Low				21%	36%	13%	7%	7%	2%	2%

Source: EUROCONTROL SEVEN-YEAR FORECAST OCT 2021 (STATFOR) and EUROCONTROL NMIR for actual data

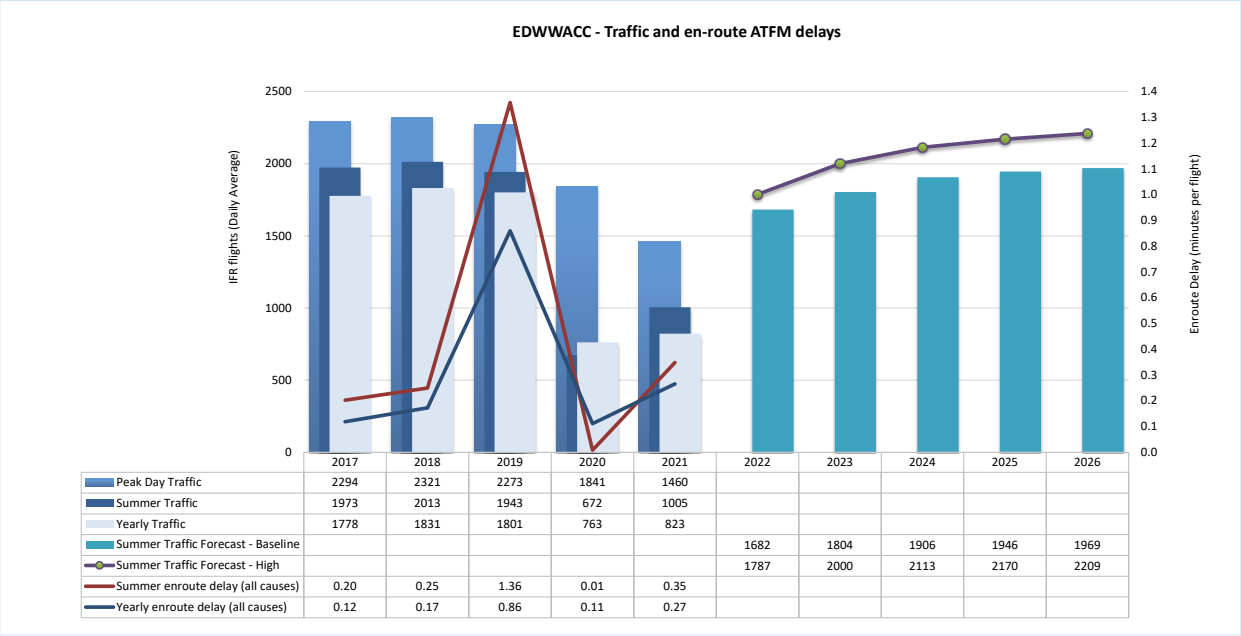
2021

Traffic in Germany was at 50% of 2019[1].

[1] 2019: reference year for traffic recovery, prior to COVID19

2.2. **Bremen ACC**

Traffic and en-route ATFM delays 2017-2026



	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Peak Day Traffic	2294	2321	2273	1841	1460					
Summer Traffic	1973	2013	1943	672	1005					
Yearly Traffic	1778	1831	1801	763	823					
Summer Traffic Forecast - Baseline						1682	1804	1906	1946	1969
Summer Traffic Forecast - High						1787	2000	2113	2170	2209
Summer enroute delay (all causes)	0.20	0.25	1.36	0.01	0.35					
Yearly enroute delay (all causes)	0.12	0.17	0.86	0.11	0.27					

Source: EUROCONTROL SEVEN-YEAR FORECAST OCT 2021 (STATFOR) and EUROCONTROL NMIR for actual data

2021 performance

Bremen ACC	Traffic (% of 2019)	En-route Delay (min. per flight)		Capacity	
		All reasons	ACC Reference Value	Capacity Gap?	Baseline
Year	46%	0.27	0.08	Yes	
Summer	52%	0.35			84

Summer 2021 performance assessment		
The average delay per flight was 0.35 minutes per flight in Summer 2021. 75% of the Summer delays were due to ATC Capacity, 16% due to ATC Staffing, and 5% due to Weather.		
Operational actions	**Achieved**	**Comments**
Free Route Airspace in DFS AoR, H24, above FL 245 / FL285	Yes	
Link AMAN EDDB – EDYY	No	On hold
Staffing: -10 (Staffing figures relate to the difference in number of ATCOs (FTE) at the end of one year (31 December) compared to the year before)	No	-16 ATCOs (FTE)

Source: All figures based on NM data

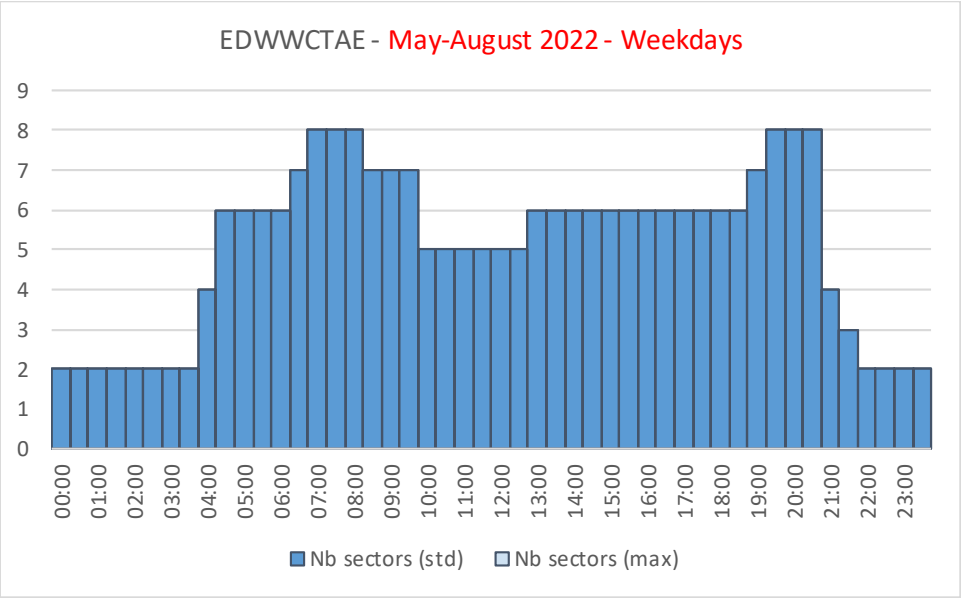
Planning Period – Summer 2022-2026

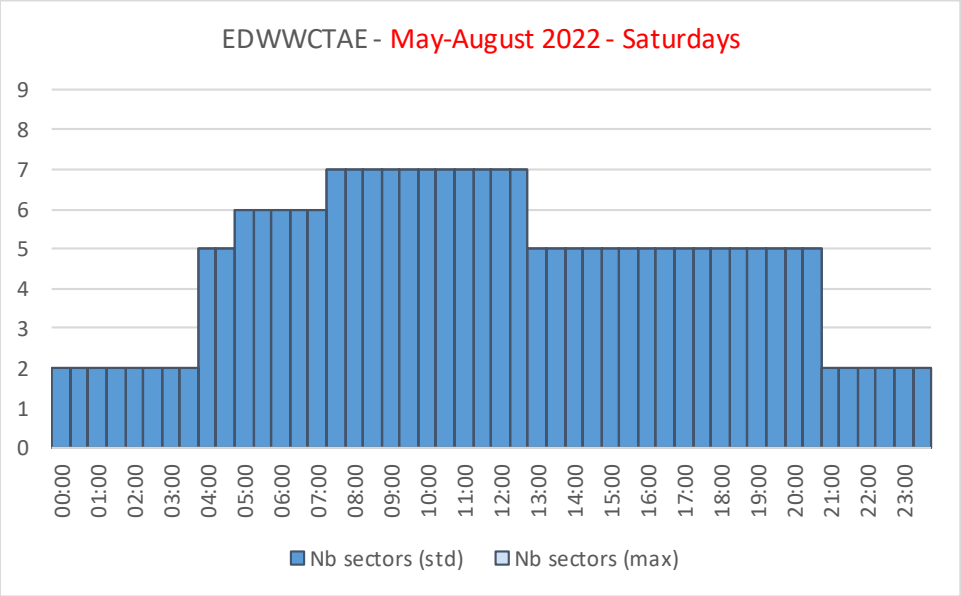
The planning focuses on the Summer season to reflect the most demanding period of the year from a capacity perspective. This approach ensures consistency with the previous planning cycles.

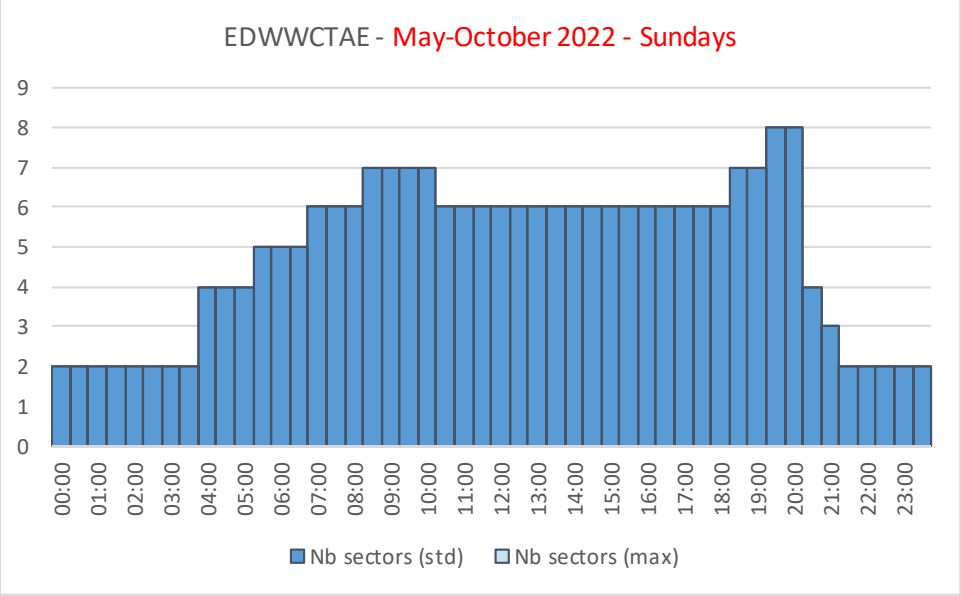
The measures for each year are the measures that will be implemented before the summer season.

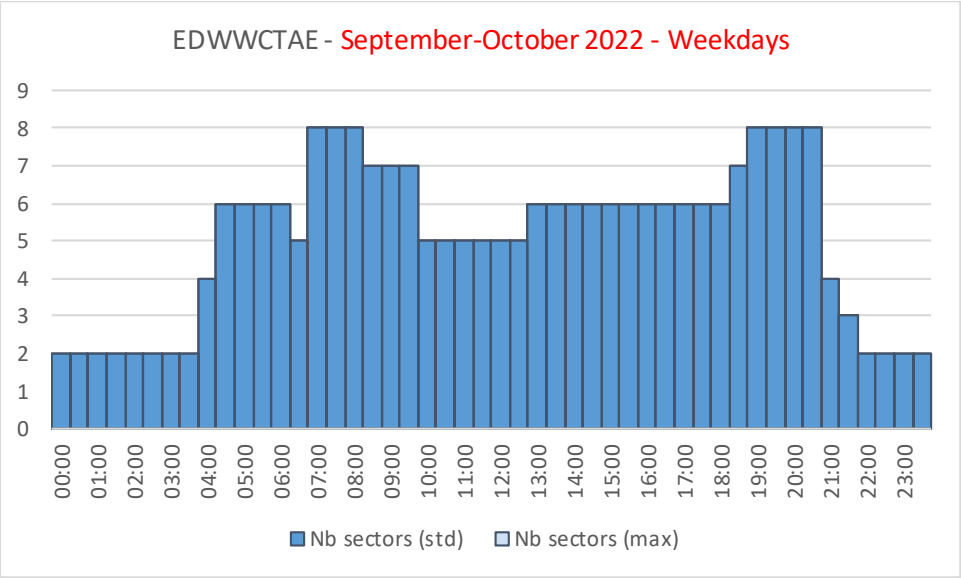
Summer Capacity Plan					
	2022	2023	2024	2025	2026
Free Route Airspace					
Airspace Management Advanced FUA					
Airport & TMA Network Integration					
Cooperative Traffic Management					
Airspace	Re-design EDUU UAC FFM and FUL sectors (interface re-sectorisation COBRA CENTRAL)				
Procedures					
Staffing	-32 *	+19	+20	+3	+15
Technical				New ATM System iCAS	
Capacity		Training for iCAS			
Significant Events	ILA Berlin	MAGEX (military exercise in June 2023)	ILA Berlin		
Max sectors	10 ENR + 5 APP + 2 feeders	9 ENR + 5 APP + 2 feeders	8 ENR + 4 APP + 2 feeders	9 ENR + 5 APP + 2 feeders	10 ENR + 5 APP + 2 feeders
Planned Annual Capacity Increase	23%	14%	13%	3%	10%
Capacity Profile - Base Annual % Increase	48%	6%	5%		
Capacity Plan v. Profile - Base	-17%	-11%	-5%		
Capacity Profile - High Annual % Increase	55%	12%	6%		
Capacity Plan v. Profile - High	-21%	-20%	-15%		
Annual Reference Value (min)	0.10	0.11	0.11		
Additional information	* Compared to 2019				

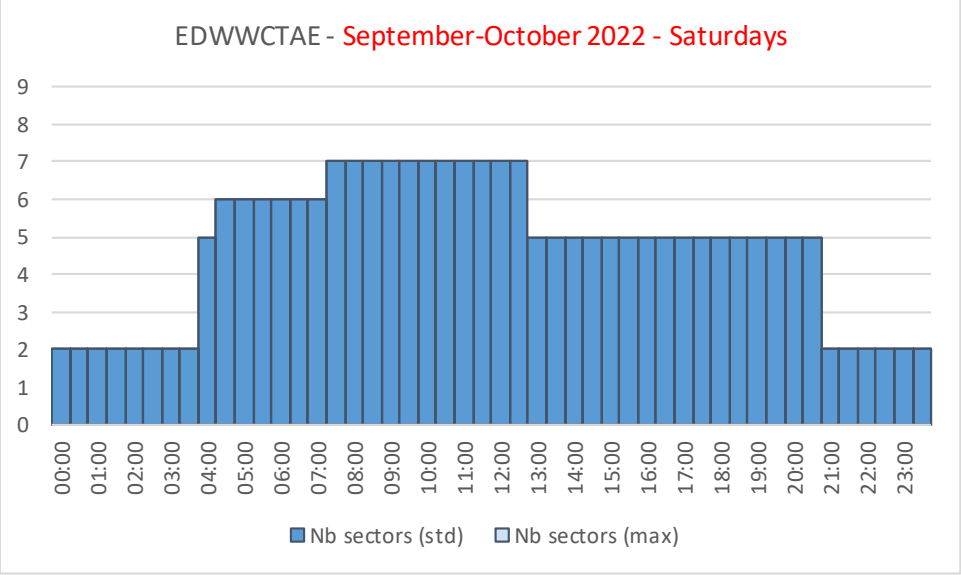
Source: All figures based on NM data

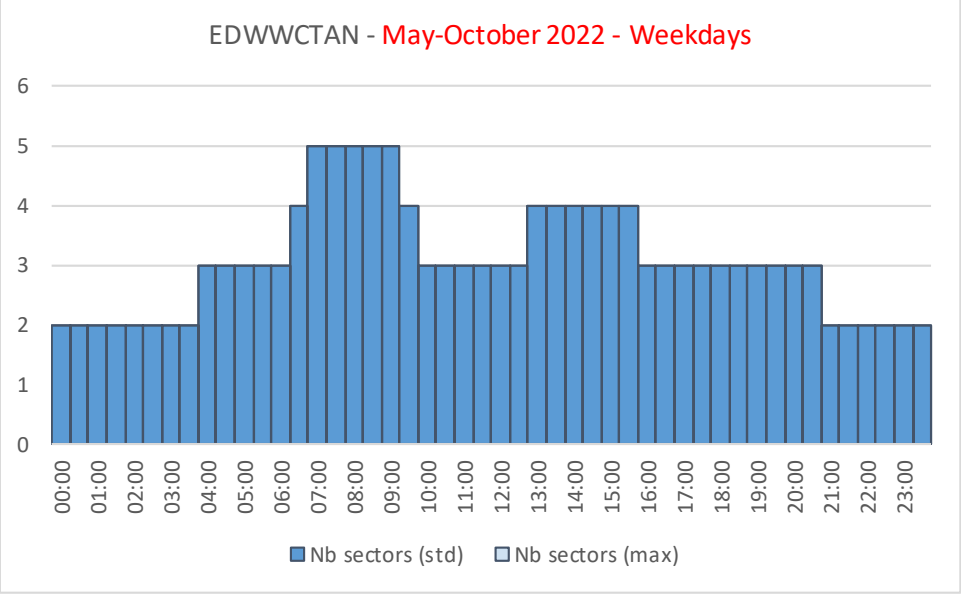

EDWWCTAE - May-August 2022 - Weekdays
9
8
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)

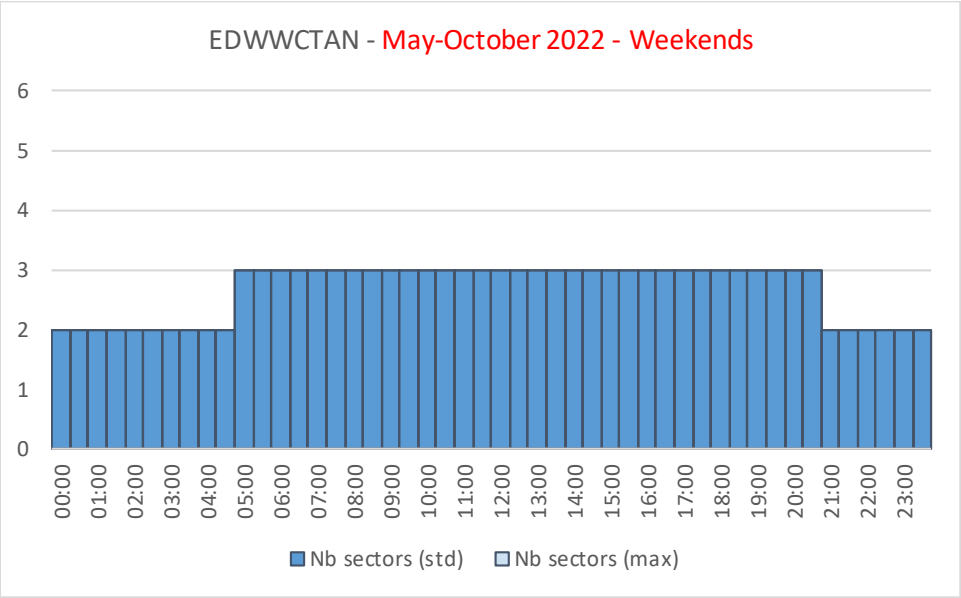

EDWWCTAE - May-August 2022 - Saturdays
9
8
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)

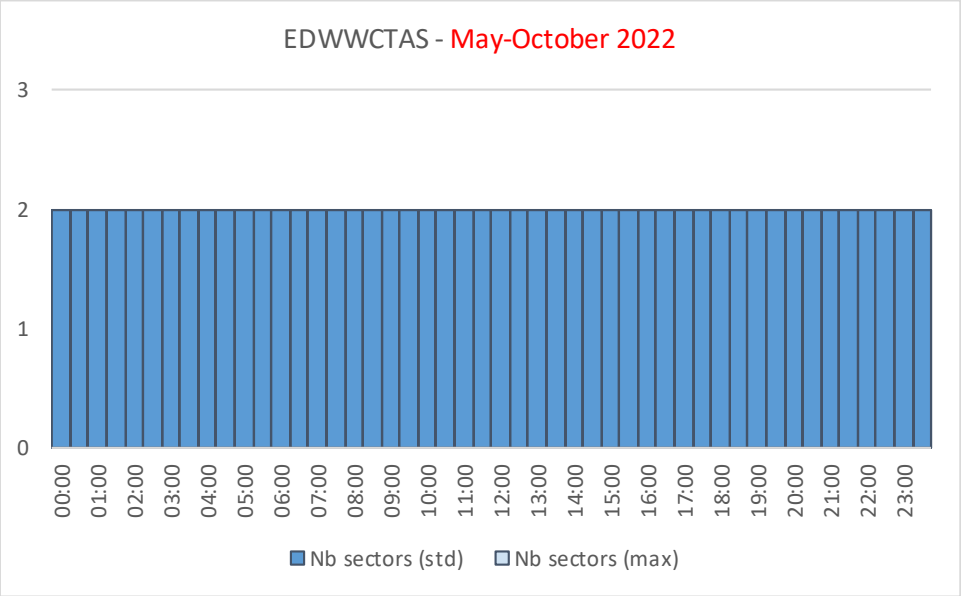

EDWWCTAE - May-October 2022 - Sundays
9
8
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)

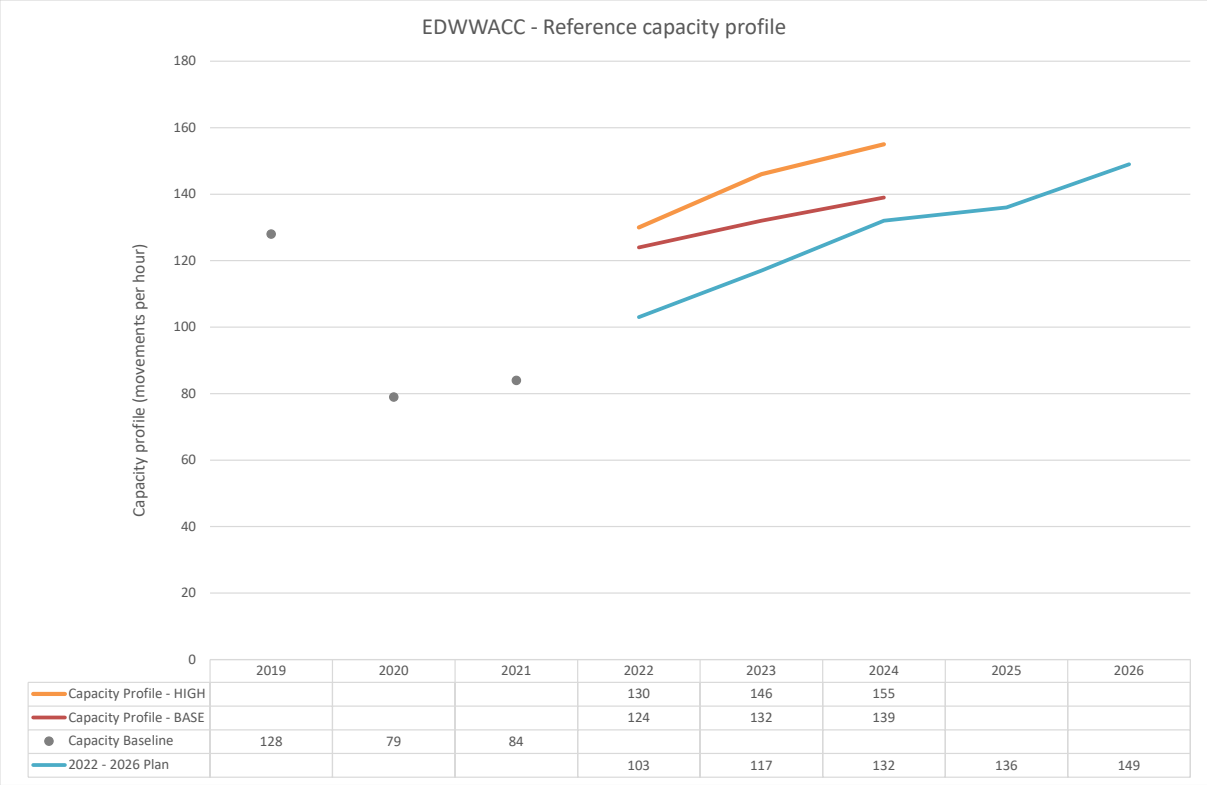

EDWWCTAE - September-October 2022 - Weekdays
9
8
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDWWCTAE - September-October 2022 - Saturdays
9
8
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDWWCTAN - May-October 2022 - Weekdays
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDWWCTAN - May-October 2022 - Weekends
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDWWCTAS - May-October 2022
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)



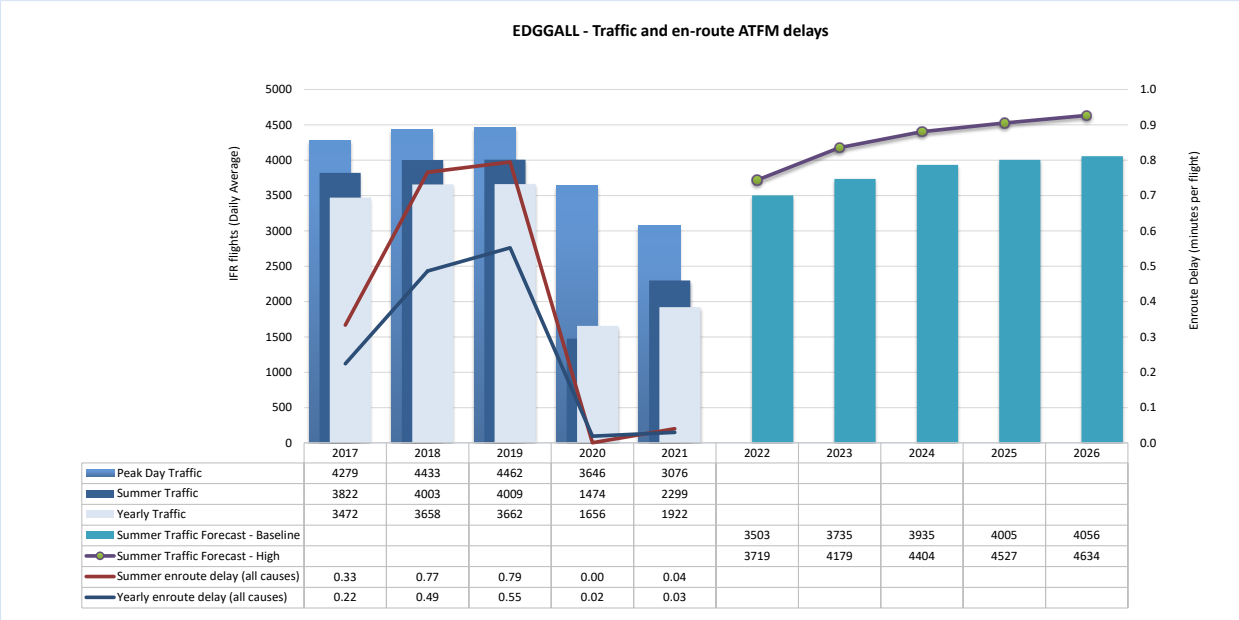
	2019	2020	2021	2022	2023	2024	2025	2026
Capacity Profile - HIGH				130	146	155		
Capacity Profile - BASE				124	132	139		
Capacity Baseline	128	79	84					
2022 - 2026 Plan				103	117	132	136	149

2022-2026 Outlook
There will be a significant capacity gap in Bremen ACC during the planning period.

Source: All figures based on NM data

2.3. **Langen ACC**

Traffic and en-route ATFM delays 2017-2026



	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Peak Day Traffic	4279	4433	4462	3646	3076					
Summer Traffic	3822	4003	4009	1474	2299					
Yearly Traffic	3472	3658	3662	1656	1922					
Summer Traffic Forecast - Baseline						3503	3735	3935	4005	4056
Summer Traffic Forecast - High						3719	4179	4404	4527	4634
Summer enroute delay (all causes)	0.33	0.77	0.79	0.00	0.04					
Yearly enroute delay (all causes)	0.22	0.49	0.55	0.02	0.03					

Source: EUROCONTROL SEVEN-YEAR FORECAST OCT 2021 (STATFOR) and EUROCONTROL NMIR for actual data

2021 performance

Langen ACC	Traffic (% of 2019)	En-route Delay (min. per flight)		Capacity	
		All reasons	ACC Reference Value	Capacity Gap?	Baseline
Year	52%	0.03	0.11	No	
Summer	57%	0.04			201

Summer 2021 performance assessment		
The average delay per flight was 0.04 in Summer 2021.		
Operational actions	**Achieved**	**Comments**
Link XMAN EDDF – LFEE Link AMAN EDDL – EDUU / EDWW	Yes	
High Transition Operations (HTO) - Phase 3a	No	Postponed to April 2023
Staffing: +5 (Staffing figures relate to the difference in number of ATCOs (FTE) at the end of one year (31 December) compared to the year before)	No	-26 ATCOs (FTE)
Implementation PSS SF01 Restructuration of SF01: DUS APP	Yes	
Additional Controller Assistance Tools (CATO): SF02 + SF04	No	Postponed until further notice

Source: All figures based on NM data

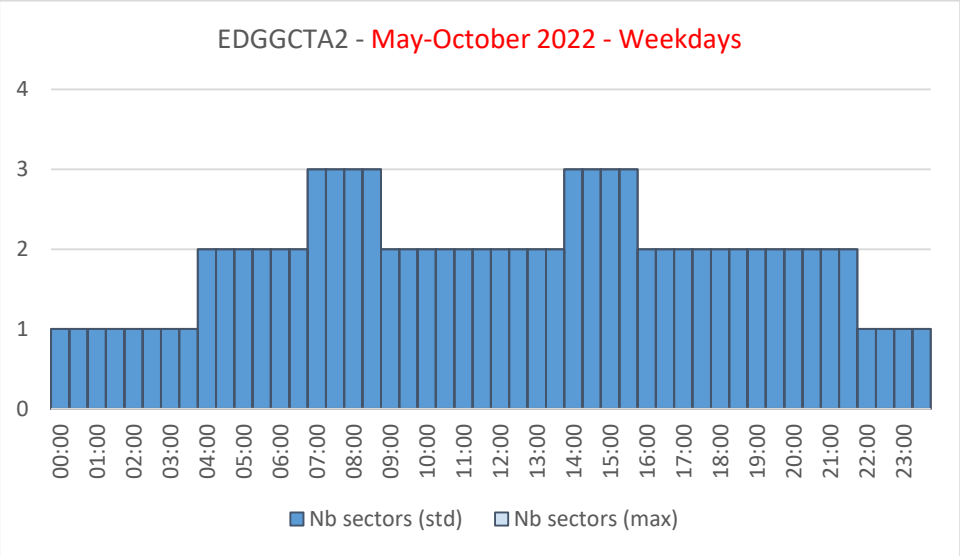
Planning Period – Summer 2022-2026

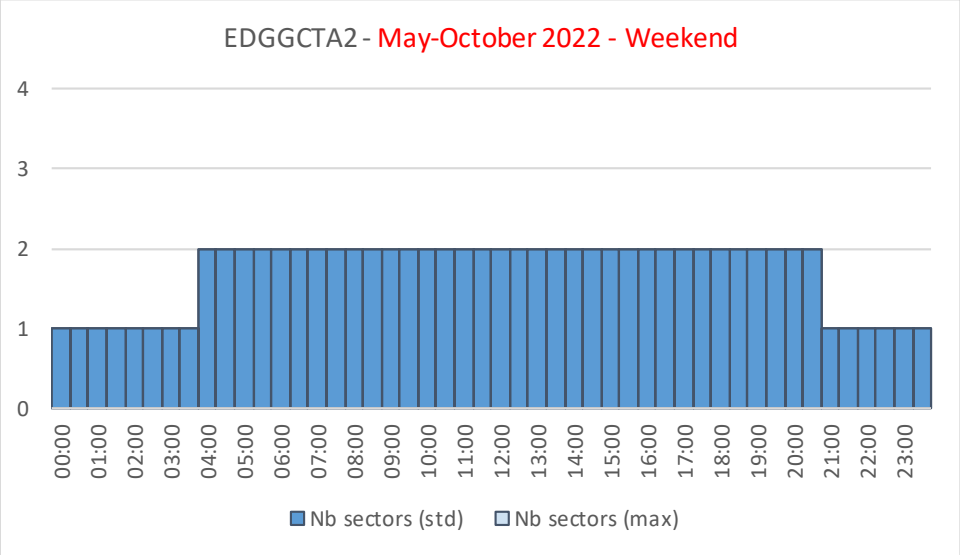
The planning focuses on the Summer season to reflect the most demanding period of the year from a capacity perspective. This approach ensures consistency with the previous planning cycles.

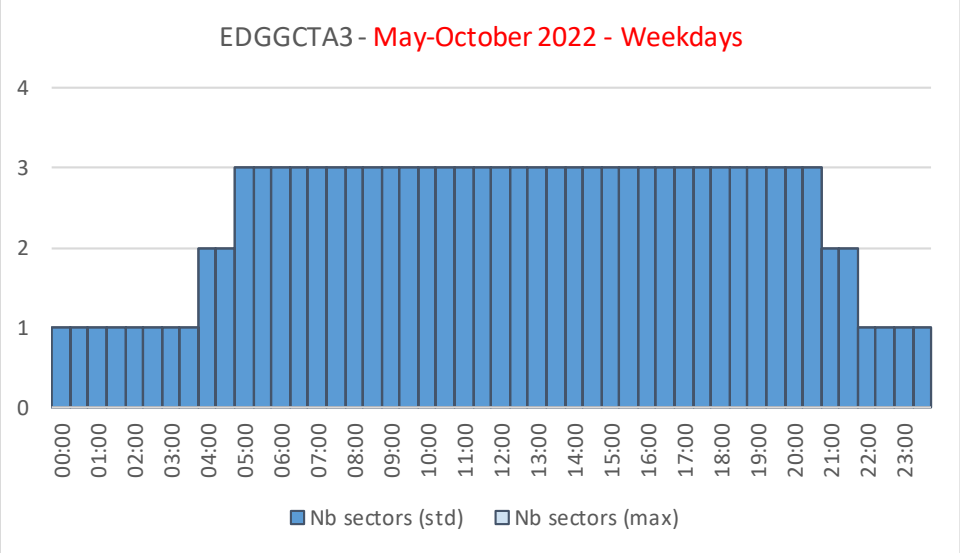
The measures for each year are the measures that will be implemented before the summer season.

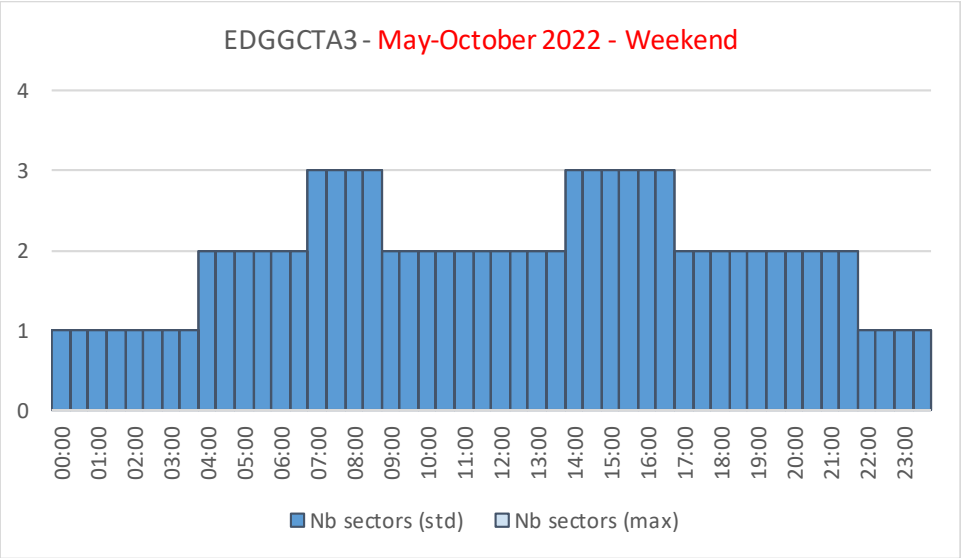
Summer Capacity Plan					
	2022	2023	2024	2025	2026
Free Route Airspace					
Airspace Management Advanced FUA					
Airport & TMA Network Integration					
Cooperative Traffic Management					
Airspace	Re-design EDUU UAC NTM sectors (interface re-sectorisation COBRA WEST)				
	Re-design EDUU UAC FFM and FUL sectors (interface re-sectorisation COBRA CENTRAL)				
Procedures		High Transition Operations (HTO) – Feature 1 & 2 (04/2023) & 3 (11/2023)			
Staffing	-32 *	+14	+13	+8	+10
Technical	GBAS Cat. 2 in EDDF (07/2022)				
Capacity					
Significant Events					
Max sectors	20 ENR + 10 APP + 5 feeders + 2 military positions	20 ENR + 10 APP + 5 feeders + 2 military positions	20 ENR + 10 APP + 5 feeders + 2 military positions	20 ENR + 10 APP + 5 feeders + 2 military positions	20 ENR + 10 APP + 5 feeders + 2 military positions
Planned Annual Capacity Increase	13%	4%	4%	2%	3%
Capacity Profile - Base Annual % Increase	20%	6%	4%		
Capacity Plan v. Profile - Base	-6%	-7%	-8%		
Capacity Profile - High Annual % Increase	25%	13%	6%		
Capacity Plan v. Profile - High	-10%	-16%	-18%		
Annual Reference Value (min)	0.15	0.15	0.15		
Additional information	* Compared to 2019				

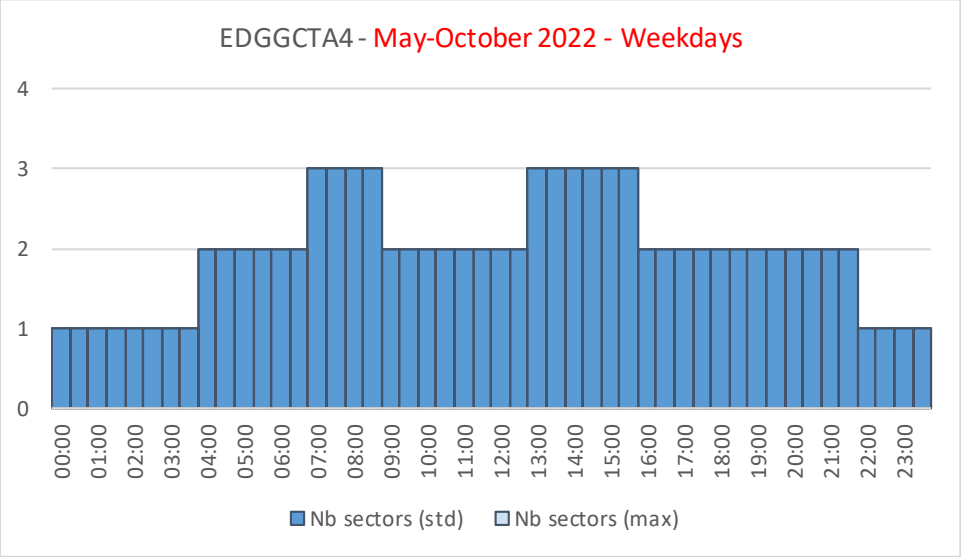
Source: All figures based on NM data

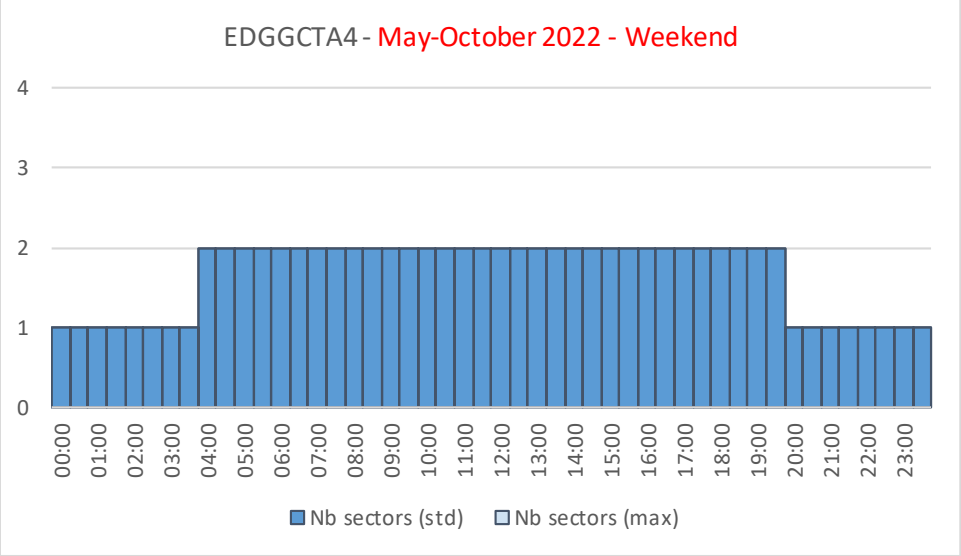

EDGGCTA2 - May-October 2022 - Weekdays
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)

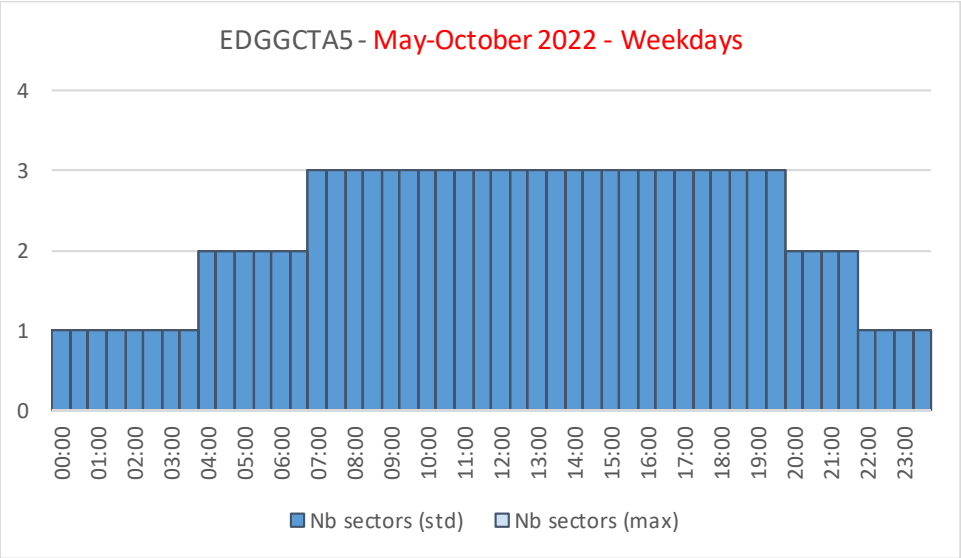

EDGGCTA2 - May-October 2022 - Weekend
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)

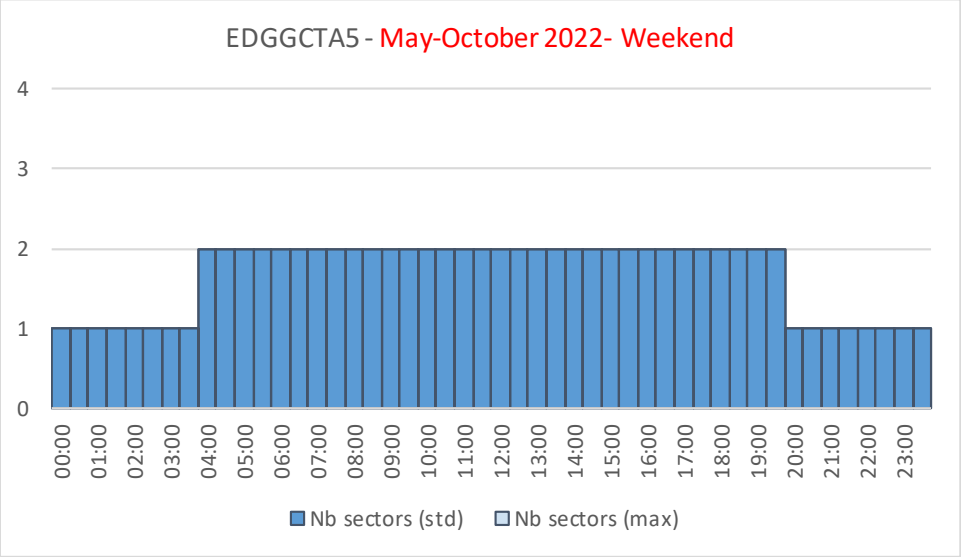

EDGGCTA3 - May-October 2022 - Weekdays
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)

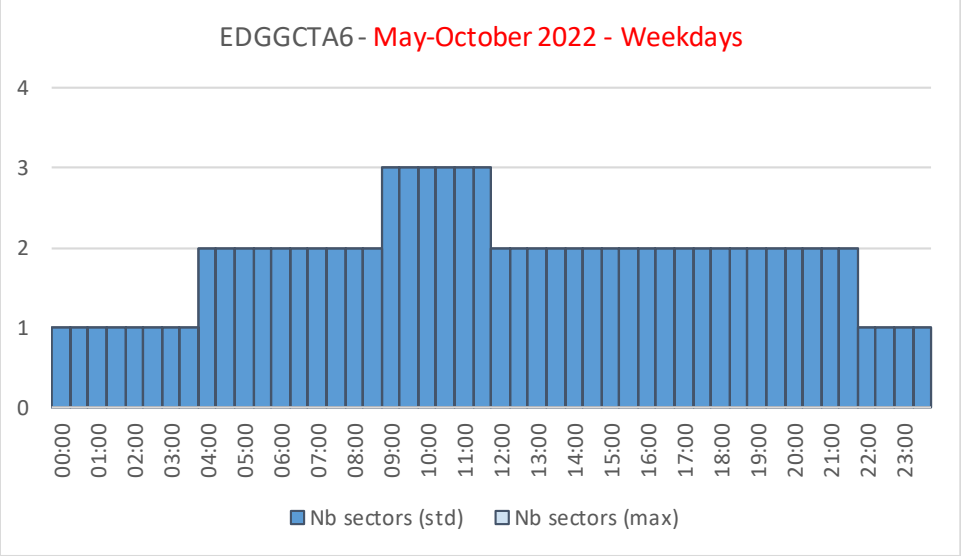

EDGGCTA3 - May-October 2022 - Weekend
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)

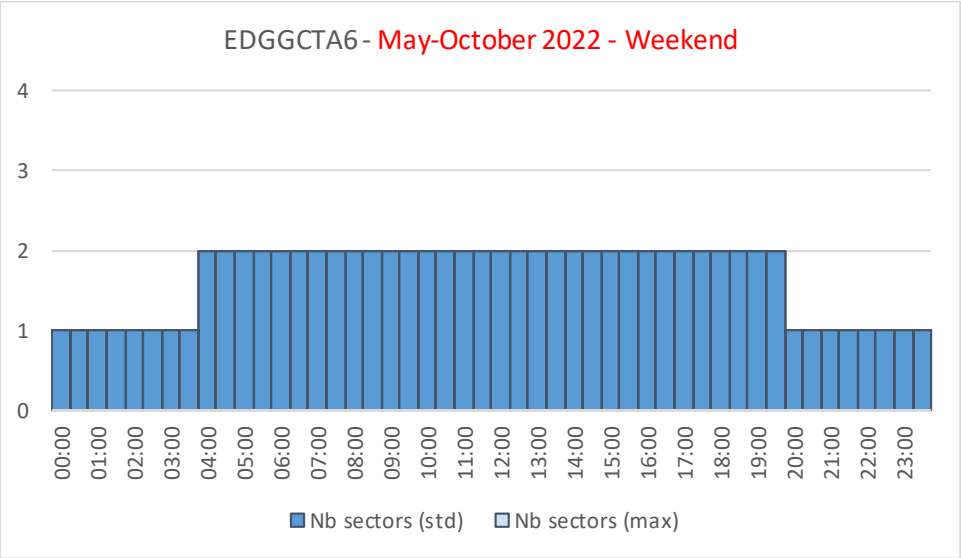

EDGGCTA4 - May-October 2022 - Weekdays
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)

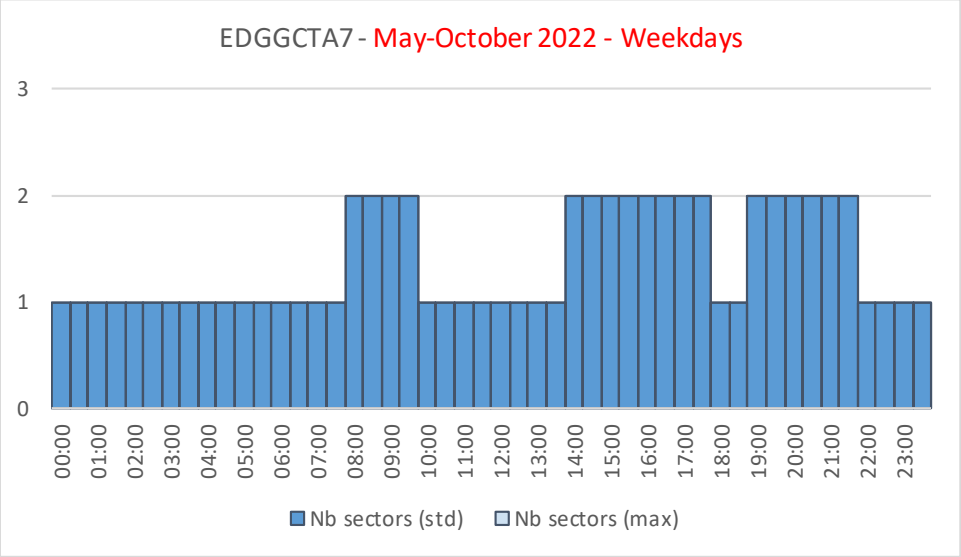

EDGGCTA4 - May-October 2022 - Weekend
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)

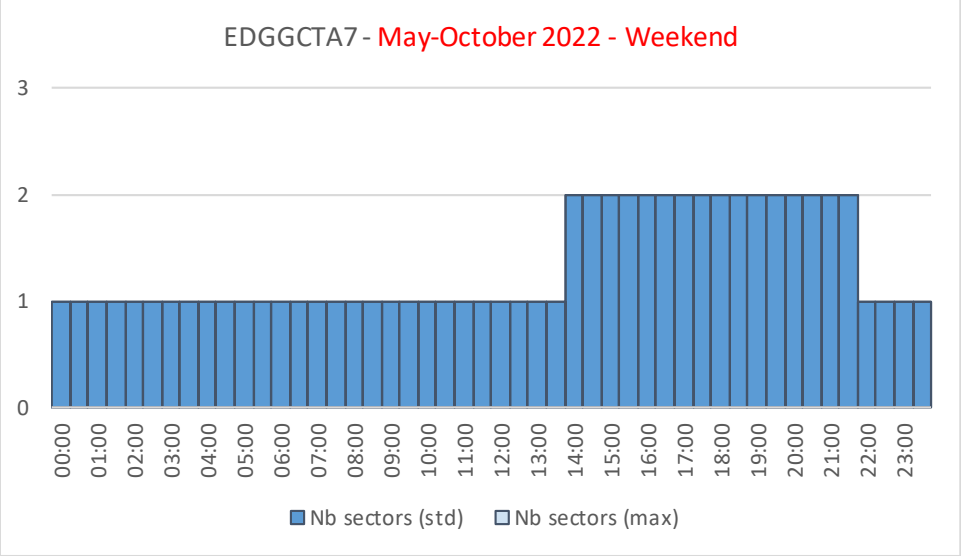

EDGGCTA5 - May-October 2022 - Weekdays
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)

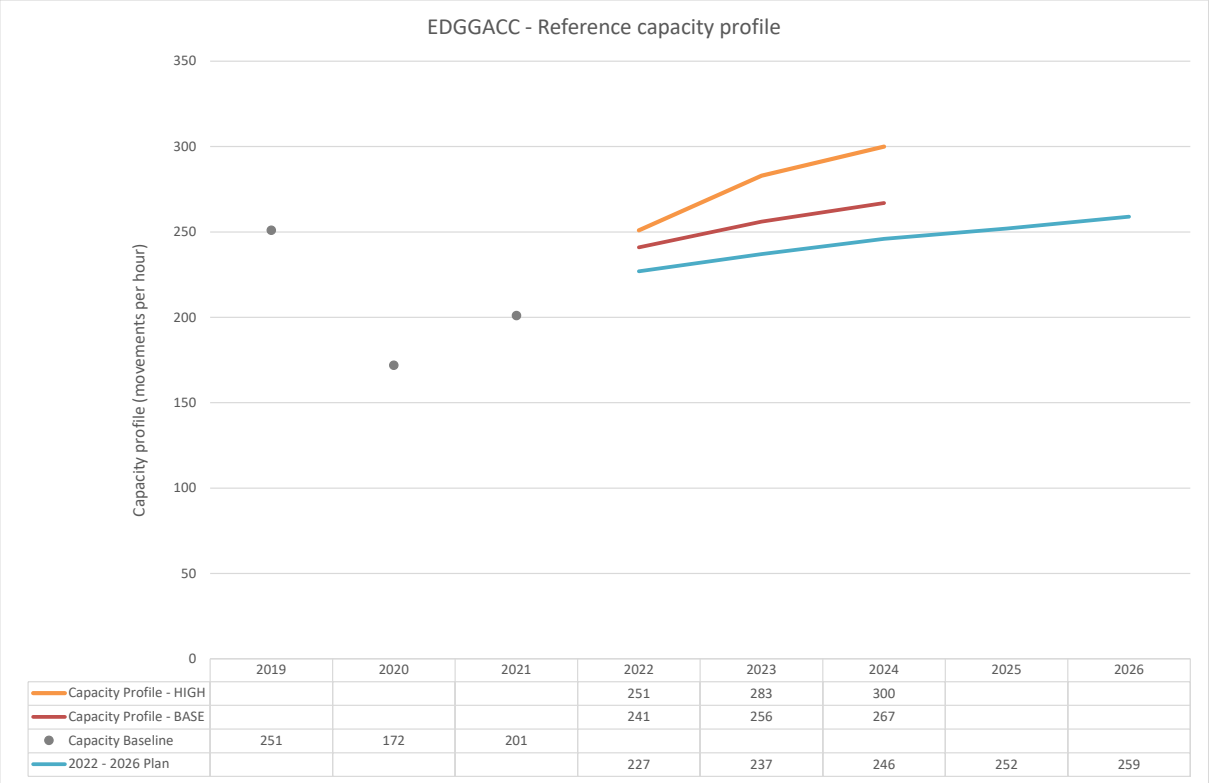

EDGGCTA5 - May-October 2022- Weekend
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDGGCTA6 - May-October 2022 - Weekdays
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDGGCTA6 - May-October 2022 - Weekend
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDGGCTA7 - May-October 2022 - Weekdays
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDGGCTA7 - May-October 2022 - Weekend
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)



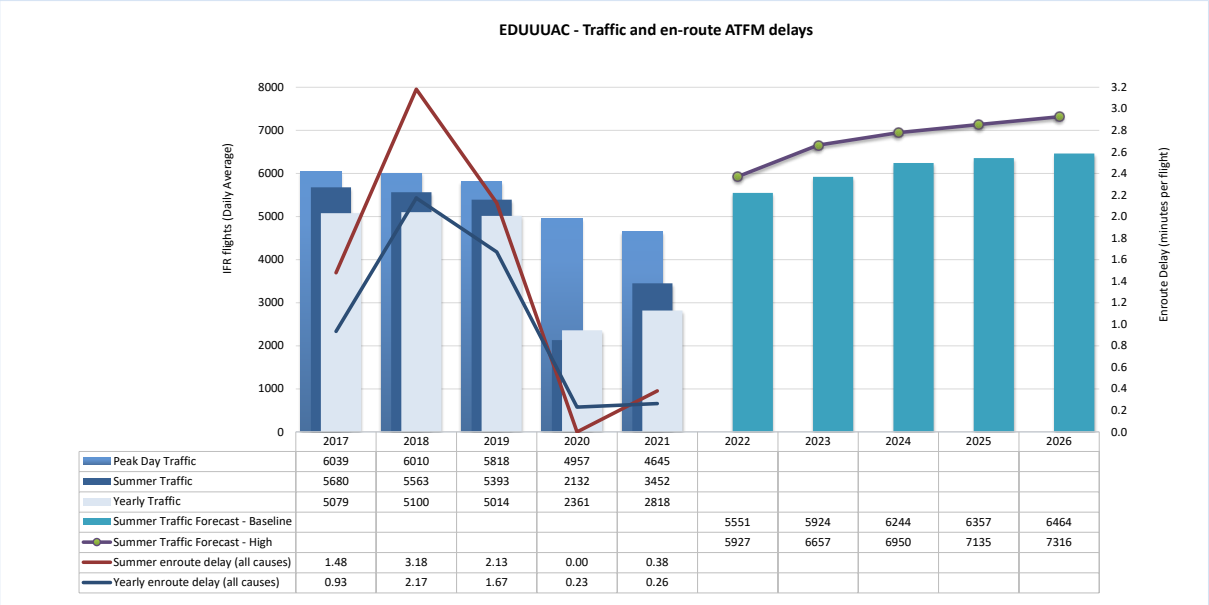
	2019	2020	2021	2022	2023	2024	2025	2026
Capacity Profile - HIGH				251	283	300		
Capacity Profile - BASE				241	256	267		
Capacity Baseline	251	172	201					
2022 - 2026 Plan				227	237	246	252	259

2022-2026 Outlook
There will be a significant capacity gap in Langen ACC during the planning period.

Source: All figures based on NM data

2.4. **Karlsruhe UAC**

Traffic and en-route ATFM delays 2017-2026



	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Peak Day Traffic	6039	6010	5818	4957	4645					
Summer Traffic	5680	5563	5393	2132	3452					
Yearly Traffic	5079	5100	5014	2361	2818					
Summer Traffic Forecast - Baseline						5551	5924	6244	6357	6464
Summer Traffic Forecast - High						5927	6657	6950	7135	7316
Summer enroute delay (all causes)	1.48	3.18	2.13	0.00	0.38					
Yearly enroute delay (all causes)	0.93	2.17	1.67	0.23	0.26					

Source: EUROCONTROL SEVEN-YEAR FORECAST OCT 2021 (STATFOR) and EUROCONTROL NMIR for actual data

2021 performance

Karlsruhe UAC	Traffic (% of 2019)	En-route Delay (min. per flight)		Capacity	
		All reasons	ACC Reference Value	Capacity Gap?	Baseline
Year	56%	0.26	0.15	Yes	
Summer	64%	0.38			258

Summer 2021 performance assessment		
The average delay per flight was 0.38 minutes per flight in Summer 2021. 45% of the Summer delays were due to ATC Capacity, 38% due to Weather, and 16% due to ATC Staffing.		
Operational actions	**Achieved**	**Comments**
Full Free Route Airspace in DFS AoR, H24, above FL245 / FL285	Yes	
Long-term recruitment plan 2021: +17 (Staffing figures relate to the difference in number of ATCOs (FTE) at the end of one year (31 December) compared to the year before)	No	+12 ATCOs (FTE)
Progressive utilization of Data Link depending on the number of connected flights	Yes	Logon list implementation

Source: All figures based on NM data

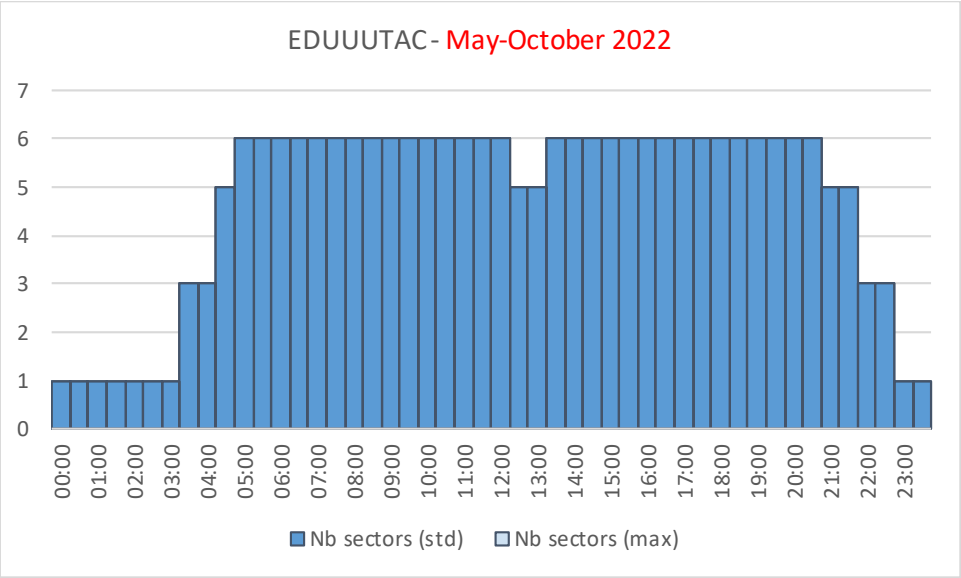
Planning Period – Summer 2022-2026

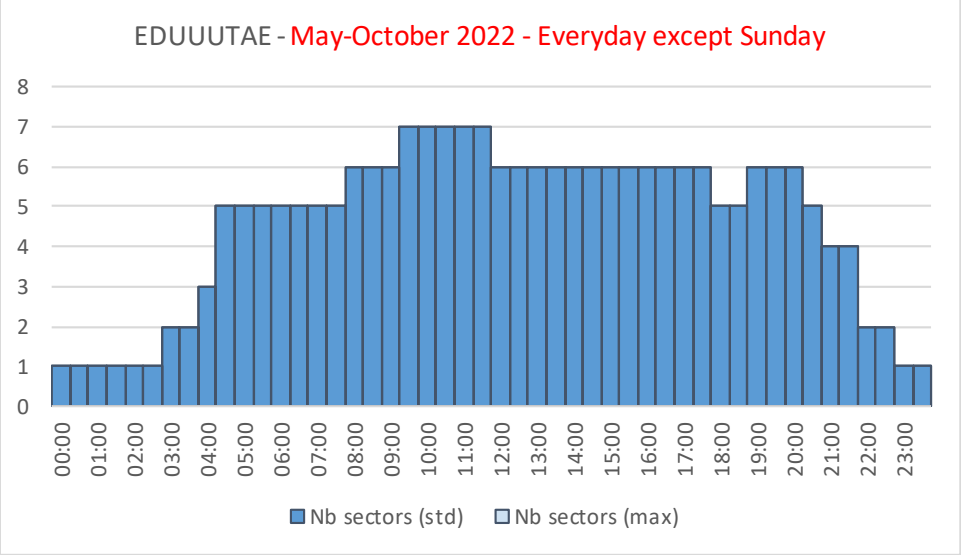
The planning focuses on the Summer season to reflect the most demanding period of the year from a capacity perspective. This approach ensures consistency with the previous planning cycles.

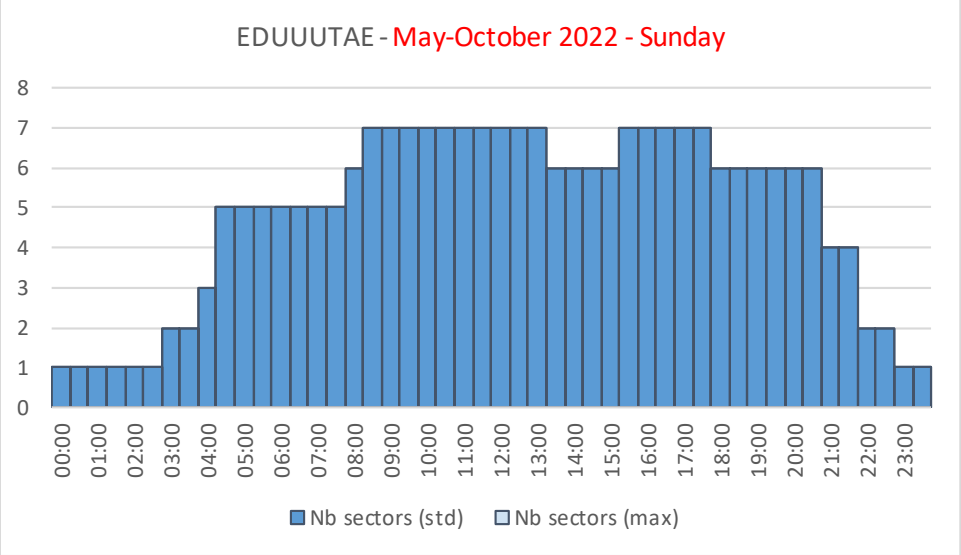
The measures for each year are the measures that will be implemented before the summer season.

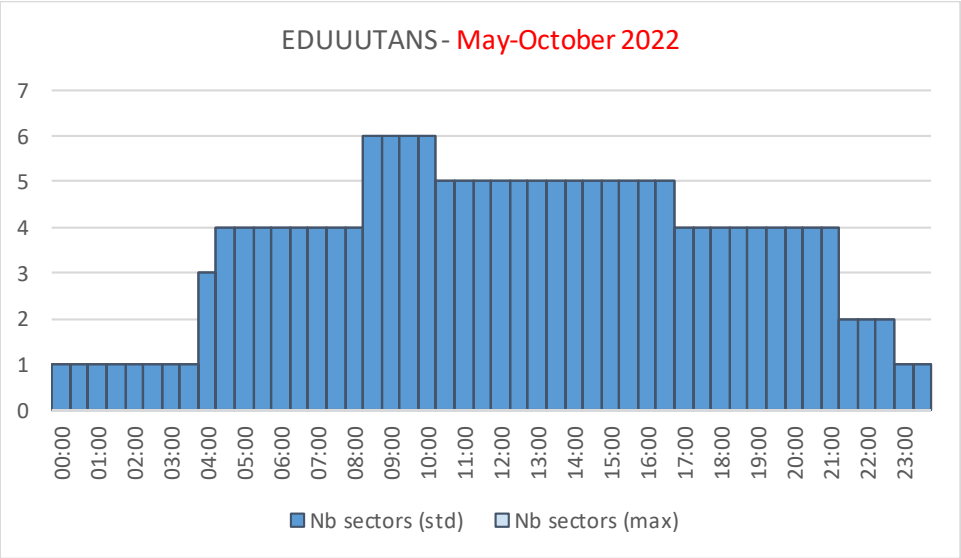
Summer Capacity Plan					
	2022	2023	2024	2025	2026
Free Route Airspace					
Airspace Management Advanced FUA		XMAN LFPG-EDUU / 2022			
Airport & TMA Network Integration					
Cooperative Traffic Management		Complexity Management Tool Implementation iFMP			
Airspace	Re-design EDUU UAC NTM sectors (interface re-sectorisation COBRA WEST)			Erlangen: vertical split into 3 sectors	
	Re-design EDUU UAC FFM and FUL sectors (interface re-sectorisation COBRA CENTRAL)				
Procedures					
Staffing	Long-term recruitment plan				
	+49 *	+33	+16	+26	+16
Technical	Progressive utilization of data link depending on the number of connected flights				
Capacity					
Significant Events					
Max sectors	25 ENR	28-29 ENR	30-31 ENR	32-33 ENR	34-35 ENR
Planned Annual Capacity Increase	31%	9%	5%	5%	3%
Capacity Profile - Base Annual % Increase	28%	9%	4%		
Capacity Plan v. Profile - Base	2%	3%	3%		
Capacity Profile - High Annual % Increase	38%	13%	3%		
Capacity Plan v. Profile - High	-5%	-8%	-6%		
Annual Reference Value (min)	0.20	0.20	0.20		
Additional information	* Compared to 2019				

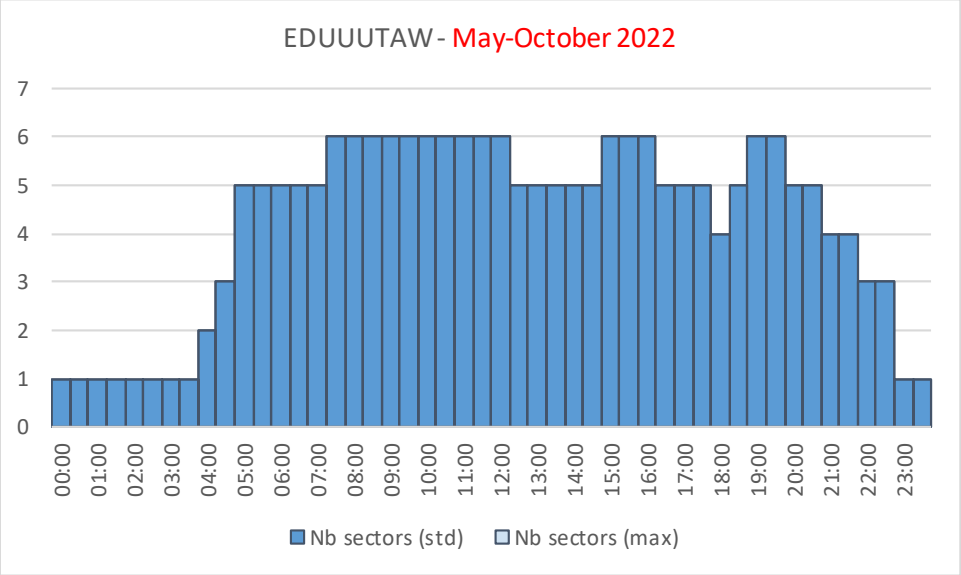
Source: All figures based on NM data

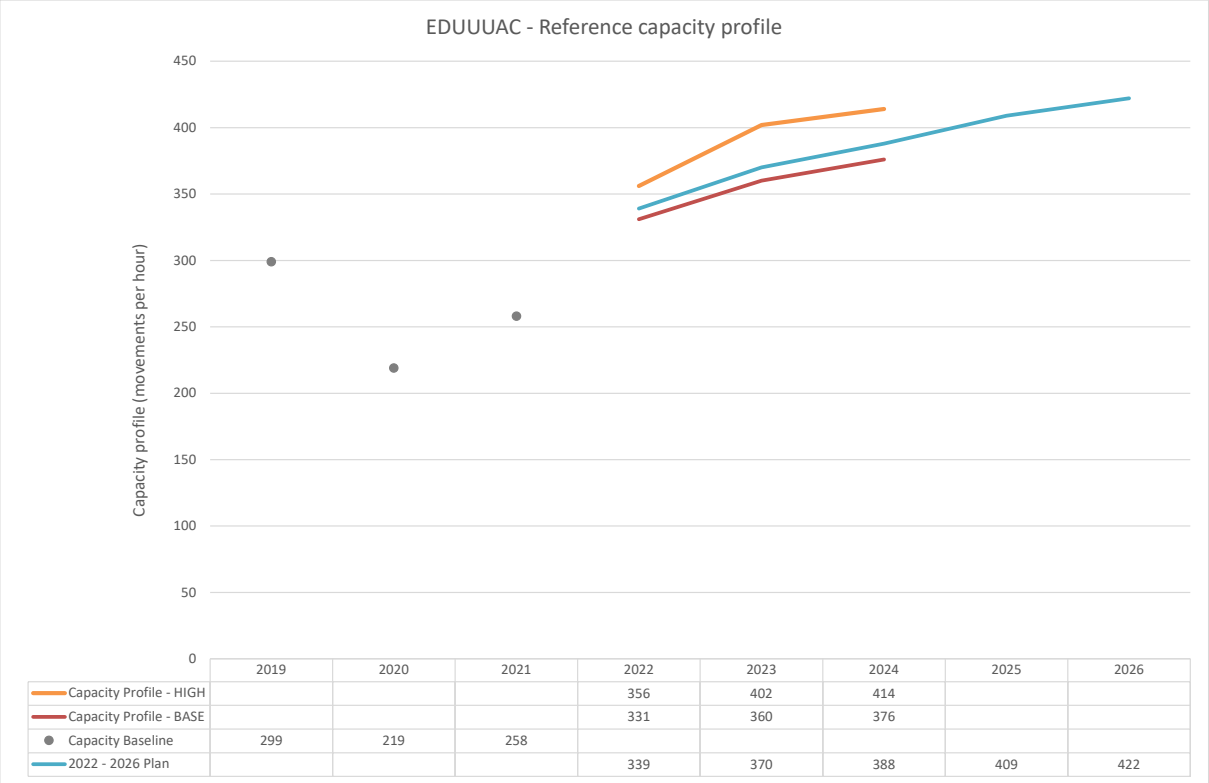

EDUUUTAC - May-October 2022
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDUUUTAE - May-October 2022 - Everyday except Sunday
8
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDUUUTAE - May-October 2022 - Sunday
8
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDUUUTANS - May-October 2022
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDUUUTAW - May-October 2022
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)



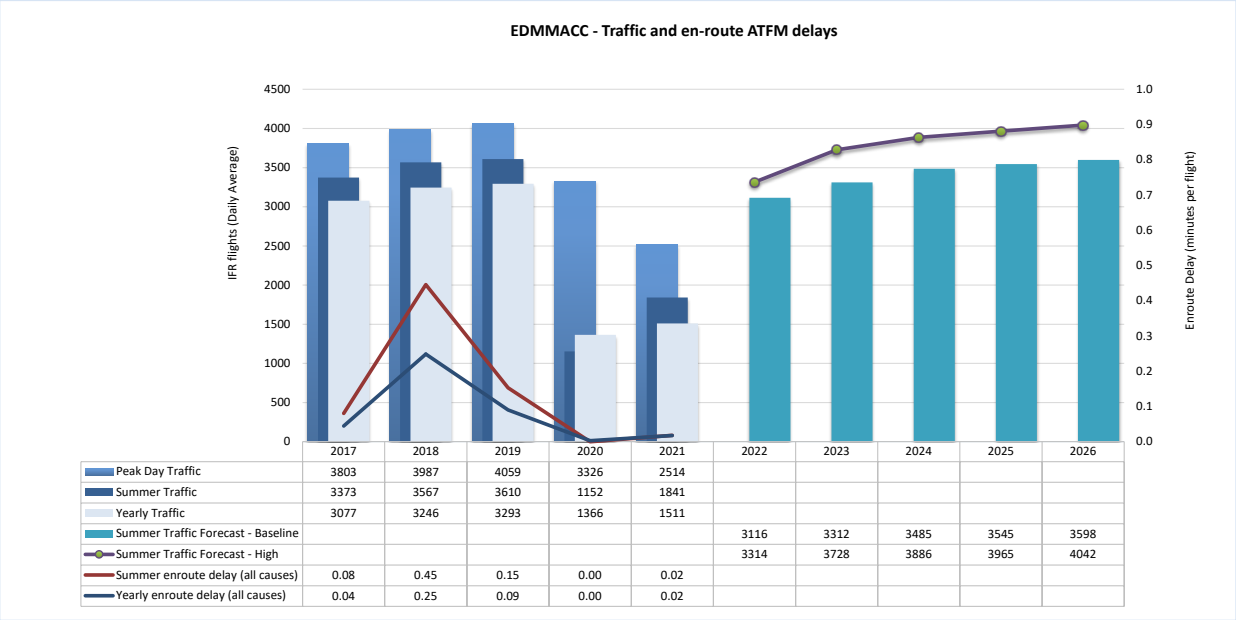
	2019	2020	2021	2022	2023	2024	2025	2026
Capacity Profile - HIGH				356	402	414		
Capacity Profile - BASE				331	360	376		
Capacity Baseline	299	219	258					
2022 - 2026 Plan				339	370	388	409	422

2022-2026 Outlook
The capacity plan is sufficient for the baseline traffic growth only.

Source: All figures based on NM data

2.5. München ACC

Traffic and en-route ATFM delays 2017-2026



	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Peak Day Traffic	3803	3987	4059	3326	2514					
Summer Traffic	3373	3567	3610	1152	1841					
Yearly Traffic	3077	3246	3293	1366	1511					
Summer Traffic Forecast - Baseline						3116	3312	3485	3545	3598
Summer Traffic Forecast - High						3314	3728	3886	3965	4042
Summer enroute delay (all causes)	0.08	0.45	0.15	0.00	0.02					
Yearly enroute delay (all causes)	0.04	0.25	0.09	0.00	0.02					

Source: EUROCONTROL SEVEN-YEAR FORECAST OCT 2021 (STATFOR) and EUROCONTROL NMIR for actual data

2021 performance

München ACC	Traffic (% of 2019)	En-route Delay (min. per flight)		Capacity	
		All reasons	ACC Reference Value	Capacity Gap?	Baseline
Year	46%	0.02	0.06	No	
Summer	51%	0.02			190

Summer 2021 performance assessment		
The average delay per flight was 0.02 minutes per flight in Summer 2021.		
Operational actions	**Achieved**	**Comments**
Link AMAN EDDM – LIPP	No	On hold
Staffing: +1 (Staffing figures relate to the difference in number of ATCOs (FTE) at the end of one year (31 December) compared to the year before)	No	-5 ATCOs (FTE)
Training and Transition for iCAS	Ongoing	

Source: All figures based on NM data

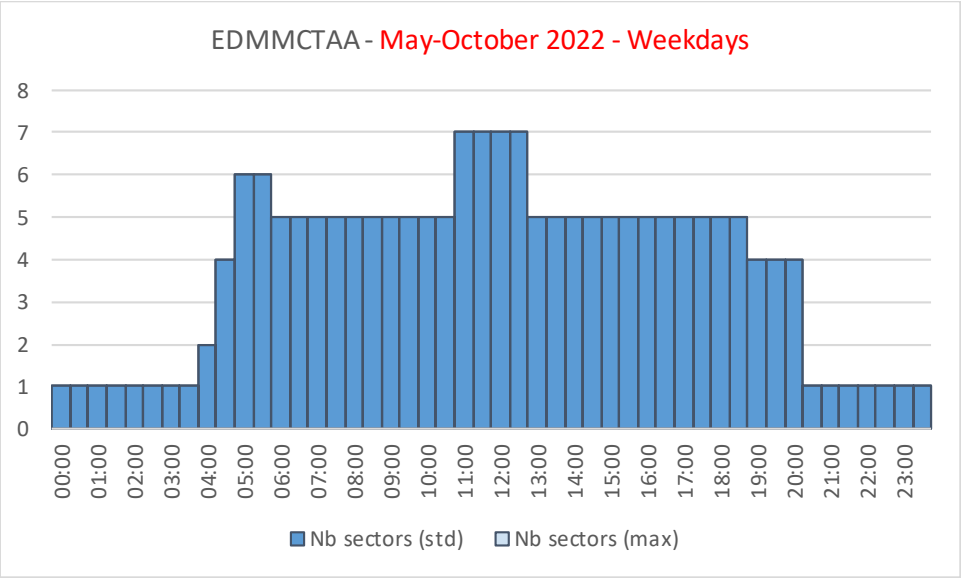
Planning Period – Summer 2022-2026

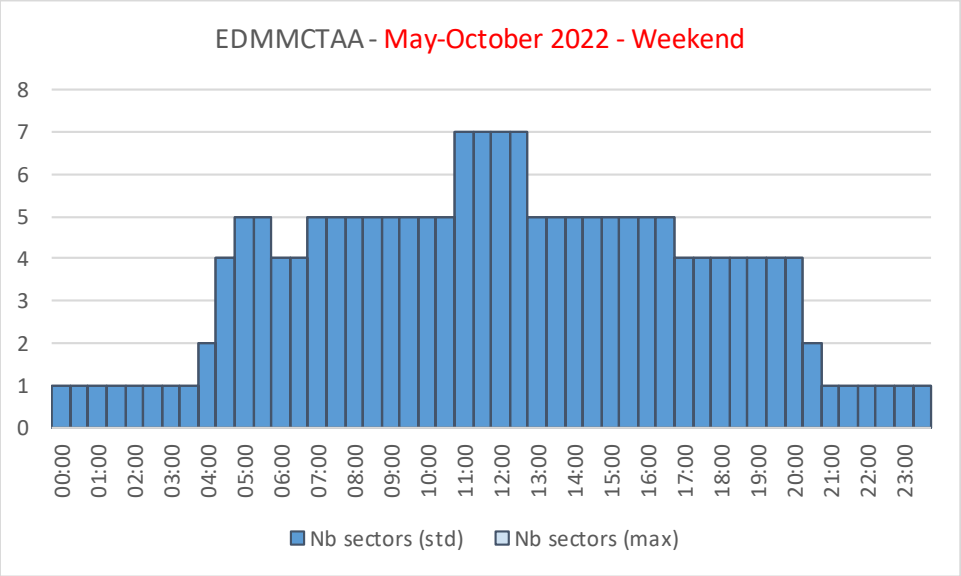
The planning focuses on the Summer season to reflect the most demanding period of the year from a capacity perspective. This approach ensures consistency with the previous planning cycles.

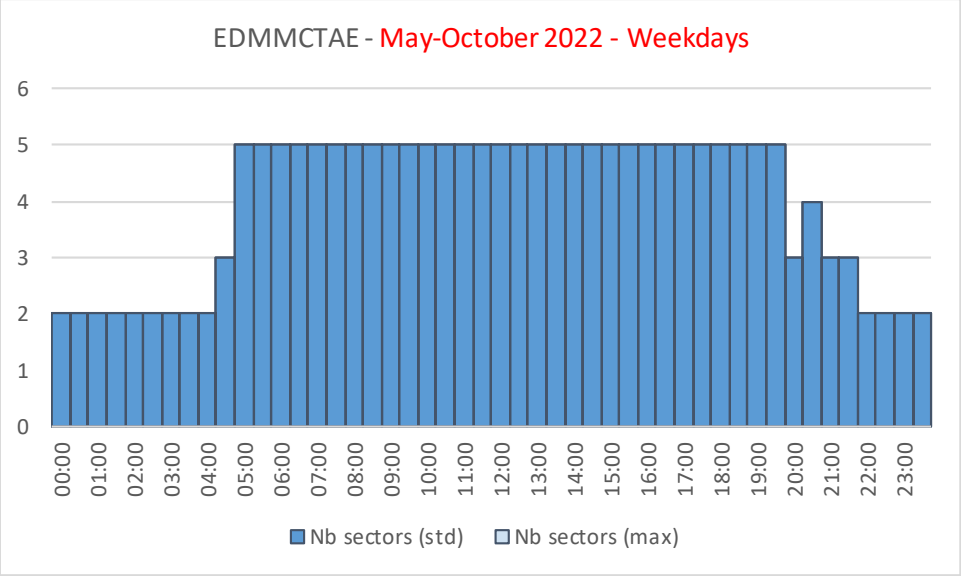
The measures for each year are the measures that will be implemented before the summer season.

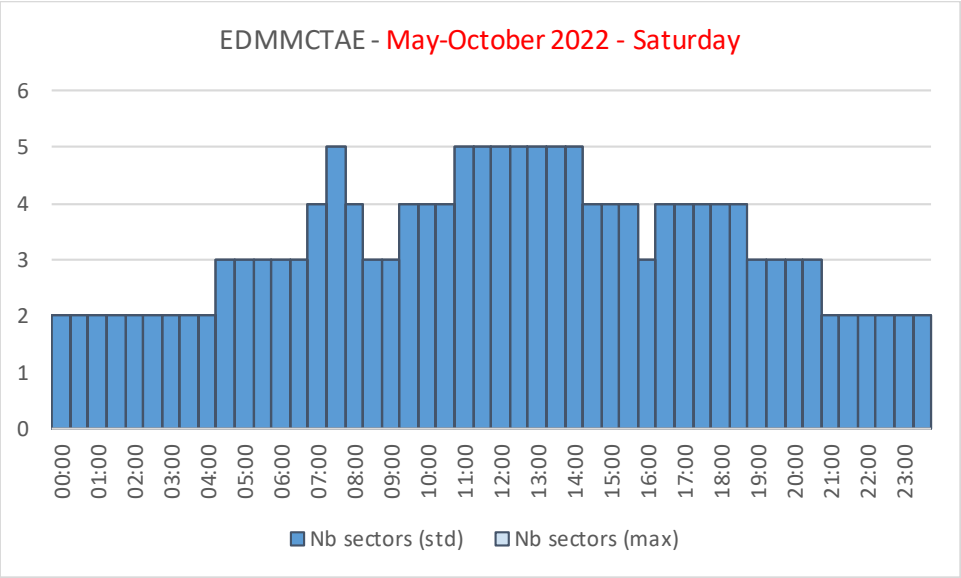
Summer Capacity Plan					
	2022	2023	2024	2025	2026
Free Route Airspace					
Airspace Management Advanced FUA					
Airport & TMA Network Integration	Remote Tower Control (RTC) in Erfurt (Q1/2022)	Remote Tower Control (RTC) in Dresden (2023)			
		Independent parallel operations at Leipzig airport fully operational with 2 feeders (Q2/2023)	AMAN EDDM – LIPP		
Cooperative Traffic Management					
Airspace		Bodensee sector: implementation in Zürich (Q1/2023)	Bodensee sector: implementation in Munich (2023/2024)		
Procedures					
Staffing	-24 *	+11	+5	+1	+4
Technical		New ATM System iCAS			
Capacity					
Significant Events	Training for iCAS				
Max sectors	13 ENR + 4 APP + 2 feeders	16 ENR + 4 APP + 2 feeders	16 ENR + 4 APP + 2 feeders	16 ENR + 4 APP + 2 feeders	16 ENR + 4 APP + 2 feeders
Planned Annual Capacity Increase	21%	8%	5%	0%	2%
Capacity Profile - Base Annual % Increase	14%	6%	5%		
Capacity Plan v. Profile - Base	6%	9%	9%		
Capacity Profile - High Annual % Increase	21%	13%	4%		
Capacity Plan v. Profile - High	1%	-3%	-2%		
Annual Reference Value (min)	0.10	0.11	0.11		
Additional information	* Compared to 2019				

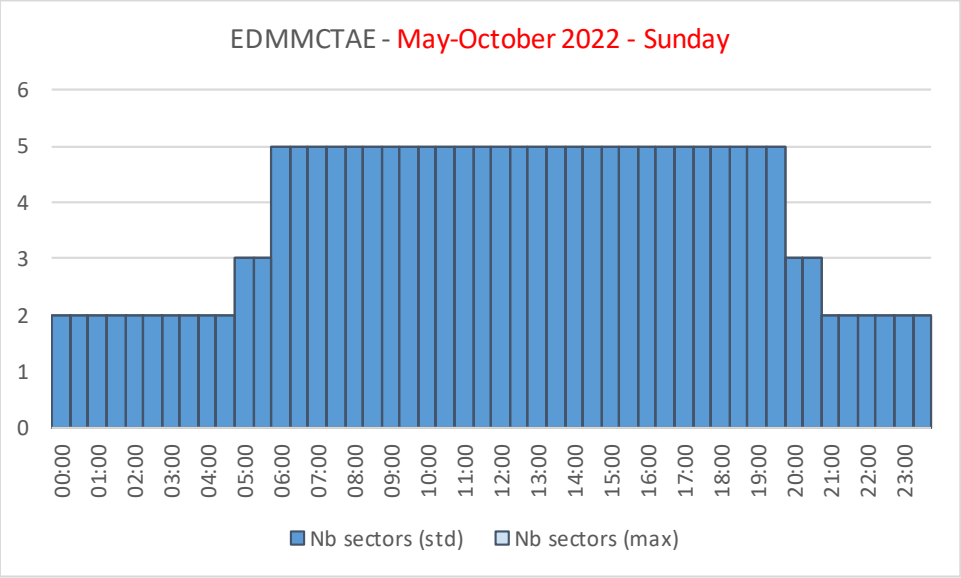
Source: All figures based on NM data

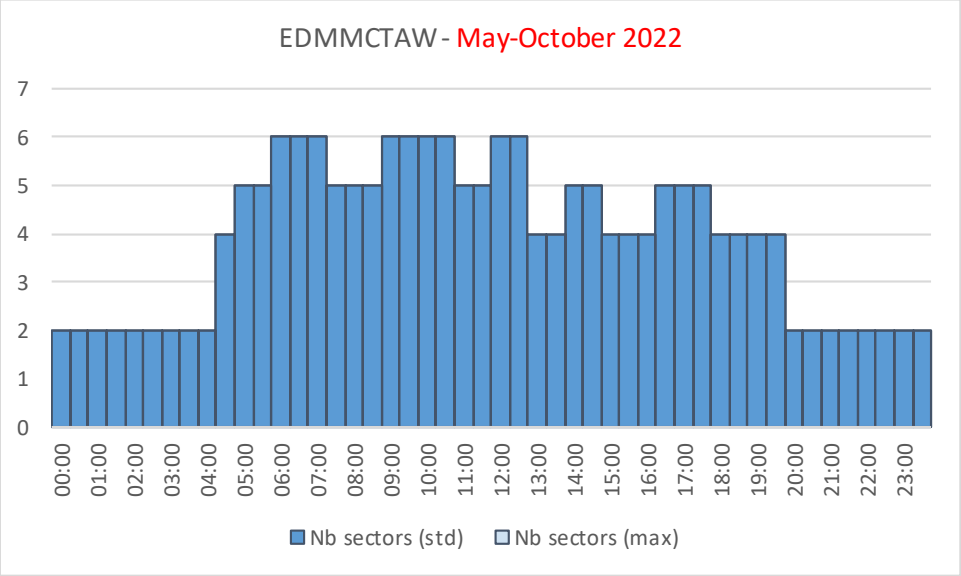

EDMMCTAA - May-October 2022 - Weekdays
8
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDMMCTAA - May-October 2022 - Weekend
8
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDMMCTAE - May-October 2022 - Weekdays
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDMMCTAE - May-October 2022 - Saturday
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDMMCTAE - May-October 2022 - Sunday
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)


EDMMCTAW - May-October 2022
7
6
5
4
3
2
1
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Nb sectors (std)
Nb sectors (max)

	2019	2020	2021	2022	2023	2024	2025	2026
Capacity Profile - HIGH				229	259	269		
Capacity Profile - BASE				217	230	241		
Capacity Baseline	264	144	190					
2022 - 2026 Plan				231	250	263	264	269

2022-2026 Outlook
The capacity plan is sufficient for the baseline traffic growth, but not for the high traffic growth as from 2023.

Source: All figures based on NM data

3. Implementation Projects

The tables below presents the high-level information about the main projects currently ongoing in Germany.

3.1. National projects

Name of project:	Organisation(s):	Schedule:	Progress Description:	Links:
iCAS (iTEC Center Automation System)	DFS (DE)	2006-2026	iCAS is the latest ATS system under development by the DFS, which replaces ATS systems P1/ATCAS and P2. iCAS system is built for use in control centres of Lower and Upper Airspace over Germany. iCAS Program is aimed at the development, deployment and commissioning of this uniform ATS System iCAS for operational use at all DFS Air Traffic Control Centres. The ongoing iCAS Phase II aims at the commissioning of iCAS in control centres of Lower Airspace in Munich (2020-2022), Bremen (2021-2024) and Langen (2025-2026).	L3: ITY-AGDL, AOM21.2, ATC15.1, ATC15.2, ITY-FMTP, ATC12.1 DP: DP 1.1.1 DP 1.1.2 DP 3.1.1 DP 3.1.2 DP 3.1.3 DP 3.1.4 DP 3.2.1 RP2 PP: AF 1.1 AMAN extended to En-Route Airspace AF 3.1 Airspace Management and Advanced Flexible Use of Airspace AF 3.2 Free Route
Realignment of logistics centre	DFS (DE)	2019 - 2021	The construction of the new logistics centre on the DFS Campus is due to age-related requirements. The existing building will be removed in 2019. The new building will be constructed on the same site. The logistics centre was opened for operation in the second half of 2021.	-

Name of project:	Organisation(s):	Schedule:	Progress Description:	Links:
S-ATM Robusto	DFS (DE)	2019 - 2026	With S-ATM Robusto, the first stage of a sectorless air traffic management system will be implemented in the airspace above FL385 at the Karlsruhe UAC site. S-ATM leads to a paradigm shift: from spatial controller responsibility to air traffic control-centered responsibility with the goal of - Increasing controller productivity by increasing the time spent in the airspace and continuous utilization of the controllers - More flexible personnel allocation The implementation will be carried out in two stages and is based on the adaptation/modification of the current procedures, processes and technical infrastructure. Changes to the existing system technology and the wide-area communications infrastructure should be kept to a minimum wherever possible.	L3: AOM21.2, AOM19.4 DP: DP 3.1.1 DP 3.1.2 DP 3.1.3 DP 3.1.4 DP 3.2.1 RP2 PP: AF 3.1 Airspace Management and Advanced Flexible Use of Airspace AF 3.2 Free Route
Tower ATS Next Generation (TANGe)	DFS (DE)	2017-2022	TANGe's vision is the new sustainable Tower ATS system, which will provide the controller with demand-driven, harmonised system support and an ergonomic workplace. TANGe relies on an agile requirements management process oriented towards FVK procedures. The service-oriented, cloud-based architecture will enable efficient product maintenance and innovation.	-
A-SMGCS Leipzig	DFS (DE)	2020-2023	The project A-SMGCS Leipzig implements a ground control system including runway incursion monitoring function at Leipzig/Halle Airport including the necessary sensor technology.	L3: AOP04.2, AOP13 DP: 2.2.1 - A-SMGCS Level 1 and 2 RP2 PP: 2.1.3.5 Airport capacity

3.2. FAB projects

There are two main FABEC 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 2021;
- 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) 2021/116 (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			

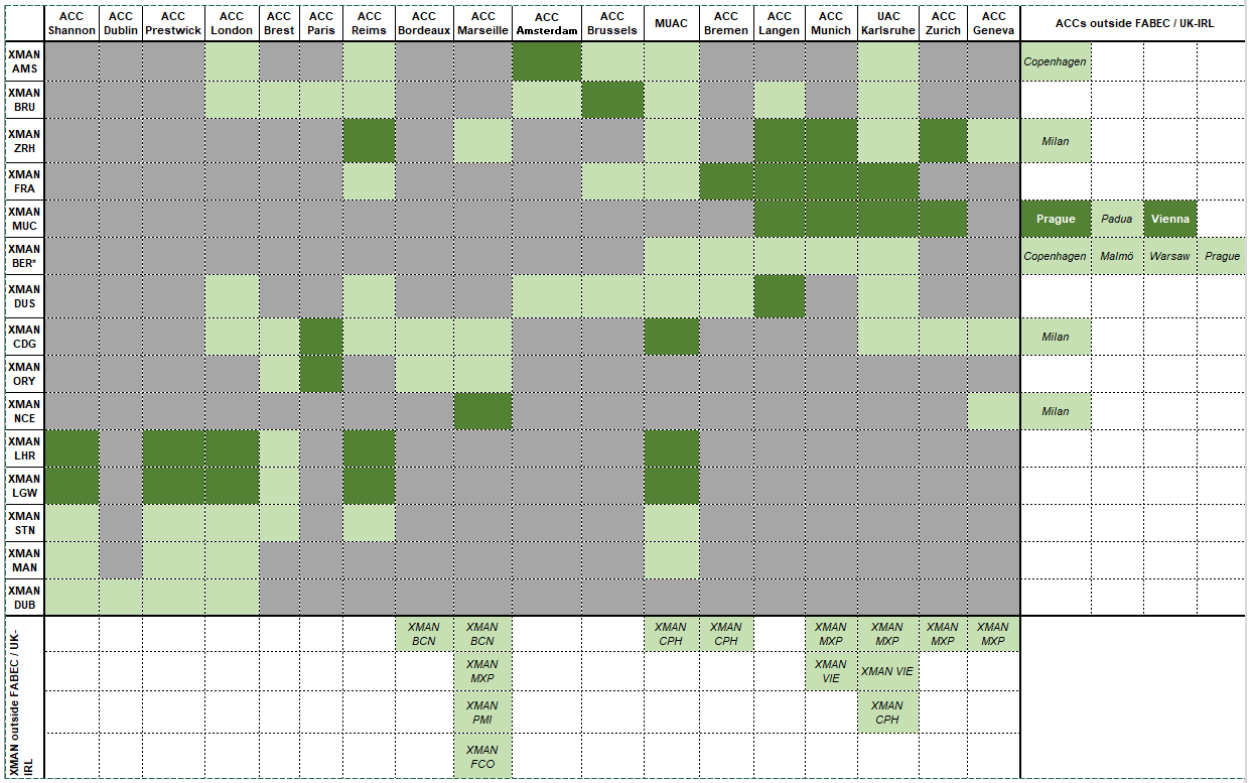
ACCs.
This step also takes into account further validated SESAR results and will optimise the cooperation between arrival management and Airport-CDM, Aircraft Operators and Network Management in order to widely share Arrival Management (AM) information between all partners and to process and to apply 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 mid 2024.
The XMAN Portal (main feature of the Advanced Step of the XMAN project) Prototype used for the SESAR2020 trials in 2019 is technically ready at MUAC.
A complete XMAN review has been done. Following documents were updated and released:

- FABEC XMAN Implementation Roadmap: V5.1, 16.12.2021
- FABEC Extended Arrival management CONOPS Advanced: V1.5, 18.12.2020

Summary of current status (Dark green: Implemented; Light green: planned; 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 & ATC15.2 bis

OI Steps: TS-0102, TS-0305

Other References: CP1:
- AF1: Extended AMAN and Integrated AMAN/DMAN in the high-density TMA
Deployment Programme 2021:
- Family 1.1.1: Arrival Management extended to en-route airspace

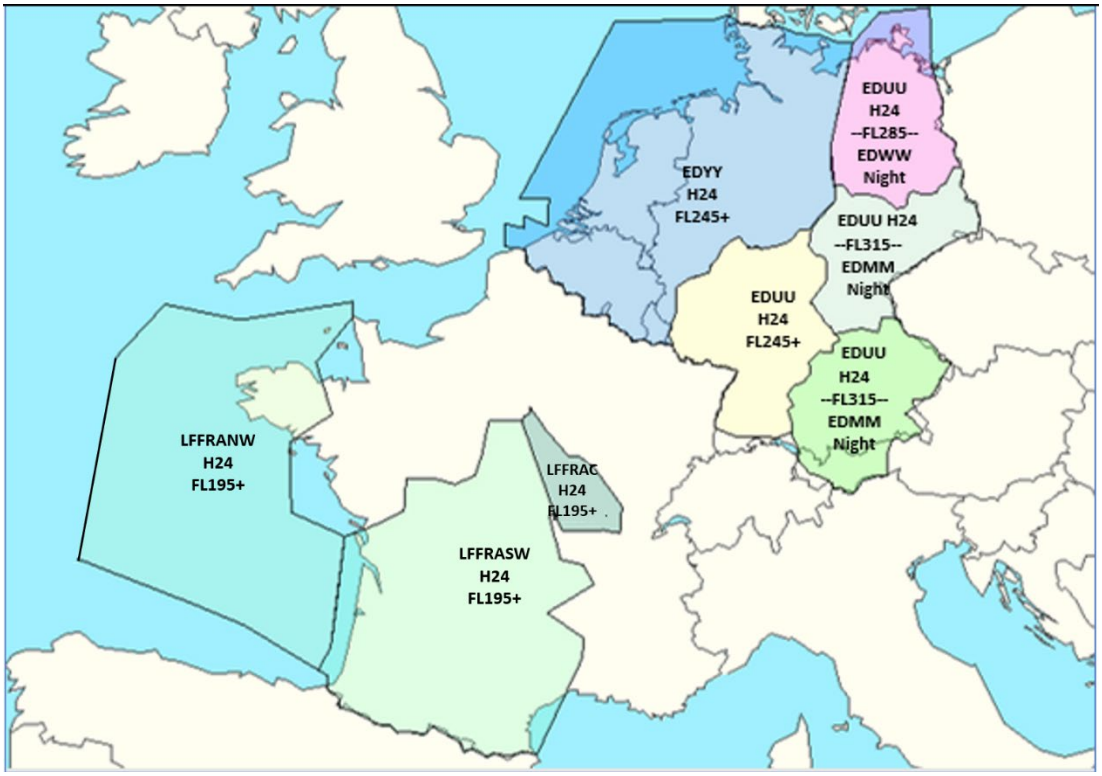
Expected Performance Contribution (specific to the participating organisation(s))

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.

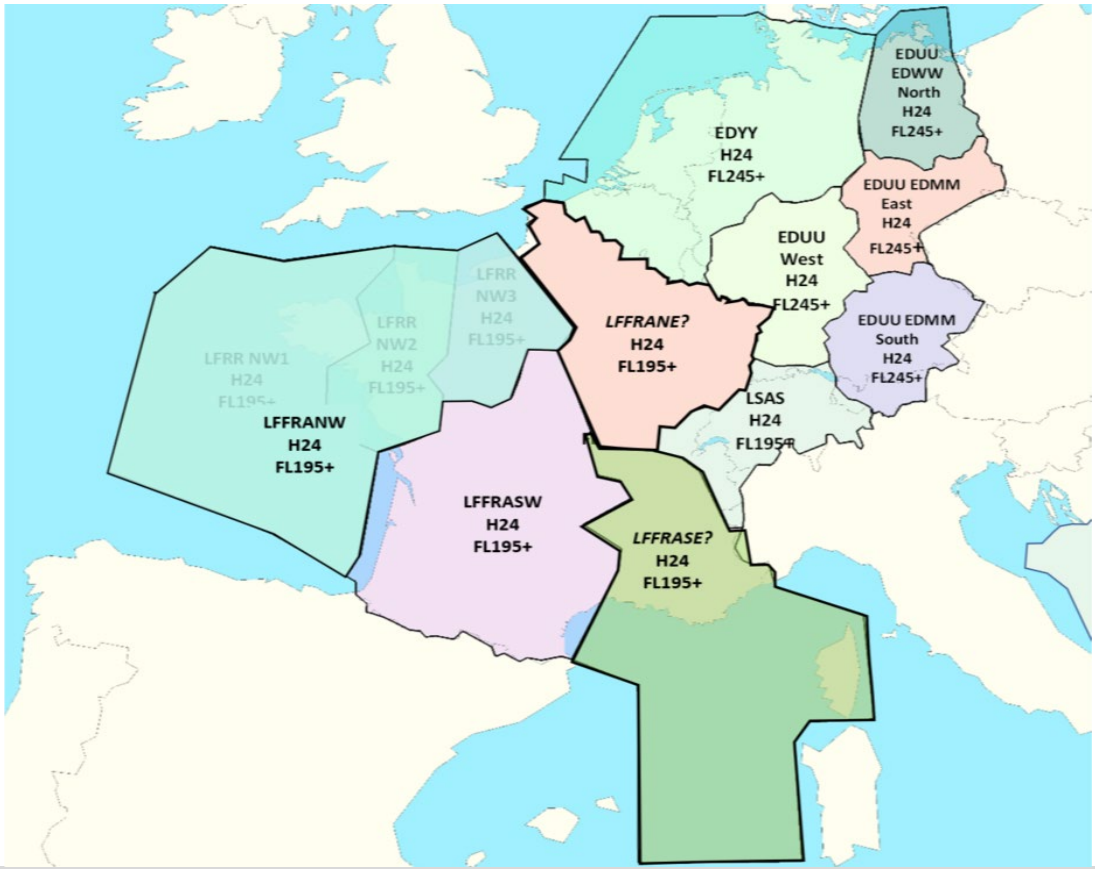
Safety	Improved situational awareness: small positive effect. Reduced tactical interventions: small positive effect.
Environment (including flight efficiency)	Reduction of: • Track miles and holdings: small to medium positive effect; • Fuel burn: large positive effect; • CO_2/NO_x emissions: large positive 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 is depicted in the figure below:



The final configuration by 2025 will be as depicted below:



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 Deployment Programme 2021: - 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. There 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

European MET Information Exchange (MET-GATE)			
Organisation(s):	DWD (DE)	**Type of project:** Multinational	
Schedule:	01/10/2016–31/12/2021		
Progress Description:	-		
Description:	All partners have successfully established a SWIM-compliant interface for the retrieval or automatic delivery of aeronautical meteorological information. In addition, each MET ANSP partner has published exemplary SWIM services in the SWIM Registry, this includes publishing results from the SESAR implementation projects 67 "European Weather Radar Composite of Convection Information Service" and 68 "European Harmonised Forecasts of Adverse Weather (Icing, Turbulence, Convection and Winter weather).		
Link and references			
ATM MP links:	L3: INF10.10, INF10.11, INF10.12		
Other links:	-		
Project included in RP2 Performance Plan:	Y	**Name/Code in RP2 Performance Plan:**	SESAR solutions: #34, #35, #46
Project included in RP3 Performance Plan:	Y	**Name/Code in RP3 Performance Plan:**	SESAR solutions: #34, #35, #46
Project included in DP:	Y	**Name/Code in DP:**	Family 5.4.1 - Meteorological Information Exchange
Performance contribution			
Safety:		-	
Environment:		-	
Capacity:		-	
Cost-efficiency:		-	
Operational efficiency:		-	
Security:		-	
Cooperation Activities:	-		

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, 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 - 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

SESAR

As part of Single European Sky, SESAR (Single European Sky ATM Research) represents its technological dimension. This key international programme is aimed at achieving the modernisation of the European ATM network by:

- Coordinating and concentrating all relevant research and innovation (R&I) activities under the auspices of the SESAR 3 Joint Undertaking
- Coordinating deployment activities by the SESAR Deployment Manager.

SESAR will give Europe a high-performance ATC infrastructure, one that will enable the safe and environmentally friendly development of air transport. SESAR can also be regarded as the standard-setting instrument for the common future European ATM network.

The Definition phase of SESAR delivered the first ATM Master Plan and was finalised in 2008. The Development phase (started 2008) led by the SESAR Joint Undertaking (SJU) will design the required new generation of technological systems, components and operational procedures according to the ATM Master Plan and Work Programme. Finally, the Deployment phase (started 2014) will yield the large-scale production and implementation of the new ATM infrastructure guaranteeing high performance air transport in Europe.

SESAR 2020 was integrated in the EU's key funding programme for research and innovation called "Horizon 2020". Its successor is "Horizon Europe" starting in 2022, integrating the SESAR 3 programme as the successor for SESAR 2020 and organised under the auspices of the SESAR 3 Joint Undertaking (S3JU), which has taken over all duties from the SJU (including the finalisation of SESAR 2020). This new partnership has a volume of about 2 Billion Euros for SESAR 3 and is meant for the realisation of the SESAR Vision, the Digital European Sky.

Since the inception of the programme, DFS has been a steady contributor and member of the SJU, which was created under Article 171 of the Treaty establishing the European Community. In addition to the contribution to a broad spectrum of R&I work packages in SESAR, DFS led the work package B called "Target Concept and Architecture Maintenance" in SESAR 1 (2009 – 2016). In SESAR 2020 Wave 1 (2016 – 2019) DFS was coordinating the biggest R&I project, PJ10 dealing with Separation Management in en-route, TMA as well as Controller Tools. This work and the leading role of DFS has been continued in SESAR 2020 Waves 2 and 3 (2019 – 2023). In December 2021, DFS has become a Founding Member of the new SESAR 3 Joint Undertaking.

German military experts have been involved in certain Work Packages with military relevancy.

The scope of the "Target Concept and Architecture Maintenance Work Package" covered the maintenance and refinement of the high-level ATM. It defined and ensured the consistency of an ATM service-oriented architecture. Work package B also included the execution of a performance analysis of the ATM solutions throughout SESAR development phase.

The project "Separation Management En-Route and TMA" (PJ10) aims at delivering a variety of SESAR Solutions. Among the most promising in terms of performance improvement are "High Productivity Controller Team

Organisation", "Flight Centred ATC" in en-route environment and "Advanced Separation Management" integrating additional information like ATC and Aircraft intent. In Wave 2, the project will also focus on the delegation of airspace amongst air traffic service units in a virtual centre environment.

A6 Alliance

The A6 Alliance was founded in 2011 by six ANSP members of the SESAR JU – DFS (Germany), DSNA (France), AENA (Spain) renamed later to ENAIRE, ENAV (Italy), NATS (UK) and NORACON – a consortium of Austro Control (Austria), AVINOR (Norway), EANS (Estonia), Finavia (Finland), IAA (Ireland), LFV (Sweden) and Naviair (Denmark).

In 2015 PANSA became a full member of the A6 Alliance. At the same time the COOPANS consortium replaced NORACON in all A6 activities and the B4 Consortium joined A6 in the area of SESAR 2020.

The A6 Alliance has also concluded a collaboration agreement with Skyguide in relation to SESAR Research & Development (R&D) activities, as well as with ROMATSA and HungaroControl in relation to SESAR Deployment Manager.

The A6 Alliance plays a significant role in R & D through active participation in the SESAR Programme.

The A6+ partners participate in multiple ATM-solution projects. Furthermore, the A6+ partners hold an active role in transversal activities including the Masterplan and in Very Large Scale Demonstrations.

Since the launch of SESAR 1, members of the A6 Alliance have achieved significant results together with other SJU partners.

The members of the A6 Alliance control more than 80% of EU air traffic. They are responsible for more than 70% of the investment in the future air traffic management infrastructure.

Areas of DFS involvement in 2021:

- Preparation of positions regarding operational/technical, policy and legal regulations proposals prepared or led by the EU institutions/bodies together with other partners;
- Participation in the SESAR Joint Undertaking, SESAR Deployment Manager and initiatives/projects financed by CINEA (SWIM, DLS, etc.);
- A6 activities: develop proposals for improvement of the ATM system in Europe and drive their implementation.

Deployment Manager

In December 2014, the European Commission has tasked the SESAR (Single European Sky ATM Research) Deployment Alliance, a cross industry partnership made up of the four airline groups (A4), operators of 25 airports and 13 air navigation service providers including DFS, to plan and coordinate SESAR deployment. It has been appointed to the European Commission-mandated role of SESAR Deployment Manager (SDM).

The SDM ensures that new technologies and solutions that have already been tested and validated through the SESAR Joint Undertaking are delivered into everyday operations across Europe, delivering significant benefits to airspace users and the environment. The SESAR Deployment Alliance, comprised of the A6 Alliance of ANSPs, the A4 airlines and the SESAR-related Deployment Airport Operators Group (SDAG), will coordinate and synchronise for an initial 7-year period the deployment activities related to the Pilot Common Project (PCP Regulation (EU) No 716/2014). The PCP represents the first set of SESAR deployment activities mandated by an EU Implementing Rule and was replaced by the Common Project 1 in February 2021 (CP1 Regulation (EU) 2021/116). Currently, the SDM is coordinating/ managing 343 Implementing Projects of 93 partners and a total EU funding of € 1.3 bn. In October 2021, the European Commission published a Call for proposals for the selection of the new SESAR Deployment Manager taking over the mandate from the current SDM beginning from June 2022.

iTEC European (Interoperability Through European Collaboration) Alliance

Following the successful co-operation started in 2007 between DFS, ENAIRE and NATS with INDRA as technological partner, the activities for defining, developing and implementing the iTEC product have continued. Over the years the alliance grew with the further incorporation of LVNL (2011), AVINOR (2016), Oro Navigacija (2017) and PANSA (2017).

iTEC Alliance provides a platform for synergies and thus cost reductions, helping to realise the vision of a Single European Sky (SES) with greater efficiencies and service standards for Europe's airspace users. The goal of the collaboration is to develop a high-end air traffic management system for busy and complex airspace that meets the Single European Sky ATM Research requirements and enables significant steps towards its productivity. The members of the iTEC alliance can benefit from sharing of best practices, reduced operational expenditures by sharing development costs and knowledge of risks as well as from enabling accelerated deployment of enhanced systems and future operational concepts.

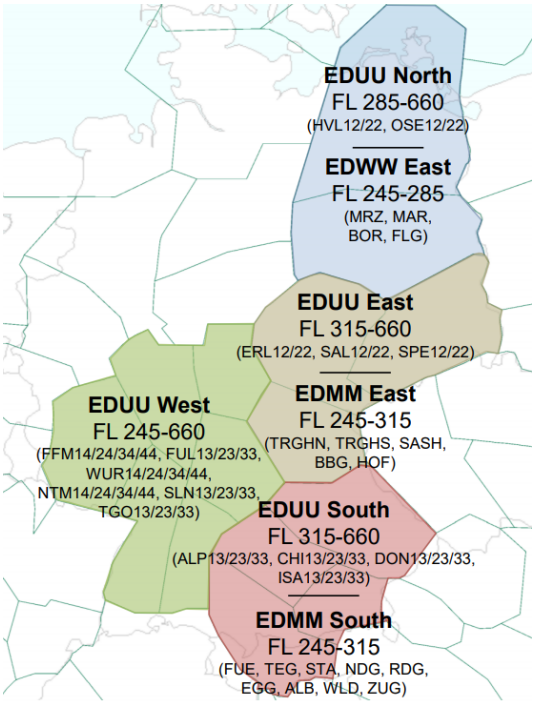
The main efforts have been devoted to jointly define the FDP and CWP components for iTEC as a common product that became the core of the ATM system iCAS of DFS. iCAS is the trajectory-based system which delivers enhanced ATC tools to controllers.

DFS has replaced its ATS-system VAFORIT with iCAS I in UAC Karlsruhe in December 2017 and will replace its current ATS system P1/ATCAS in all ACCs/TMAs with iCAS II in the coming years.

See also Chapter 3.1 for more details.

http://www.itec.aero/

Free Route Airspace



Source: DFS

DFS Free Route Airspace – Overview FRA Cells

The FRA programme aims at developing and implementing a Free Route Airspace FABEC wide. This is in line with the requirements of the Commission Implementing Regulation (EU) No 716/2014 Pilot Common Project (PCP) with a target date of 2021.

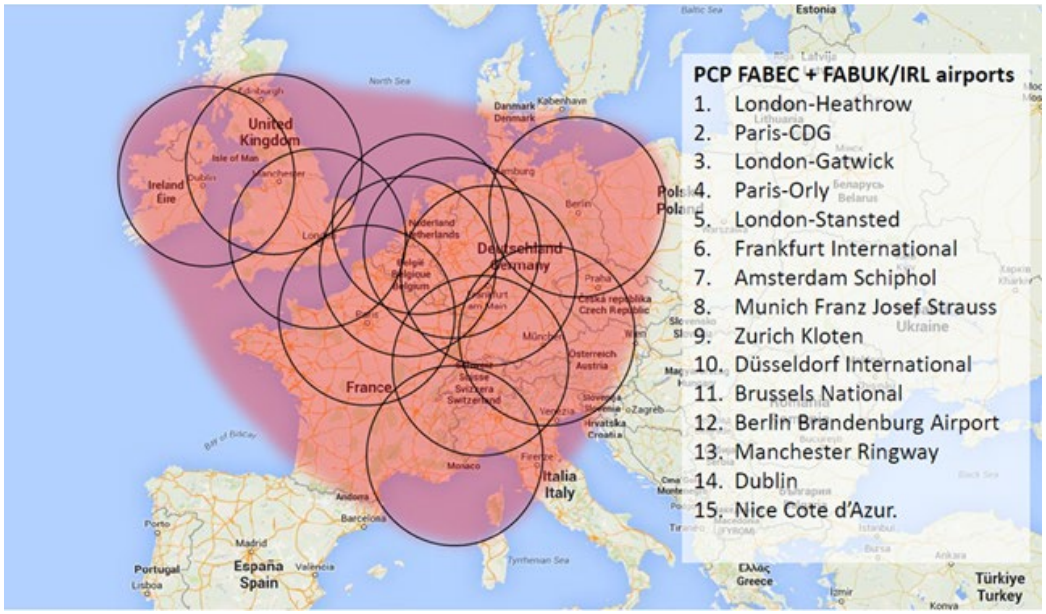
The objective of the FRA implementation is to give airspace users the opportunity to improve the horizontal flight efficiency through defined volumes of Free Route Airspace. FRA allows the airspace user to plan a free route between a defined entry point and a defined exit point, affording a high level of flexibility in route planning. After the implementation of national and cross border DCTs in 2017, Free Routing has been successfully introduced in Germany from 2018 to 2021.

See also Chapter 3.2 for more details.

XMAN Extended Arrival Management

The FABEC XMAN/AMAN (Cross-centre arrival management) project is a multi-stakeholder project, conducted by FABEC and FAB UK/IRL (skeyes, DFS, DSNA, MUAC, LVNL, NATS and skyguide) to ensure a harmonized and coordinated implementation of Extended Arrival Management Operations in accordance with PCP Implementing Rule 716/2014 and the Deployment Programme of the SESAR Deployment Manager.

The FABEC XMAN/AMAN project aims for the extension of the planning horizon of arrival management systems (AMAN) from the local TMA into the airspace of adjacent en-route control centers up to about 200 NM including economical Top of Descent (ToD) around the PCP-airports – or even beyond – depending on the operational environment and the needs of the stakeholders.



Source: FABEC

5. Implementation Objectives Progress

5.1. State View: Overall Objective Implementation Progress

The ATM Master Plan Level 3 is based on the ATM MP Level 1 and Level 2, the SESAR Deployment Program (SDP), the Network Strategy Plan, as well as SES interoperability regulations.

This Implementation Plan brings together and provides the framework for the commonly agreed actions to be taken by ECAC stakeholder in the context of the implementation of SESAR. It addresses V3 (pre-industrial development) validated SESAR Solutions, CP1 (Common Project 1) ATM Functionalities (AFs), SESAR Baseline solutions, SES and ICAO requirements derived from the Global Air Navigation Plan.

Each objective is developed in the respective work packages of the SESAR Joint Undertaking in close coordination with the stakeholders. In the case of objectives related to CP1 regulation (2021/116) detailed synchronisation timelines for the different stakeholder lines of actions are defined by the SESAR Deployment Manager and their consultation arrangements. Where applicable the full operational capability dates for the objectives are derived from the respective European regulations and Provisional Council decisions.

Stakeholder commitment for the implementation is achieved via consultation arrangement within the SESAR Joint Undertaking, SESAR Deployment Manager and EUROCONTROL.

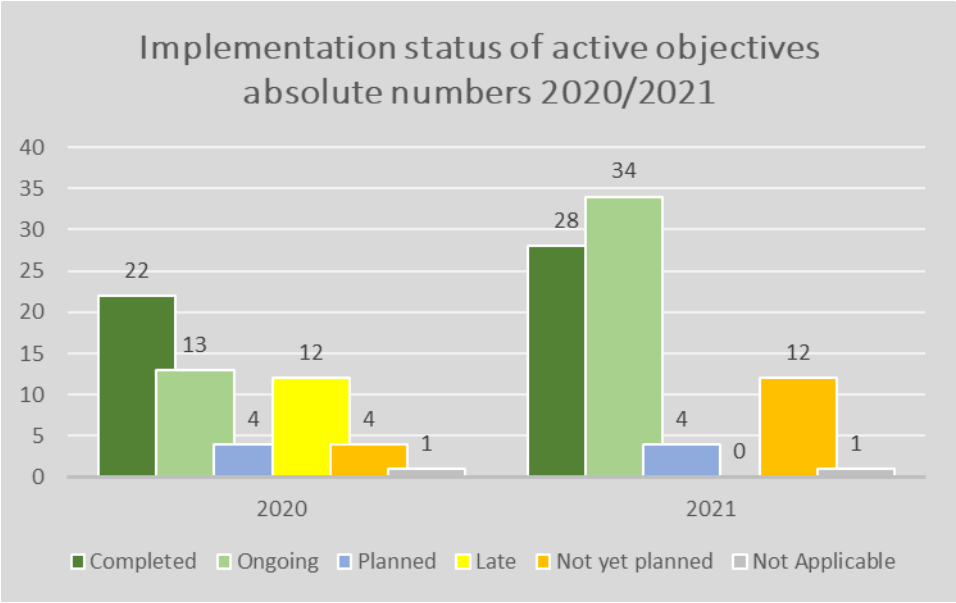
The adaptations of the ATM Master Plan Level 3 to the contents of the CP1 regulation had a major impact on the current reporting cycle. This resulted in a great number of new (32) and substantially changed (10) objectives. 12 objectives were removed and two were set to achieved.

For Germany the large majority of objectives, with a network or local effect, are either completed or planned within schedule as shown in the table below. In detail, 28 out of 79 (63 active, 9 local, 7 ICAO GANP ASBU-related objectives) reported objectives are completed. In addition, there are another 34 objectives in an ongoing status and four have a planned status.

Due to the ongoing influence of the Corona crisis and the associated financial restrictions, some projects could not be carried out to the planned extent. Furthermore, the decline in flight movements has also led to a reassessment of some of the implementation initiatives.
This has resulted in some delay in the implementation of objectives at various points.

Progress distribution for applicable Implementation Objectives

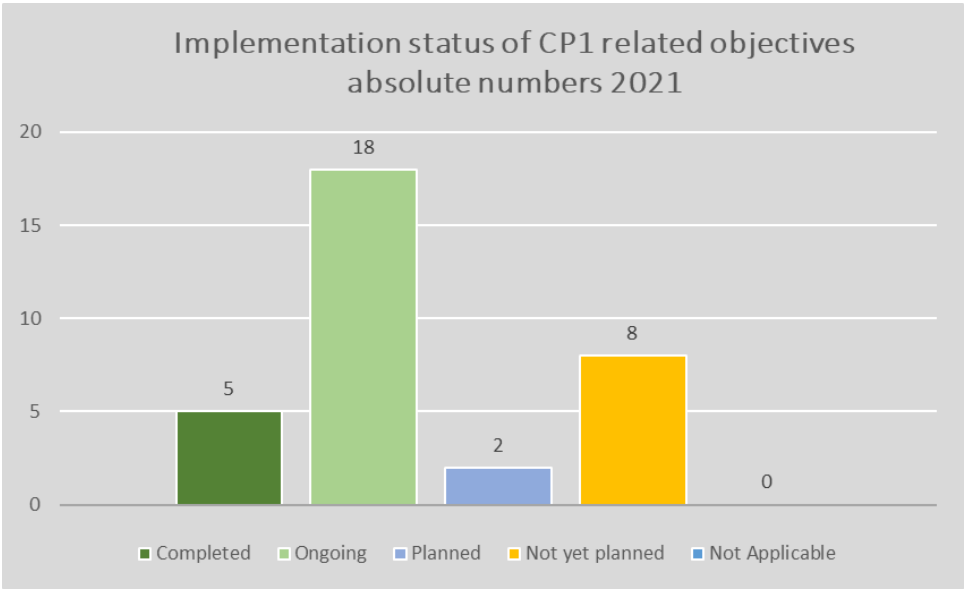
Compared to the previous year, the amount of objectives has increased significantly. Overall Germany reports for 79 objectives including local and ICAO related objectives.



Source: LSSIP DB

In cases where an objective has several stakeholders allocated, the objective was only counted once.

The implementation of objectives related to CP1 has started in 2021 and has gained momentum. From the 33 CP1 related objectives 5 are already completed and 18 are ongoing. In the area of SWIM related objectives are most of the objectives located were planning is about to start in 2022.

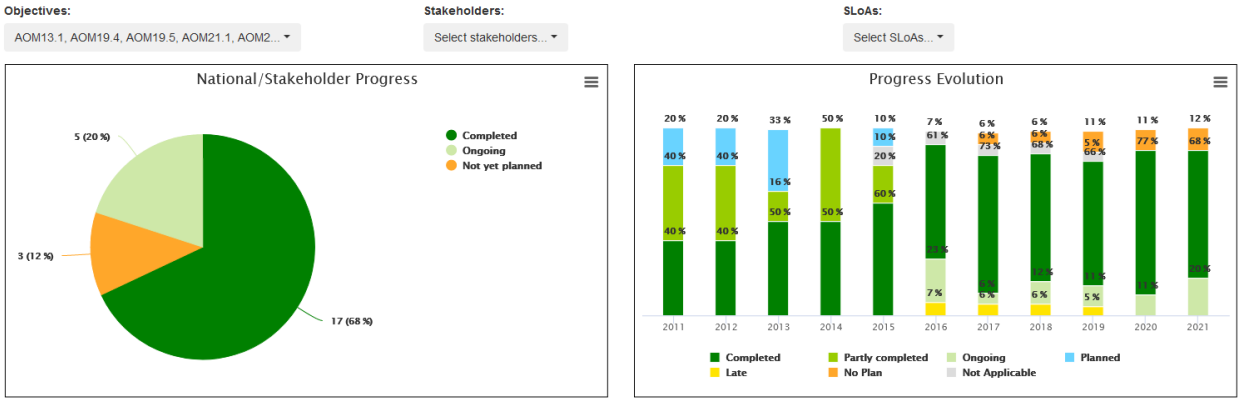


Source: LSSIP DB

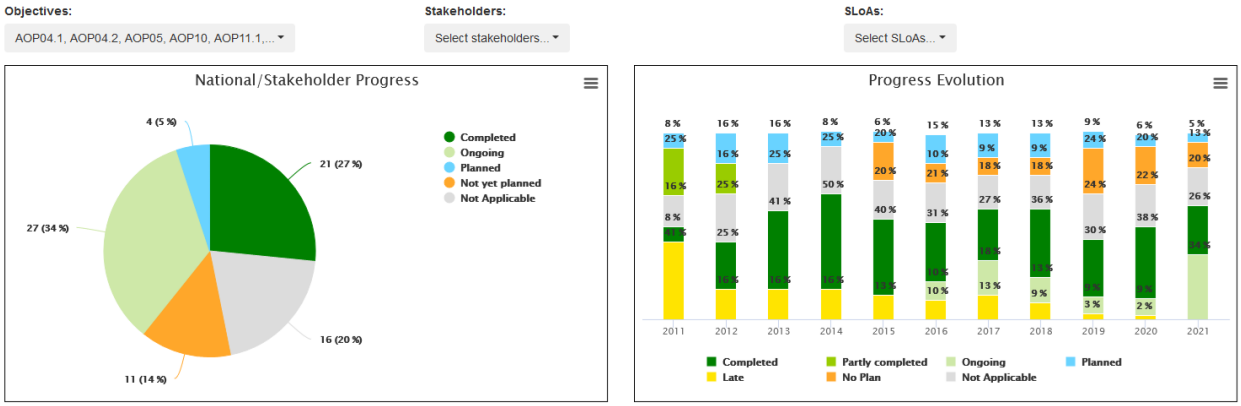
In cases where an objective has several stakeholders allocated, the objective was only counted once.

Summary of the implementation of the objectives

The implementation of AOM and ATC objectives by the German ATM stakeholders has continued steadily.



The implementation of airport related objectives is well advanced. It should be highlighted that the LSSIP 2021 contains the first complete results of Berlin Brandenburg Airport (EDDB).



The implementation of A-SMGCS Level 1 has been achieved in 2018. The implementation of A-SMGCS Runway Monitoring and Conflict Alerting (RMCA) is completed for Munich and Düsseldorf Airport and is well progressed and planned to be finalised at Frankfurt Airport until the end of 2022.

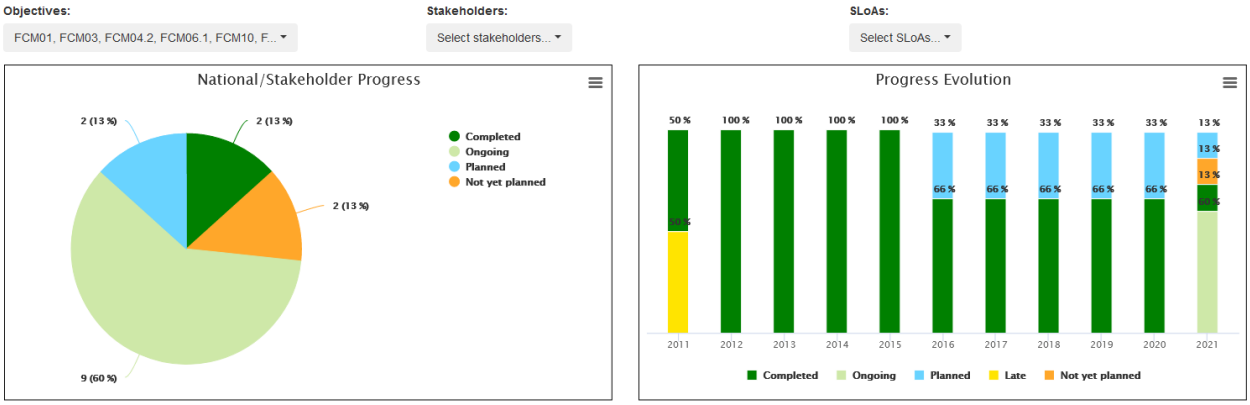
With regard to Time Based Separation studies are ongoing at Frankfurt Airport and the implementation of Initial and Enhanced Airport Operations Plan is ongoing as well at all relevant airports.

The new objectives related to Extended AOP, AOP/NOP integration and Departure Management are ongoing within the time frame of the respective objectives.

For the Flow and Capacity Management objectives the implementation of collaborative flight planning is completed. The objectives concerning Enhanced Short Term ATFCM Measures and Automated Support for Traffic Complexity Assessment and Flight Planning interface are planned and ongoing.

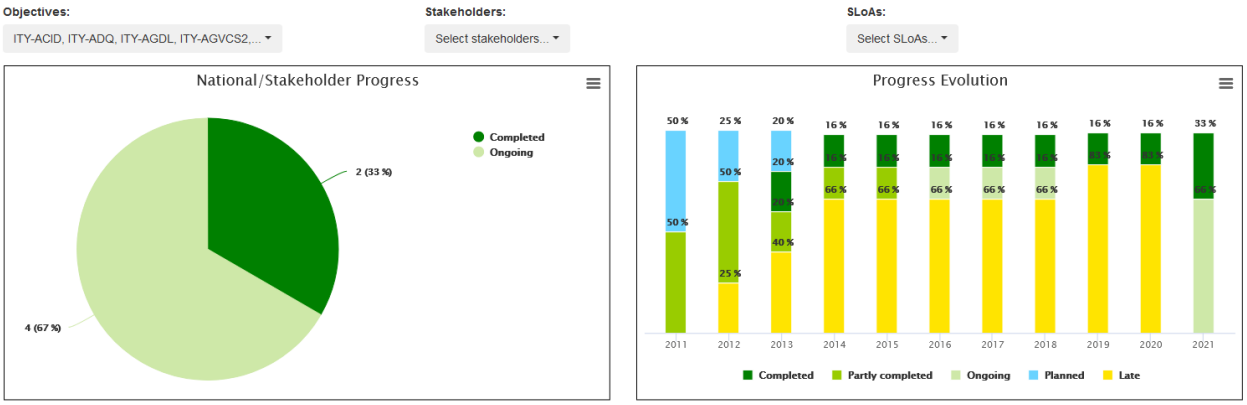
The implementation of the new objectives for Interactive Rolling Network Operations Plan, Initial AOP/NOP Information Sharing and AOP/NOP integration have started at most of the airports and are planned to be finished within the timeframe of the respective objectives.

FCM03	Collaborative Flight Planning	100%	Completed
FCM04.2	Enhanced Short Term ATFCM Measures	0%	Planned
FCM06.1	Automated Support for Traffic Complexity Assessment and Flight Planning interfaces	14%	Ongoing
FCM10	Interactive Rolling NOP	0%	Planned
FCM11.1(EDDB)	Initial AOP/NOP Information Sharing	2%	Ongoing
FCM11.1(EDDF)	Initial AOP/NOP Information Sharing	2%	Ongoing
FCM11.1(EDDL)	Initial AOP/NOP Information Sharing	3%	Ongoing
FCM11.1(EDDM)	Initial AOP/NOP Information Sharing	1%	Ongoing
FCM11.2(EDDB)	AOP/NOP integration	2%	Ongoing
FCM11.2(EDDF)	AOP/NOP integration	0%	Not yet planned
FCM11.2(EDDH)	AOP/NOP integration	7%	Ongoing
FCM11.2(EDDL)	AOP/NOP integration	3%	Ongoing
FCM11.2(EDDM)	AOP/NOP integration	0%	Not yet planned
FCM11.2(EDDS)	AOP/NOP integration	7%	Ongoing



The implementation of AMHS is completed, while the implementation of Voice over Internet Protocol (VoIP) in ATM shows delays in relation to the timeframe of the objective.
Voice Communication System to support VoIP inter-centre telephony is available at the ACCs Langen, Munich and Bremen since the end of 2017. DFS has deployed an IP based (ED137 compliant) last resort radio system at all ACCs until mid 2018. Other ACCs and DFS Towers will be equipped with VoIP capable VCSs in the course of the regular update cycle until 2027.
Migration to NewPENS is completed since May 2020.

Compared to 2020 the picture for the implementation of the Interoperability Objectives has improved because Air-Ground Voice Channel Spacing requirements below FL195 is completed now. Air Ground Data Link services is implemented since 2020.



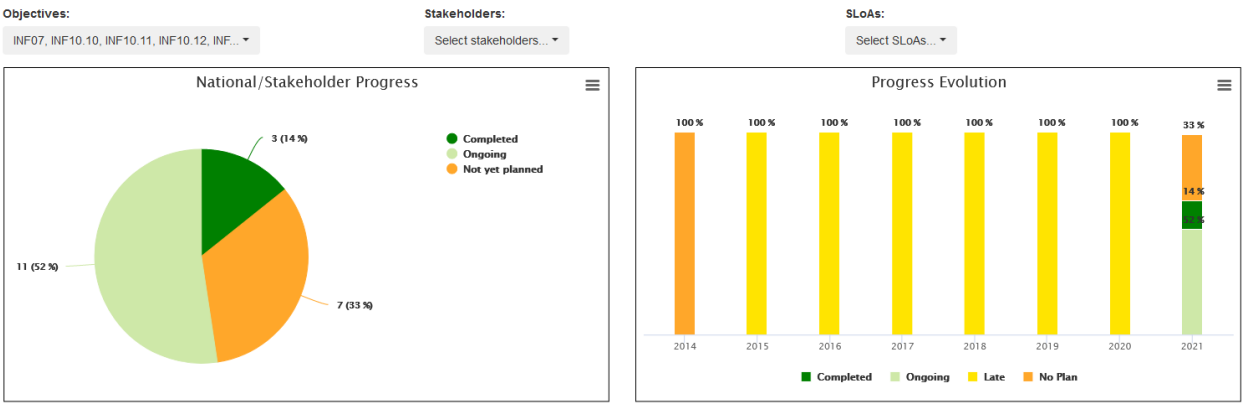
The objective regarding Aircraft Identification and the objective regarding Surveillance Performance and Interoperability are late. For Aircraft Identification DFS has declared the airspace FL100 and above as Mode S airspace. However, in many regions Mode S coverage is ensured even below FL100, sometimes down to ground. For Surveillance Performance and Interoperability NSA and DFS have completed their SloAs. Most of the military aircraft are equipped with Mode-S Elementary Surveillance. An exemption regulation is agreed with the German NSA. Most of the military transport-type State aircraft are equipped with ADS-B. Military transport-type State aircraft A400M is not yet equipped but will be upgraded until 2026.

The implementation of Ground-Ground Automated Co-ordination Processes and Flight Message Transfer Protocol is completed for the civil ANSP but late for the military part with target date in 2022.

The German eTOD policy was finalised and submitted to ICAO on 30 March 2021. In a second step Germany has to take care of delivering all necessary information about obstacle data in the German AIP. The supply of electronic Obstacle Data is considered in national projects in relation to the ADQ implementing regulation.

The amount of Information Management objectives has significantly increased. 22 new objectives were introduced in 2021 all related to SWIM Services. In this area MET services are reported for the first time. Two-thirds of the objectives are already reported as ongoing or completed.

INF10.10	Meteorological Information Exchange - Aerodrome Meteorological information Service	4%	Ongoing
INF10.11	Meteorological Information Exchange - En-Route and Approach Meteorological information service	2%	Ongoing
INF10.12	Meteorological Information Exchange - Network Meteorological Information	2%	Ongoing
INF10.13	Cooperative Network Information Exchange - ATFCM Tactical Updates Service (Airport Capacity and Enroute)	5%	Ongoing
INF10.14	Cooperative Network Information Exchange – Flight Management Service (Slots and NOP/AOP integration)	6%	Ongoing
INF10.15	Cooperative Network Information Exchange – Measures Service (Traffic Regulation)	100%	Completed
INF10.16	Cooperative Network Information Exchange - Short Term ATFCM Measures services (MCDM, eHelpdesk, STAM measures)	5%	Ongoing
INF10.17	Cooperative Network Information Exchange – Counts service (ATFCM Congestion Points)	10%	Ongoing
INF10.19	Flight Information Exchange (Yellow Profile) - Flight Data Request Service	0%	Not yet planned
INF10.2	Stakeholders' SWIM PKI and cyber security	12%	Ongoing
INF10.20	Flight Information Exchange (Yellow Profile) - Notification Service	0%	Not yet planned
INF10.21	Flight Information Exchange (Yellow Profile) - Data Publication Service	0%	Not yet planned
INF10.23	Flight Information Exchange (Yellow Profile) - Extended AMAN SWIM Service	3%	Ongoing
INF10.3	Aeronautical Information Exchange - Airspace structure service	100%	Completed
INF10.4	Aeronautical Information Exchange - Airspace Availability Service	100%	Completed
INF10.5	Aeronautical Information Exchange - Airspace Reservation (ARES)	25%	Ongoing
INF10.6	Aeronautical Information Exchange – Digital NOTAM service	0%	Not yet planned
INF10.7	Aeronautical Information Exchange - Aerodrome mapping service	0%	Not yet planned
INF10.8	Aeronautical Information Exchange - Aeronautical Information Features service	0%	Not yet planned
INF10.9	Meteorological Information Exchange - Volcanic Ash Mass Concentration information service	0%	Not yet planned



The objectives for implementation of RNAV 1, RNP 1 in TMA operations and RNP Approach Procedures to instrument RWY are advancing and efforts are being made to finish within the timeframe of the objectives.

5.2. Objective Progress per SESAR Essential Operational Changes

Results below were determined using the LSSIP Year 2021 declared statuses and progress of the relevant Implementation objectives.

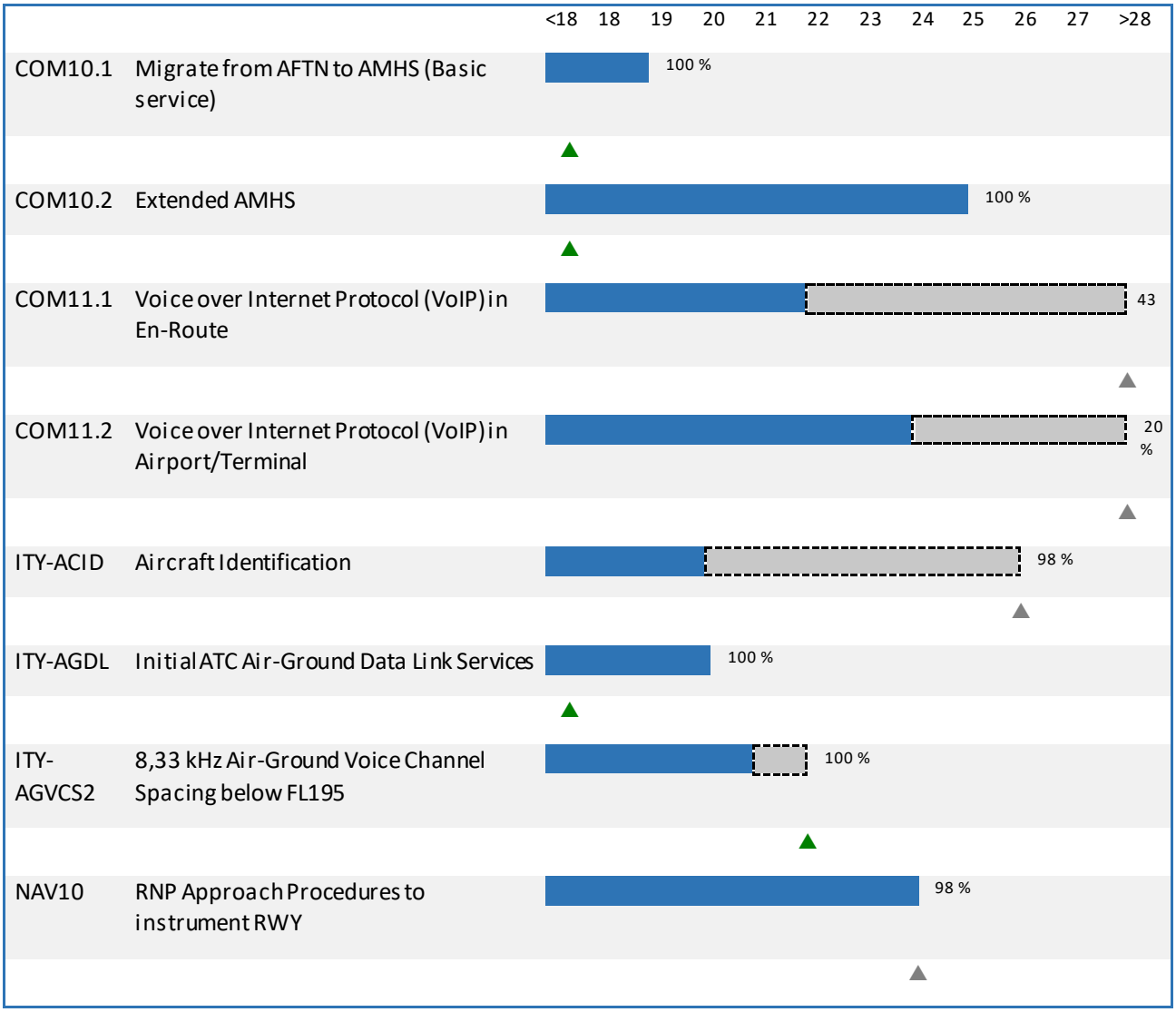
▲ 100% = Objective completed

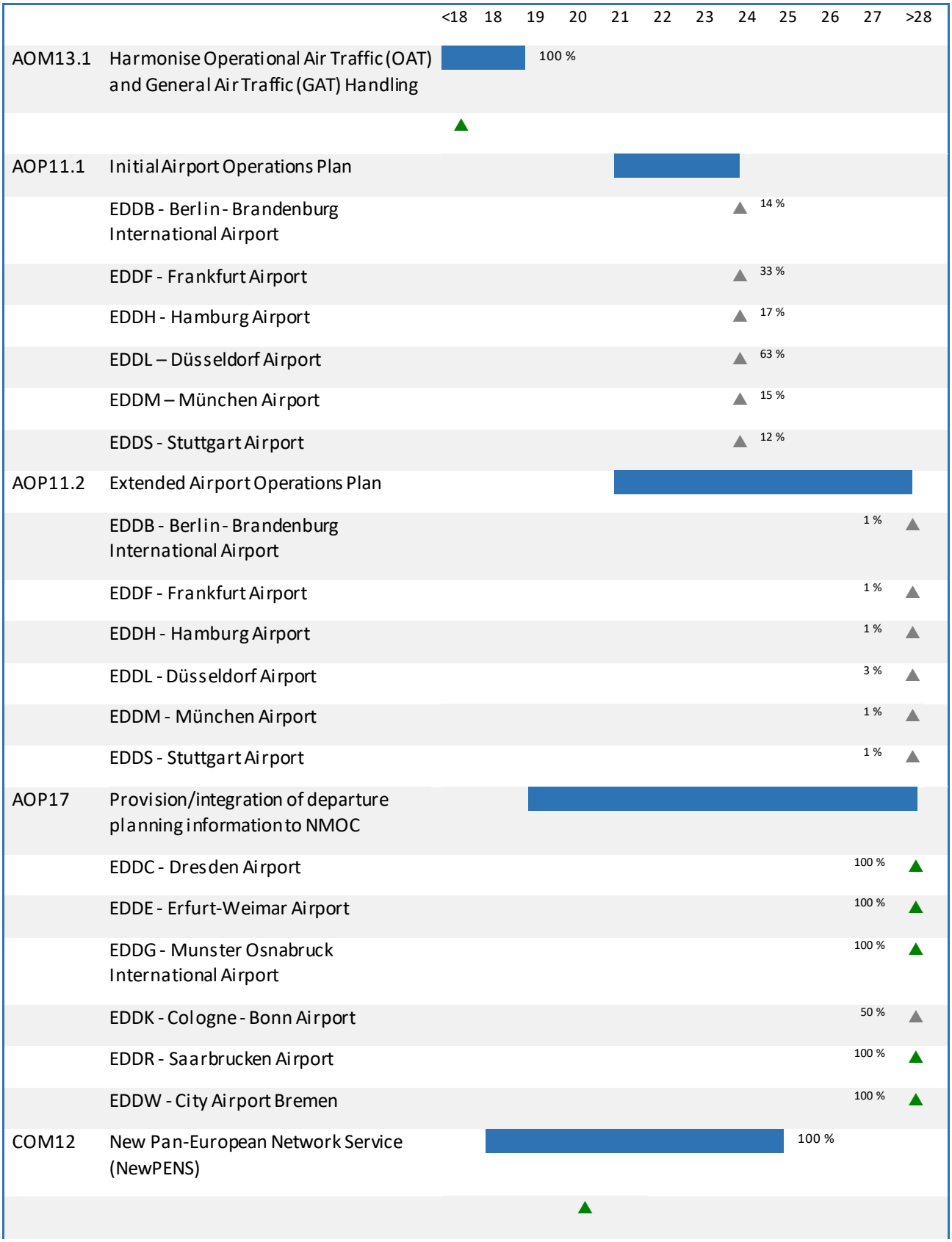
▲ ## % = Expected completion / % Progress

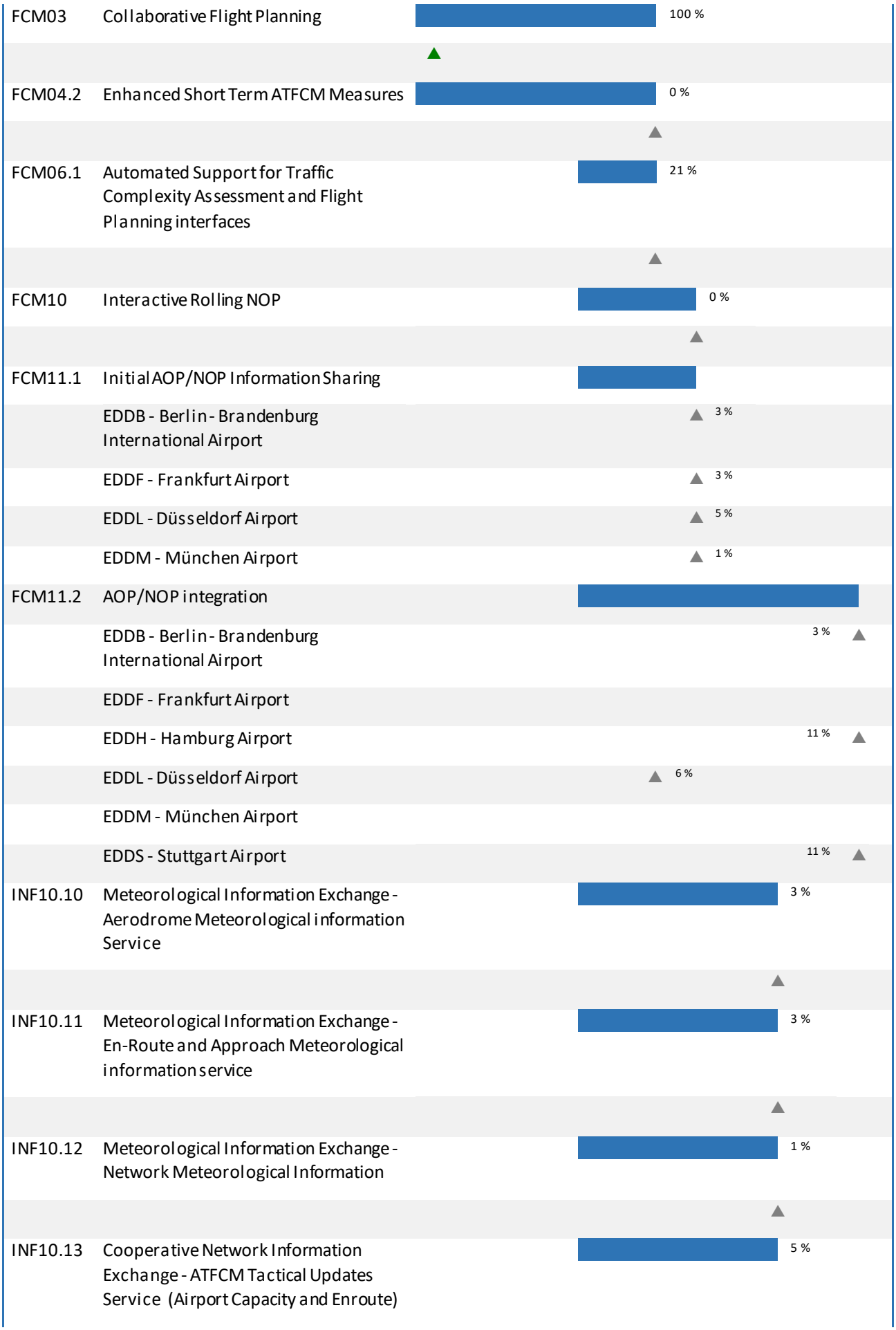
= Implementation Objective timeline (to FOC date)

= Completion beyond Implementation Objective timeline

CNS infrastructure and services




<18
18
19
20
21
22
23
24
25
26
27
>28
AOM13.1
Harmonise Operational Air Traffic (OAT) and General Air Traffic (GAT) Handling
100 %
AOP11.1
Initial Airport Operations Plan
EDDB - Berlin - Brandenburg International Airport
14 %
EDDF - Frankfurt Airport
33 %
EDDH - Hamburg Airport
17 %
EDDL – Düsseldorf Airport
63 %
EDDM – München Airport
15 %
EDDS - Stuttgart Airport
12 %
AOP11.2
Extended Airport Operations Plan
EDDB - Berlin - Brandenburg International Airport
1 %
EDDF - Frankfurt Airport
1 %
EDDH - Hamburg Airport
1 %
EDDL - Düsseldorf Airport
3 %
EDDM - München Airport
1 %
EDDS - Stuttgart Airport
1 %
AOP17
Provision/integration of departure planning information to NMOC
EDDC - Dresden Airport
100 %
EDDE - Erfurt-Weimar Airport
100 %
EDDG - Munster Osnabruck International Airport
100 %
EDDK - Cologne - Bonn Airport
50 %
EDDR - Saarbrucken Airport
100 %
EDDW - City Airport Bremen
100 %
COM12
New Pan-European Network Service (NewPENS)
100 %


FCM03
Collaborative Flight Planning
100 %
FCM04.2
Enhanced Short Term ATFCM Measures
0 %
FCM06.1
Automated Support for Traffic Complexity Assessment and Flight Planning interfaces
21 %
FCM10
Interactive Rolling NOP
0 %
FCM11.1
Initial AOP/NOP Information Sharing
EDDB - Berlin - Brandenburg International Airport
3 %
EDDF - Frankfurt Airport
3 %
EDDL - Düsseldorf Airport
5 %
EDDM - München Airport
1 %
FCM11.2
AOP/NOP integration
EDDB - Berlin - Brandenburg International Airport
3 %
EDDF - Frankfurt Airport
EDDH - Hamburg Airport
11 %
EDDL - Düsseldorf Airport
6 %
EDDM - München Airport
EDDS - Stuttgart Airport
11 %
INF10.10
Meteorological Information Exchange - Aerodrome Meteorological information Service
3 %
INF10.11
Meteorological Information Exchange - En-Route and Approach Meteorological information service
3 %
INF10.12
Meteorological Information Exchange - Network Meteorological Information
1 %
INF10.13
Cooperative Network Information Exchange - ATFCM Tactical Updates Service (Airport Capacity and Enroute)
5 %

INF10.14	Cooperative Network Information Exchange Flight Management Service (Slots and NOP/AOP integration)	7 %
INF10.15	Cooperative Network Information Exchange Measures Service (Traffic Regulation)	100 %
INF10.16	Cooperative Network Information Exchange - Short Term ATFCM Measures services (MCDM, eHelpdesk, STAM measures)	5 %
INF10.17	Cooperative Network Information Exchange Counts service (ATFCM Congestion Points)	10 %
INF10.19	Flight Information Exchange (Yellow Profile) - Flight Data Request Service	0 %
INF10.2	Stakeholders SWIM PKI and cyber security	17 %
INF10.20	Flight Information Exchange (Yellow Profile) - Notification Service	0 %
INF10.21	Flight Information Exchange (Yellow Profile) - Data Publication Service	0 %
INF10.23	Flight Information Exchange (Yellow Profile) - Extended AMAN SWIM Service	3 %
INF10.3	Aeronautical Information Exchange - Airspace structure service	100 %
INF10.4	Aeronautical Information Exchange - Airspace Availability Service	100 %

INF10.5	Aeronautical Information Exchange - Airspace Reservation (ARES)	25 %
INF10.6	Aeronautical Information Exchange Digital NOTAM service	0 %
INF10.7	Aeronautical Information Exchange - Aerodrome mapping service	0 %
INF10.8	Aeronautical Information Exchange - Aeronautical Information Features service	0 %
INF10.9	Meteorological Information Exchange - Volcanic Ash Mass Concentration information service	0 %

dS Digital AIM and MET services

		<18	18	19	20	21	22	23	24	25	26	27	>28
INF07	Electronic Terrain and Obstacle Data (eTOD)								18 %				

U-S U-space services

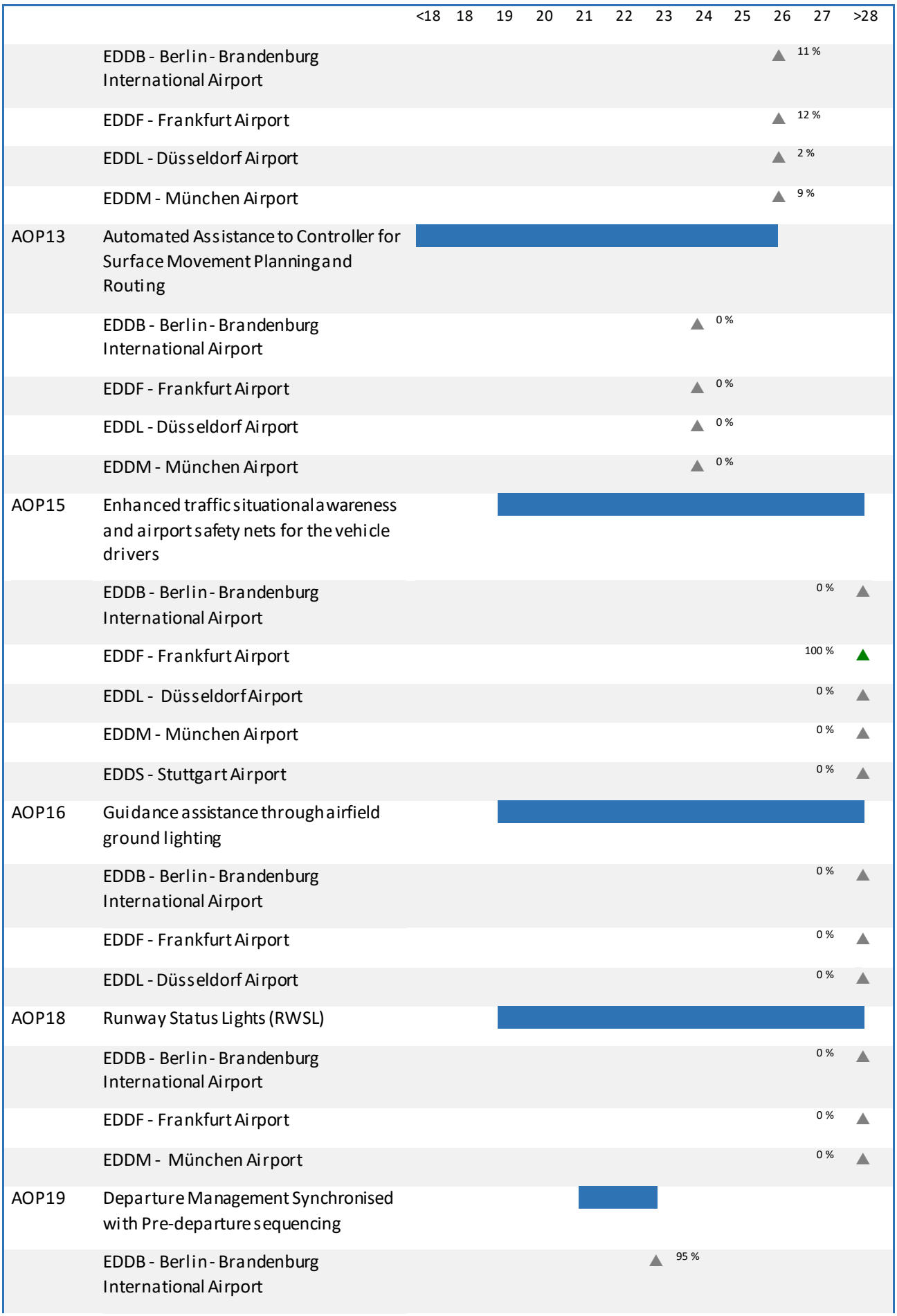
No implementation objectives are available yet for this EOC.

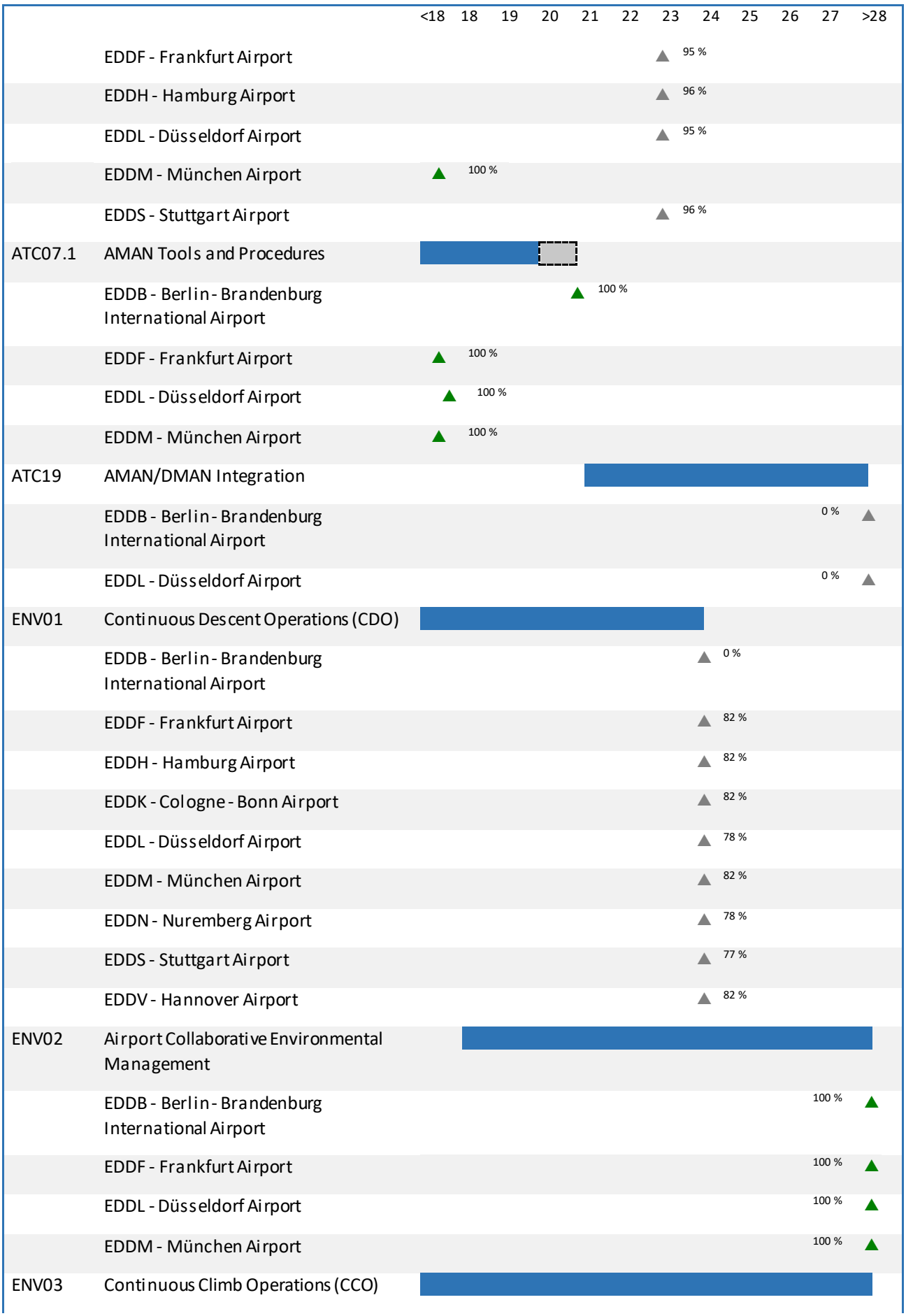
vS Virtualisation of service provision

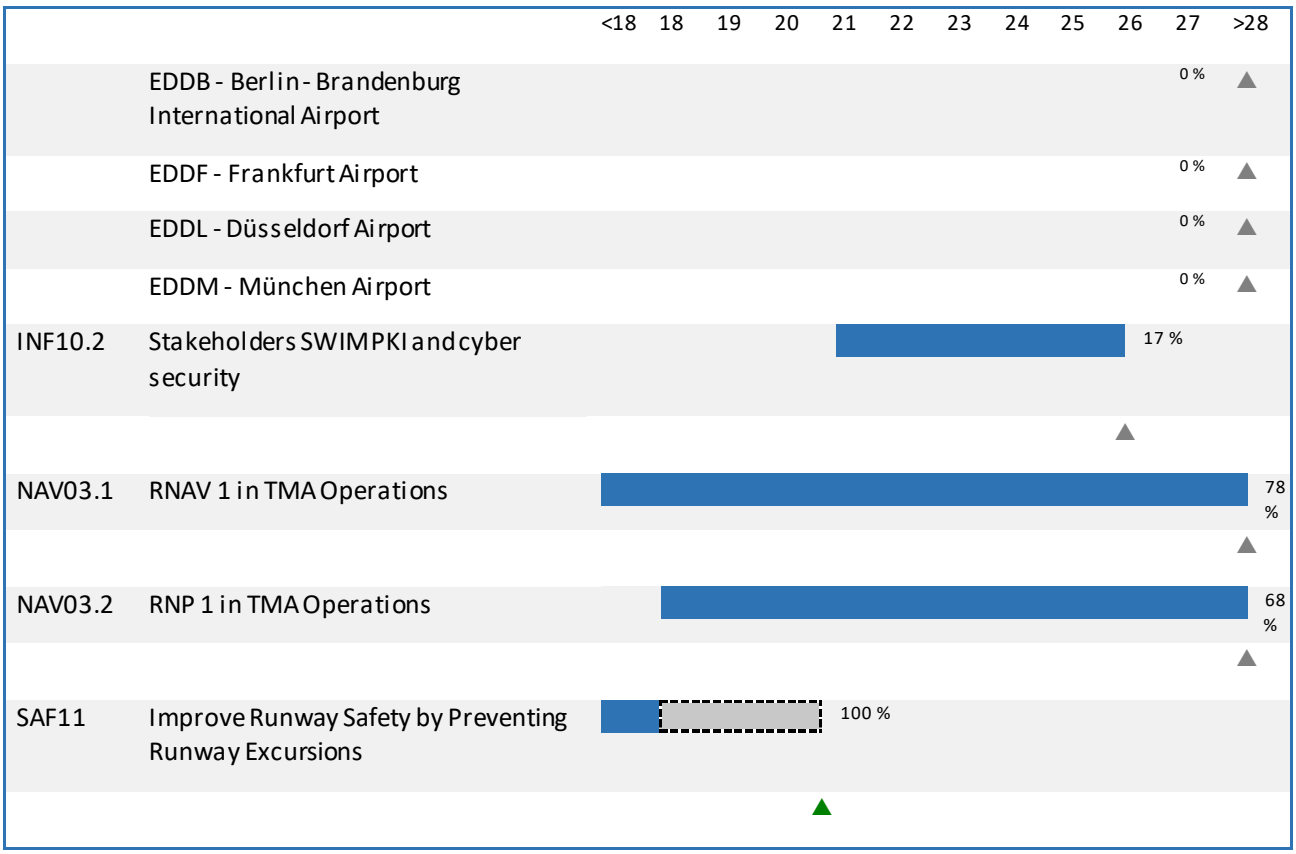
		<18	18	19	20	21	22	23	24	25	26	27	>28
AOP14	Remote Tower Services												
	EDDC - Dresden Airport											25 %	

	EDDE - Erfurt-Weimar Airport	50 %
	EDDR - Saarbrucken Airport	100 %

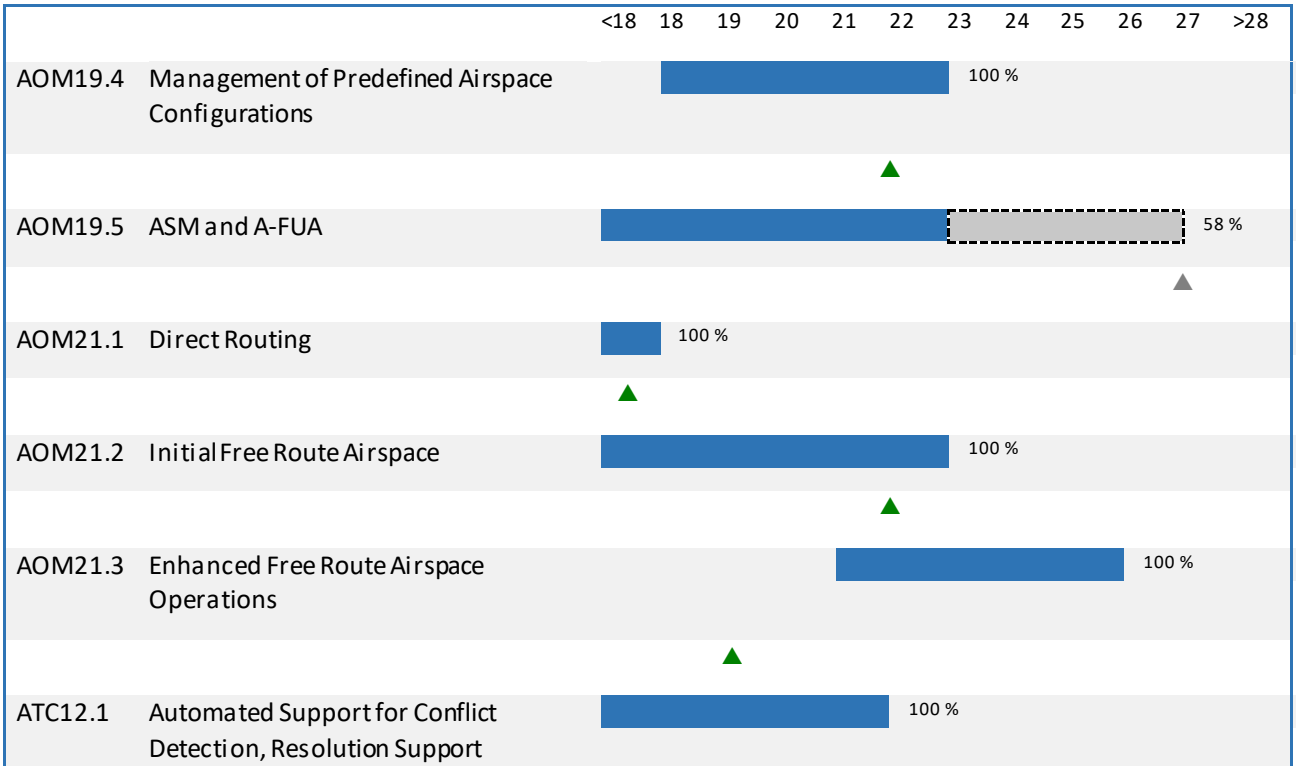
		<18	18	19	20	21	22	23	24	25	26	27	>28
AOP04.1	Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance (former Level 1)												
	EDDB - Berlin - Brandenburg International Airport					100 %							
	EDDF - Frankfurt Airport		100 %										
	EDDL - Düsseldorf Airport			100 %									
	EDDM - München Airport		100 %										
AOP04.2	Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)												
	EDDB - Berlin - Brandenburg International Airport						100 %						
	EDDF - Frankfurt Airport							50 %					
	EDDL - Düsseldorf Airport				100 %								
	EDDM - München Airport		100 %										
AOP05	Airport Collaborative Decision Making (A-CDM)												
	EDDB - Berlin - Brandenburg International Airport					100 %							
	EDDF - Frankfurt Airport		100 %										
	EDDH - Hamburg Airport		100 %										
	EDDL - Düsseldorf Airport		100 %										
	EDDM - München Airport		100 %										
	EDDS - Stuttgart Airport		100 %										
AOP10	Time-Based Separation												
	EDDF - Frankfurt Airport								6 %				
	EDDL - Düsseldorf Airport												
	EDDM - München Airport												
AOP12.1	Airport Safety Nets												

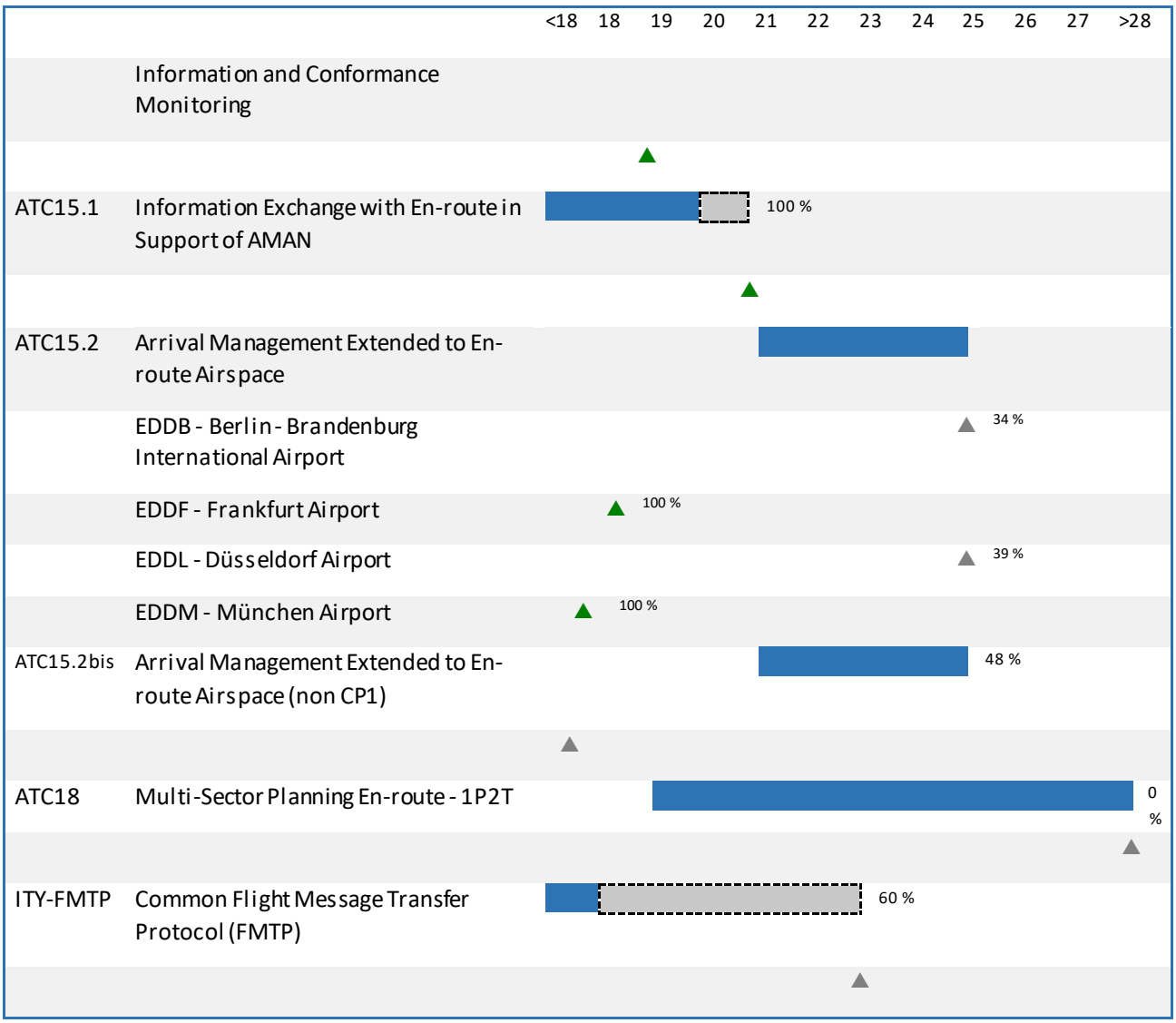

<18
18
19
20
21
22
23
24
25
26
27
>28
EDDB - Berlin - Brandenburg International Airport
11 %
EDDF - Frankfurt Airport
12 %
EDDL - Düsseldorf Airport
2 %
EDDM - München Airport
9 %
AOP13
Automated Assistance to Controller for Surface Movement Planning and Routing
EDDB - Berlin - Brandenburg International Airport
0 %
EDDF - Frankfurt Airport
0 %
EDDL - Düsseldorf Airport
0 %
EDDM - München Airport
0 %
AOP15
Enhanced traffic situational awareness and airport safety nets for the vehicle drivers
EDDB - Berlin - Brandenburg International Airport
0 %
EDDF - Frankfurt Airport
100 %
EDDL - Düsseldorf Airport
0 %
EDDM - München Airport
0 %
EDDS - Stuttgart Airport
0 %
AOP16
Guidance assistance through airfield ground lighting
EDDB - Berlin - Brandenburg International Airport
0 %
EDDF - Frankfurt Airport
0 %
EDDL - Düsseldorf Airport
0 %
AOP18
Runway Status Lights (RWSL)
EDDB - Berlin - Brandenburg International Airport
0 %
EDDF - Frankfurt Airport
0 %
EDDM - München Airport
0 %
AOP19
Departure Management Synchronised with Pre-departure sequencing
EDDB - Berlin - Brandenburg International Airport
95 %


<18
18
19
20
21
22
23
24
25
26
27
>28
EDDF - Frankfurt Airport
95 %
EDDH - Hamburg Airport
96 %
EDDL - Düsseldorf Airport
95 %
EDDM - München Airport
100 %
EDDS - Stuttgart Airport
96 %
ATC07.1
AMAN Tools and Procedures
EDDB - Berlin - Brandenburg International Airport
100 %
EDDF - Frankfurt Airport
100 %
EDDL - Düsseldorf Airport
100 %
EDDM - München Airport
100 %
ATC19
AMAN/DMAN Integration
EDDB - Berlin - Brandenburg International Airport
0 %
EDDL - Düsseldorf Airport
0 %
ENV01
Continuous Descent Operations (CDO)
EDDB - Berlin - Brandenburg International Airport
0 %
EDDF - Frankfurt Airport
82 %
EDDH - Hamburg Airport
82 %
EDDK - Cologne - Bonn Airport
82 %
EDDL - Düsseldorf Airport
78 %
EDDM - München Airport
82 %
EDDN - Nuremberg Airport
78 %
EDDS - Stuttgart Airport
77 %
EDDV - Hannover Airport
82 %
ENV02
Airport Collaborative Environmental Management
EDDB - Berlin - Brandenburg International Airport
100 %
EDDF - Frankfurt Airport
100 %
EDDL - Düsseldorf Airport
100 %
EDDM - München Airport
100 %
ENV03
Continuous Climb Operations (CCO)

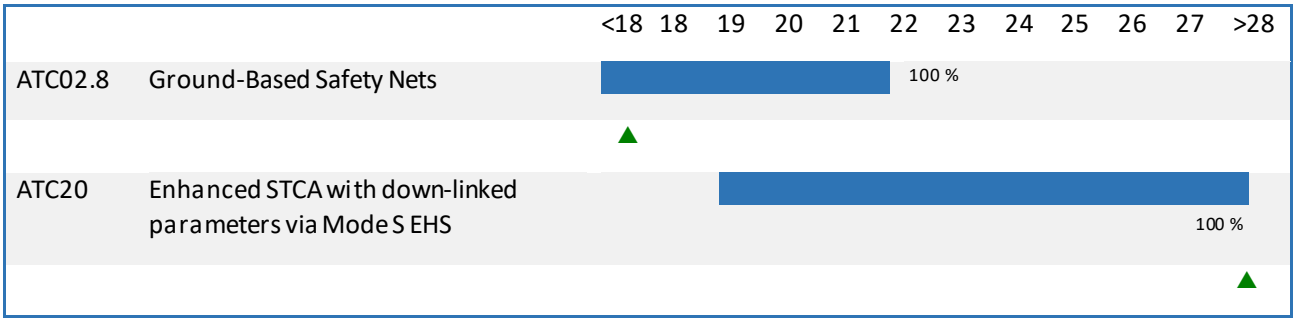


dA Fully dynamic and optimised airspace





TBO Trajectory -based operations



This EOC Chart is not applicable for Germany since the objective NAV12 is not applicable

5.3. ICAO ASBU Implementation Progress

The following tables show, for each of the 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 2021, based on the conclusions of the EUR Global Air Navigation Plan (GANP) Transition Project Team.

Results below were determined using the LSSIP Year 2021 declared statuses and progress of the relevant Implementation objectives in accordance with the updated mapping approved by the EASPG/3 meeting.

Legend:

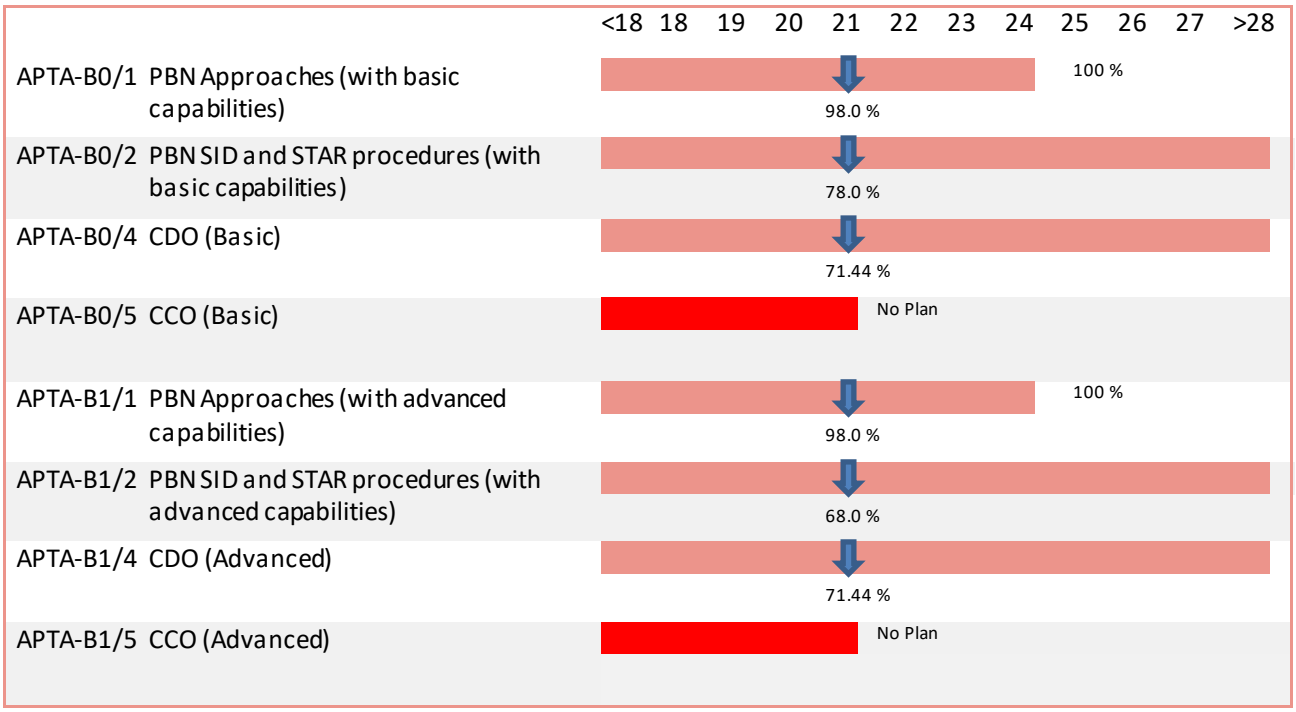
ACAS

		<18	18	19	20	21	22	23	24	25	26	27	>28
ACAS-B1/1	ACAS Improvements						100 %						

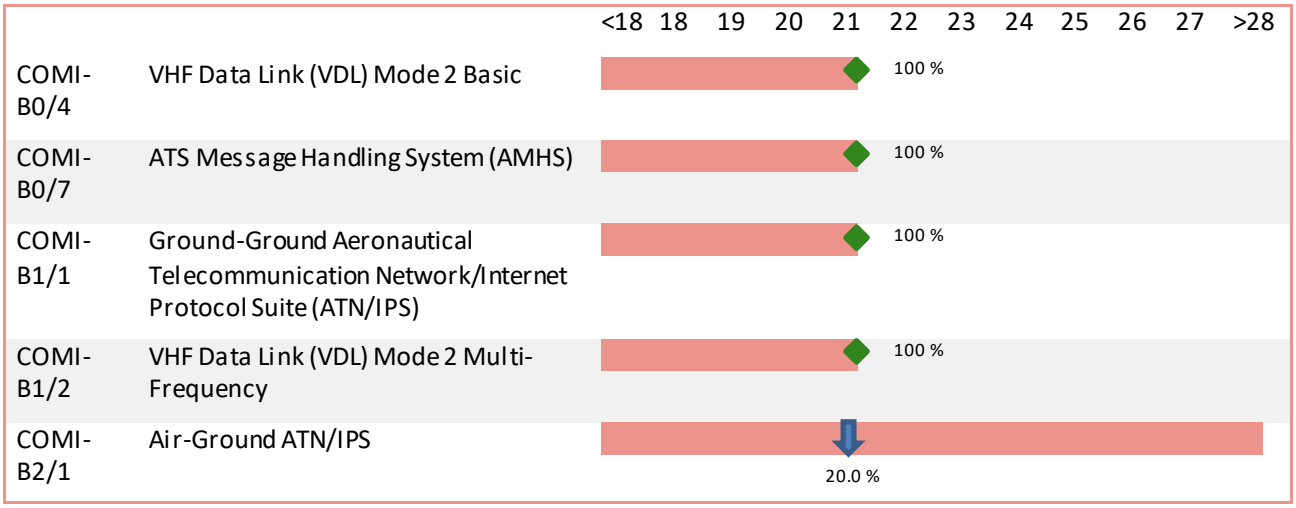
ACDM

		<18	18	19	20	21	22	23	24	25	26	27	>28
ACDM-B0/1	Airport CDM Information Sharing (ACIS)						100 %						
ACDM-B0/2	Integration with ATM Network function						100 %						
ACDM-B1/1	Airport Operations Plan (AOP)					12.5 %							

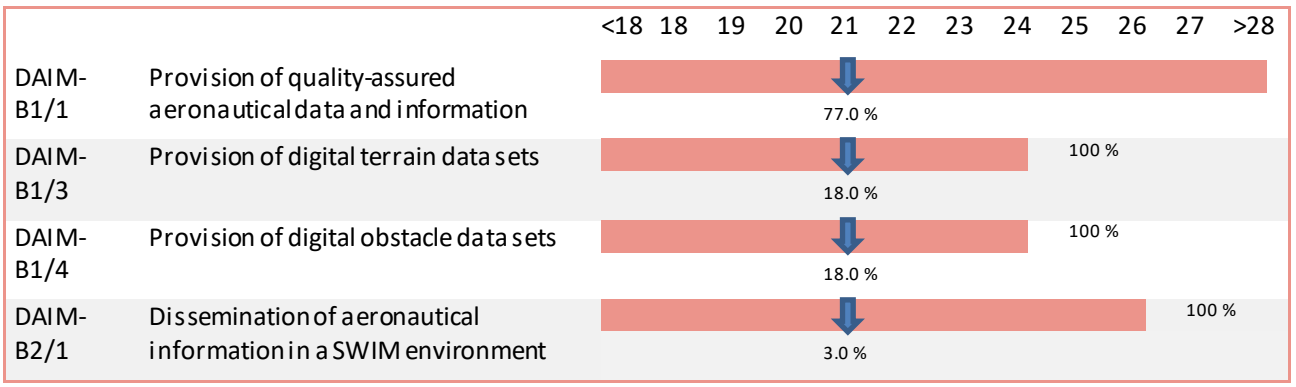
APTA



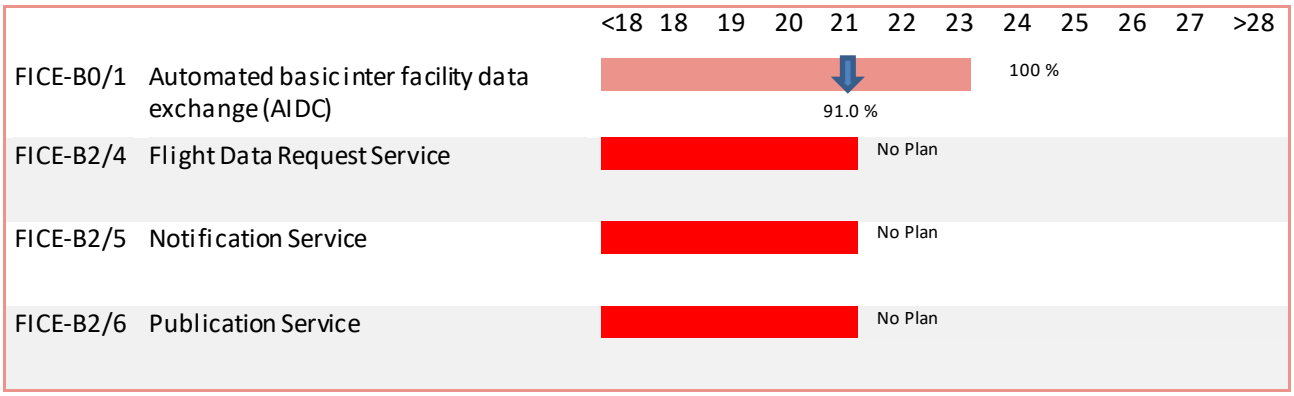
COMI



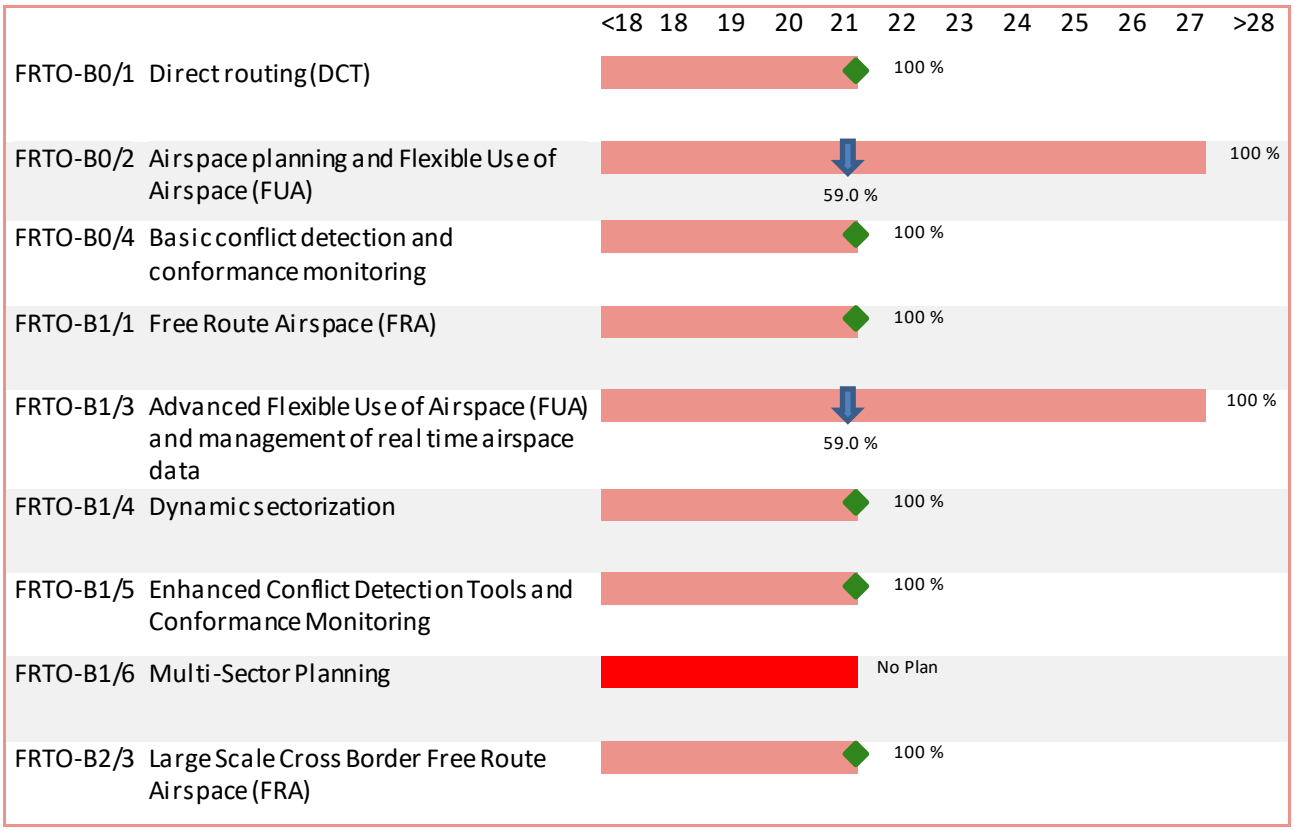
DAIM



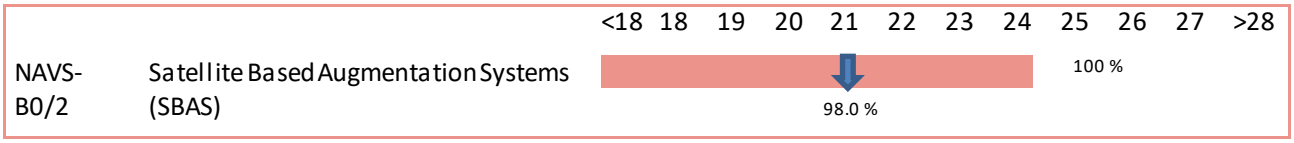
FICE



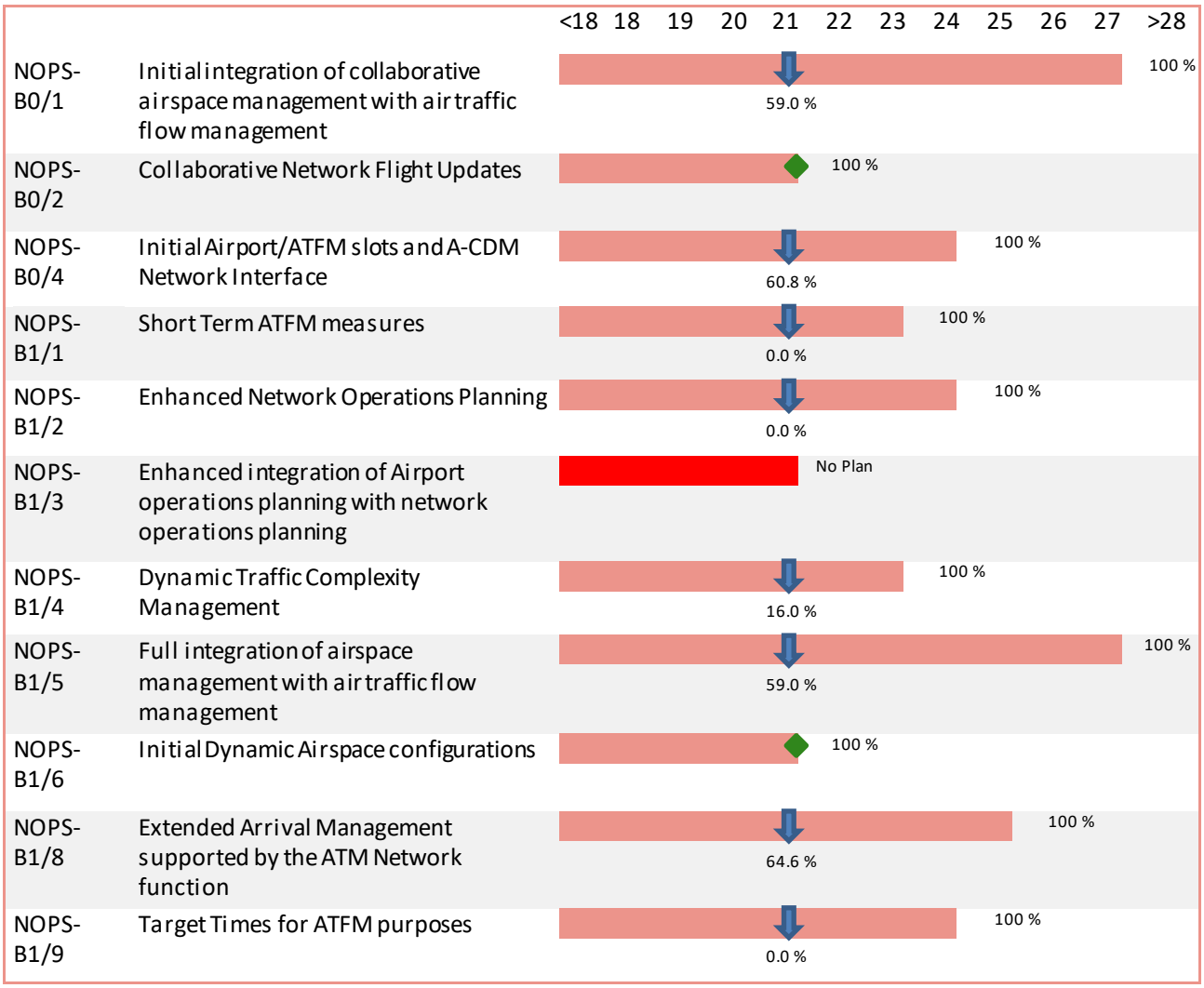
FRTO



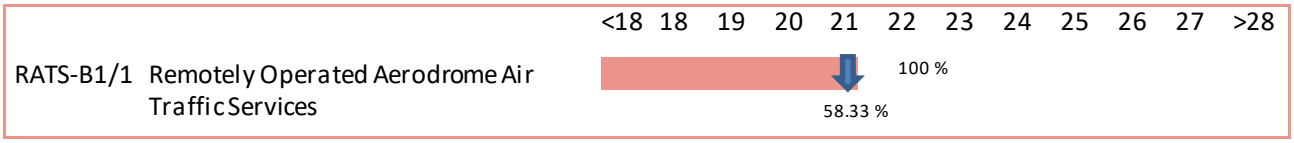
NAVS



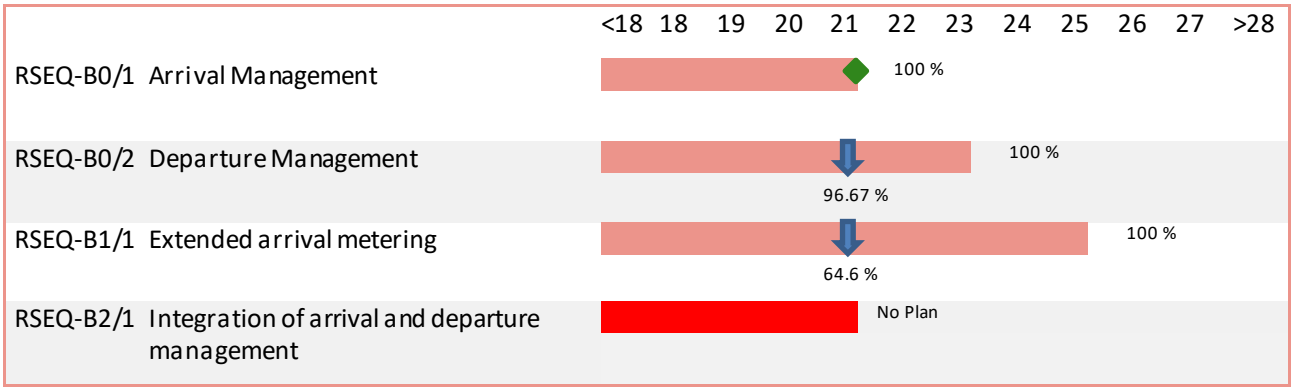
NOPS



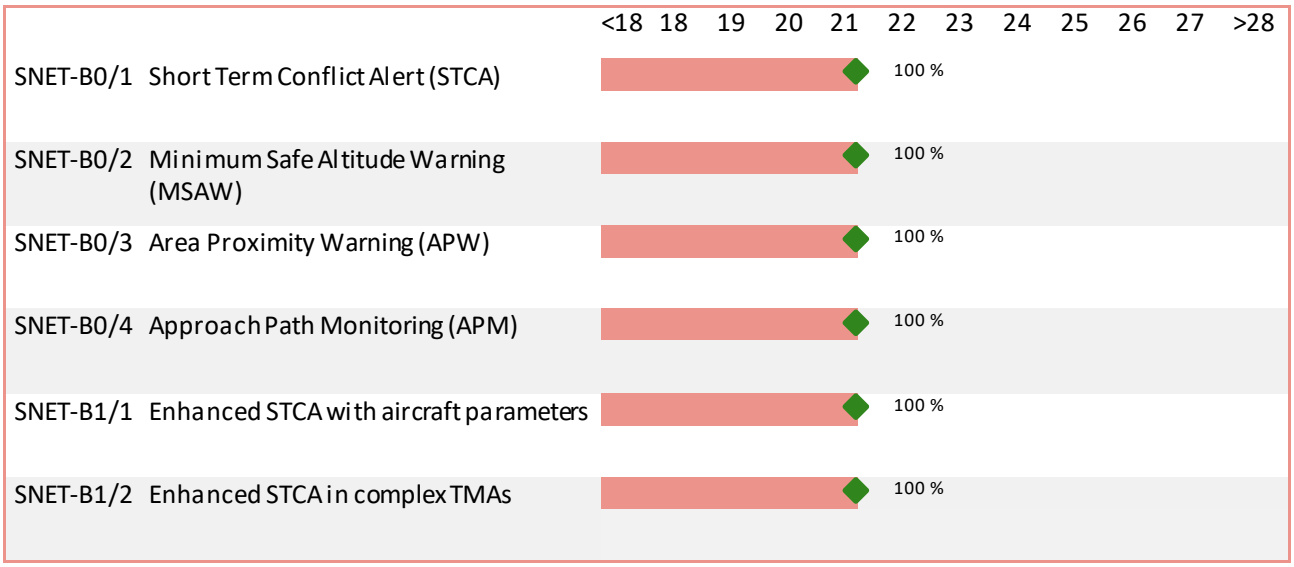
RATS



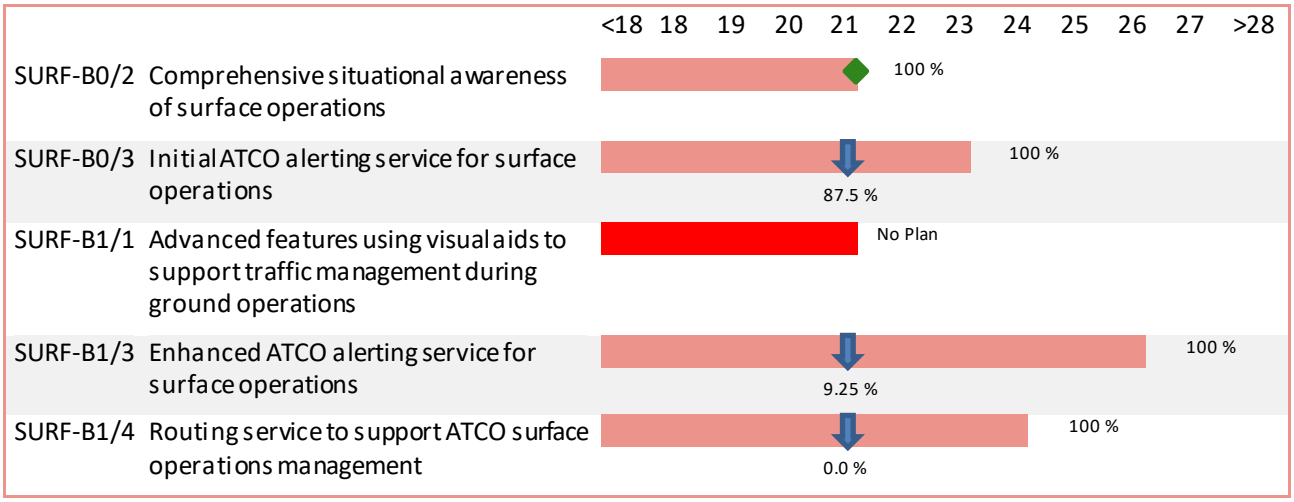
RSEQ



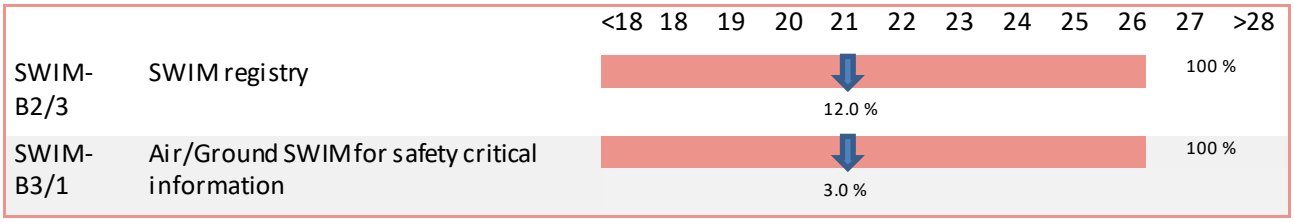
SNET



SURF



SWIM



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**
-				
The handling of OAT over Germany, the principles and procedures are the main elements of the civil-military integration in Germany. The achieved high degree of harmonisation of OAT and GAT is the result of nearly 20 years of co-operative civil-military service provision. Military ANS are subject to local APP and TWR functions and these units cooperate likewise with civil service provision. Air defense radar units cooperate with the civil service provider on well-established and highly accepted harmonised principles and procedures. The framework of EUROAT/OATTS is mainly based upon German rules and experiences. By law, BAF constitutes the regulator (NSA) for GAT and OAT in regional (en-route) services, all aspects of military traffic where both organizations, BAF and LufABw, are concerned, are handled in close coordination between them. LufABw is the responsible authority for the ANS at military airports.				**31/12/2013**
REG (By:12/2018)				
NSA	See State comment.	-	100%	Completed 31/12/2011
Federal Ministry of Defence	See State comment.	-	100%	Completed 31/12/2011
ASP (By:12/2018)				
DFS	Common principles, rules and procedures for OAT handling and OAT/GAT interface are established. DFS is responsible for OAT and GAT handling. German MoD and MoT are participating in CMIC (Civil Military Interface Committee) where this topic is dealt with from both sides.	-	100%	Completed 31/12/2013
Federal Ministry of Defence	See State comment.	-	100%	Completed 31/12/2013
MIL (By:12/2018)				
Federal Ministry of Defence	Principles, rules and procedures for OAT and GAT are harmonised to the widest extent and are laid down in the German AIP and Mil AIP. The EUROCONTROL specification on EUROAT has been analysed and the relevant documents have been developed. EUROAT was implemented 3rd May 2012.	-	100%	Completed 31/12/2012

AOM19.4	**Management of Predefined Airspace Configurations** ***Timescales:*** Initial operational capability: 01/01/2018 Full Operational Capability / Target Date: 31/12/2022		**100%**	**Completed**
		-		
Germany uses different types of RSA (TRA, VPA etc.) that are laid down in all ATS and ASM systems. These areas can be tailored to military demand and will be coordinated on D-1 and promulgated via AUP. Activation and deactivation on D0 is conducted in close coordination between ACC/UAC and Air Defence. For a selection of airspaces, an UUP can be released. Coordination procedures are laid down in LoAs and other agreements. Germany investigates further opportunities for improvement even exceeding CP1 requirements.				**31/12/2021**
ASP (By:12/2022)				
DFS	Germany uses different types of RSA (TRA, VPA etc.) that are laid down in all ATS and ASM systems. These areas can be tailored to military demand and will be coordinated on D-1 and promulgated via AUP. Activation and deactivation on D0 is conducted in close coordination between ACC/UAC and air defense. For a selection of airspaces, an UUP can be released. Coordination procedures are laid down in LoAs and other agreements. Germany investigates further opportunities for improvement even exceeding CP1 requirements.	-	100%	Completed 31/12/2021

AOM19.5	**ASM and A-FUA** ***Timescales:*** Initial Operational Capability: 01/01/2014 Full Operational Capability / Target Date: 31/12/2022		**58%**	**Ongoing**
		-		
The majority of ASM and A-FUA functionalities are currently fulfilled. Some of the remaining functionalities will be completed by deployment target dates as set on 31/12/2022. The necessary interface for the automatic ASM data exchange between the ASM system (STANLY_ACOS) and ATC system (iCAS) will not be available before 2026.				**31/12/2026**
ASP (By:12/2022)				
DFS	The majority of ASM and A-FUA functionalities are currently fulfilled. Some of the remaining functionalities will be completed by deployment target dates as set on 31/12/2022. The necessary interface for the automatic ASM data exchange between the ASM system (STANLY_ACOS) and ATC system (iCAS) will not be available before2026.	-	59%	Ongoing 31/12/2026

AOM21.2	**Initial Free Route Airspace** ***Timescales:*** Initial operational capability: 01/01/2015 Full Operational Capability / Target Date: 31/12/2022		**100%**	**Completed**
	-			
The implementation of Free Route Airspace (OI-Steps AOM-0501, AOM-0505) is completed.				**31/12/2021**
ASP (By:12/2022)				
DFS	The implementation of Free Route Airspace (OI-Steps AOM-0501, AOM-0505) is completed: DFS FRA is available in DFS FRA Cells EDUU North (FL285+), EDUU East (FL (285+), EDUU South (FL315+) and EDUU West (FL245+) on a H24 basis. FRA Cell EDMM East, EDMM South EDWW East pending FRA H24 implementation due to system limitations (awaiting iCAS) As mitigation action, RAD App 4 DCTs are available in those FRA Cells.	Free Route Airspace / S-ATM Robusto / iCAS (iTEC Center Automation System)	100%	Completed 31/12/2021

AOM21.3	**Enhanced Free Route Airspace Operations** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**100%**	**Completed**
	-			
DFS considers the implementation of Enhanced Free Route Airspace Operations as completed.				**25/04/2019**
ASP (By:12/2025)				
DFS	First Cross-Border FRA operations were implemented between Karlsruhe UAC FRA-Cell North (H24) and DK-SE FAB FRA (Copenhagen ACC and Malmoe ACC) on 25/04/2019. As AOM21.3 aims for cross-border FRA operations with at least one neighbouring state, DFS considers this Objective as completed.	Free Route Airspace	100%	Completed 25/04/2019

AOP04.1	**Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance (former Level 1)** ***Timescales:*** Initial operational capability: 01/01/2007 Full operational capability: 31/12/2020		**100%**	**Completed**
	EDDB - Berlin - Brandenburg International Airport			
At Schoenefeld Airport (SXF) an A-SMGCS (Level 1) system is installed and fully operational.				**30/10/2020**
REG (By:12/2010)				
MoT	-	-	100%	Completed 30/10/2020
MoT/NSA	The provision of level 1 service is under continuous oversight.	-	100%	Completed 30/10/2020
ASP (By:01/2021)				
DFS	At Schoenefeld Airport (SXF) an A-SMGCS (Level 1) system is installed and fully operational. With the extension of the airport as the new BER Airport, the capabilities will be enlarged for the additional areas.	-	100%	Completed 30/10/2020
APO (By:01/2021)				
BERLIN BRANDENBURG Airport	Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance is available.	-	100%	Completed 30/10/2020

AOP04.1	**Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance (former Level 1)** ***Timescales:*** Initial operational capability: 01/01/2007 Full operational capability: 31/12/2020		**100%**	**Completed**
EDDF - Frankfurt Airport				
At Frankfurt Airport, MLAT (CAPTS; operated by Fraport) and three SMR sites (operated by DFS) are installed as sensor systems. DFS and Fraport are using a combination of these sensor systems for different purposes in Surface Movement Guidance.				**31/12/2012**
REG (By:12/2010)				
MoT/NSA	The provision of level 1 service is under continuous oversight.	-	100%	Completed 31/12/2009
MoT	-	-	100%	Completed 31/12/2009
ASP (By:01/2021)				
DFS	At Frankfurt Airport, the sensor systems CAPTS - Cooperative Area Precision Tracking System (Multilateration) and ASR sites are operational. DFS is using HITT, a system to combine the two sensor types.	-	100%	Completed 30/06/2011
APO (By:01/2021)				
FRAPORT AG	At Frankfurt Airport, the sensor systems CAPTS - Cooperative Area Precision Tracking System (Multilateration) and SMR sites are operational. Fraport is using FAST MS (Frankfurt Airport Surface Traffic Management System) to combine the two sensor types. FAST MS is operational as A-SMGCS level 1 in taxi control on the apron.	-	100%	Completed 31/12/2012

AOP04.1	**Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance (former Level 1)** ***Timescales:*** Initial operational capability: 01/01/2007 Full operational capability: 31/12/2020		**100%**	**Completed**
EDDL - Düsseldorf Airport				
For Düsseldorf Airport, the installation of a Multilateration Radar System is finished since February 2019.				**28/02/2019**
REG (By:12/2010)				
MoT/NSA	-	-	100%	Completed 31/12/2009
MoT	Oversight procedures are in place and will be applied. Therefore, the SLoAs are considered "Completed".	-	100%	Completed 31/12/2009
ASP (By:01/2021)				
DFS	For Düsseldorf Airport, a Multilateration Radar System was installed in July 2018.	-	100%	Completed 31/07/2018
APO (By:01/2021)				
DÜSSELDORF Airport	For Düsseldorf Airport, a Multilateration Radar System is installed since February 2019.	-	100%	Completed 28/02/2019

AOP04.1	**Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance (former Level 1)** ***Timescales:*** Initial operational capability: 01/01/2007 Full operational capability: 31/12/2020		**100%**	**Completed**
EDDM - München Airport				
At Munich Airport, the installation of the surface movement radar antennas and the system is completed. The installation of the multilateration system (ERA) is also completed. It is used as a level 1 system. The procurement of equipment for ground vehicles has been finished in 11/2014.				**31/05/2015**
REG (By:12/2010)				
MoT	The provision of level 1 service is under continuous oversight.	-	100%	Completed 31/12/2010
MoT/NSA	-	-	100%	Completed 31/12/2009
ASP (By:01/2021)				
DFS	At Munich Airport, in cooperation with the airport operator the multilateration system is implemented in addition to the existing primary radars.	-	100%	Completed 31/12/2009
APO (By:01/2021)				
MUNICH Airport	At Munich Airport, the installation of the surface movement radar antennas and the system is completed. The installation of the multilateration system (ERA) is also completed. It is used as a level 1 system. The procurement of equipment for ground vehicles has been finished in 11/2014.	-	100%	Completed 31/05/2015

AOP04.2	**Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)** ***Timescales:*** - not applicable -		**100%**	**Completed**
EDDB - Berlin - Brandenburg International Airport **(Outside Applicability Area)**				
Implementation of Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) is finalised.				**31/10/2021**
ASP (By:12/2025)				
DFS	Implementation of Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) is finalised.	A-SMGCS Leipzig / Implementation of A-SMGCS Level 2	100%	Completed 31/10/2021
APO (By:12/2025)				
BERLIN BRANDENBURG Airport	Implementation of Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) is finalised.	-	100%	Completed 31/10/2021

AOP04.2	**Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)** ***Timescales:*** Initial operational capability: 01/01/2021 Full operational capability: 31/12/2025		**50%**	**Ongoing**
EDDF - Frankfurt Airport				
At Frankfurt Airport, the Fraport system FAST MS (Frankfurt Airport Surface Traffic Management System) is operational. FAST MS is not covering the runway system. The A-SMGCS functionalities for the runway system fall under the responsibility of DFS. A system upgrade for warning functionality is being tested and operational implementation is planned for December 2022.				**31/12/2022**
ASP (By:12/2025)				
DFS	At Frankfurt Airport, the existing HITT system will be replaced by PHOENIX TWR to achieve A-SMGCS level 2. Sensor systems are currently in operational use. Operational implementation is planned for December 2022.	A-SMGCS Leipzig / Implementation of A-SMGCS Level 2	33%	Ongoing 31/12/2022
APO (By:12/2025)				
FRAPORT AG	At Frankfurt Airport, the FAST MS (Frankfurt Airport Surface Traffic Management System) is operational and covers A-SMGCS Level I. The result of the current project apron controller working position (ACWP) will be replacing the FAST MS including new safety functionalities for apron control. Fraport is preparing the replacement of the FAST MS system until 2021 including apron control surface safety nets.	-	100%	Completed 31/12/2009

AOP04.2	**Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)** ***Timescales:*** Initial operational capability: 01/01/2021 Full operational capability: 31/12/2025		**100%**	**Completed**
EDDL - Düsseldorf Airport				
For Düsseldorf Airport, A-SMGCS Level 2 is operational since 30.08.2019.				**30/08/2019**
ASP (By:12/2025)				
DFS	For Dusseldorf Airport, A-SMGCS Level 2 is operational since 30.08.2019.	A-SMGCS Leipzig / Implementation of A-SMGCS Level 2	100%	Completed 30/08/2019
APO (By:12/2025)				
DÜSSELDORF Airport	For Düsseldorf Airport, A-SMGCS Level 2 is operational since 30.08.2019.	-	100%	Completed 30/08/2019

AOP04.2	**Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)** ***Timescales:*** Initial operational capability: 01/01/2021 Full operational capability: 31/12/2025		**100%**	**Completed**
EDDM - München Airport				
At Munich Airport, the multilateration system is implemented in addition to the existing primary radar.				**30/11/2014**
ASP (By:12/2025)				
DFS	At Munich Airport, in cooperation with the airport operator "Flughafen München GmbH" the multilateration system is implemented in addition to the existing primary radar.	A-SMGCS Leipzig / Implementation of A-SMGCS Level 2	100%	Completed 31/03/2013
APO (By:12/2025)				
MUNICH Airport	At Munich Airport, the implementation of A-SMGCS Level 2 is implemented.	-	100%	Completed 30/11/2014

AOP05	**Airport Collaborative Decision Making (A-CDM)** ***Timescales:*** Initial operational capability: 01/01/2004 Full operational capability: 31/12/2020		**100%**	**Completed**
EDDB - Berlin - Brandenburg International Airport				
At Berlin - Brandenburg Airport, implementation of A-CDM is completed. Originally developed for BER, it was decided to implement the existing BER A-CDM for Berlin-Schoenefeld airport, to guarantee a seamless switch over to BER at the airport opening; fully implemented A-CDM airport since 2014.				**30/10/2020**
ASP (By:01/2021)				
DFS	At Berlin - Brandenburg Airport, implementation of A-CDM is completed. Originally developed for BER, it was decided to implement the existing BER A-CDM for Berlin-Schoenefeld airport, to guarantee a seamless switch over to BER at the airport opening; fully implemented A-CDM airport since 2014.	-	100%	Completed 31/12/2014
APO (By:01/2021)				
BERLIN BRANDENBURG Airport	At Berlin - Brandenburg Airport, implementation of A-CDM is completed.	-	100%	Completed 30/10/2020

AOP05	**Airport Collaborative Decision Making (A-CDM)** ***Timescales:*** Initial operational capability: 01/01/2004 Full operational capability: 31/12/2020		**100%**	**Completed**
EDDF - Frankfurt Airport				
At Frankfurt Airport, implementation of A-CDM is completed.				**31/01/2013**
ASP (By:01/2021)				
DFS	At Frankfurt Airport, implementation of A-CDM is completed.	-	100%	Completed 28/02/2011
APO (By:01/2021)				
FRAPORT AG	At Frankfurt Airport, implementation of A-CDM is completed.	-	100%	Completed 31/01/2013

AOP05	**Airport Collaborative Decision Making (A-CDM)** ***Timescales:*** Initial operational capability: 01/01/2004 Full operational capability: 31/12/2020		**100%**	**Completed**
EDDH - Hamburg Airport				
At Hamburg Airport the implementation of A-CDM was completed in 2017.				**01/09/2017**
ASP (By:01/2021)				
DFS	At Hamburg Airport the implementation of A-CDM was completed in 2017.	-	100%	Completed 01/09/2017
APO (By:01/2021)				
HAMBURG Airport	At Hamburg Airport the implementation of A-CDM was completed in 2017.	-	100%	Completed 01/09/2017

AOP05	**Airport Collaborative Decision Making (A-CDM)** ***Timescales:*** Initial operational capability: 01/01/2004 Full operational capability: 31/12/2020		**100%**	**Completed**
EDDL - Düsseldorf Airport				
At Düsseldorf Airport, the implementation of A-CDM is completed.				**30/04/2013**
ASP (By:01/2021)				
DFS	At Düsseldorf Airport, the implementation of A-CDM is completed.	-	100%	Completed 30/04/2013
APO (By:01/2021)				
DÜSSELDORF Airport	At Düsseldorf Airport, the implementation of A-CDM is completed.	-	100%	Completed 30/04/2013

AOP05	**Airport Collaborative Decision Making (A-CDM)** ***Timescales:*** Initial operational capability: 01/01/2004 Full operational capability: 31/12/2020		**100%**	**Completed**
EDDM - München Airport				
At Munich Airport, A-CDM is fully operational since 2011.				**31/12/2011**
ASP (By:01/2021)				
DFS	At Munich Airport, Airport CDM is fully operational since 7th June 2007 including DPI exchange according the published European A-CDM manual guidelines.	-	100%	Completed 30/06/2007
APO (By:01/2021)				
MUNICH Airport	At Munich Airport, Airport CDM is fully operational since 2011.	-	100%	Completed 31/12/2011

AOP05	**Airport Collaborative Decision Making (A-CDM)** ***Timescales:*** Initial operational capability: 01/01/2004 Full operational capability: 31/12/2020		**100%**	**Completed**
EDDS - Stuttgart Airport				
At Stuttgart Airport the implementation of A-CDM is completed.				**06/10/2014**
ASP (By:01/2021)				
DFS	At Stuttgart Airport the implementation of A-CDM is completed.	-	100%	Completed 06/10/2014
APO (By:01/2021)				
STUTTGART Airport	At Stuttgart Airport the implementation of A-CDM is completed.	-	100%	Completed 06/10/2014

AOP10	**Time-Based Separation** ***Timescales:*** Initial operational capability: 01/01/2015 Full operational capability: 01/01/2024		**6%**	**Ongoing**
EDDF - Frankfurt Airport				
The possible use of Time-Based Separation has been studied. Due to the influence of the Corona crisis and the associated financial restrictions, the feasibility study could not be carried out to the planned extent. Furthermore, the decline in flight movements has also led to a reassessment of some of the implementation initiatives. For the time being work has been stopped, therefore, no updates to the objective.				**31/12/2023**
REG (By:01/2024)				
NSA	This topic is work in progress. Initial work has been started as a pilot project at Frankfurt airport and approach. The TBS operations procedures as per this objective are planned to be published in the national aeronautical information publication.	-	10%	Ongoing 31/12/2023
ASP (By:12/2024)				
DFS	The possible use of Time-Based Separation has been studied. Due to the influence of the Corona crisis and the associated financial restrictions, the feasibility study could not be carried out to the planned extent. Furthermore, the decline in flight movements has also led to a reassessment of some of the implementation initiatives. For the time being work has been stopped, therefore, no updates to the objective.	-	5%	Ongoing 31/12/2023

AOP10	**Time-Based Separation** ***Timescales:*** Initial operational capability: 01/01/2015 Full operational capability: 01/01/2024		**0%**	**Not yet planned**
EDDL - Düsseldorf Airport				
The possible use of Time-Based Separation has been studied at Frankfurt Airport. Due to the influence of the Corona crisis and the associated financial restrictions, the feasibility study could not be carried out to the planned extent. Furthermore, the decline in flight movements has also led to a reassessment of some of the implementation initiatives. For the time being work has been stopped, therefore, no updates to the objective.				-
REG (By:01/2024)				
NSA	The possible use of Time-Based Separation is being studied. If available, publication will be provided in the national aeronautical information publications.	-	0%	Not yet planned -
ASP (By:12/2024)				
DFS	The possible use of Time-Based Separation has been studied at Frankfurt Airport. Due to the influence of the Corona crisis and the associated financial restrictions, the feasibility study could not be carried out to the planned extent. Furthermore, the decline in flight movements has also led to a reassessment of some of the implementation initiatives. For the time being work has been stopped, therefore, no updates to the objective.	-	0%	Not yet planned -

AOP10	**Time-Based Separation** ***Timescales:*** Initial operational capability: 01/01/2015 Full operational capability: 01/01/2024		**0%**	**Not yet planned**
EDDM - München Airport				
The possible use of Time-Based Separation has been studied at Frankfurt Airport. Due to the influence of the Corona crisis and the associated financial restrictions, the feasibility study could not be carried out to the planned extent. Furthermore, the decline in flight movements has also led to a reassessment of some of the implementation initiatives. For the time being work has been stopped, therefore, no updates to the objective.				-
REG (By:01/2024)				
NSA	The possible use of Time-Based Separation is being studied. If available, publication will be provided in the national aeronautical information publications.	-	0%	Not yet planned -
ASP (By:12/2024)				
DFS	The possible use of Time-Based Separation has been studied at Frankfurt Airport. Due to the influence of the Corona crisis and the associated financial restrictions, the feasibility study could not be carried out to the planned extent. Furthermore, the decline in flight movements has also led to a reassessment of some of the implementation initiatives. For the time being work has been stopped, therefore, no updates to the objective.	-	0%	Not yet planned -

AOP11.1	**Initial Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023		**14%**	**Ongoing**
EDDB - Berlin - Brandenburg International Airport				
Initial Airport Operational Plan is planned to be implemented within the time frame of the objective.				**31/12/2023**
ASP (By:12/2023)				
DFS	Initial Airport Operational Plan is planned to be implemented within the time frame of the objective.	-	23%	Ongoing 31/12/2023
APO (By:12/2023)				
BERLIN BRANDENBURG Airport	Berlin Brandenburg Airport will implement Initial Airport Operations Plan within the time frame of the objective.	-	2%	Ongoing 31/12/2023

AOP11.1	**Initial Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023		**33%**	**Ongoing**
EDDF - Frankfurt Airport				
Initial Airport Operational Plan is planned to be implemented within the time frame of the objective.				**31/12/2023**
ASP (By:12/2023)				
DFS	Airport and DFS have started activities in a national harmonisation working group (ACDM@GER). Initial Airport Operational Plan is planned to be implemented within the time frame of the objective.	-	23%	Ongoing 31/12/2023
APO (By:12/2023)				
FRAPORT AG	Fraport will implement all data related to requirements and provide technical and procedural situational awareness as well as impact assessment within the time frame of the objective.	-	37%	Ongoing 31/12/2023

AOP11.1	**Initial Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023		**17%**	**Ongoing**
EDDH - Hamburg Airport				
The objective is not mandatory for Hamburg Airport. Nevertheless Hamburg Airport will use the guideline described by the SLoAs of AOP11.1 for the implementation of Extended Airport Operations Plan (AOP11.2) until 2027. **Airport and DFS have started activities in a national harmonisation working group (ACDM@GER).**				**31/12/2023**
ASP (By:12/2023)				
DFS	Initial Airport Operational Plan is planned to be implemented within the time frame of the objective.	-	23%	Ongoing 31/12/2023
APO (By:12/2023)				
HAMBURG Airport	The objective is not mandatory for Hamburg Airport. Nevertheless Hamburg Airport will use the guideline described by the SLoAs of AOP11.1 for the implementation of Extended Airport Operations Plan (AOP11.2) until 2027.	-	12%	Ongoing 31/12/2023

AOP11.1	**Initial Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023		**63%**	**Ongoing**
EDDL - Düsseldorf Airport				
At Dusseldorf Airport, an iAOP project started in 2016 to ensure full operational capabilities by the end of Dec. 2020. Initial Airport Operational Plan is planned to be implemented within the time frame of the objective.				**31/12/2023**
ASP (By:12/2023)				
DFS	Airport and DFS have started activities in a national harmonisation working group (ACDM@GER). Initial Airport Operational Plan is planned to be implemented within the time frame of the objective.	-	23%	Ongoing 31/12/2023
APO (By:12/2023)				
DÜSSELDORF Airport	At Dusseldorf Airport, an iAOP project started in 2016 to ensure full operational capabilities by the end of Dec. 2020.	-	100%	Completed 31/12/2020

AOP11.1	**Initial Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023		**15%**	**Ongoing**
EDDM - München Airport				
Initial Airport Operational Plan is planned to be implemented within the time frame of the objective.				**31/12/2023**
ASP (By:12/2023)				
DFS	Airport and DFS have started activities in a national harmonisation working group (ACDM@GER). Initial Airport Operational Plan is planned to be implemented within the time frame of the objective	-	23%	Ongoing 31/12/2023
APO (By:12/2023)				
MUNICH Airport	The local CEF funded iAOP project was kicked-off in 2018. In addition to this project scope, further implementation of relevant parts to reach FOC until the end of 2023 is planned.	-	4%	Ongoing 31/12/2023

AOP11.1	**Initial Airport Operations Plan** ***Timescales:*** - not applicable -		**0%**	**Not Applicable**
EDDN - Nuremberg Airport **(Outside Applicability Area)**				
... It's not planned to introduce A-CDM due to the fact that Nuremburg Airport is a Level 2 Airport only.				-
ASP (By:12/2023)				
DFS	The objective is not mandatory for Nuremburg Airport. Therefore, the objective is considered as "Not Applicable".	-	0%	Not Applicable -
APO (By:12/2023)				
NUREMBERG Airport	It's not planned to introduce A-CDM due to the fact that Nuremburg Airport is a Level 2 Airport only.	-	0%	Not Applicable -

AOP11.1	**Initial Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023		**12%**	**Ongoing**
EDDS - Stuttgart Airport				
The objective is not mandatory for Stuttgart Airport. Nevertheless Stuttgart Airport will use the guideline described by the SLoAs of AOP11.1 for the implementation of Extended Airport Operations Plan (AOP11.2) until 2027. Airport and DFS have started activities in a national harmonisation working group (ACDM@GER).				**31/12/2023**
ASP (By:12/2023)				
DFS	The objective is not mandatory for Stuttgart Airport. Therefore, the objective is considered as "Not Applicable". Airport and DFS have started activities in a national harmonisation working group (ACDM@GER).	-	0%	Not Applicable -
APO (By:12/2023)				
STUTTGART Airport	The objective is not mandatory for Stuttgart Airport. Nevertheless Stuttgart Airport will use the guideline described by the SLoAs of AOP11.1 for the implementation of Extended Airport Operations Plan (AOP11.2) until 2027.	-	12%	Ongoing 31/12/2023

AOP11.1	**Initial Airport Operations Plan** ***Timescales:*** - not applicable -		**0%**	**Not Applicable**
EDDV - Hannover Airport **(Outside Applicability Area)**				
Since A-CDM is considered a prerequisite for iAOP and EDDV is not planning to implement A-CDM in the near future AOP11.1 is considered as "Not Applicable".				**-**
ASP (By:12/2023)				
DFS	The objective is not mandatory for Hannover Airport. Therefore, the objective is considered as "Not Applicable".	-	0%	Not Applicable -
APO (By:12/2023)				
HANNOVER Airport	Since A-CDM is considered a prerequisite for iAOP and EDDV is not planning to implement A-CDM in the near future. AOP 11.1 is considered as "Not Applicable".	-	0%	Not Applicable -

AOP11.2	**Extended Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**1%**	**Ongoing**
EDDB - Berlin - Brandenburg International Airport				
Enhanced Airport Operational Plan is planned to be implemented within the time frame of the objective.				**31/12/2027**
ASP (By:12/2027)				
DFS	DFS is part of the national Working Group on A-CDM (A-CDM@GER) where Extended Airport Operations Plan is discussed. Planning activities will be concluded in 2022.	-	0%	Planned 31/12/2027
APO (By:12/2027)				
BERLIN BRANDENBURG Airport	Berlin Brandenburg Airport will implement Enhanced Airport Operations Plan within the time frame of the objective.	-	2%	Ongoing 31/12/2027

AOP11.2	**Extended Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**1%**	**Ongoing**
EDDF - Frankfurt Airport				
At Frankfurt Airport, activities are ongoing in the direction of ground coordination / Total Airport Management to cover the requirements within the time frame of the objective.				**31/12/2027**
ASP (By:12/2027)				
DFS	At Frankfurt Airport, activities are ongoing in the direction of ground coordination / Total Airport Management to cover the requirements within the time frame of the objective.	-	2%	Ongoing 31/12/2027
APO (By:12/2027)				
FRAPORT AG	Internal activities have started, project planning is underway. No CEF project yet.	-	0%	Planned 31/12/2027

AOP11.2	**Extended Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**1%**	**Ongoing**
EDDH - Hamburg Airport				
Enhanced Airport Operational Plan is planned to be implemented within the time frame of the objective.				**31/12/2027**
ASP (By:12/2027)				
DFS	DFS is part of the national Working Group on A-CDM (A-CDM@GER) where Extended Airport Operations Plan is discussed. Planning activities will be concluded in 2022.	-	0%	Planned 31/12/2027
APO (By:12/2027)				
HAMBURG Airport	Hamburg Airport is part of the national Working Group on A-CDM (A-CDM@GER) where Extended Airport Operations Plan is discussed.	-	2%	Ongoing 31/12/2027

AOP11.2	**Extended Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**3%**	**Ongoing**
EDDL - Düsseldorf Airport				
Enhanced Airport Operational Plan is planned to be implemented within the time frame of the objective.				**31/12/2027**
ASP (By:12/2027)				
DFS	DFS is part of the national Working Group on A-CDM (A-CDM@GER) where Extended Airport Operations Plan is discussed. Planning activities will be concluded in 2022.	-	0%	Planned 31/12/2027
APO (By:12/2027)				
DÜSSELDORF Airport	Düsseldorf Airport plans to implement Extended Airport Operations Plan until the end of 2022.	-	7%	Ongoing 31/12/2022

AOP11.2	**Extended Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**1%**	**Ongoing**
EDDM - München Airport				
At Munich Airport, activities are ongoing in the direction of ground coordination / Total Airport Management to cover the requirements within the time frame of the objective.				**31/12/2027**
ASP (By:12/2027)				
DFS	At Munich Airport, activities are ongoing in the direction of ground coordination / Total Airport Management to cover the requirements within the time frame of the objective.	-	2%	Ongoing 31/12/2027
APO (By:12/2027)				
MUNICH Airport	Munich Airport aims to reach FOC end of 2027 and planning for related implementation projects are on-going.	-	0%	Not yet planned -

AOP11.2	**Extended Airport Operations Plan** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**1%**	**Ongoing**
EDDS - Stuttgart Airport				
Enhanced Airport Operational Plan is planned to be implemented within the time frame of the objective.				**31/12/2027**
ASP (By:12/2027)				
DFS	DFS is part of the national Working Group on A-CDM (A-CDM@GER) where Extended Airport Operations Plan is discussed. Planning activities will be concluded in 2022.	-	0%	Planned 31/12/2027
APO (By:12/2027)				
STUTTGART Airport	Stuttgart Airport is part of the national Working Group on A-CDM (A-CDM@GER) where Extended Airport Operations Plan is discussed.	-	2%	Ongoing 31/12/2027

AOP12.1	**Airport Safety Nets** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**11%**	**Ongoing**
EDDB - Berlin - Brandenburg International Airport				
The implementation of Airport Safety Nets is planned to be implemented within the time frame of the objective.				**31/12/2025**
ASP (By:12/2025)				
DFS	The implementation of Airport Safety Nets is planned to be implemented within the time frame of the objective.	-	5%	Ongoing 31/12/2025
APO (By:12/2025)				
BERLIN BRANDENBURG Airport	Berlin Brandenburg Airport will implement Airport Safety Nets within the time frame of the objective.	-	18%	Ongoing 31/12/2025

AOP12.1	**Airport Safety Nets** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**12%**	**Ongoing**
EDDF - Frankfurt Airport				
The implementation of Airport Safety Nets is planned to be implemented within the time frame of the objective.				**31/12/2025**
ASP (By:12/2025)				
DFS	The implementation of Airport Safety Nets is planned to be implemented within the time frame of the objective.	-	3%	Ongoing 31/12/2025
APO (By:12/2025)				
FRAPORT AG	Fraport is developing a new apron controller working position controlling operations in the manoeuvring area except the runways (responsibility of DFS). Therefore, RMCA alerts are not included.	-	22%	Ongoing 31/12/2025

AOP12.1	**Airport Safety Nets** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**2%**	**Ongoing**
EDDL - Düsseldorf Airport				
The implementation of Airport Safety Nets is planned to be implemented within the time frame of the objective.				**31/12/2025**
ASP (By:12/2025)				
DFS	The implementation of Airport Safety Nets is planned to be implemented within the time frame of the objective.	-	3%	Ongoing 31/12/2025
APO (By:12/2025)				
DÜSSELDORF Airport	The implementation of Airport Safety Nets is planned to be implemented within the time frame of the objective.	-	2%	Ongoing 31/05/2025

AOP12.1	**Airport Safety Nets** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**9%**	**Ongoing**
EDDM - München Airport				
The implementation of Airport Safety Nets is planned to be implemented within the time frame of the objective.				**31/12/2025**
ASP (By:12/2025)				
DFS	The implementation of Airport Safety Nets is planned to be implemented within the time frame of the objective.	-	18%	Ongoing 31/12/2025
APO (By:12/2025)				
MUNICH Airport	It is planned to launch a project to implement an Integrated Controller Working Position (ICWP), which will also include the functionalities CATC and CMAC. Munich Airport aims to reach FOC by end of 2025, but detailed project planning is ongoing.	-	2%	Ongoing 31/05/2025

AOP13	**Automated Assistance to Controller for Surface Movement Planning and Routing** ***Timescales:*** - not applicable -		**0%**	**Planned**
EDDB - Berlin - Brandenburg International Airport **(Outside Applicability Area)**				
Automated assistance to Controller for Surface Movement Planning and Routing is planned to be implemented in 2023.				**31/12/2023**
REG (By:12/2025)				
BERLIN BRANDENB URG Airport	Coordination and final official approval of procedures by the local regulator can only start after availability of implementation results.	-	0%	Not Applicable -
ASP (By:12/2025)				
DFS	Automated assistance to Controller for Surface Movement Planning and Routing is planned to be implemented in 2023.	A-SMGCS Leipzig	0%	Planned 31/12/2023

AOP13	**Automated Assistance to Controller for Surface Movement Planning and Routing** ***Timescales:*** Initial operational capability: 01/01/2016 Full operational capability: 31/12/2025		**0%**	**Planned**
EDDF - Frankfurt Airport				
Automated assistance to Controller for Surface Movement Planning and Routing is planned to be implemented in 2023.				**31/12/2023**
REG (By:12/2025)				
NSA	Coordination and final official approval of procedures by the local regulator can only start after availability of implementation results.	-	0%	Not yet planned -
ASP (By:12/2025)				
DFS	Automated assistance to Controller for Surface Movement Planning and Routing is planned to be implemented in 2023.	A-SMGCS Leipzig	0%	Planned 31/12/2023

AOP13	**Automated Assistance to Controller for Surface Movement Planning and Routing** ***Timescales:*** Initial operational capability: 01/01/2016 Full operational capability: 31/12/2025		**0%**	**Planned**
EDDL - Düsseldorf Airport				
Automated assistance to Controller for Surface Movement Planning and Routing is planned to be implemented in 2023.				**31/12/2023**
REG (By:12/2025)				
NSA	Coordination and final official approval of procedures by the local regulator can only start after availability of implementation results.	-	0%	Not yet planned -
ASP (By:12/2025)				
DFS	Automated assistance to Controller for Surface Movement Planning and Routing is planned to be implemented in 2023.	A-SMGCS Leipzig	0%	Planned 31/12/2023

AOP13	**Automated Assistance to Controller for Surface Movement Planning and Routing** ***Timescales:*** Initial operational capability: 01/01/2016 Full operational capability: 31/12/2025		**0%**	**Planned**
EDDM - München Airport				
Automated assistance to Controller for Surface Movement Planning and Routing is planned to be implemented in 2023.				**31/12/2023**
REG (By:12/2025)				
NSA	Coordination and final official approval of procedures by the local regulator can only start after availability of implementation results.	-	0%	Not yet planned -
ASP (By:12/2025)				
DFS	Automated assistance to Controller for Surface Movement Planning and Routing is planned to be implemented in 2023.	A-SMGCS Leipzig	0%	Planned 31/12/2023

AOP19	**Departure Management Synchronised with Pre-departure sequencing** ***Timescales:*** Initial Operational Capability : 01/01/2021 Full Operational Capability / Target Date: 31/12/2022		**95%**	**Ongoing**
EDDB - Berlin - Brandenburg International Airport				
The implementation of Departure Management Synchronised with Pre-departure sequencing is planned within the time frame of the objective.				**31/12/2022**
ASP (By:12/2022)				
DFS	DFs plans to implement Departure Management Synchronised with Pre-departure sequencing within the timeframe of objective.	-	96%	Ongoing 31/12/2022
APO (By:12/2022)				
BERLIN BRANDENBURG Airport	Berlin Brandenburg Airport plans to implement Departure Management Synchronised with Pre-departure sequencing within the timeframe of objective.	-	96%	Ongoing 31/12/2022

AOP19	**Departure Management Synchronised with Pre-departure sequencing** ***Timescales:*** Initial Operational Capability : 01/01/2021 Full Operational Capability / Target Date: 31/12/2022		**95%**	**Ongoing**
EDDF - Frankfurt Airport				
The implementation of Departure Management Synchronised with Pre-departure sequencing is planned within the time frame of the objective.				**31/12/2022**
ASP (By:12/2022)				
DFS	DFS plans to implement Departure Management Synchronised with Pre-departure sequencing within the timeframe of objective.	-	96%	Ongoing 31/12/2022
APO (By:12/2022)				
FRAPORT AG	Fraport plans to implement Departure Management Synchronised with Pre-departure sequencing within the timeframe of objective.	-	96%	Ongoing 31/12/2022

AOP19	**Departure Management Synchronised with Pre-departure sequencing** ***Timescales:*** - not applicable -		**96%**	**Ongoing**
EDDH - Hamburg Airport				
The implementation of Departure Management Synchronised with Pre-departure sequencing is planned within the time frame of the objective.				**31/12/2022**
ASP (By:12/2022)				
DFS	DFS plans to implement Departure Management Synchronised with Pre-departure sequencing within the timeframe of objective.	-	96%	Ongoing 31/12/2022
APO (By:12/2022)				
HAMBURG Airport	Hamburg Airport is part of a national Working Group on A-CDM (A-CDM@GER) where Departure Management Synchronised with Pre-departure sequencing is discussed. Hamburg Airport plans to implement Departure Management Synchronised with Pre-departure sequencing within the timeframe of objective.	-	96%	Ongoing 31/12/2022

AOP19	**Departure Management Synchronised with Pre-departure sequencing** ***Timescales:*** Initial Operational Capability : 01/01/2021 Full Operational Capability / Target Date: 31/12/2022		**95%**	**Ongoing**
EDDL - Düsseldorf Airport				
The implementation of Departure Management Synchronised with Pre-departure sequencing is planned within the time frame of the objective.				**31/12/2022**
ASP (By:12/2022)				
DFS	DFS plans to implement Departure Management Synchronised with Pre-departure sequencing within the timeframe of objective.	-	96%	Ongoing 31/12/2022
APO (By:12/2022)				
DÜSSELDORF Airport	Düsseldorf Airport plans to implement Departure Management Synchronised with Pre-departure sequencing within the timeframe of objective.	-	96%	Ongoing 31/12/2022

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**
EDDM - München Airport				
The implementation of Departure Management Synchronised with Pre-departure sequencing is finished at Munich Airport.				**08/09/2016**
ASP (By:12/2022)				
DFS	Departure Management Synchronised with Pre-departure sequencing is completed.	-	100%	Completed 08/09/2016
APO (By:12/2022)				
MUNICH Airport	Required systems and procedures are implemented, also taking into account additional information for improved pre-departure sequencing such as de-icing times, variable taxi times and departure runway capacity. Arrival flow is currently not yet considered for departure sequencing.	-	100%	Completed 08/09/2016

AOP19	**Departure Management Synchronised with Pre-departure sequencing** ***Timescales:*** - not applicable -		**96%**	**Ongoing**
EDDS - Stuttgart Airport				
The implementation of Departure Management Synchronised with Pre-departure sequencing is planned within the time frame of the objective.				**31/12/2022**
ASP (By:12/2022)				
DFS	DFS plans to implement Departure Management Synchronised with Pre-departure sequencing within the timeframe of objective.	-	96%	Ongoing 31/12/2022
APO (By:12/2022)				
STUTTGART Airport	Stuttgart Airport is part of a national Working Group on A-CDM (A-CDM@GER) where Departure Management Synchronised with Pre-departure sequencing is discussed. Stuttgart Airport plans to implement Departure Management Synchronised with Pre-departure sequencing within the timeframe of objective.	-	96%	Ongoing 31/12/2022

ATC02.8	**Ground-Based Safety Nets** ***Timescales:*** Initial operational capability: 01/01/2009 Full operational capability: 31/12/2021		**100%**	**Completed**
-				
The implementation of Ground-based Safety Nets for Germany has been finished in 2015.				**28/06/2015**
ASP (By:12/2021)				
DFS	See State comment.	-	100%	Completed 28/06/2015

ATC07.1	**AMAN Tools and Procedures** ***Timescales:*** Initial operational capability: 01/01/2007 Full operational capability: 31/12/2019		**100%**	**Completed**
EDDB - Berlin - Brandenburg International Airport				
AMAN for BER Airport is in operational use since 04/11/2020.				**04/11/2020**
ASP (By:01/2020)				
DFS	Same as in the overall comment.	-	100%	Completed 04/11/2020

ATC07.1	**AMAN Tools and Procedures** ***Timescales:*** Initial operational capability: 01/01/2007 Full operational capability: 31/12/2019		**100%**	**Completed**
EDDF - Frankfurt Airport				
AMAN provides enhanced arrival management functionalities for Frankfurt Airport.				**30/09/2013**
ASP (By:01/2020)				
DFS	Same as in the overall comment.	-	100%	Completed 30/09/2013

ATC07.1	**AMAN Tools and Procedures** ***Timescales:*** Initial operational capability: 01/01/2007 Full operational capability: 31/12/2019		**100%**	**Completed**
EDDL - Düsseldorf Airport				
The development of an arrival management tool serving flights to Düsseldorf Airport has been completed in December 2017.				**12/12/2017**
ASP (By:01/2020)				
DFS	Same as in the overall comment.	-	100%	Completed 12/12/2017

ATC07.1	**AMAN Tools and Procedures** ***Timescales:*** Initial operational capability: 01/01/2007 Full operational capability: 31/12/2019		**100%**	**Completed**
EDDM - München Airport				
AMAN provides enhanced arrival management functionalities for Munich Airport.				**29/02/2008**
ASP (By:01/2020)				
DFS	Same as in the overall comment.	-	100%	Completed 29/02/2008

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**
-				
In the objective description it is stated, that CDT, Resolution Support Information and Conformance Monitoring are needed to support the implementation of Free Route Airspace (in other words PCP IR 716/2014). As FRA shall be implemented above FL310, the mentioned implementation requirements are only relevant for DFS Upper control centre (UAC) at Karlsruhe. The UAC Karlsruhe has received a (very advanced) 4D-trajectory-based ATS system by end of 2010, which provides already MTCD, Resolution Support Information and Conformance Monitoring. **MTCD and resolution support functions are part of iCAS system, commissioned in November 2017. Further enhancements of conflict detection, resolution support information and conformance monitoring will be implemented in the course of the iCAS system.**				**15/12/2018**
ASP (By:12/2021)				
DFS	Same as in the overall comment.	iCAS (iTEC Center Automation System)	100%	Completed 15/12/2018

ATC15.1	**Information Exchange with En-route in Support of AMAN** ***Timescales:*** Initial operational capability: 01/01/2012 Full operational capability: 31/12/2019		**100%**	**Completed**
	-			
To differentiate this Objective from the following ATC15.2, the requested functionality is now considered as the information exchange between AMAN systems supporting the respective TMAs and the first upstream ATS systems of the surrounding en-route control sectors, e.g. arrival sequences are displayed at the respective working positions of the en-route controllers. This implementation activity is completed with the opening of the BER Airport and the operational use of AMAN BER in Bremen ACC.				**04/11/2020**
ASP (By:12/2019)				
DFS	See State comment.	iCAS (iTEC Center Automation System)	100%	Completed 04/11/2020

ATC15.2	**Arrival Management Extended to En-route Airspace** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2024		**34%**	**Ongoing**
	EDDB - Berlin - Brandenburg International Airport			
Due to the decline of traffic numbers and the resulting financial shortfalls caused by the COVID-19 pandemic, DFS decided to pause its XMAN implementation activities. This decision affected mainly the XMAN implementations at DUS and BER and their respective – national - upstream control centres. Presently, there is no concrete implementation date planned. **Some SLoAs are considered as completed through preceding activities for other German CP1 airports (MUC, FRA).**				**31/12/2024**
ASP (By:12/2024)				
DFS	Due to the decline of traffic numbers and the resulting financial shortfalls caused by the COVID-19 pandemic, DFS decided to pause its XMAN implementation activities. This decision affected mainly the XMAN implementations at DUS and BER and their respective – national - upstream control centres. Presently, there is no concrete implementation date planned. This also concerns the connections to the external ACCs (MUAC, Warsaw, Malmö and Copenhagen). Prague ACC will be connected via Munich ACC. Connection to Amsterdam is not considered as its contribution to the inbound flow is too small. Some SLoAs are considered as completed through preceding activities for other German CP1 airports (MUC, FRA).	Extended Arrival Management / iCAS (iTEC Center Automation System)	35%	Ongoing 31/12/2024

ATC15.2	**Arrival Management Extended to En-route Airspace** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2024		**100%**	**Completed**
EDDF - Frankfurt Airport				
The planning horizon of AMAN Frankfurt is extended up to 220NM into the area of responsibility of identified upstream control centres. For Frankfurt airport, this objective is considered as "Completed" for all German upstream control centres. DFS ATS systems, procedures and agreements are ready and prepared for the implementation of connections to external ACCs/UACs (Reims, Brussels, Maastricht), outside the scope of this objective.				**28/05/2018**
ASP (By:12/2024)				
DFS	The planning horizon of AMAN Frankfurt is extended up to 220NM into the area of responsibility of identified upstream control centres. For Frankfurt airport, this objective is considered as "Completed" for all German upstream control centres. DFS ATS systems, procedures and agreements are ready and prepared for the implementation of connections to external ACCs/UACs (Reims, Brussels, Maastricht), outside the scope of this objective. However, connections to MUAC, Reims and Brussels are in the status "not yet planned" due to DFS's decision to pause its activities for 2 years.	Extended Arrival Management / iCAS (iTEC Center Automation System)	100%	Completed 28/05/2018

ATC15.2	**Arrival Management Extended to En-route Airspace** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2024		**39%**	**Ongoing**
EDDL - Düsseldorf Airport				
Due to the decline of traffic numbers and the resulting financial shortfalls caused by the COVID-19 pandemic, DFS decided to pause its XMAN implementation activities. This decision affected mainly the XMAN implementations at DUS and BER and their respective – national - upstream control centres. Presently, there is no concrete implementation date planned. Some SLoAs are considered as completed through preceding activities for other German CP1 airports (MUC, FRA).				**31/12/2024**
ASP (By:12/2024)				
DFS	Due to the decline of traffic numbers and the resulting financial shortfalls caused by the COVID-19 pandemic, DFS decided to pause its XMAN implementation activities. This decision affected mainly the XMAN implementations at DUS and BER and their respective – national - upstream control centres. Presently, there is no concrete implementation date planned. This also concerns connections to the external ACCs (MUAC, Amsterdam, Brussels). Operational necessities for the connections to ACCs Reims and London are still to be clarified. Some SLoAs are considered as completed through preceding activities for other German CP1 airports (MUC, FRA).	Extended Arrival Management / iCAS (iTEC Center Automation System)	40%	Ongoing 31/12/2024

ATC15.2	**Arrival Management Extended to En-route Airspace** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2024		**100%**	**Completed**
EDDM - München Airport				
The planning horizon of AMAN Munich is extended up to 220NM into the area of responsibility of identified upstream control centres. **For Munich airport, this objective is considered as "Completed" for all German upstream control centres, because ATS systems, procedures and agreements are implemented.** **The connections to external ACCs/UACs - outside the scope of this objective - (here: Zurich ACC, Prague ACC, Vienna ACC) are also implemented. The only outstanding connection to Padua ACC will be implemented until the given CP1 deadline depending on ENAV plans.**				**14/12/2017**
ASP (By:12/2024)				
DFS	The planning horizon of AMAN Munich is extended up to 220NM into the area of responsibility of identified upstream control centres. For Munich airport, this objective is considered as "Completed" for all German upstream control centres, because ATS systems, procedures and agreements are implemented. The connections to external ACCs/UACs - outside the scope of this objective - (here: Zurich ACC, Prague ACC, Vienna ACC) are also implemented. The only outstanding connection to Padua ACC will be implemented until the given CP1 deadline depending on ENAV plans.	Extended Arrival Management / iCAS (iTEC Center Automation System)	100%	Completed 14/12/2017

ATC15.2bis	**Arrival Management Extended to En-route Airspace (non CP1)** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability: 31/12/2024		**48%**	**Ongoing**
-				
ATCAS system at all DFS UAC/ACC support AMA message processing and display of Extended Arrival Management information at respective ATCOs working positions. **Arrival management information exchange between airport Zurich (ZRH) and ACCs Langen and Munich is in operations.** **Implementation of Extended arrival management information exchange between airports Vienna (VIE), Milan (MXP), Brussels (BRU) and Copenhagen (CPH) and the respective German control centres are not yet planned.**				**02/03/2017**
ASP (By:12/2024)				
DFS	ATCAS system at all DFS UAC/ACC support AMA message processing and display of Extended Arrival Management information at respective ATCOs working positions. Arrival management information exchange between airport Zurich (ZRH) and ACCs Langen and Munich is in operations. Implementation of Extended arrival management information exchange between airports Vienna (VIE), Milan (MXP), Brussels (BRU) and Copenhagen (CPH) and the respective German control centres are not yet planned.	Extended Arrival Management	48%	Ongoing 02/03/2017

ATC19	**AMAN/DMAN Integration** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**0%**	**Not yet planned**
EDDB - Berlin - Brandenburg International Airport				
AMAN/DMAN Integration is not yet planned for DFS Systems.				-
ASP (By:12/2027)				
DFS	AMAN/DMAN Integration is not yet planned for DFS Systems.	-	0%	Not yet planned -
APO (By:12/2027)				
BERLIN BRANDENBURG Airport	-	-	0%	Not yet planned -

ATC19	**AMAN/DMAN Integration** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**0%**	**Not yet planned**
EDDL - Düsseldorf Airport				
AMAN/DMAN Integration is not yet planned for DFS Systems.				-
ASP (By:12/2027)				
DFS	AMAN/DMAN Integration is not yet planned for DFS Systems.	-	0%	Not yet planned -
APO (By:12/2027)				
DÜSSELDORF Airport	-	-	0%	Not yet planned -

COM10.1	**Migrate from AFTN to AMHS (Basic service)** ***Timescales:*** Initial Operational Capability: 01/12/2011 Full Operational Capability: 31/12/2018		**100%**	**Completed**
-				
The German COM-Centre was upgraded to become AMHS capable and act as a national AMHS/CIDIN gateway. Conformity for basic services and associated procedures is ensured and in operational use.				**31/12/2010**
ASP (By:12/2018)				
DFS	The German COM-Centre was upgraded to become AMHS capable and act as a national AMHS/CIDIN gateway. Conformity for basic services and associated procedures is ensured and in operational use.	-	100%	Completed 31/12/2010

COM10.2	**Extended AMHS** ***Timescales:*** Initial Operational Capability: 01/12/2011 Full Operational Capability: 31/12/2024		**100%**	**Completed**
	-			
The German COM-Centre was upgraded to become AMHS capable and act as a national AMHS/CIDIN gateway. Conformity for extended AMHS services and associated procedures is ensured and in operational use.				**30/06/2016**
ASP (By:12/2024)				
DFS	The German COM-Centre was upgraded to become AMHS capable and act as a national AMHS/CIDIN gateway. Conformity for basic services and associated procedures is ensured and in operational use.	-	100%	Completed 30/06/2016

COM11.1	**Voice over Internet Protocol (VoIP) in En-Route** ***Timescales:*** Initial operational capability: 01/01/2013 Full operational capability: 31/12/2021		**43%**	**Ongoing**
	-			
The Voice Communication System to support VoIP inter-centre telephony is available at the ACCs Langen, Munich and Bremen since the end of 2017. **DFS has deployed an IP based (ED137 compliant) last resort radio system at all ACCs until mid-2018.** **UAC Karlsruhe will be equipped with VoIP capable VCS in the course of the regular update cycle in 2022.** **Concerning the implementation of Voice Communication Systems to support VoIP links to the ground radio stations there is no operational or technical need to migrate the ground segment of the radio infrastructure as required in the objective. Furthermore, there is no CBA, which proves a positive effect on the KPA Cost Effectiveness.** **Therefore, implementations in this technology will be undertaken on a case-by-case basis for replacements related to the regular system life cycle.**				**31/12/2027**
ASP (By:12/2021)				
DFS	The Voice Communication System to support VoIP inter-centre telephony is available at the ACCs Langen, Munich and Bremen since the end of 2017. DFS has deployed an IP based (ED137 compliant) last resort radio system at all ACCs until mid-2018. UAC Karlsruhe will be equipped with VoIP capable VCS in the course of the regular update cycle in 2022. Concerning the implementation of Voice Communication Systems to support VoIP links to the ground radio stations there is no operational or technical need to migrate the ground segment of the radio infrastructure as required in the objective. Furthermore, there is no CBA, which proves a positive effect on the KPA Cost Effectiveness. Therefore, implementations in this technology will be undertaken on a case-by-case basis for replacements related to the regular system life cycle.	-	43%	Ongoing 31/12/2027

COM11.2	**Voice over Internet Protocol (VoIP) in Airport/Terminal** ***Timescales:*** Initial operational capability: 01/01/2013 Full operational capability: 31/12/2023		**20%**	**Ongoing**
-				
The implementation of Voice over Internet Protocol (VoIP) in Airport/Terminal is ongoing.				**31/12/2027**
ASP (By:12/2023)				
DFS	The implementation of Voice over Internet Protocol (VoIP) in Airport/Terminal is ongoing.	-	20%	Ongoing 31/12/2027

COM12	**New Pan-European Network Service (NewPENS)** ***Timescales:*** Initial operational capability: 01/01/2018 Full operational capability (33 ANSPs): 31/12/2024		**100%**	**Completed**
-				
DFS activities to connect to NewPENS have been finished in May 2020. **NewPENS, as a network service, DFS will contact the airports for the beginning of migration tasks at the airports.** **For the time being German airports have no actions planned for the implementation of NewPENS.**				**31/05/2020**
ASP (By:12/2024)				
DFS	DFS activities to connect to NewPENS have been finished in May 2020.	-	100%	Completed 31/05/2020
APO (By:12/2024)				
STUTTGART Airport	NewPENS, as a network service, DFS will contact the airports for the beginning of migration tasks at the airports. For the time being German airports have no actions planned for the implementation of NewPENS.	-	0%	Not Applicable -
BERLIN BRANDENBURG Airport	NewPENS, as a network service, DFS will contact the airports for the beginning of migration tasks at the airports. For the time being German airports have no actions planned for the implementation of NewPENS.	-	0%	Not Applicable -
FRAPORT AG	NewPENS, as a network service, DFS will contact the airports for the beginning of migration tasks at the airports. For the time being German airports have no actions planned for the implementation of NewPENS.	-	0%	Not Applicable -
DÜSSELDORF Airport	NewPENS, as a network service, DFS will contact the airports for the beginning of migration tasks at the airports. For the time being German airports have no actions planned for the implementation of NewPENS.	-	0%	Not Applicable -
MUNICH Airport	NewPENS, as a network service, DFS will contact the airports for the beginning of migration tasks at the airports. For the time being German airports have no actions planned for the implementation of NewPENS.	-	0%	Not Applicable -
HAMBURG Airport	Stuttgart Airport is part of a national Working Group on A-CDM (A-CDM@GER) where Departure Management Synchronised with Pre-departure sequencing is discussed.	-	0%	Not Applicable -

NUREMBERG Airport	NewPENS, as a network service, DFS will contact the airports for the beginning of migration tasks at the airports. For the time being German airports have no actions planned for the implementation of NewPENS.	-	0%	Not Applicable -
HANNOVER Airport	NewPENS, as a network service, DFS will contact the airports for the beginning of migration tasks at the airports. For the time being German airports have no actions planned for the implementation of NewPENS.	-	0%	Not Applicable -

ENV01	**Continuous Descent Operations (CDO)** ***Timescales:*** Initial operational capability: 01/07/2007 Full operational capability: 31/12/2023		**0%**	**Not yet planned**
EDDB - Berlin - Brandenburg International Airport				
Due to the corona-related reduced traffic volume, no Continuous Descent Operations are planned for BER Airport for the time being.				**-**
ASP (By:12/2023)				
DFS	Due to the corona-related reduced traffic volume, no Continuous Descent Operations are planned for BER Airport for the time being.	-	0%	Not yet planned -
APO (By:12/2023)				
BERLIN BRANDENBURG Airport	For the time being Continuous Descent Operations are not planned yet for BER Airport.	-	0%	Not yet planned -

ENV01	**Continuous Descent Operations (CDO)** ***Timescales:*** Initial operational capability: 01/07/2007 Full operational capability: 31/12/2023		**82%**	**Completed**
EDDF - Frankfurt Airport				
At Frankfurt Airport, conventional CDO procedures are possible but most often not applicable due to heavy traffic load. Design and implementation of CDO procedures under PBN conditions is ongoing.				**31/12/2030**
ASP (By:12/2023)				
DFS	At Frankfurt Airport, conventional CDO procedures are possible but most often not applicable due to heavy traffic load. Design and implementation of CDO procedures under PBN conditions is ongoing.	-	78%	Completed 31/12/2030
APO (By:12/2023)				
FRAPORT AG	At Frankfurt Airport, CDO procedures are possible but most often not applicable due to heavy traffic load.	-	100%	Completed 31/12/2011

ENV01	**Continuous Descent Operations (CDO)** ***Timescales:*** Initial operational capability: 01/07/2007 Full operational capability: 31/12/2023		**82%**	**Completed**
EDDH - Hamburg Airport				
At Hamburg Airport, conventional CDO procedures are published. Design and implementation of CDO procedures under PBN conditions is ongoing.				**31/12/2030**
ASP (By:12/2023)				
DFS	At Hamburg Airport, conventional CDO procedures are published. Design and implementation of CDO procedures under PBN conditions is ongoing.	-	78%	Completed 31/12/2030
APO (By:12/2023)				
HAMBURG Airport	At Hamburg Airport, CDO procedures are published.	-	100%	Completed 31/12/2013

ENV01	**Continuous Descent Operations (CDO)** ***Timescales:*** Initial operational capability: 01/07/2007 Full operational capability: 31/12/2023		**82%**	**Completed**
EDDK - Cologne - Bonn Airport				
At Cologne-Bonn Airport, conventional CDO procedures are published. Design and implementation of CDO procedures under PBN conditions is ongoing.				**31/12/2020**
ASP (By:12/2023)				
DFS	At Cologne-Bonn Airport, conventional CDO procedures are published. Design and implementation of CDO procedures under PBN conditions is ongoing.	-	78%	Completed 31/12/2020
APO (By:12/2023)				
COLOGNE - BONN Airport	CDO procedures are implemented at Cologne-Bonn Airport.	-	100%	Completed 31/12/2010

ENV01	**Continuous Descent Operations (CDO)** ***Timescales:*** Initial operational capability: 01/07/2007 Full operational capability: 31/12/2023		**78%**	**Completed**
EDDL - Düsseldorf Airport				
At Dusseldorf Airport, conventional CDO procedures are published. Design and implementation of CDO procedures under PBN conditions is ongoing.				**31/12/2020**
ASP (By:12/2023)				
DFS	Conventional CDO procedures are published for Düsseldorf, Stuttgart, Nuremberg, Hannover, Leipzig/Halle, Munich and Cologne Airport (see AIP Germany). Although CDO procedures are published, at some airports they are not used due to high traffic density. Design and implementation of CDO procedures under PBN conditions is ongoing.	-	78%	Completed 31/12/2020
APO (By:12/2023)				
DÜSSELDORF Airport	Using CDO as descent technique is within the responsibility of the ANSP. Düsseldorf Airport is supporting the local ANSP as required. Therefore, the SLoA is considered as "Not Applicable".	-	0%	Not Applicable -

ENV01	**Continuous Descent Operations (CDO)** ***Timescales:*** Initial operational capability: 01/07/2007 Full operational capability: 31/12/2023		**82%**	**Completed**
EDDM - München Airport				
At Munich Airport, conventional CDO procedures are established and mainly used at night. Design and implementation of CDO procedures under PBN conditions is ongoing.				**31/12/2020**
ASP (By:12/2023)				
DFS	At Munich Airport, conventional CDO procedures are established and mainly used at night. Design and implementation of CDO procedures under PBN conditions is ongoing.	-	78%	Completed 31/12/2020
APO (By:12/2023)				
MUNICH Airport	At Munich Airport, CDO procedures are established and mainly used at night.	-	100%	Completed 28/02/2009

ENV01	**Continuous Descent Operations (CDO)** ***Timescales:*** Initial operational capability: 01/07/2007 Full operational capability: 31/12/2023		**78%**	**Ongoing**
EDDN - Nuremberg Airport				
At Nuremberg Airport, conventional CDO procedures are already published but not very well accepted by controllers and pilots. Because of this we are planning to withdraw these procedures during PBN implementation. Design and implementation of CDO procedures under PBN conditions is ongoing. **Due to low traffic load CDO procedures are possible at Nuremberg Airport but a systematic collection and analysis of data does not take place.**				**31/12/2023**
ASP (By:12/2023)				
DFS	At Nuremberg Airport, conventional CDO procedures are already published but not very well accepted by controllers and pilots. Because of this we are planning to withdraw these procedures during PBN implementation. Design and implementation of CDO procedures under PBN conditions is ongoing.	-	78%	Ongoing 31/12/2023
APO (By:12/2023)				
NUREMBERG Airport	Due to low traffic load CDO procedures are possible at Nuremberg Airport but a systematic collection and analysis of data does not take place.	-	0%	Not Applicable -

ENV01	**Continuous Descent Operations (CDO)** ***Timescales:*** Initial operational capability: 01/07/2007 Full operational capability: 31/12/2023		**77%**	**Ongoing**
EDDS - Stuttgart Airport				
At Stuttgart Airport, conventional CDO procedures are already published but not very well accepted by controllers and pilots. Because of this we are planning to withdraw these procedures during PBN implementation. Design and implementation of CDO procedures under PBN conditions is ongoing.				**31/12/2023**
ASP (By:12/2023)				
DFS	At Stuttgart Airport, conventional CDO procedures are published. Design and implementation of CDO procedures under PBN conditions is ongoing. At Stuttgart Airport, conventional CDO procedures are already published but not very well accepted by controllers and pilots. Because of this we are planning to withdraw these procedures during PBN implementation. Design and implementation of CDO procedures under PBN conditions is ongoing.	-	78%	Ongoing 31/12/2023
APO (By:12/2023)				
STUTTGART Airport	CDO procedures are implemented at Stuttgart Airport. Monitoring and performance measurement are not yet possible for the Airport Operator.	-	75%	Ongoing 31/12/2023

ENV01	**Continuous Descent Operations (CDO)** ***Timescales:*** Initial operational capability: 01/07/2007 Full operational capability: 31/12/2023		**82%**	**Completed**
EDDV - Hannover Airport				
At Hannover Airport, conventional CDO procedures are published. Design and implementation of CDO procedures under PBN conditions is ongoing.				**31/12/2030**
ASP (By:12/2023)				
DFS	At Hannover Airport, conventional CDO procedures are published. Design and implementation of CDO procedures under PBN conditions is ongoing.	-	78%	Completed 31/12/2030
APO (By:12/2023)				
HANNOVER Airport	CDO procedures are implemented at Hannover Airport.	-	100%	Completed 31/12/2010

FCM03	**Collaborative Flight Planning** ***Timescales:*** Initial operational capability: 01/01/2000 Full operational capability: 31/12/2022		**100%**	**Completed**
	-			
DFS is an integrated service provider and as well responsible for ATS en-route service to OAT flights. All functions required to support collaborative flight planning have been implemented in the current DFS ATS systems in 2012 and have been part of the NM test implementations. New agreed ICD requirements will be implemented. The status of the objective will therefore be maintained as "Completed"".				**30/11/2012**
ASP (By:12/2022)				
DFS	All functions required to support collaborative flight planning have been implemented in the current DFS ATS systems in 2012 and have been part of the NM test implementations. New agreed ICD requirements will be implemented. The status of the objective will therefore be maintained as "Completed"".	-	100%	Completed 30/11/2012

FCM04.2	**Enhanced Short Term ATFCM Measures** ***Timescales:*** Initial operational capability: 01/11/2017 Full Operational Capability / Target Date: 31/12/2022		**0%**	**Planned**
	-			
The implementation of Short Term ATFCM Measures (STAM) - phase 2 is planned to be finished within the timeframe of the objective.				**31/12/2022**
ASP (By:12/2022)				
DFS	The implementation of Short Term ATFCM Measures (STAM) - phase 2 is planned to be finished within the timeframe of the objective.	-	0%	Planned 31/12/2022

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		**21%**	**Ongoing**
	-			
The implementation of Automated Support for Traffic Complexity Assessment and Flight Planning interfaces is planned to be finished within the time frame of the objective.				**31/12/2022**
ASP (By:12/2022)				
DFS	The functionalities for Lower Airspace will be realized with an independent tool named AirMagic (Tool for Advanced Sector Analysis and Planning), which is the implementation of Airtopsoft´s COTS product WIZerACC in DFS. The requested standards are partly fulfilled. For Upper Airspace (UAC Karlsruhe) another tool (iFMP) will be implemented. The proof of conformity is still open. Full compliance might not be fulfilled by deployment target dates as it is currently out of operational priority, however this is not directly related to the iCAS IP (2017_031_AF3). More importantly, the main deployment activities with regard to Family 4.3.1 are not executed within this IP but via a separate IP namely the "IP_2016_024_AF4 Deployment of an Automated Support Tool for Traffic Complexity Assessment at DFS". Possible implications concerning deployment target dates are still under evaluation or ongoing. No further activities in context with Family 4.3.1 will be conducted within the scope of IP_2017_031_AF3.	-	16%	Ongoing 31/12/2022

FCM10	**Interactive Rolling NOP** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023		**0%**	**Planned**
	-			
Full operational capability of Interactive rolling NOP is planned within the timeframe of the objective.				**31/12/2023**
ASP (By:12/2023)				
DFS	Full operational capability of Interactive rolling NOP is planned within the timeframe of the objective.	-	0%	Planned 31/12/2023

FCM11.1	**Initial AOP/NOP Information Sharing** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023		**3%**	**Ongoing**
EDDB - Berlin - Brandenburg International Airport				
The implementation of Initial AOP/NOP Information Sharing is planned within the timeframe of the objective.				**31/12/2023**
ASP (By:12/2023)				
DFS	The implementation of Initial AOP/NOP Information Sharing is planned within the timeframe of the objective.	-	2%	Ongoing 31/12/2023
APO (By:12/2023)				
BERLIN BRANDENBURG Airport	The implementation of Initial AOP/NOP Information Sharing is planned within the timeframe of the objective.	-	2%	Ongoing 31/12/2023

FCM11.1	**Initial AOP/NOP Information Sharing** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023		**3%**	**Ongoing**
EDDF - Frankfurt Airport				
The implementation of Initial AOP/NOP Information Sharing is planned within the timeframe of the objective.				**31/12/2023**
ASP (By:12/2023)				
DFS	The implementation of Initial AOP/NOP Information Sharing is planned within the timeframe of the objective.	-	2%	Ongoing 31/12/2023
APO (By:12/2023)				
FRAPORT AG	Discussion is still ongoing if Fraport or DFS will implement the NM B2B services to deliver the data to NM. In the latter case, Fraport would provide the required data to DFS.	-	2%	Ongoing 31/12/2023

FCM11.1	**Initial AOP/NOP Information Sharing** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023		**5%**	**Ongoing**
EDDL - Düsseldorf Airport				
The implementation of Initial AOP/NOP Information Sharing is planned within the timeframe of the objective.				**31/12/2023**
ASP (By:12/2023)				
DFS	The implementation of Initial AOP/NOP Information Sharing is planned within the timeframe of the objective.	-	2%	Ongoing 31/12/2023
APO (By:12/2023)				
DÜSSELDORF Airport	A-CDM is fully implemented at Dusseldorf Airport. The additional required messages (e.g. G-API, P-DPI) are planned to be implemented on time.	-	5%	Ongoing 31/12/2023

FCM11.1	**Initial AOP/NOP Information Sharing** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2023		**1%**	**Ongoing**
EDDM - München Airport				
The implementation of Initial AOP/NOP Information Sharing is planned within the timeframe of the objective.				**31/12/2023**
ASP (By:12/2023)				
DFS	The implementation of Initial AOP/NOP Information Sharing is planned within the timeframe of the objective.	-	2%	Ongoing 31/12/2023
APO (By:12/2023)				
MUNICH Airport	A-CDM is fully implemented at Munich Airport. The additional required messages (e.g. G-API, P-DPI) are planned to be implemented on time until end of 2023.	-	0%	Planned 31/12/2023

FCM11.2	**AOP/NOP integration** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**3%**	**Ongoing**
EDDB - Berlin - Brandenburg International Airport				
The implementation of AOP/NOP integration is intended within the timeframe of the objective.				**31/12/2027**
ASP (By:12/2027)				
DFS	The implementation of AOP/NOP integration is intended within the timeframe of the objective.	-	0%	Not yet planned -
APO (By:12/2027)				
BERLIN BRANDENBURG Airport	The implementation of AOP/NOP integration is intended within the timeframe of the objective.	-	2%	Ongoing 31/12/2027

FCM11.2	**AOP/NOP integration** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**0%**	**Not yet planned**
EDDF - Frankfurt Airport				
The implementation of AOP/NOP integration is intended within the timeframe of the objective. Airports and DFS are investigating a joint approach for AOP/NOP integration. A pilot project on an interface for mutual data exchange is established at Hamburg Airport.				**-**
ASP (By:12/2027)				
DFS	The implementation of AOP/NOP integration is intended within the timeframe of the objective.	-	0%	Not yet planned -
APO (By:12/2027)				
FRAPORT AG	Activities for coordination of prospective data and information to be shared have started within the EUROCONTROL Airport-Network integration task force (ANI-TF). No CEF project yet.	-	0%	Not yet planned -

FCM11.2	**AOP/NOP integration** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**11%**	**Ongoing**
EDDH - Hamburg Airport				
The implementation of AOP/NOP integration is intended within the timeframe of the objective. Airports and DFS are investigating a joint approach for AOP/NOP integration. A pilot project on an interface for mutual data exchange is established at Hamburg Airport.				**31/12/2027**
ASP (By:12/2027)				
DFS	The implementation of AOP/NOP integration is intended within the timeframe of the objective.	-	0%	Not yet planned -
APO (By:12/2027)				
HAMBURG Airport	Airports and DFS are investigating a joint approach for AOP/NOP integration. A pilot project on an interface for mutual data exchange is established at Hamburg Airport.	-	8%	Ongoing 31/12/2027

FCM11.2	**AOP/NOP integration** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**6%**	**Ongoing**
EDDL - Düsseldorf Airport				
The implementation of AOP/NOP integration is intended within the timeframe of the objective. Airports and DFS are investigating a joint approach for AOP/NOP integration. A pilot project on an interface for mutual data exchange is established at Hamburg Airport.				**31/12/2022**
ASP (By:12/2027)				
DFS	The implementation of AOP/NOP integration is intended within the timeframe of the objective.	-	0%	Not yet planned -
APO (By:12/2027)				
DÜSSELDORF Airport	Düsseldorf Airport plans to implement AOP/NOP integration until the end of 2022.	-	4%	Ongoing 31/12/2022

FCM11.2	**AOP/NOP integration** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**0%**	**Not yet planned**
EDDM - München Airport				
The implementation of AOP/NOP integration is intended within the timeframe of the objective. Airports and DFS are investigating a joint approach for AOP/NOP integration. A pilot project on an interface for mutual data exchange is established at Hamburg Airport.				**-**
ASP (By:12/2027)				
DFS	The implementation of AOP/NOP integration is intended within the timeframe of the objective.	-	0%	Not yet planned -
APO (By:12/2027)				
MUNICH Airport	The planning for the implementation of AOP/NOP integration in ongoing. Munich Airport aims to reach FOC end of 2027.	-	0%	Not yet planned -

FCM11.2	**AOP/NOP integration** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2027		**11%**	**Ongoing**
EDDS - Stuttgart Airport				
The implementation of AOP/NOP integration is intended within the timeframe of the objective. Airports and DFS are investigating a joint approach for AOP/NOP integration. A pilot project on an interface for mutual data exchange is established at Hamburg Airport.				**31/12/2027**
ASP (By:12/2027)				
DFS	DFS has the intention to implement AOP/NOP integration within the timeframe of the objective.	-	0%	Not yet planned -
APO (By:12/2027)				
STUTTGART Airport	Airports and DFS are investigating a joint approach for AOP/NOP integration. A pilot project on an interface for mutual data exchange is established at Hamburg Airport. Results will be shared within a national workgroup (A-CDM@GER) where Stuttgart Airport is part of.	-	8%	Ongoing 31/12/2027

INF07	**Electronic Terrain and Obstacle Data (eTOD)** ***Timescales:*** Initial operational capability: 01/11/2014 Full operational capability: 31/12/2018		**18%**	**Ongoing**
-				
According to Reg. (EU) 2020/469 Germany has developed an eTOD policy and sent to ICAO for evaluation. On 21 January 2022 ICAO confirmed the submitted electronic terrain data and the publication in the German AIP. Various actions are ongoing to promote and ensure the availability of electronic obstacle data.				**31/12/2023**
REG (By:01/2019)				
MoT	Various actions are ongoing to promote and ensure the availability of electronic obstacle data. The connection between ADQ and eTOD is seen as an issue to the eTOD implementation. Terrain data are available in terms of Area 1 to 4 since 2019. In terms of electronic terrain data the ICAO requirements are fulfilled, DFS, German military and airports are now working on publication procedures in order to get the obstacle data published within the AIP Germany.	-	35%	Ongoing 31/12/2023
ASP (By:01/2019)				
DFS	Since the German national eTOD policy has been published in March 2021, the implementation activities for a regulatory framework have begun.	-	0%	Not yet planned -
Federal Ministry of Defence	Since the German national eTOD policy has been published, the activities to establish the MIL eTOD regulatory framework can begin. German MIL with its own MAA, ASP, APO and data collection services has to establish an eTOD regulatory framework.	-	0%	Not yet planned -

APO (By:01/2019)				
MUNICH Airport	National eTOD Policy Germany was established in March 2021. Planning of further deployment steps are on-going. Kick-off between DFS and airport representatives is planned for February 2022. Final implementation date is not known yet.	-	5%	Ongoing 31/12/2022
BERLIN BRANDENBURG Airport	eTOD regulatory framework is not yet established. All Terrain and Obstacle Data that BER has to collect are available electronically in accordance with Regulation (EU) 139/2014. The management and provision of this data has not yet been implemented.	-	5%	Ongoing 31/12/2022
DÜSSELDORF Airport	eTOD regulatory framework is not yet established.	-	0%	Not yet planned -
FRAPORT AG	Due to the fact that German eTOD regulatory framework is not yet established, planning activities have not started. The collection, management and provision of eTOD data is considered within an ADQ project in cooperation of the ADV task force. The project is finished in the meantime. eTOD was only partially covered therein. eTOD policy now drafted by ADV and BMVI BMVD (processes and responsibilities)	-	0%	Not yet planned -

INF10.10	**Meteorological Information Exchange - Aerodrome Meteorological information Service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**3%**	**Ongoing**
-				
The implementation of Meteorological Information Exchange - Aerodrome Meteorological information Service is planned to be implemented within the timeframe of the objective.				**31/12/2025**
ASP (By:12/2025)				
DFS	DFS contribution for IP#69 was conducted and reported.	-	7%	Ongoing 31/12/2025
APO (By:12/2025)				
DÜSSELDORF Airport	Düsseldorf Airport plans to implement the objective within the timeframe of the objective.	-	0%	Planned 31/12/2025
FRAPORT AG	Fraport plans to implement Meteorological Information Exchange - Aerodrome Meteorological information Service within the timeframe of the objective.	-	3%	Ongoing 31/12/2025
BERLIN BRANDENBURG Airport	Berlin Brandenburg Airport plans to implement the objective within the timeframe of the objective.	-	0%	Not yet planned -
MUNICH Airport	Munich Airport plans to implement Meteorological Information Exchange - Aerodrome Meteorological information Service within the timeframe of the objective.	-	0%	Not yet planned -
STUTTGART Airport	Due to the fact that the interchange format definition is still under discussion the objective is not yet planned.	-	0%	Not yet planned -
HAMBURG Airport	Due to the fact that the interchange format definition is still under discussion the objective is not yet planned.	-	0%	Not yet planned -
MET (By:12/2025)				
DWD	The implementation of Aerodrome Meteorological Services is planned to be finished within the timeframe of the objective.	European MET Information Exchange (MET-GATE)	3%	Ongoing 31/12/2024

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		**3%**	**Ongoing**
	-			
The implementation of En-Route and Approach Meteorological Services is planned to be finished within the timeframe of the objective.				**31/12/2025**
ASP (By:12/2025)				
DFS	DFS contribution for IP#69 was conducted and reported.	-	0%	Planned 31/12/2025
MET (By:12/2025)				
DWD	The implementation of En-Route and Approach Meteorological Services is planned to be finished within the timeframe of the objective.	European MET Information Exchange (MET-GATE)	3%	Ongoing 30/06/2025

INF10.12	**Meteorological Information Exchange - Network Meteorological Information** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**1%**	**Ongoing**
	-			
The implementation of Meteorological Information Exchange - Network Meteorological Information is planned to be finished within the time frame of the objective.				**31/12/2025**
ASP (By:12/2025)				
DFS	DFS contribution for IP#69 was conducted and reported.	-	3%	Ongoing 31/12/2025
MET (By:12/2025)				
DWD	The implementation of Network Meteorological Services is not yet planned.	European MET Information Exchange (MET-GATE)	0%	Not yet planned -

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		**5%**	**Ongoing**
	-			
The implementation of Cooperative Network Information Exchange - ATFCM Tactical Updates Service (Airport Capacity and Enroute) is planned to be finished within the time frame of the objective.				**31/12/2025**
ASP (By:12/2025)				
DFS	See State Comment.	-	5%	Ongoing 31/12/2025

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	**7%**	**Ongoing**
-			
The implementation of Cooperative Network Information Exchange – Flight Management Service (Slots and NOP/AOP integration) is planned to be finished within the time frame of the objective.			**31/12/2025**
ASP (By:12/2025)			
DFS	The implementation of Cooperative Network Information Exchange – Flight Management Service (Slots and NOP/AOP integration) is planned to be finished within the time frame of the objective.	- 10%	Ongoing 31/12/2025
APO (By:12/2025)			
FRAPORT AG	Discussions still ongoing if Fraport or DFS will implement the NM B2B services to deliver the data to NM. In the latter case Fraport would provide the required data to DFS.	- 5%	Ongoing 31/12/2025
DÜSSELDORF Airport	Düsseldorf Airport plans to implement the objective within the timeframe of the objective.	- 3%	Ongoing 31/12/2025
HAMBURG Airport	Hamburg Airport is studying the exchange of Pre Departure Planning Information in collaboration with Eurocontrol.	- 10%	Ongoing 31/12/2025
STUTTGART Airport	Stuttgart Airport is studying the exchange of Pre Departure Planning Information in collaboration with Eurocontrol.	- 5%	Ongoing 31/12/2025
BERLIN BRANDENBURG Airport	Berlin Brandenburg Airport intends to implement the objective within the timeframe of the objective.	- 0%	Not yet planned -
MUNICH Airport	Munich Airport intends to implement Cooperative Network Information Exchange – Flight Management Service (Slots and NOP/AOP integration) within the timeframe of the objective.	- 0%	Not yet planned -

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	**100%**	**Completed**
-			
The implementation of Cooperative Network Information Exchange – Measures Service (Traffic Regulation) is completed.			**27/02/2021**
ASP (By:12/2025)			
DFS	See State comment.	- 100%	Completed 27/02/2021

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		**5%**	**Ongoing**
-				
The implementation of Cooperative Network Information Exchange - Short Term ATFCM Measures services (MCDM, eHelpdesk, STAM measures) is planned to be finished within the time frame of the objective.				**31/12/2025**
ASP (By:12/2025)				
DFS	The implementation of Cooperative Network Information Exchange - Short Term ATFCM Measures services (MCDM, eHelpdesk, STAM measures) is planned to be finished within the time frame of the objective.	-	5%	Ongoing 31/12/2025

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		**10%**	**Ongoing**
-				
The implementation of Cooperative Network Information Exchange – Counts service (ATFCM Congestion Points) is planned to be finished within the time frame of the objective.				**31/12/2025**
ASP (By:12/2025)				
DFS	The implementation of Cooperative Network Information Exchange – Counts service (ATFCM Congestion Points) is planned to be finished within the time frame of the objective.	-	10%	Ongoing 31/12/2025

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**
-			
Analysis shows that this service covers the same FF-ICE/R1 information exchange as INF10.21, except for the message exchange pattern (here, Request/Reply). **It is therefore unclear which specific FF-ICE/R1 operational purpose this service would serve once the Publication Service (INF10.21) and the Notification Service (INF10.20) are implemented. The participation of ANSPs in FF-ICE/R1 as agreed by the NM FPFDE Task Force requires the Request/Reply message exchange pattern between ANSPs and NM only for the Notification Service (INF10.20).** **Nevertheless, in some scenarios this service might still be practical for technical reasons. Therefore, implementation planning for this service has been postponed pending planning for INF10.20 and INF10.21.**		-
ASP (By:12/2025)			
DFS	Analysis shows that this service covers the same FF-ICE/R1 information exchange as INF10.21, except for the message exchange pattern (here, Request/Reply). It is therefore unclear which specific FF-ICE/R1 operational purpose this service would serve once the Publication Service (INF10.21) and the Notification Service (INF10.20) are implemented. The participation of ANSPs in FF-ICE/R1 as agreed by the NM FPFDE Task Force requires the Request/Reply message exchange pattern between ANSPs and NM only for the Notification Service (INF10.20). Nevertheless, in some scenarios this service might still be practical for technical reasons. Therefore, implementation planning for this service has been postponed pending planning for INF10.20 and INF10.21.	-	0%	Not yet planned -

INF10.2	**Stakeholders' SWIM PKI and cyber security** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**17%**	**Ongoing**
	-			
At DFS a local PKI framework has been agreed and formalised as internal regulation. The implementation path is currently being discussed. Further implementation by other stakeholders are not planned yet.				**31/12/2025**
ASP (By:12/2025)				
DFS	A local PKI framework has been agreed and formalised as internal regulation. The implementation path is currently being discussed. The other SLoAs depend on this decision. CEF funded Implementation Projects 2015_192_AF5 "RAPNET NG" and 2015_197_AF5 Centralized DFS Yellow Profile SWIM Node have taken place (and been completed) in the past however they cannot be directly linked to the deployment milestones.	-	20%	Ongoing 31/12/2025
APO (By:12/2025)				
DÜSSELDORF Airport	Düsseldorf Airport plans to implement the objective within the timeframe of the objective	-	0%	Planned 31/12/2025
FRAPORT AG	A local PKI framework has been agreed and formalised as internal regulation.	-	96%	Ongoing 31/12/2025
BERLIN BRANDENBURG Airport	Berlin Brandenburg Airport plans to implement the objective within the timeframe of the objective.	-	0%	Not yet planned -
MUNICH Airport	Munich Airport plans to implement Stakeholders' SWIM PKI and cyber security within the timeframe of the objective.	-	0%	Not yet planned -
HAMBURG Airport	Stakeholders' SWIM PKI and cyber security not yet planned at Hamburg Airport.	-	0%	Not yet planned -
STUTTGART Airport	Stakeholders' SWIM PKI and cyber security not yet planned at Stuttgart Airport.	-	0%	Not yet planned -
MET (By:12/2025)				
DWD	DWD is in the scoping phase and has not yet finally decided on a project to implement the SWIM PKI, results from the CEF-funded project SWIM Common PKI (2017_084_AF5) are still pending.	-	0%	Not yet planned -

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%**	**Not yet planned**
	-			
This Network Manager service is currently scheduled to become available in NM Release 26 (2022). As of end 2021, no specification of the service is available so no planning can be done yet.				-
ASP (By:12/2025)				
DFS	This Network Manager service is currently scheduled to become available in NM Release 26 (2022). As of end 2021, no specification of the service is available so no planning can be done yet.	-	0%	Not yet planned -

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%**	**Not yet planned**
	-			
Analysis of the actual FF-ICE/R1 data that will be available to DFS is a prerequisite for determining adequate operational use of said data and hence, planning for the operations-grade implementation in both Stakeholder Lines of Action. Preparatory work on data analysis and prototyping is ongoing and expected to be sufficiently complete for planning during 2022.				-
ASP (By:12/2025)				
DFS	Analysis of the actual FF-ICE/R1 data that will be available to DFS is a prerequisite for determining adequate operational use of said data and hence, planning for the operations-grade implementation in both Stakeholder Lines of Action. Preparatory work on data analysis and prototyping is ongoing and expected to be sufficiently complete for planning during 2022.	-	0%	Not yet planned -

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		**3%**	**Ongoing**
	-			
The implementation of Flight Information Exchange (Yellow Profile) - Extended AMAN SWIM Service is planned to be finished within the time frame of the objective.				**31/12/2025**
ASP (By:12/2025)				
DFS	See State comment.	-	3%	Ongoing 31/12/2025

INF10.3	**Aeronautical Information Exchange - Airspace structure service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**100%**	**Completed**
-				
DFS uses the in-house AIS data within the context of ASM. The use of NM data is not foreseen. NM UUIDs are matched with the DFS data and used when data are provided to NM. Thus, in addition to using the NM UUIDs, checks of the data can take place, data errors can be identified quickly and efficiently, and in the case of third party requests, UUIDs can be made to orders based on the NM. Therefore, DFS considers the objective as "Not Applicable".				**31/12/2021**
ASP (By:12/2025)				
DFS	DFS uses the in-house AIS data within the context of ASM. The use of NM data is not foreseen. NM UUIDs are matched with the DFS data and used when data are provided to NM. Thus, in addition to using the NM UUIDs, checks of the data can take place, data errors can be identified quickly and efficiently, and in the case of third party requests, UUIDs can be made to orders based on the NM.	-	100%	Completed 31/12/2021

INF10.4	**Aeronautical Information Exchange - Airspace Availability Service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**100%**	**Completed**
-				
DFS provides AUP information to NM.				**31/12/2021**
ASP (By:12/2025)				
DFS	DFS provides AUP information to NM.	-	100%	Completed 31/12/2021

INF10.5	**Aeronautical Information Exchange - Airspace Reservation (ARES)** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**25%**	**Ongoing**
-				
The implementation of Aeronautical Information Exchange - Airspace Reservation (ARES) objective is planned to be finished within the time frame of the objective.				**31/12/2025**
ASP (By:12/2025)				
DFS	Via web AUP (https://ais.dfs.de/pilotservice/service/aup/aup_edit_map.jsp?lang=de), the ARES information is accessible to local civil/military stakeholders.	-	25%	Ongoing 31/12/2025

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**
-				
The underlying technical standard AIXM 5.x is underspecified and unfit for the exchange of NOTAM-like messages. Further, the Temporality Extension (TE) to the OGC Web Feature Service standard is currently only available as draft. **To remedy these shortcomings, DFS is collaborating with FABEC members to set up AIXM compliance testing infrastructure. This work will also comprise maturing the TE to the level of OGC standard and its incorporation into the aforementioned compliance testing system. This FABEC project should be ready by the end of 2022. Without these pre-requisites, no feasible implementation project can be set up. Once these artifacts are ready, DFS will begin the implementation process using EAD as a Digital NOTAM creation and exchange vehicle.**				-
ASP (By:12/2025)				
DFS	The underlying technical standard AIXM 5.x is underspecified and unfit for the exchange of NOTAM-like messages. Further, the Temporality Extension (TE) to the OGC Web Feature Service standard is currently only available as draft. To remedy these shortcomings, DFS is collaborating with FABEC members to set up AIXM compliance testing infrastructure. This work will also comprise maturing the TE to the level of OGC standard and its incorporation into the aforementioned compliance testing system. This FABEC project should be ready by the end of 2022. Without these pre-requisites, no feasible implementation project can be set up. Once these artifacts are ready, DFS will begin the implementation process using EAD as a Digital NOTAM creation and exchange vehicle.	-	0%	Not yet planned -
AIS (By:12/2025)				
DFS	The underlying technical standard AIXM 5.x is underspecified and unfit for the exchange of NOTAM-like messages. Further, the Temporality Extension (TE) to the OGC Web Feature Service standard is currently only available as draft. To remedy these shortcomings, DFS is collaborating with FABEC members to set up AIXM compliance testing infrastructure. This work will also comprise maturing the TE to the level of OGC standard and its incorporation into the aforementioned compliance testing system. This FABEC project should be ready by the end of 2022. Without these pre-requisites, no feasible implementation project can be set up. Once these artifacts are ready, DFS will begin the implementation process using EAD as a Digital NOTAM creation and exchange vehicle.	-	0%	Not yet planned -

INF10.7	**Aeronautical Information Exchange - Aerodrome mapping service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**0%**	**Not yet planned**
	-			
The underlying technical standard AIXM 5.x is unfit for aerodrome Mapping information. To remedy these shortcomings, DFS is collaborating with German airports to handle ASRN.				-
AIS (By:12/2025)				
DFS	The underlying technical standard AIXM 5.x is unfit for aerodrome Mapping information. To remedy these shortcomings, DFS is collaborating with German airports to handle ASRN.	-	0%	Not yet planned -

INF10.8	**Aeronautical Information Exchange - Aeronautical Information Features service** ***Timescales:*** Initial Operational Capability: 01/01/2021 Full Operational Capability / Target Date: 31/12/2025		**0%**	**Not yet planned**
	-			
The implementation of Aeronautical Information Exchange - Aeronautical Information Features service is not yet planned.				-
ASP (By:12/2025)				
DFS	The implementation of Aeronautical Information Exchange - Aeronautical Information Features service is not yet planned.	-	0%	Not yet planned -
AIS (By:12/2025)				
DFS	The implementation of Aeronautical Information Exchange - Aeronautical Information Features service is not yet planned.	-	0%	Not yet planned -

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%**	**Not yet planned**
	-			
No specification of the Volcanic Ash Mass Concentration information service is available yet. Once available, planning activities to consume the service can be undertaken.				-
ASP (By:12/2025)				
DFS	No specification of the Volcanic Ash Mass Concentration information service is available yet. Once available, planning activities to consume the service can be undertaken. The MET-GATE client can be used for the consumption of the service.	-	0%	Not yet planned -
MET (By:12/2025)				
DWD	The implementation of Volcanic Ash Mass Concentration information service is not yet planned as this implementation objective is mainly applicable for Volcanic Ash Advisory Centres.	-	0%	Not yet planned -

ITY-ACID	**Aircraft Identification** ***Timescales:*** Entry into force of the Regulation: 13/12/2011 System capability: 02/01/2020	**98%**	**Ongoing**
-			
DFS has declared the airspace FL100 and above as Mode S airspace. However, in many regions Mode S coverage is ensured even below FL100, sometimes down to ground. All relevant DFS systems are able to process the downlinked aircraft identification. Downlinked aircraft identification is in use for more than 50% of all flights in the German airspace. DFS has declared 7 international airports as Mode S airport: Bremen, Hannover, Leipzig, Berlin-Brandenburg, Düsseldorf, Frankfurt/Main and München. However, some smaller airports do not have the necessary Mode S coverage to use Mode S there.			**31/12/2025**
ASP (By:01/2020)			
DFS	DFS has declared the airspace FL100 and above as Mode S airspace. However, in many regions Mode S coverage is ensured even below FL100, sometimes down to ground. All relevant DFS systems are able to process the downlinked aircraft identification. Downlinked aircraft identification is in use for more than 50% of all flights in the German airspace. DFS has declared 7 international airports as Mode S airport: Bremen, Hannover, Leipzig, Berlin-Brandenburg, Düsseldorf, Frankfurt/Main and München. However, some smaller airports do not have the necessary Mode S coverage to use Mode S there.	-	98%	Ongoing 31/12/2025

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**
-			
Data link functions are provided in accordance with DLS IR. The respective ATS system is upgraded accordingly.			**31/12/2013**
REG (By:02/2018)			
NSA	ANSPs within the area of responsibility of the BAF (German NSA) are informed about new applicable regulations. Information about the implementation status is part of the national oversight process.	-	100%	Completed 31/12/2013
ASP (By:02/2018)			
DFS	Data link functions are provided in accordance with DLS IR in Karlsruhe UAC. Training programs and operations manuals are available and in use.	iCAS (iTEC Center Automation System)	100%	Completed 31/12/2012

MIL (By:01/2019)				
Federal Ministry of Defence	Systems procurement by the military differs from the civil stakeholders, in particular as regards budgetary constraints, political decisions, longer procurement cycles and no fleet management, enabling the military to buy COTS products. These shortcomings may cause delays. According Art 3, para 5, of EU 29/2009 German MoD decided to equip new transport aircraft A 400 M with VDL Mode 2 Standard. Deliveries of aircraft with VDL Mode 2 started mid-2020, all previously delivered Aircraft will be equipped during the retrofit program. With the end of the retrofit program in 2027 all A400M will be equipped with VDL Mode 2.	-	100%	Completed 28/02/2013

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**	
	-			
Germany considers the implementation of 8,33 kHz Air-Ground Voice Channel Spacing below FL195 as completed because the remaining activities that have to be done are marginal to the whole process to fulfil completely the regulation.				**31/12/2021**
REG (By:12/2018)				
Federal Ministry of Defence	See State comment.	-	100%	Completed 31/12/2021
NSA	Following Annex II of Commission Regulation (EU) No 677/2011 - The radio frequency function-, Part A, Germany has nominated the NSA as the national frequency manager. The NSA assures that aeronautical frequency assignments are made, modified and published in accordance with EU regulations. The correct and efficient usage is ensured as well.	-	100%	Completed 31/12/2021
ASP (By:12/2018)				
Federal Ministry of Defence	See State comment.	-	100%	Completed 31/12/2021
DFS	DFS finished the conversion of all 25 kHz frequencies to 8,33 kHz by end of 2020. The objective ITY-AGVCS is completed with respect to all tasks to be performed by DFS.	-	100%	Completed 31/12/2020
MIL (By:12/2020)				
Federal Ministry of Defence	See State comment.	-	100%	Completed 31/12/2021

APO (By:12/2018)				
MUNICH Airport	The SLoAs APO01 and APO02 are considered as "Not Applicable" for the airports because frequency management falls under the responsibility of the German ANSP and for the equipment of vehicles, relevant airport areas are strictly restricted to vehicles that are properly equipped. The respective personnel are trained according to the requirements. All personnel operating aviation radios hold Radio telephony certificates, as it is mandatory in Germany.	-	100%	Completed 31/01/2012
DÜSSELDORF Airport	The SLoAs APO01 and APO02 are considered as "Not Applicable" for the airports because frequency management falls under the responsibility of the German ANSP and for the equipment of vehicles, relevant airport areas are strictly restricted to vehicles that are properly equipped. The respective personnel are trained according to the requirements. All personnel operating aviation radios hold Radio telephony certificates, as it is mandatory in Germany.	-	100%	Completed 31/01/2012
FRAPORT AG	The SLoAs APO01 and APO02 are considered as "Not Applicable" for the airports because frequency management falls under the responsibility of the German ANSP and for the equipment of vehicles, relevant airport areas are strictly restricted to vehicles that are properly equipped. The respective personnel are trained according to the requirements. All personnel operating aviation radios hold Radio telephony certificates, as it is mandatory in Germany.	-	100%	Completed 31/01/2012
BERLIN BRANDENBURG Airport	The SLoAs APO01 and APO02 are considered as "Not Applicable" for the airports because frequency management falls under the responsibility of the German ANSP and for the equipment of vehicles, relevant airport areas are strictly restricted to vehicles that are properly equipped. The respective personnel are trained according to the requirements. All personnel operating aviation radios hold Radio telephony certificates, as it is mandatory in Germany.	-	100%	Completed 30/10/2020

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		**60%**	**Ongoing**
	-			
The German implementation of FMTP is ongoing. The upgrade of DFS systems to TCP/IPv6 in accordance with the SES-IR 633/2007 is completed. Depending on the ability of neighbouring partners to support FMTP, the system is put into service. **The relevant oversight processes are established and for the military FMTP will be implemented further to the procurement of ASR-S until 2022.** **Air Defence Control Units are foreseen for the establishment of procedures for notification, coordination, and transfer of the flights between military and civil ATS units**				**31/12/2022**
ASP (By:12/2014)				
DFS	Upgrade of DFS systems to TCP/IPv6 in accordance with the SES-IR 633/2007 is completed. Depending on the ability of neighbouring partners to support FMTP, the system is put into service.	iCAS (iTEC Center Automation System)	100%	Completed 31/12/2014
Federal Ministry of Defence	See State comment.	-	30%	Ongoing 31/12/2022
MIL (By:12/2014)				
Federal Ministry of Defence	FMTP will be implemented further to procurement of ASR-S.	-	10%	Ongoing 31/12/2022

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		**78%**	**Ongoing**
-				
The general concept for RNAV 1 implementation has been finished in 2017 and the first RNAV 1 procedures at Frankfurt/Hahn Airport (EDFH) have been implemented in the same year. The status of implementation at the airports can be found in the transition plan and updates thereof. **There are no military aerodromes with P-RNAV procedures. Only aircraft of the MOD special air transport wing (Flugbereitschaft BMVg) are equipped with RNAV equipment. Respective aircrews are trained in RNAV TMA procedures.**				**06/06/2030**
REG (By:06/2030)				
NSA	A first version of the transition plan for PBN in ANS provision has been developed by the ANS-provider in coordination with the NSA and - after verification by the NSA - approved by MoT. A process for establishing and verifying the upcoming updates of the transition plan has been developed in 2021. Therefore, BAF considers the SLoA as "completed".	-	100%	Completed 02/12/2021
ASP (By:06/2030)				
DFS	The concept for RNAV 1 implementation has been finished in 2017 and the first RNAV 1 procedures at Frankfurt/Hahn Airport (EDFH) have been implemented in the same year. The next package of procedures for the airports of Hamburg (EDDH), Hamburg/Finkenwerder (EDHI), Luebeck (EDHL) and Kiel (EDHK) has been implemented until the end of 2020. In 2021, the next package of procedures for the airports of Nuremburg (EDDN); Erfurt-Weimar (EDDE), Memmingen (EDJY) and Niederrhein (EDLV) was implemented.	-	74%	Ongoing 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		**68%**	**Ongoing**
	-			
Currently for SIDs and approaches, the implementation is ongoing. There are currently no plans to implement RNP 1 arrival procedures in TMA operations.				**06/06/2030**
REG (By:06/2030)				
NSA	A first version of the transition plan for PBN in ANS provision has been developed by the ANS-provider in coordination with the NSA and - after verification by the NSA - approved by MoT. A process for establishing and verifying the upcoming updates of the transition plan has been developed in 2021. Therefore, BAF considers the SLoA as "completed".	-	100%	Completed 02/12/2021
ASP (By:06/2030)				
DFS	In Germany only RNAV1 in TMA Operations are implemented. Currently for SIDs and approaches, the implementation is ongoing. In some cases these implementations are amended with RNP1 SID with AV. There are no plans to implement RNP 1 arrival procedures in TMA operations.	-	63%	Ongoing 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		**98%**	**Ongoing**
	-			
APV/Baro and/or APV/SBAS procedures are published and implemented in accordance with ICAO Assembly resolution A37-11.				**25/01/2024**
REG (By:01/2024)				
MoT/NSA	Germany has published relevant regulatory material on APV procedures for aircraft operators.	-	100%	Completed 30/04/2011
NSA	A first version of the transition plan for PBN in ANS provision has been developed by the ANS-provider in coordination with the NSA and - after verification by the NSA - approved by MoT. A process for establishing and verifying the upcoming updates of the transition plan has been developed in 2021. Therefore, BAF considers the SLoA as "completed".	-	100%	Completed 02/12/2021
ASP (By:01/2024)				
DFS	APV/Baro and/or APV/SBAS procedures are published and implemented in accordance with ICAO Assembly resolution A37-11.	-	97%	Ongoing 25/01/2024

NAV12	**ATS IFR Routes for Rotorcraft Operations** **(Outside Applicability Area)** ***Timescales:*** - not applicable -		**0%**	**Not Applicable**
-				
This objective is reported, as "Not Applicable" because for the time being there is no intention to implement ATS IFR routes (LLR) for rotorcraft operations.				-
REG (By:06/2030)				
NSA	-	-	0%	Not Applicable -
ASP (By:06/2030)				
DFS	This objective is reported, as "Not Applicable" because for the time being there is no intention to implement ATS IFR routes (LLR) for rotorcraft operations.	-	0%	Not Applicable -

SAF11	**Improve Runway Safety by Preventing Runway Excursions** ***Timescales:*** Initial operational capability: 01/09/2013 Full operational capability: 31/01/2018		**100%**	**Completed**
-				
The required actions for the improvement of runway safety by preventing runway excursions are considered completed for DFS and the reported airports.				**30/10/2020**
REG (By:01/2018)				
NSA	The required actions for the improvement of runway safety by preventing runway excursions have been finished by 12/2013.	-	100%	Completed 31/12/2013
ASP (By:12/2014)				
DFS	Regarding the DFS as main service provider, the European Action Plan for the Prevention of Runway Excursions (EAPPRE) has been examined. The relevant recommendations in section 3 are covered by existing procedures and measures (e.g. Local Runway Safety Teams; adherence to ICAO provisions; Safety Training and Briefings). Their implementation is monitored and documented in a database. For the military, the objective is considered as "Not Applicable" because the European Action Plan for the Prevention of Runway Excursions is not mandatory for the Military. Nevertheless, military aerodromes have a military flight safety committee and the practices and procedures relating to runway operations are in compliance with ICAO provisions. Where military necessity requires different handling, it may be possible to deviate from ICAO provisions.	-	100%	Completed 31/12/2013
APO (By:12/2014)				
DÜSSELDORF Airport	The implementation of the appropriate parts of the European Action Plan for the prevention of Runway Excursions is completed for the reported airports.	-	100%	Completed 31/12/2013
BERLIN BRANDENBURG Airport	The implementation of the appropriate parts of the European Action Plan for the prevention of Runway Excursions is completed for the reported airports.	-	100%	Completed 30/10/2020
MUNICH Airport	The implementation of the appropriate parts of the European Action Plan for the prevention of Runway Excursions is completed for the reported airports.	-	100%	Completed 31/07/2010
FRAPORT AG	The implementation of the appropriate parts of the European Action Plan for the prevention of Runway Excursions is completed for the reported airports.	-	100%	Completed 31/12/2013

Additional Objectives for ICAO ASBU Monitoring

AOM21.1	**Direct Routing** ***Timescales:*** Initial Operational Capability: 01/01/2015 Full Operational Capability: 31/12/2017		**100%**	**Completed**
	-			
Direct Routing has been implemented in German airspace.				**31/12/2015**
ASP (By:12/2017)				
DFS	Direct Routing has been implemented in German airspace.	-	100%	Completed 31/12/2015

ATC02.2	**Implement ground based safety nets - Short Term Conflict Alert (STCA) - level 2 for en-route operations** ***Timescales:*** Initial operational capability: 01/01/2008 Full operational capability: 31/01/2013		**100%**	**Completed**
	-			
STCA level 2 is effectively implemented in all German UAC/ACCs. German APP units, which are responsible for TMAs, are integrated in the ACCs. Eurocontrol specifications have the value of an AMC and, therefore, will not be made mandatory by the REG Authority. Specifications are subject to safety oversight by BAF. Any new safety significant changes to the existing system must meet the requirements of EC Regulation 1315/2007 and are assessed by BAF prior to putting into service.				**31/12/2008**
ASP (By:01/2013)				
DFS	STCA level 2 is implemented in all German UAC/ACCs. German APP units, which are responsible for TMAs, are integrated in the ACCs.	-	100%	Completed 31/12/2008

ATC02.9	**Short Term Conflict Alert (STCA) for TMAs** ***Timescales:*** Initial operational capability: 01/01/2018 Full operational capability: 31/12/2020		**100%**	**Completed**
	-			
The DFS complied with a comprehensive implementation of STCA. German APP units, which are responsible for TMAs, are integrated in the ACCs.				**31/12/2017**
ASP (By:12/2020)				
DFS	The DFS complied with a comprehensive implementation of STCA. German APP units, which are responsible for TMAs, are integrated in the ACCs.	-	100%	Completed 31/12/2017

ATC16	**Implement ACAS II compliant with TCAS II change 7.1** ***Timescales:*** Initial operational capability: 01/03/2012 Full operational capability: 31/12/2015		**100%**	**Completed**
-				
ACAS monitoring system is in place. **The CAA has evidence on the status of compliance with regulatory provisions for ACAS II (TCAS 7.1) for aircraft and aircraft operators in the State of Registry under the NSA oversight.** **The German military is regarding the implementation of this objective with the procurement of new transport-type aircraft. The delivery of the A 400 M started in 2014.**				**31/12/2015**
REG (By:12/2015)				
NSA	The CAA has evidence on the status of compliance with regulatory provisions for ACAS II (TCAS 7.1) for aircraft and aircraft operators in the State of Registry under the NSA oversight.	-	100%	Completed 30/11/2011
ASP (By:03/2012)				
DFS	ACAS monitoring system is in place.	-	100%	Completed 31/08/2010
MIL (By:12/2015)				
Federal Ministry of Defence	With the procurement of new transport-type aircraft, the objective is regarded. The new A 400 M transport aircraft is delivered starting 2014 with a compliant ACAS equipment.	-	100%	Completed 31/12/2015

FCM01	**Implement enhanced tactical flow management services** ***Timescales:*** Initial operational capability: 01/08/2001 Full operational capability: 31/12/2006		**100%**	**Completed**
-				
The ETFMS Programme consists of 4 phases (milestones). Germany is participating in Phase 1, the adaptation of ATS systems to provide data to ETFMS. This work is currently on time: reception and processing of ATFM data and provision of information on flight activation is implemented in the STANLY System, which connects all German ACCs with the CFMU. There is an intention to provide additional data. The primary benefit will be the optimised utilisation of unused capacity through a better availability of information in the CFMU (CFMU will be able to take ATFM decisions based on actual traffic rather than planned traffic), with additional safety benefits and the reduction of costs by reduced delays. **ATFM measures from the CFMU apply only for GAT, which lies in the responsibility of the DFS. In case of military flights are concerned the information will be shared by the DFS.**				**31/12/2006**
ASP (By:07/2014)				
DFS	Same as in the overall comment.	-	100%	Completed 31/12/2006

ITY-ADQ	**Ensure Quality of Aeronautical Data and Aeronautical Information** ***Timescales:*** Entry into force of the regulation: 16/02/2010 Article 5(4)(a), Article 5(4)(b) and Article 6 to 13 to be implemented by: 30/06/2013 Article 4, Article5(1) and Article 5(2), Article 5(3) and Article 5(4)(c) to be implemented by: 30/06/2014 All data requirements implemented by: 30/06/2017		**77%**	**Ongoing**
-				
The ADQ implementation in Germany is ongoing. Due to the late availability of means of compliance for the ADQ Implementing Rule as well as industry's lack of providing reliable COTS software solutions in due time, Germany is unable to comply with the dates set in this regulation. Respective information has been published in the German AIP. In the area of responsibility of the DFS, new aeronautical data is processed according to the requirements of EU Regulation 73/2010. The fulfilment of the requirements of EU Regulation 73/2010 cannot be assured for data that was already collected before the introduction of the new ADQ compliant procedures. These data will be updated in the normal update process of the data.				**31/12/2029**
REG (By:06/2017)				
MoT	ANSP, states, airports and surveyors are informed about the IR on Aeronautical Data Quality and its deadlines. ADQ implementation in Germany is ongoing. Due to the late availability of means of compliance for the ADQ Implementing Rule Germany was unable to comply with the first dates set in the regulation. Respective information has been published in the German AIP.	-	20%	Ongoing 31/12/2024
NSA	For the NSA part, see the MoT comment.	-	20%	Ongoing 31/12/2024
ASP (By:06/2017)				
Federal Ministry of Defence	The ADQ implementation within the military organisation in Germany is ongoing. The reasons for being unable to comply with the dates set in the regulation are similar to those stated by the civilian national and FAB partners. New Data is processed according to the requirements, old data will be updated in the normal update processes. Generally an ISO-certificate is not intended for military providers, but the QMS is designed based on ISO and following the framework. Audits by the MAA investigate amongst other things, whether a QMS that follows ISO is successfully implemented.	-	79%	Ongoing 31/12/2029
DFS	The ADQ implementation project in DFS is completed. New aeronautical data is processed according to the requirements of 73/2010. This statement cannot be made for data that was already collected before the introduction of the new procedures. These data will be updated in the normal update process of the data. Respective information has been published in the German AIP.	AIM Task Force	91%	Ongoing 31/12/2029

APO (By:06/2017)				
FRAPORT AG	Fraport completed all SLoAs of the objective.	-	100%	Completed 31/12/2017
BERLIN BRANDENBURG Airport	BER Airport completed all SLoAs of the objective.	-	100%	Completed 30/10/2020
MUNICH Airport	Munich Airport completed all SLoAs of the objective.	-	100%	Completed 31/12/2019
DÜSSELDORF Airport	Duesseldorf Airport considers the implementation of Aeronautical Data and Aeronautical Information as finished.	-	100%	Completed 31/12/2021

ITY-COTR	**Implementation of ground-ground automated co-ordination processes** ***Timescales:*** Entry into force of Regulation: 27/07/2006 For putting into service of EATMN systems in respect of notification and initial coordination processes: 27/07/2006 For putting into service of EATMN systems in respect of Revision of Coordination, Abrogation of Coordination, Basic Flight Data and Change to Basic Flight Data: 01/01/2009 To all EATMN systems in operation by 12/2012: 31/12/2012	**91%**	**Ongoing**
	-		
FDP systems capable of providing information required for display, processing and compilation of exchanged system information are implemented at all DFS Control Centres. OLDI messages ABI and ACT/ are in operational use. The messages REV and MAC are technically available. Stepwise introduction will be achieved in cooperation between adjacent ATC units. Due to the existing civil-military integration flight data, BFD/CFD is only provided for information purposes to air defense units. The data link supporting OLDI messages LOF/NAN are implemented. **For the regulator the service providers are responsible for developing safety assessments and actions are subject to the regulatory safety oversight.** **For the military, the implementation of a ground-ground automated co-ordination process is aligned with initial operation of ASR-S. The first 18 systems of ASR-S were taken into operation by the end of 2020.**			**31/12/2022**

ASP (By:12/2012)				
DFS	FDP systems capable of providing information required for display, processing and compilation of exchanged system information are implemented at all DFS Control Centres. OLDI messages ABI and ACT/ are in operational use. The messages REV and MAC are technically available. Stepwise introduction will be achieved in cooperation between adjacent ATC units. Due to the existing civil-military integration, flight data BFD/CFD is only provided for information purposes to air defence units. The data link supporting OLDI messages LOF/NAN are implemented.	-	100%	Completed 31/12/2012
MIL (By:12/2012)				
Federal Ministry of Defence	With the rollout of ASR-S, military ATS units will be able to send ACT messages to DFS centres according to OLDI standards. 18 systems of ASR-S were taken into operation by the end of 2020. However, the capability of exchanging OLDI messages is linked to the electronic control strip function, which could not be realised with the first systems of ASR-S. It is expected that this function will be developed and become operational in 2022.	-	10%	 31/12/2022

Local Objectives

AOP14	Remote Tower Services *Applicability and timescale: Local*	25%	Ongoing
EDDC - Dresden Airport			
The implementation of Remote Tower Services for Dresden Airport is ongoing and planned to be finished by the end of 2023. The Services will be provided from Leipzig, where the DFS Remote Tower Centre is located.			31/12/2023

AOP14	Remote Tower Services *Applicability and timescale: Local*	50%	Ongoing
EDDE - Erfurt-Weimar Airport			
The implementation of Remote Tower Services for Erfurt Airport is ongoing and planned to be finished by April 2022. The Services will be provided from Leipzig, where the DFS Remote Tower Centre is located.			30/04/2022

AOP14	Remote Tower Services *Applicability and timescale: Local*	100%	Completed
EDDR - Saarbrucken Airport			
The implementation of Remote Tower Services for Saarbruecken Airport was finished in December 2018. The Services are provided from Leipzig, where the DFS Remote Tower Centre is located.			04/12/2018

AOP15	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers *Applicability and timescale: Local*	%	Not yet planned
EDDB - Berlin - Brandenburg International Airport			
Enhanced traffic situational awareness and airport safety nets for the vehicle drivers is not planned yet at Berlin Brandenburg Airport.			-

AOP15	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers *Applicability and timescale: Local*	100%	Completed
EDDF - Frankfurt Airport			
Initial implementation and training of relevant personnel is complete. Rollout for use of multiple stakeholders is still ongoing. Current functionalities include moving map in vehicles, display of surrounding traffic (in movement areas) and provision of alerts to vehicle drivers. This includes alerts for potential or actual conflict with an aircraft or other vehicles, alerts for area infringement, notifications and directions to points of interest and simple route displays. Current users are fire brigade, marshallers and snow removal team Planned further functionalities for project are route and alert sharing with apron controller working position and the display (and functionalities) of temporary restrictions.			31/12/2019

AOP15	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers *Applicability and timescale: Local*	%	Not Applicable
EDDH - Hamburg Airport			
For the time being there is no intention to implement Enhanced traffic situational awareness and airport safety nets for the vehicle drivers at Hamburg Airport.			-

AOP15	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers *Applicability and timescale: Local*	0%	Not yet planned
EDDL - Düsseldorf Airport			
For the time being, at Düsseldorf Airport there are no plans for enhanced traffic situational awareness and airport safety nets for vehicle Drivers.			-

AOP15	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers *Applicability and timescale: Local*	0%	Not yet planned
EDDM - München Airport			
Munich Airport regards this activity as absolutely useful, however, no action has been started on this yet.			-

AOP15	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers *Applicability and timescale: Local*	%	Not Applicable
EDDN - Nuremberg Airport			
It's not planned to introduce a moving map in the vehicles. A-SMR is installed.			-

AOP15	Enhanced traffic situational awareness and airport safety nets for the vehicle drivers *Applicability and timescale: Local*	%	Ongoing
EDDS - Stuttgart Airport			
At Stuttgart Airport the technical implementation of an A-SMGCS Level 1 has been completed. Currently the system is operated in a test mode to verify the functionalities and established procedures. Until April 2022 all vehicles operating on the movement area need to be equipped with vehicle transponders to assure detection by the A-SMGCS. The A-SMGCS Level 1 shall be fully operational in April 2022. Until January 2023 an additional Runway Incursion Monitoring functionality shall be operational to provide an A-SMGCS Level 2. Additionally, a project to provide situational awareness to drivers of winter service vehicles started in 2019. This project is still ongoing. Further safety nets for the runway system are not in place and are not planned at DFS at this time.			31/12/2023

AOP16	Guidance assistance through airfield ground lighting *Applicability and timescale: Local*	0%	Not yet planned
EDDB - Berlin - Brandenburg International Airport			
For the time being, at Berlin-Brandenburg Airport there are no plans for additional guidance assistance through airfield ground lighting. Since objective AOP13 (Automated Assistance to Controller for Surface Movement Planning and Routing) is a pre-requisite for AOP16, no actions are planned yet.			-

AOP16	Guidance assistance through airfield ground lighting *Applicability and timescale: Local*	0%	Not yet planned
EDDF - Frankfurt Airport			
For the time being, at Frankfurt Airport there are no plans for additional guidance assistance through airfield ground lighting. Since objective AOP13 (Automated Assistance to Controller for Surface Movement Planning and Routing) is a pre-requisite for AOP16, no actions are planned yet.			-

AOP16	Guidance assistance through airfield ground lighting *Applicability and timescale: Local*	%	Not Applicable
EDDH - Hamburg Airport			
For the time being there is no intention to implement Guidance assistance through airfield ground lighting at Hamburg Airport.			-

AOP16	Guidance assistance through airfield ground lighting *Applicability and timescale: Local*	0%	Not yet planned
EDDL - Düsseldorf Airport			
For the time being, at Düsseldorf Airport there are no plans for additional guidance assistance through airfield ground lighting. Since objective AOP13 (Automated Assistance to Controller for Surface Movement Planning and Routing) is a pre-requisite for AOP16 no actions are planned yet.			-

AOP16	Guidance assistance through airfield ground lighting *Applicability and timescale: Local*	%	Not Applicable
EDDM - München Airport			
Guidance assistance through airfield ground lighting is a favourable solution at least in low-visibility conditions. Due to the fact that a respective project has been paused the objective is set to "Not Applicable" for the time being.			-

AOP16	Guidance assistance through airfield ground lighting *Applicability and timescale: Local*	%	Not Applicable
EDDN - Nuremberg Airport			
It's not planned to install a guidance assistance through airfield ground lighting.			-

AOP16	Guidance assistance through airfield ground lighting *Applicability and timescale: Local*	%	Not Applicable
EDDS - Stuttgart Airport			
Taxiways and Apron taxi lanes at Stuttgart Airport are mostly equipped with Centreline lights according to EASA-CS. The lighting system is set in static configurations according to day/night and visibility conditions. Runways are protected with CATII/III Stopp bars during low visibility operations. Centreline lights behind the stop bars are linked to each other according to EASA-CS. At Stuttgart Airport a project was launched to replace the existing airfield ground lighting by LED technology and to also update the steering of the AGL. This change of technology will enable the implementation of an A-SMGCS guidance function. So far, no intentions for an implementation exist.			-

AOP17	Provision/integration of departure planning information to NMOC *Applicability and timescale: Local*	100%	Completed
EDDC - Dresden Airport			
At Dresden Airport planning information to NMOC is provided.			31/12/2020

AOP17	Provision/integration of departure planning information to NMOC *Applicability and timescale: Local*	100%	Completed
EDDE - Erfurt-Weimar Airport			
At Erfurt-Weimar Airport planning information to NMOC is provided.			31/12/2020

AOP17	Provision/integration of departure planning information to NMOC *Applicability and timescale: Local*	100%	Completed
EDDG - Munster Osnabruck International Airport			
At Munster Osnabruck Airport planning information to NMOC is provided.			31/12/2020

AOP17	Provision/integration of departure planning information to NMOC *Applicability and timescale: Local*	%	Not Applicable
EDDH - Hamburg Airport			
The local objective should be considered as not applicable for the airports that already deployed A-CDM or plan to deploy A-CDM in near future. DFS considers provision/integration of departure planning information to NMOC as completed.			-

AOP17	Provision/integration of departure planning information to NMOC *Applicability and timescale: Local*	50%	Ongoing
EDDK - Cologne - Bonn Airport			
At Cologne-Bonn Airport implementation is ongoing.			31/12/2022

AOP17	Provision/integration of departure planning information to NMOC *Applicability and timescale: Local*	%	Not Applicable
EDDL - Düsseldorf Airport			
The local objective should be considered as not applicable for the airports that already deployed A-CDM or plan to deploy A-CDM in near future. DFS considers provision/integration of departure planning information to NMOC as completed.			-

AOP17	Provision/integration of departure planning information to NMOC *Applicability and timescale: Local*	%	Not Applicable
EDDM - München Airport			
The local objective should be considered as not applicable for the airports that already deployed A-CDM or plan to deploy A-CDM in near future. DFS considers provision/integration of departure planning information to NMOC as completed.			-

AOP17	Provision/integration of departure planning information to NMOC *Applicability and timescale: Local*	100%	Completed
EDDR - Saarbrucken Airport			
At Saarbrucken Airport planning information to NMOC is provided.			31/12/2020

AOP17	Provision/integration of departure planning information to NMOC *Applicability and timescale: Local*	%	Not Applicable
EDDS - Stuttgart Airport			
The local objective should be considered as not applicable for the airports that already deployed A-CDM or plan to deploy A-CDM in near future. DFS considers provision/integration of departure planning information to NMOC as completed.			-

AOP17	Provision/integration of departure planning information to NMOC *Applicability and timescale: Local*	100%	Completed
EDDW - City Airport Bremen			
At Bremen Airport planning information to NMOC is provided.			31/12/2020

AOP18	Runway Status Lights (RWSL) *Applicability and timescale: Local*	%	Not yet planned
EDDB - Berlin - Brandenburg International Airport			
Implementation of Runway Status Lights is not planned yet.			-

AOP18	Runway Status Lights (RWSL) *Applicability and timescale: Local*	0%	Not yet planned
EDDF - Frankfurt Airport			
Implementation of Runway Status Lights is not planned yet.			-

AOP18	Runway Status Lights (RWSL) *Applicability and timescale: Local*	0%	Not Applicable
EDDH - Hamburg Airport			
Not in place and not planned for the time being.			-

AOP18	Runway Status Lights (RWSL) *Applicability and timescale: Local*	0%	Not Applicable
EDDL - Düsseldorf Airport			
For the time being, at Düsseldorf Airport there are no plans for additional Runway Status Lights (RWSL).			-

AOP18	Runway Status Lights (RWSL) *Applicability and timescale: Local*	0%	Not yet planned
EDDM - München Airport			
Implementation of Runway Status Lights is not planned yet.			-

AOP18	Runway Status Lights (RWSL) *Applicability and timescale: Local*	%	Not Applicable
EDDN - Nuremberg Airport			
It's not planned to install Runway Status Lights.			-

AOP18	Runway Status Lights (RWSL) *Applicability and timescale: Local*	%	Not Applicable
EDDS - Stuttgart Airport			
At Stuttgart Airport the implementation of RWSL is currently not intended.			-

ATC18	Multi-Sector Planning En-route - 1P2T *Applicability and timescale: Local*	0%	Not yet planned
-			
For the time being DFS does not plan to implement Multi Sector Planning function at its Control Centres.			-

ATC20	Enhanced STCA with down-linked parameters via Mode S EHS *Applicability and timescale: Local*	100%	Completed
-			
Enhancement of the STCA with selected flight level (SFL) information down-linked from the suitably equipped aircraft via the Mode-S EHS is available.			13/12/2019

ENV02	Airport Collaborative Environmental Management *Applicability and timescale: Local*	100%	Completed
EDDB - Berlin - Brandenburg International Airport			
Germany has a strict federal legislation on protection against aviation noise. In this context, Noise Abatement Commissions are established at airports where, inter alia, the environmental impact of air traffic procedures is being discussed. Environmental implications of aircraft operations are also part of the initial tower controller training.			31/12/2021

ENV02	Airport Collaborative Environmental Management *Applicability and timescale: Local*	100%	Completed
EDDF - Frankfurt Airport			
Germany has a strict federal legislation on protection against aviation noise. In this context, Noise Abatement Commissions are established at airports where, inter alia, the environmental impact of air traffic procedures is being discussed. Environmental implications of aircraft operations are also part of the initial tower controller training.			31/12/2012

ENV02	Airport Collaborative Environmental Management *Applicability and timescale: Local*	100%	Completed
EDDL - Düsseldorf Airport			
Germany has a strict federal legislation on protection against aviation noise. In this context, Noise Abatement Commissions are established at airports where, inter alia, the environmental impact of air traffic procedures is being discussed. Environmental implications of aircraft operations are also part of the initial tower controller training.			31/01/2013

ENV02	Airport Collaborative Environmental Management *Applicability and timescale: Local*	100%	Completed
EDDM - München Airport			
Germany has a strict federal legislation on protection against aviation noise. In this context, Noise Abatement Commissions are established at airports where, inter alia, the environmental impact of air traffic procedures is being discussed. Environmental implications of aircraft operations are also part of the initial tower controller training.			31/07/2007

ENV03	Continuous Climb Operations (CCO) *Applicability and timescale: Local*	%	Not yet planned
EDDB - Berlin - Brandenburg International Airport			
The implementation of CCO is currently not yet planned at Berlin Brandenburg Airport.			-

ENV03	Continuous Climb Operations (CCO) *Applicability and timescale: Local*	0%	Planned
EDDF - Frankfurt Airport			
New CCO procedures will be developed and verified from different points of view before implementing new operations at Frankfurt airport. DFS, as main service provider, in close cooperation with aircraft operators facilitates the techniques of continuous climb whenever practicable and workload permitting. The current practice is supplying a sufficient amount of capacity to satisfy operational needs of Air Traffic Control and airspace operators.			31/12/2022

ENV03	Continuous Climb Operations (CCO) *Applicability and timescale: Local*	0%	Planned
EDDL - Düsseldorf Airport			
New CCO procedures will be developed and verified from different points of view before implementing new operations at EDDL airport. DFS, as main service provider, in close cooperation with aircraft operators facilitates the techniques of continuous climb whenever practicable and workload permitting. The current practice is supplying a sufficient amount of capacity to satisfy operational needs of Air Traffic Control and airspace operators.			31/12/2022

ENV03	Continuous Climb Operations (CCO) *Applicability and timescale: Local*	%	Not yet planned
EDDM - München Airport			
The implementation of CCO is currently not yet planned at Munich Airport.			-

6. Annexes

A. Specialists involved in the ATM implementation reporting for Germany

LSSIP Co-ordination

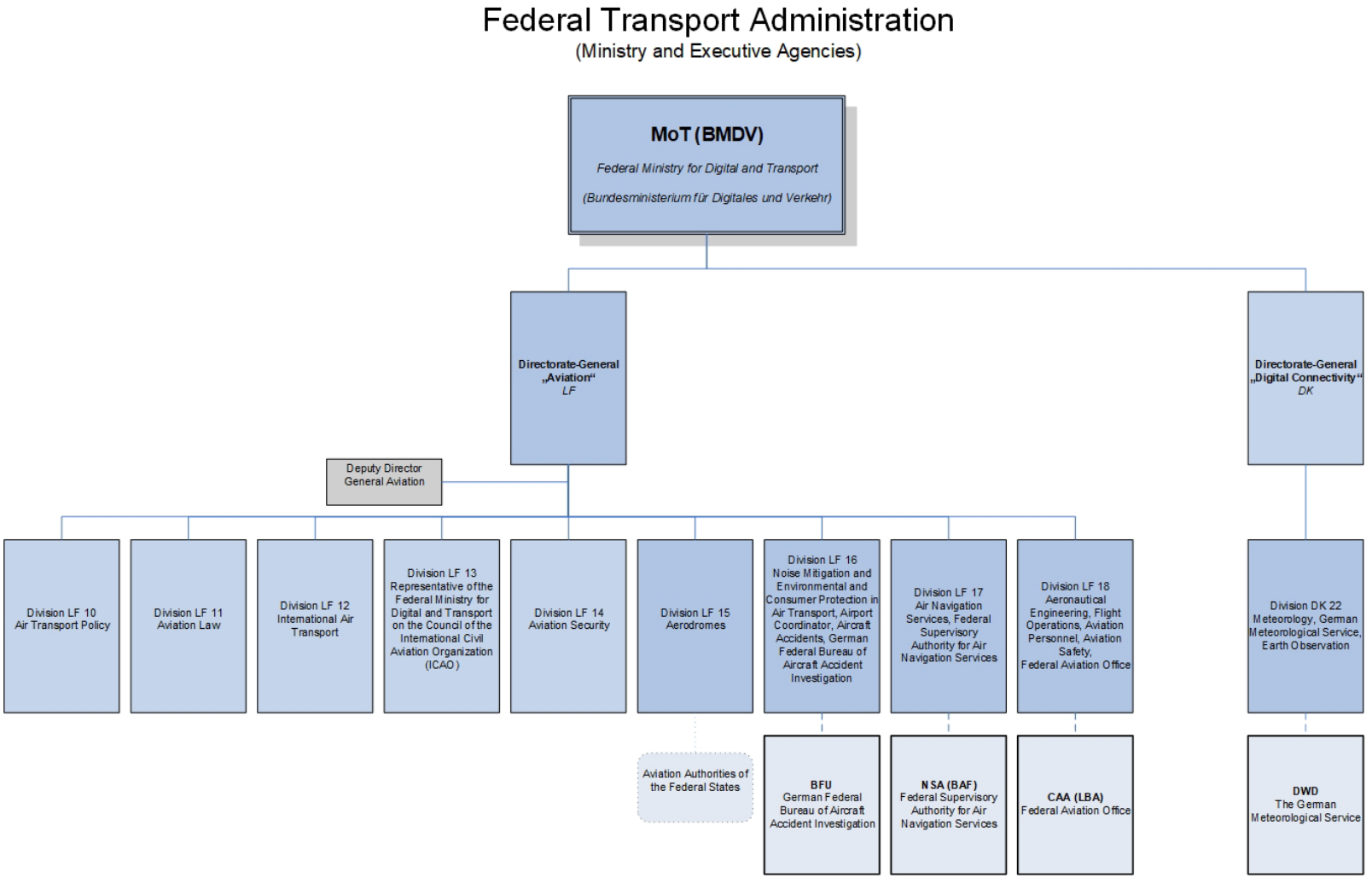
LSSIP Focal Points	Organisation	Name
LSSIP National Focal Point	Assigned by the Federal Supervisory Authority for Air Navigation Services (BAF)	Ralf REISER
LSSIP Focal Point for NSA	Federal Supervisory Authority for Air Navigation Services (BAF)	André MÜHLIG
LSSIP Focal Point for ANSP	DFS Deutsche Flugsicherung GmbH	Ralf REISER
LSSIP Focal Point for Airport	Federal Ministry for Digital and Transport (MoT)	Department LF 15
LSSIP Focal Point for Military	Federal Office of the Bundeswehr for Military Aviation (LufABw, DEU MAA)	Benjamin SEVERIN
LSSIP Focal point for MET	DWD Deutscher Wetterdienst	Svenja KOOS

Other Focal Points	Organisation	Name
Focal Point for NETSYS	DFS Deutsche Flugsicherung GmbH	Stefan KELLER Mark KLEINSCHMIDT Ralf REISER
Focal Point for SUR	DFS Deutsche Flugsicherung GmbH	Rainer SCHINDLER Stefan STANZEL
Focal Point for SDP/CP1	DFS Deutsche Flugsicherung GmbH	Jesse OUDENDIJK

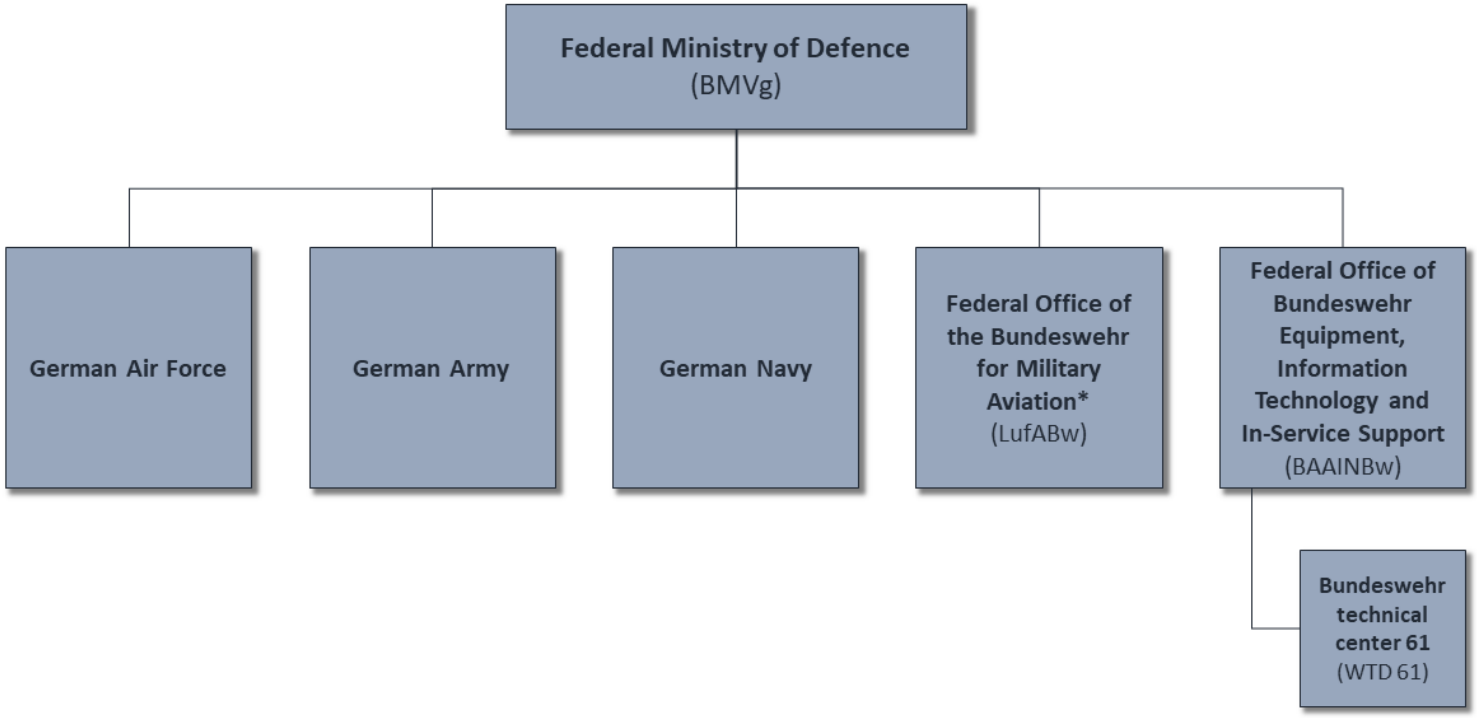
B. National stakeholders organisation charts

Federal Ministry for Digital and Transport

Here below is an overview of the part of MoT, which manages ATM matters in Germany



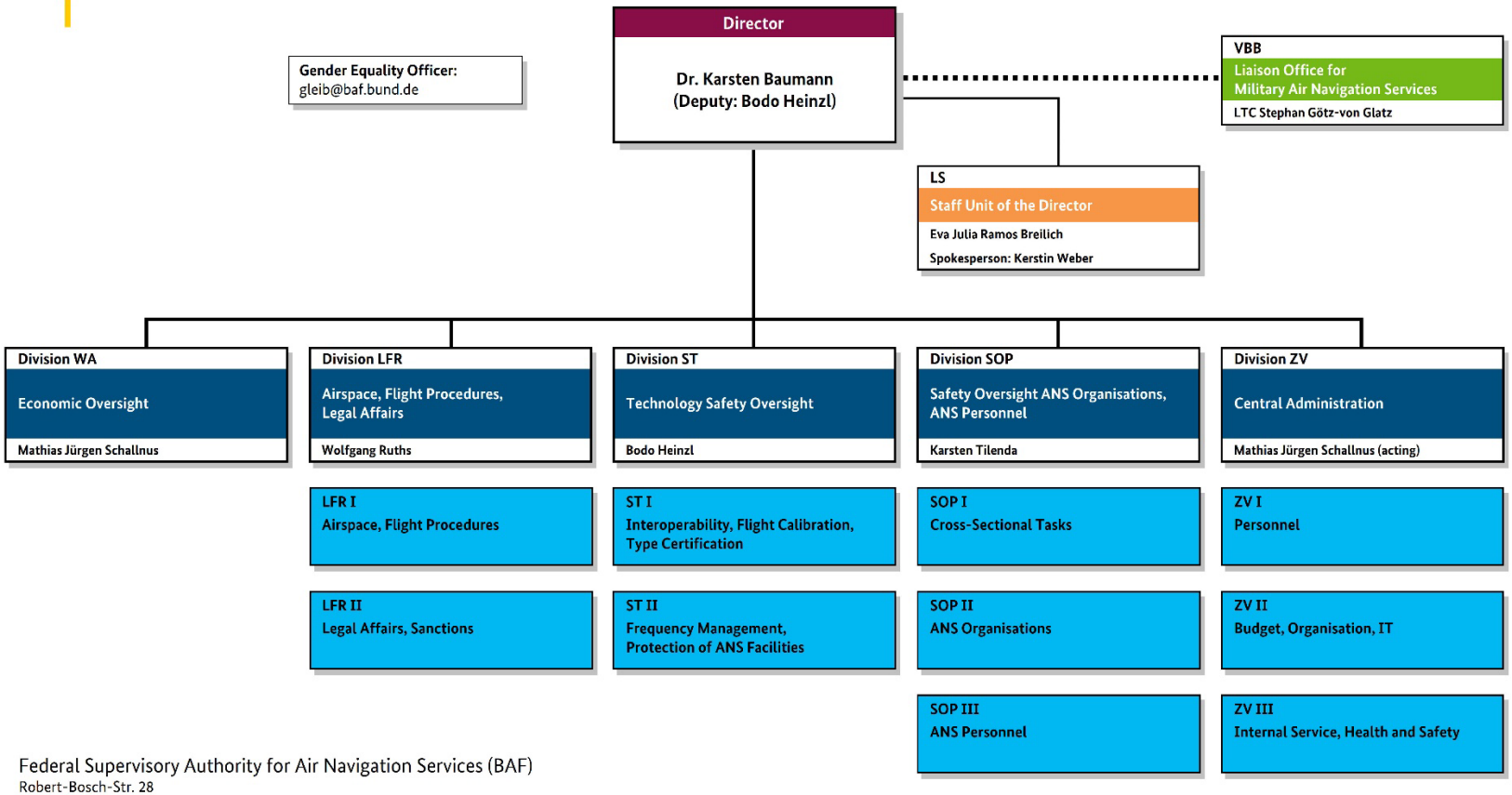
Federal Ministry of Defence



* LufABw is the „German Military Aviation Authority“ (DEU MAA)

Federal Supervisory Authority for Air Navigation Services

2022-02-01



Federal Supervisory Authority for Air Navigation Services (BAF)
Robert-Bosch-Str. 28
D-63225 Langen (Hessen), Germany

Phone: +49 (0) 6103 8043-0
Fax: +49 (0) 6103 8043-250
E-Mail: poststelle@baf.bund.de
Web: http://www.baf.bund.de

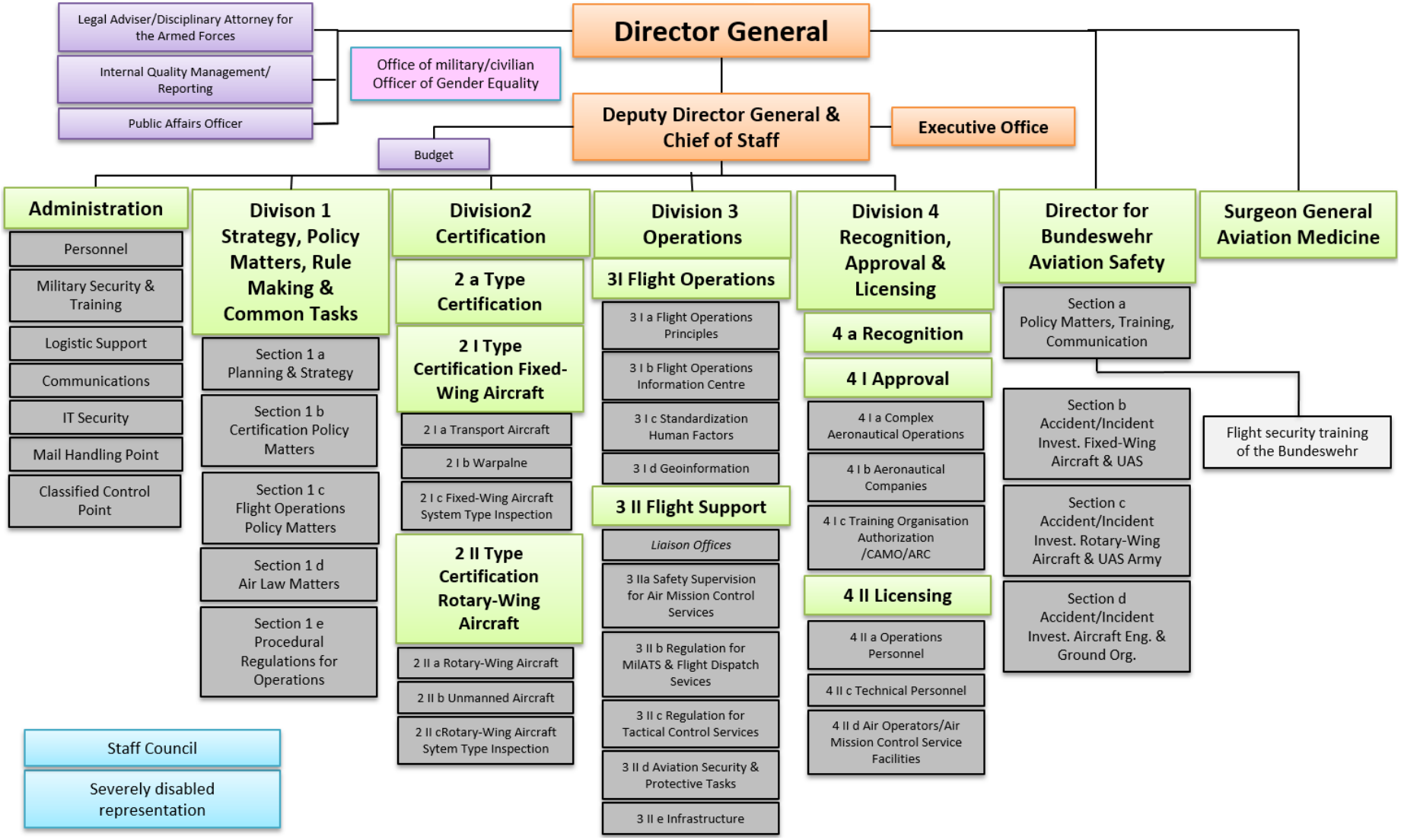
Data Protection Officer:
datenschutz@baf.bund.de

Contact Person for Corruption Prevention:
kp@baf.bund.de

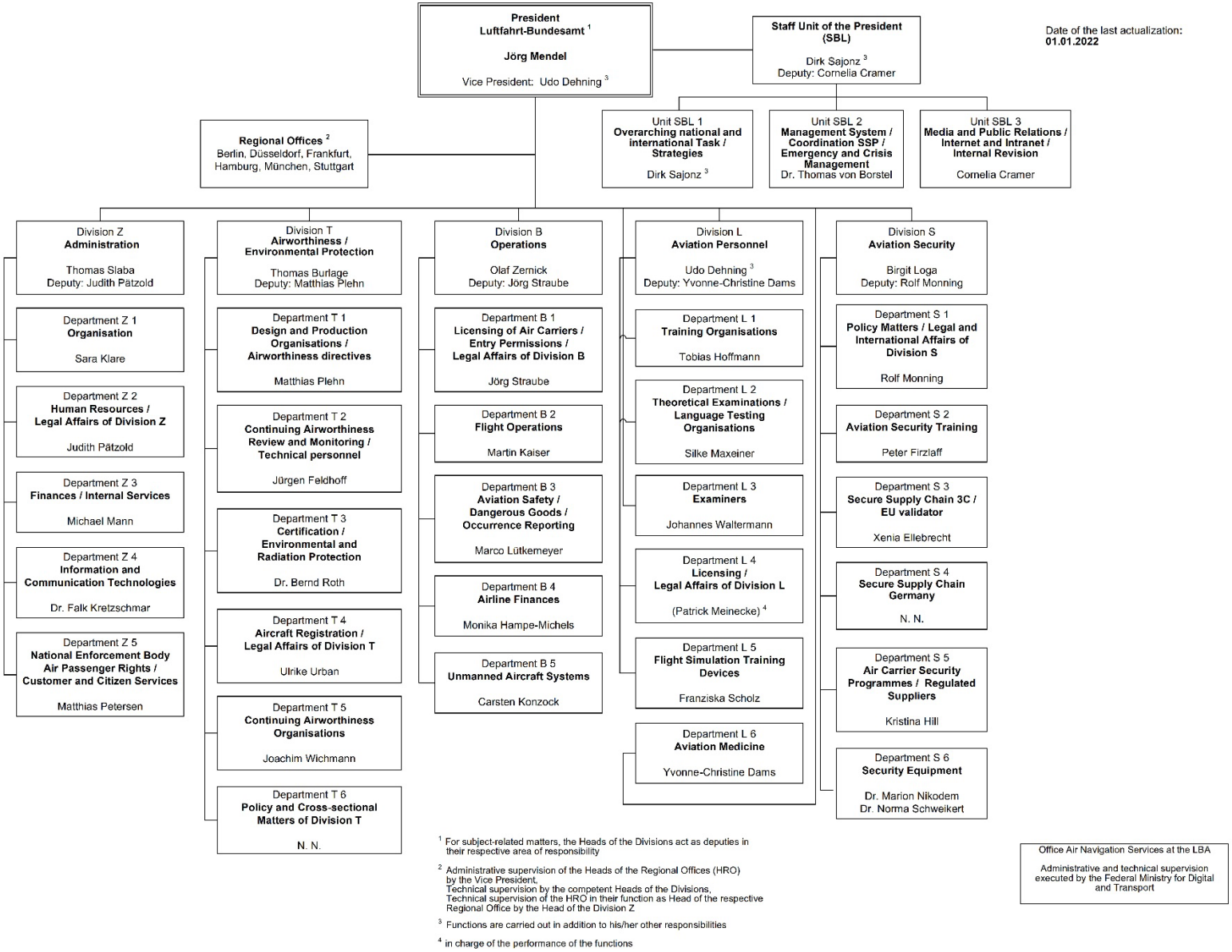
IT Security Officer:
it-sibe@baf.bund.de

Occupational Safety Specialist:
Stefan.Rychlewski@wsv.bund.de

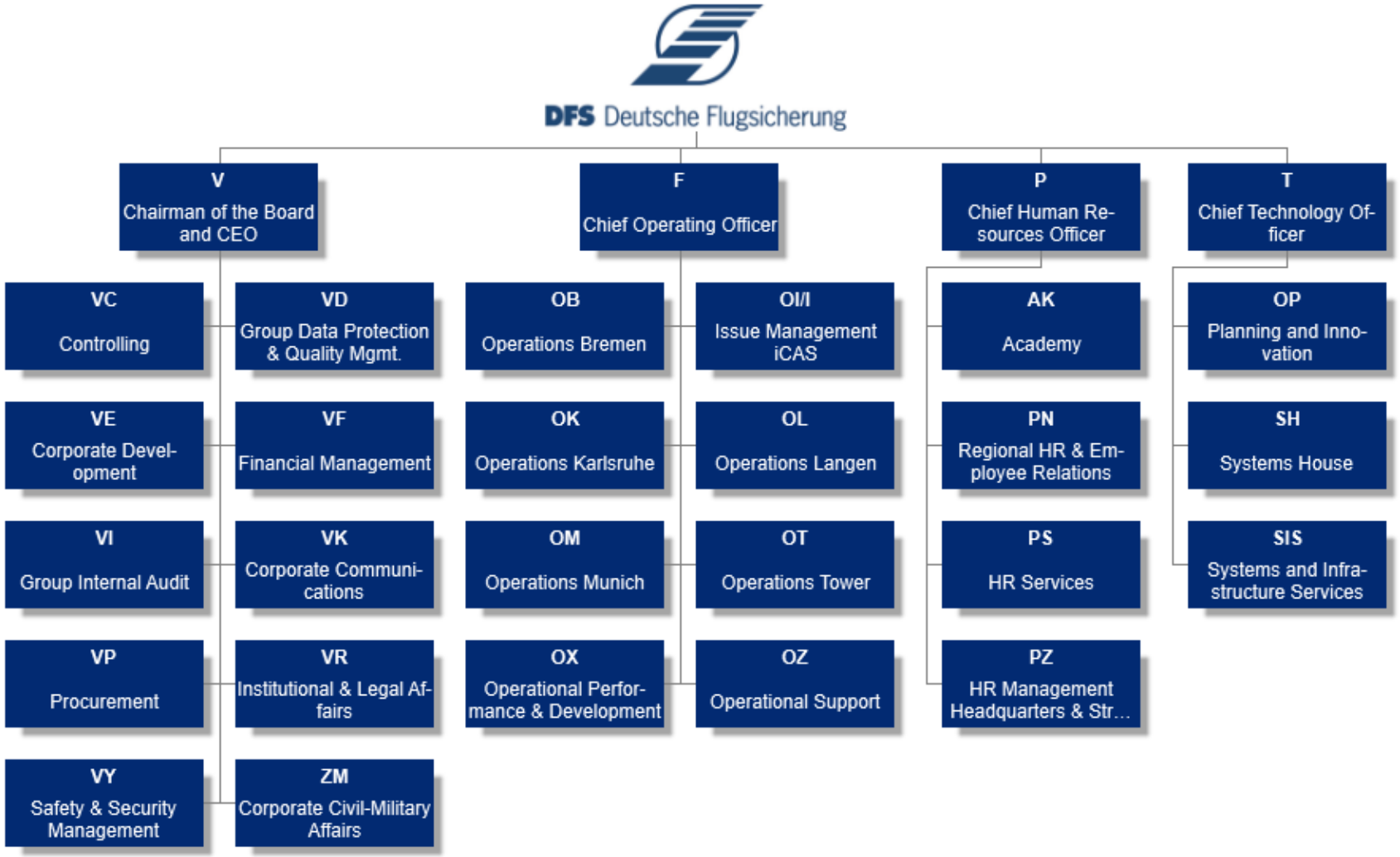
Federal Office of the Bundeswehr for Military Aviation – (LufABw, DEU MAA)



Federal Office of Civil Aviation - Civil Aviation Authority

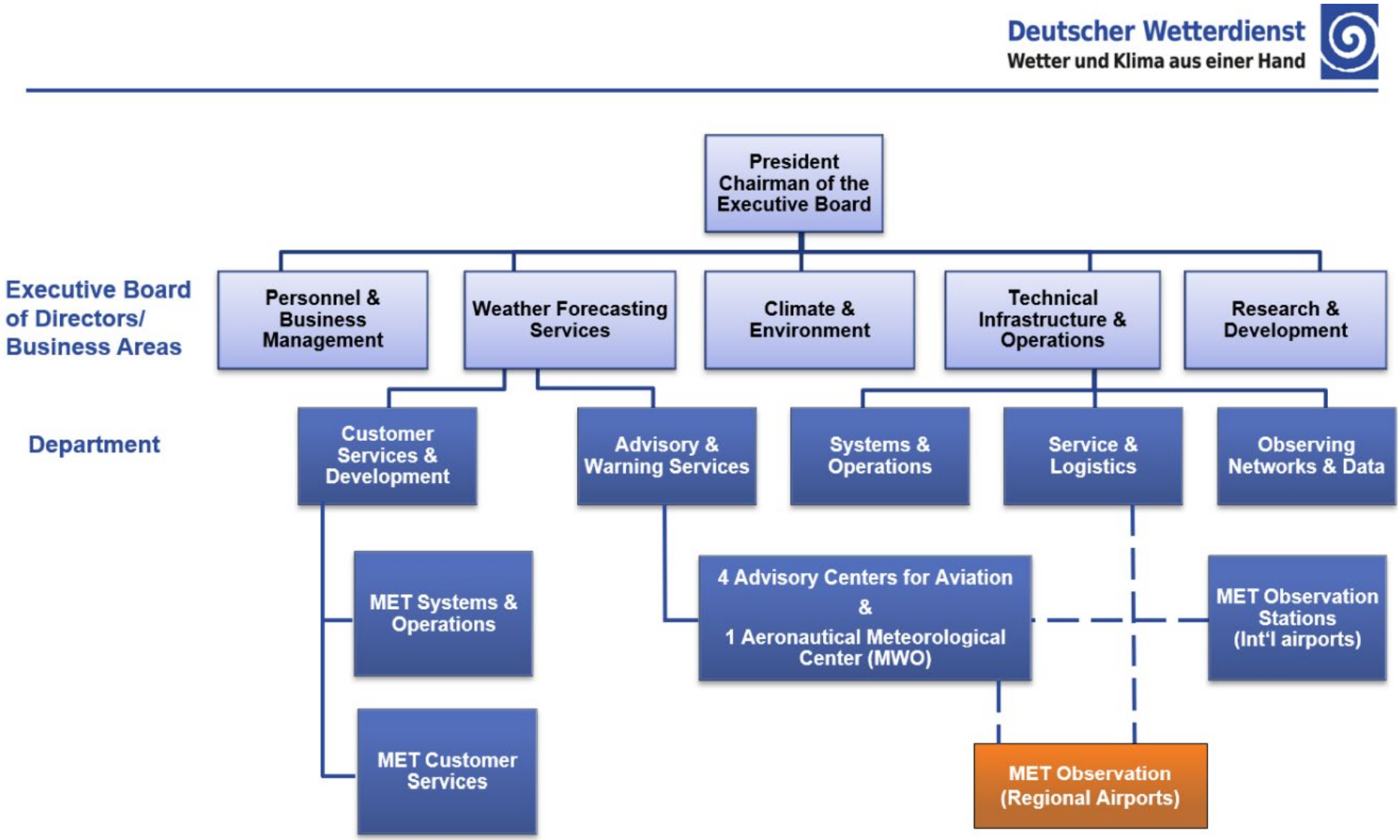


DFS Management Organisation



Date: 01.04.2021

Deutscher Wetterdienst DWD (Organisational chart with focus on Aeronautical Meteorology Services)



Link to the full DWD organisational chart on the DWD website: www.dwd.de/SharedDocs/downloads/EN/general/organisationchart.pdf

C. Implementation Objectives' links with other plans

The table below (extracted from the MPL3 Plan 2021) 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.

EOC	Level 3 Implementation Objectives	SESAR Sol.	DP Family	ICAO ASBUs	EPAS	NSP	AAS TP	KF
CNS	ATC21 – Composite surveillance ADS-B/WAM	#114	-	ASUR-B0/1 ASUR-B0/2	RMT.0679 RMT.0519	SO8/3 SO8/4	AM-1.17	EAI
	COM10.1 – Migration from AFTN to AMHS (Basic service)	-	-	COMI B0/7	-	SO7/4	-	EAI
	COM10.2 – Extended AMHS	-	-	COMI B0/7	-	SO7/4	-	EAI
	COM11.1 – Voice over Internet Protocol (VoIP) in En-Route	-	-	COMI B2/1	-	SO8/4	AM-1.3	EAI
	COM11.2 – Voice over Internet Protocol (VoIP) in Airport/Terminal	-	-	COMI B2/1	-	SO8/4	-	EAI
	ITY-ACID – Aircraft identification	-	-	-	-	SO8/2	-	EAI
	ITY-AGDL – Initial ATC air-ground data link services	-	-	COMI B0/4 COMI B1/2	RMT.0524	SO4/1 SO8/3	AM-1.1	EAI
	ITY-AGVCS2 – 8.33 kHz Air-Ground Voice Channel Spacing below FL195	-	-	-	-	SO8/1	-	EAI
	NAV10 – RNP Approach Procedures to instrument RWY	#103	-	APTA B0/1 APTA B1/1 NAVS B0/2	RMT.0445 RMT.0643	SO6/5	-	AATS
	NAV11 – Precision Approach using GBAS CAT II/III based on GPS L1	#55	-	NAVS B1/1	RMT.0682 RMT.0379	-	-	HPAO
iN	AOM13.1 – Harmonise OAT and GAT handling	-	-	-	-	SO6/2	-	OANS
	AOP11.1 – Initial Airport Operations Plan	#21	2.2.1	ACDM-B1/1	-	SO6/2	-	HPAO
	AOP11.2 – Extended Airport Operations Plan	#21	2.2.2	ACDM-B1/1	-	SO5/2	-	HPAO
	AOP17 – Provision/integration of DPI to NMOC	#61	-	NOPS B0/4	-	-	-	HPAO

EOC	Level 3 Implementation Objectives	SESAR Sol.	DP Family	ICAO ASBUs	EPAS	NSP	AAS TP	KF
	COM12 – NewPENS	-	-	COMI B1/1	-	SO2/3 SO2/4 SO8/3 SO8/4	-	EAI
	FCM03 – Collaborative flight planning	-	-	NOPS B0/2	-	SO4/3	AM-1.14	OANS
	FCM04.2 – Enhanced Short Term ATFCM Measures	#17	4.1.1	NOPS B1/1	-	SO4/5	AM-1.11	OANS
	FCM06.1 – Automated Support for Traffic Complexity Assessment and Flight Planning interfaces	#19	4.3.1	NOPS B0/2, NOPS B1/4	-	SO4/3, SO4/5	AM-1.13	OANS
	FCM09 – Enhanced ATFM Slot swapping	#56	-	NOPS B1/7	-	SO6/1	-	OANS
	FCM10 – Interactive rolling NOP	#18 #20	4.2.1	NOPS B1/2	-	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	NOPS-B0/4	-	SO4/4 SO4/5 SO5/2	AM-1.12	OANS
	FCM11.2 – AOP/NOP integration	#18 #20 #21	4.4.1	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	SWIM-B2/3	RMT.0720	SO2/4	AM-1.5	EAI
	INF10.3 – Aeronautical Information Exchange - Airspace structure service	#46	5.3.1	-	-	SO2/4	AM-1.5	EAI
	INF10.4 – Aeronautical Information Exchange - Airspace availability service	#46	5.3.1	-	-	SO2/4	AM-1.5	EAI
	INF10.5 – Aeronautical Information Exchange - Airspace Reservation (ARES) service	#46	5.3.1	-	-	SO2/4	AM-1.5	EAI
	INF10.6 – Aeronautical Information Exchange - Digital NOTAM service	#34 #46	5.3.1	-	-	SO2/4	AM-1.5	EAI
	INF10.7 – Aeronautical Information Exchange - Aerodrome Mapping information exchange service	#34 #46	5.3.1	-	-	SO2/4	AM-1.5	EAI

EOC	Level 3 Implementation Objectives	SESAR Sol.	DP Family	ICAO ASBUs	EPAS	NSP	AAS TP	KF
	INF10.8 – Aeronautical Information Exchange - Aeronautical Information Features service	#34 #46	5.3.1	-	-	SO2/4	AM-1.5	EAI
	INF10.9 – Meteorological Information Exchange - Volcanic ash concentration service	#34 #35 #46	5.4.1	-	-	SO2/4	AM-1.5	EAI
	INF10.10 – Meteorological Information Exchange - Aerodrome Meteorological information Service	#34 #35 #46	5.4.1	-	-	SO2/4	AM-1.5	EAI
	INF10.11 – Meteorological Information Exchange - En-Route and Approach Meteorological information service	#34 #35 #46	5.4.1	-	-	SO2/4	AM-1.5	EAI
	INF10.12 – Meteorological Information Exchange - Network Manager Meteorological Information	#34 #35 #46	5.4.1	-	-	SO2/4	AM-1.5	EAI
	INF10.13 – Cooperative Network Information Exchange - ATFCM Tactical Updates Service	#46	5.5.1	-	-	SO2/4	AM-1.5	EAI
	INF10.14 – Cooperative Network Information Exchange - Flight Management Service	#46	5.5.1	-	-	SO2/4, SO5/2	AM-1.5	EAI
	INF10.15 – Cooperative Network Information Exchange - Measures Service	#46	5.5.1	-	-	SO2/4, SO4/5	AM-1.5	EAI
	INF10.16 – Cooperative Network Information Exchange - Short Term ATFCM Measures services	#46	5.5.1	-	-	SO2/4, SO4/5	AM-1.5	EAI
	INF10.17 – Cooperative Network Information Exchange - Counts service	#46	5.5.1	-	-	SO2/4	AM-1.5	EAI

EOC	Level 3 Implementation Objectives	SESAR Sol.	DP Family	ICAO ASBUs	EPAS	NSP	AAS TP	KF
	INF10.18 – Flight Information Exchange - Filing Service	#46	5.6.1	FICE-B2/2	-	SO2/4	AM-1.5	EAI
	INF10.19 – Flight Information Exchange - Flight Data Request Service	#46	5.6.1	FICE-B2/4	-	SO2/4	AM-1.5	EAI
	INF10.20 – Flight Information Exchange - Notification Service	#46	5.6.1	FICE-B2/5	-	SO2/4	AM-1.5	EAI
	INF10.21 – Flight Information Exchange - Publication Service	#46	5.6.1	FICE-B2/6	-	SO2/4	AM-1.5	EAI
	INF10.22 – Flight Information Exchange - Trial Service	#46	5.6.1	FICE-B2/3	-	SO2/4	AM-1.5	EAI
	INF10.23 – Flight Information Exchange - Extended AMAN SWIM Service	#46	5.6.1	DAIM-B2/1 SWIM-B3/1	-	SO2/4	AM-1.5	EAI
dS	INF07 – Electronic Terrain and Obstacle Data (e-TOD)	-	-	DAIM B1/3 DAIM B1/4	RMT.0703 RMT.0722	SO2/5	-	EAI
U-s	-	-	-	-	-	-	-	-
vS	AOP14 – Remote Tower Services	#12 #13 #52 #71	-	RATS B1/1	RMT.0624	SO6/5	-	HPAO
ATp	AOP04.1 – A-SMGCS Surveillance (former Level 1)	#70	-	SURF B0/2	MST.0029	SO6/6	-	HPAO
	AOP04.2 – A-SMGCS RMCA (former Level 2)	-	-	SURF B0/3	MST.0029	SO6/6	-	HPAO
	AOP05 – Airport CDM	-	-	ACDM B0/1 ACDM B0/2 NOPS B0/4	-	SO6/4	-	HPAO
	AOP10 – Time Based Separation	#64	-	WAKE B2/7	-	SO6/5	-	HPAO
	AOP12.1 – Airport Safety Nets	#02	2.3.1	SURF B1/3	MST.0029	SP6/6	-	HPAO
	AOP13 – Automated assistance to Controller for Surface Movement planning and routing	#22 #53	-	SURF B1/4	MST.0029	SO6/6	-	HPAO

EOC	Level 3 Implementation Objectives	SESAR Sol.	DP Family	ICAO ASBUs	EPAS	NSP	AAS TP	KF
	AOP15 – Safety Nets for vehicle drivers	#04	-	SURF B2/2	MST.0029	-	-	HPAO
	AOP16 – Guidance assistance through airfield lighting	#47	-	SURF B1/1	MST.0029	-	-	HPAO
	AOP18 – Runway Status Lights	#01	-	-	MST.0029	-	-	HPAO
	AOP19 – Departure Management Synchronised with Pre-departure sequencing	#53 #106	2.1.1	RSEQ-B0/2	-		-	HPAO
	AOP20 – Wake Turbulence Separations for Departures based on Static Aircraft Characteristics (S-PWS-D)	PJ.02-01-06	-	WAKE-B2/4	RMT.0476		-	HPAO
	AOP21 – Wake Turbulence Separations for Arrivals based on Static Aircraft Characteristics (S-PWS-A)	PJ.02-01-04	-	WAKE-B2/4	RMT.0476		-	HPAO
	AOP22 – Minimum pair separations based on SRP	PJ.02-03	-	-	-		-	HPAO
	AOP23 – Integrated runway sequence for full traffic optimization on single and multiple runway airports	PJ.02-08-01	-	RSEQ – B2/1	-		-	HPAO
	AOP24 – Optimised use of runway configuration for multiple runway airports	PJ.02-08-02	-	RSEQ-B3/3	-		-	HPAO
	ATC07.1 – Arrival management tools	-	-	RSEQ B0/1	-	SO4/1	-	AATS
	ATC19 – Enhanced AMAN-DMAN integration	#54	1.2.1	RSEQ B2/1	-	SO6/5 SO4/1	-	AATS
	ENV01 – Continuous Descent Operations	#11	-	APTA B0/4 APTA-B1/4	-	SO6/5	-	AATS
	ENV02 – Airport Collaborative Environmental Management	-	-	-	-	-	-	HPAO
	ENV03 – Continuous Climb Operations	-	-	APTA B0/5 APTA-B1/5	-	SO6/5	-	AATS

EOC	Level 3 Implementation Objectives	SESAR Sol.	DP Family	ICAO ASBUs	EPAS	NSP	AAS TP	KF
	NAV03.1 – RNAV1 in TMA Operations	#62	-	APTA B0/2	RMT.0445	SO6/5	-	AATS
	NAV03.2 – RNP1 in TMA Operations	#09, #51	-	APTA B1/2	RMT.0445	SO6/5	-	AATS
	SAF11 – Improve runway safety by preventing runway excursions	-	-	-	MST.0028 RMT.0570 RMT.0703	-	-	HPAO
dA	AOM19.4 – Management of Pre-defined Airspace Configurations	#31 #66	3.1.2	NOPS B1/6 FRTO B1/4	-	SO3/2 SO3/3	AM-1.10 AM-1.8-	OANS
	AOM19.5 – ASM and A-FUA	#31 #66	3.1.1	NOPS B1/5, NOPS B0/1, FRTO B1/3, FRTO B0/2	-	SO3/2, SO3/3	AM-1.10 AM-1.8	OANS
	AOM21.2 – Initial Free Route Airspace	#32 #33 #66	3.2.1	FRTO B1/1	-	SO3/1 SO3/4	AM-1.10 AM-5.1	AATS
	AOM21.3 – Enhanced Free Route Airspace Operations	PJ.06-01	3.2.2	FRTO B2/3	-	SO3/1 SO3/4	AM-1.6 AM-1.7	AATS
	ATC12.1 – MONA, TCT and MTCD	#27 #104	3.2.1	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	-	-	-	-	SO4/1	-	AATS
	ATC15.2 – Arrival Management Extended to En-route Airspace	#05	1.1.1	RSEQ B1/1 NOPS B1/8	-	SO4/1	AM-1.3	AATS
	ATC18 – Multi Sector Planning En-route – 1P2T	#63	-	FRTO B1/6	-	SO4/1	AM-4.3 AM-5.1	AATS
	ITY-FMTP – Apply a common flight message transfer protocol (FMTP)	-	-	-	-	SO8/3	AM-1.3	EAI
TBO	ATC02.8 – Ground based safety nets	-	3.2.1	SNET B0/1 SNET B0/2 SNET B0/3 SNET B0/4	-	SO4/1	-	AATS
	ATC20 – Enhanced STCA with DAP via Mode S EHS	#69	-	SNET B1/1	MST.0030	SO7/2	-	AATS
	ATC22 – Initial Air-Ground Trajectory	#115	6.1.1	-	RMT.0682	SO4/5	AM-1.2	EAI

EOC	Level 3 Implementation Objectives	SESAR Sol.	DP Family	ICAO ASBUs	EPAS	NSP	AAS TP	KF
	Information Sharing (Airborne Domain)							
	ATC23 – Initial Air-Ground Trajectory Information Sharing (Ground Domain)	#115 PJ.18-06b1	6.1.2	-	RMT.0682	SO4/5	AM-1.2	EAI
	ATC24 – Network Manager Trajectory Information Enhancement	PJ.18-06b1	6.2.1	-	RMT.0682	SO4/5	-	EAI
	ATC25 – Initial Trajectory Information Sharing ground distribution	#115	6.3.1	-	MST.0031		AM-1.2	EAI
M3	NAV12 – ATS IFR Routes for Rotorcraft Operations	#113	-	APTA B0/6	MST.0031	SO6/5	-	AATS

D. SESAR Solutions implemented in a voluntary way[2]

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.

Due to the influence of the Corona crisis and the associated financial restrictions, some projects could not be carried out to the planned extent. Furthermore, the decline in flight movements has also led to a reassessment of some of the implementation initiatives. This specially applies to the SESAR solutions implemented in a voluntary way. Therefore, DFS has decided not to contribute to this Annex in this reporting cycle.

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

E. Surveillance (SUR)

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 objective for the inclusion of this information in LSSIP is to consolidate the data collection process and increase efficiency by avoiding parallel surveys.
The corresponding tables have been prefilled with information already available from recent surveys within the surveillance area.

For practical reasons to harmonise the reporting, since the LSSIP 2021 cycle the questionnaire is included in the LSSIP Annex.

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: Frankfurt Airport (EDDF) **Activity type:** **Relationship with other projects:** **Objective:** **Airspace**: TMA/CTR (GND-FL200) **Service**: 3NM Separation	**Type:** WAM with ADS-B data output **Number of sites**: 34 (37 Rx) **Provider**: Thales **Coverage:**	**Capacity:** **Operational-Efficiency:** **Safety:** **Security:** **Environment:** **RF/Spectrum:** **Cost-Efficiency:**	**Sensor installation date:** 2011 **Operational date:** 2012 **ADS-B operational integration date (ATCO CWP) where applicable:** TWR 2021 **Estimated End of Life:**

Activity Description **Area / Airspace**	**System Description** (for new system, replacement/upgrade or decommissioning)	**Expected contribution to the Key Performance Areas**	**Schedule**
Area/Name: Phase 3 ADS-B coverage full German Airspace **Activity type:** **Relationship with other projects:** **Objective:** **Airspace**: **Service**: 5 & 3NM Separation	**Type:** ADS-B **Number of sites**: **Provider**: **Coverage:** Complete German Airspace	**Capacity:** **Operational-Efficiency:** **Safety:** **Security:** **Environment:** **RF/Spectrum:** **Cost-Efficiency:**	**Sensor installation date:** 2025 ff **Operational date:** 2026 **ADS-B operational integration date (ATCO CWP) where applicable:** 2026 ff **Estimated End of Life:**

Activity Description Area / Airspace	System Description (for new system, replacement/upgrade or decommissioning)	Expected contribution to the Key Performance Areas	Schedule
Area/Name: Hannover Airport SMR and ADS-B (ASTA) **Activity type:** **Relationship with other projects:** **Objective:** Coverage **Airspace**: Airport Surface **Service**: Info only	**Type:** SMR with ADS-B input (providing Identity and other cooperative info.) **Number of sites**: 1 SMR, 2 ADS-B Rx **Provider**: Thales (ADS-B). All sensors installed on top of the tower (ADS-B with directional antenna). Data fusion occurs in the Phoenix-system. **Coverage:**	**Capacity:** **Operational-Efficiency:** **Safety:** **Security:** **Environment:** **RF/Spectrum:** **Cost-Efficiency:**	**Sensor installation date:** 2019 **Operational date:** Operational since 2019 **ADS-B operational integration date (ATCO CWP) where applicable:** 2019 **Estimated End of Life:**

Activity Description Area / Airspace	System Description (for new system, replacement/upgrade or decommissioning)	Expected contribution to the Key Performance Areas	Schedule
Area/Name: Mode S and PSR radar replacement project (MaRS) **Activity type:** **Relationship with other projects:** **Objective:** Coverage **Airspace**: Full German Airspace **Service**: 5 & 3 NM	**Type:** Mode S and PSR with ADS-B **Number of sites**: 23 fixed + 6 optional sites **Provider**: **Coverage:** German Airspace	**Capacity:** **Operational-Efficiency:** **Safety:** **Security:** **Environment:** **RF/Spectrum:** **Cost-Efficiency:**	**Sensor installation date:** planned Major upgrade to occur 2025 to 2035 **Operational date:** 2025 ff. **ADS-B operational integration date (ATCO CWP) where applicable:** 2025 ff. **Estimated End of Life:**

Activity Description Area / Airspace	System Description (for new system, replacement/upgrade or decommissioning)	Expected contribution to the Key Performance Areas	Schedule
Area/Name: ADS-B Germany - Phase 1 Karlsruhe UAC **Activity type:** **Relationship with other projects:** **Objective:** **Airspace**: En-Route TMA **Service**: 5 & 3NM Separation	**Type:** ADS-B **Number of sites**: Phase 1A: Existing infra. PAM FRA Phase 1B: Additional sensors **Provider**: Integration of ADS-B in ARTAS and Phoenix systems. **Coverage:**	**Capacity:** **Operational-Efficiency:** **Safety:** **Security:** **Environment:** **RF/Spectrum:** **Cost-Efficiency:**	**Sensor installation date:** 15 ADS-B Rx in 2023 **Operational date:** 1. Phase 1A 2020 (Dec) 2. Phase 1B 2024 **ADS-B operational integration date (ATCO CWP) where applicable:** 2021 **Estimated End of Life:**

Activity Description Area / Airspace	System Description (for new system, replacement/upgrade or decommissioning)	Expected contribution to the Key Performance Areas	Schedule
Area/Name: ADS-B Germany - Phase 2 ADS-B Infra Lower Airspace South of Germany **Activity type:** **Relationship with other projects:** **Objective:** **Airspace**: **Service**: 5 & 3 NM Separation	**Type:** ADS-B **Number of sites**: Additional sensors **Provider**: **Coverage:** Lower airspace for south of Germany	**Capacity:** **Operational-Efficiency:** **Safety:** **Security:** **Environment:** **RF/Spectrum:** **Cost-Efficiency:**	**Sensor installation date:** 2024 **Operational date:** 2025 **ADS-B operational integration date (ATCO CWP) where applicable:** 2025 **Estimated End of Life:**

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	2021	2022	2023	2024	2025	2026
WAM Systems/Clusters						
WAM Sensors (Rx, Tx, Rx/Tx)	1	1				
Mode S	4	4				
Airport MLAT Systems/Clusters						
Airport MLAT Sensors (Rx, Tx, Rx/Tx)	6	6				
ADS-B equipped Vehicles						
Mode A/C	4	4				
Space-based ADS-B	0	0				
Surface Movement Radar (SMR)	11	10				
ADS-B receivers (not part of MLAT/WAM)	1	1				
CMB PSR Mode A/C	11	11				
CMB PSR Mode S	10	10				
PSR stand alone	0	0				

Surveillance Data Use

This section provides and overview of the use of Surveillance data per state. 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 Part of operational procedure Source: Mode S			
Barometric pressure setting				
Roll angle				
True track angle				
Ground speed				
Track angle rate				
Magnetic heading	Displayed for information Source: Mode S			
Indicated airspeed	Displayed for information Source: Mode S			
Mach No	Displayed for information Source:			

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**
	Mode S			
Vertical rate (Baro, Inertial)	Baro rate used by SDPS Source: Mode S (Inertial rate not used)			
True Airspeed				
Other data items				

ADS-B integration

ADS-B use case and integration date	Operational or planned ops date	Sites
ACC ATC integration ENR	2021	ADS-B Phase 1A Karlsruhe
ACC ATC integration TMA		
ATC integration TWR CTR/TMA	2019, 2021	Hannover TWR (ASTA), Frankfurt TWR (WAM)
Flight Information Service	2019, 2021	TWR Hannover, TWR Frankfurt
ATCO Traffic Awareness		
Traffic planning e.g. Arrival Manager		
Conflict Alerting, e.g. STCA		
Airport surveillance e.g. Traffic awareness, Target identification support	TWR Hannover, TWR Frankfurt	Hannover TWR (ASTA), Frankfurt TWR (WAM)
Other:		

F. Glossary of abbreviations

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

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

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

Term	Description
AF	ATM Functionality
BAF	Federal Supervisory Authority for Air Navigation Services
BFU	Federal Bureau of Aircraft Accident Investigation
BGIS	Bundeswehr Geoinformation Service
BMDV	Federal Ministry for Digital and Transport
BMI	Federal Ministry of the Interior and Community
BMUV	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection
BMVg	Federal Ministry of Defence
CAPTS	Cooperative Area Precision Tracking System (Multilateration)
CP1	Common Project 1
DFS	German Air Navigation Services
DWD	German Meteorological Service
FAST MS	Frankfurt Airport Surface Traffic Management System
EOC	Essential Operational Changes
GAFHQ	German Air Force Headquarters
iCAS	iTEC Centre Automation System
iTEC	Interoperability Through European Cooperation
KF	Key Feature
LBA	Federal Office of Civil Aviation – Civil Aviation Authority
LF	Directorate General for Civil Aviation
LufABw	Federal Office of the Bundeswehr for Military Aviation – Military Aviation Authority
P1/ATCAS	Air Traffic Control Automation System
PCP	Pilot Common Project