CP1	Active							ECAC+		
FCM06.1	**Automated Support for Traffic Complexity Assessment and Flight Planning interfaces**									
REG	ASP	MIL	APO	USE	INT	IND	NM	MET	AIS	USP

Subject matter and scope

The Traffic Complexity tool continuously monitors and evaluates current and expected traffic loads and estimates the impact of traffic complexity on controllers' workload.

The predicted complexity enables ATFCM to take timely action to adjust capacity or request the traffic profile changes in coordination with Network Manager, ATC and airspace users.

The rigid application of ATFCM regulations based on standard demand thresholds as the pre-dominant tactical capacity measure needs to be replaced by a dynamic working relationship between ANSPs and Network Manager, which evolves towards monitoring of the real controller's workload, the resulting sector capacity and their dynamic management.

As the Trajectory predictability is crucial for complexity management, this objective also addresses the FF-ICE Release 1 implementation and message exchange between NM systems and operational Stakeholders in respect of collaborative flight planning, improving flight plan distribution and enhanced tactical flow management.

This encompasses the exchanges of following messages between NM systems, ATC systems and AU systems such as:

• ATC Flight Plan Proposal (AFP);
• ATC Flight Plan Change message (ACH);
• ATC Flight Plan message (APL);
• eFPL based on FF-ICE.

ANSPs shall provide the automatic AFPs in cases of tactical trajectory changes and process the APL/ACH data from IFPS. The NM system needs to integrate the automatic AFPs from ATC systems. The eFPL will include the 4D trajectory of the flight, as well as flight performance data, in addition to ICAO 2012 FPL data. The first phase should address only the exchange of eFPL between AUs and NM.

The eFPLs distribution will be exploited when ANSP's transition to FF-ICE provisions is achieved, transition that is not considered as mandatory within this objective.

System requirements:

Concerning the traffic complexity tools, it is suggested that ANSPs develop the concept for the complexity tools utilisation before considering the procurement/upgrades of ATM systems with this functionality.

ANSPs have two options:

• Use NM tools and systems
• Develop and install a local traffic complexity tool and connect with NM via the NM B2B Services;

The system requirements below are related to the second option of local traffic complexity tool:

• The Traffic Complexity tool continuously monitors and evaluates current and expected traffic loads and estimates controller's workload.
• It provides a support in the determination of solutions in order to plan airspace, sectors and staff to handle the predicted traffic. It is suggested that ANSPs develop concept for the complexity tools utilisation before considering the procurement/upgrades of ATM systems with this functionality;
• The local complexity tools need to receive process and integrate the EFD (or the NM B2B Services flight updates) provided by NM. This is required in order to supplement the local traffic counts with the flight plan data from ETFMS;
• Additionally, the use of the NM B2B Services for the reception/processing of NM traffic counts and for the provision of traffic monitoring values to NM might also need to be envisaged.

The NM systems adaptation activities:

• Deal with improving the quality of the planned trajectory (processing of tactical ATC information, processing of eFPL, support to mixed mode operations, implementation of traffic count methodologies that do not impact trajectory calculation) thus enhancing NM complexity assessment.
• Implementation of tools in support of traffic complexity will rely on the planned trajectory and allows simulating options optimising the use of available capacity. This will help NM operations identify possible mitigation strategies to be applied at network or local level, in coordination with FMPs and airspace users if applicable.

FCM06.1	**Automated Support for Traffic Complexity Assessment and Flight Planning interfaces**

AFP, APL and ACH

• ANSPs automatically provide AFP message to NM
• The local ATC system shall be capable to process APL and ACH messages sent by IFPS in order to exploit the full benefits of AFP distribution to NM.
• NM systems shall integrate the received AFP and provide APL/ACH messages.

NOTE FOR MILITARY AUTHORITIES: It is the responsibility of each military authority to review this Objective IN ITS ENTIRETY and address each of the SLoAs that the military authority considers RELEVANT for itself. This has to be done on top and above of the review of "MIL" SLoAs which identify actions EXCLUSIVE to military authorities.

Applicability Area(s) & Timescale(s)

Applicability Area 1	All EU SES States
Applicability Area 2	Albania, Armenia, Bosnia and Herzegovina, Georgia, Israel, Moldova, Montenegro, Morocco, North Macedonia, Serbia, Türkiye, Ukraine, United Kingdom

Timescales:	From:	By:	Applicable to:
Initial Operational Capability	01/01/2021		Applicability Area 1 + Applicability Area 2
Full Operational Capability / Target date		31/12/2022	Applicability Area 1 + Applicability Area 2

References

European ATM Master Plan

OI step	-	[CM-0101]-Automated Support for Traffic Load (Density) Management							
	Enablers -	ER APP ATC 124							
OI step	-	[CM-0103-A]-Automated Support for Traffic Complexity Assessment							
	Enablers -	ER APP ATC 93	NIMS-37	PRO-220a	PRO-220b	SWIM-APS-03a	SWIM-APS-04a	SWIM-INFR-05a	SWIM-NET-01a
OI step	-	[IS-0102]-Improved Management of Flight Plan After Departure							
	Enablers -	NIMS-02	NIMS-20	PRO-005					

Legend:	WXYZ-001	Covered by SLoA(s) in this objective	WXYZ-002 zzz	Covered by SLoA(s) in another objective Objective covering the enabler	WXYZ-003	Not covered in the Implementation Plan

Applicable legislation

Regulation (EU) No 2019/123 laying down detailed rules for the implementation of air traffic management (ATM) network functions and repealing Regulation (EU) No 677/2011 Regulation (EU) 2021/116 on the establishment of the Common Project One

Essential Operational Changes

ATM Interconnected Network

SESAR Solution

#19 - Automated support for Traffic Complexity Detection and Resolution, #37 - Extended Flight Plan, PJ.18-02c - eFPL distribution to ATC

ICAO GANP - ASBUs

NOPS-B0/2	Collaborative Network Flight Updates
NOPS-B1/4	Dynamic Traffic Complexity Management

Deployment Programme

4.3.1	Automated Support for Traffic Complexity Assessment and Flight Planning Interfaces

European Plan for Aviation Safety

- none -	

Operating Environments

FCM06.1	Automated Support for Traffic Complexity Assessment and Flight Planning interfaces

En-Route
Network
Terminal Airspace

Stakeholder Lines of Action (SLoAs)

SloA ref.	Title	From	By
FCM06.1-ASP01	Automatically provide AFP for airborne flights	01/01/2021	31/12/2022
FCM06.1-ASP02	Processing of APL and ACH messages	01/01/2021	31/12/2022
FCM06.1-ASP03	Use NM systems for traffic complexity management	01/01/2021	31/12/2022
FCM06.1-ASP04	Implement Local Traffic Complexity tool	01/01/2021	31/12/2022
FCM06.1-ASP05	Process and Integrate EFD for Local Traffic Complexity Tool	01/01/2021	31/12/2022
FCM06.1-ASP06	Local Traffic Complexity procedures	01/01/2021	31/12/2022
FCM06.1-ASP07	Safety Assessment	01/01/2021	31/12/2022
FCM06.1-ASP08	Training	01/01/2021	31/12/2022
FCM06.1-ASP09	Operational use	01/01/2021	31/12/2022
FCM06.1-NM01	Implement Traffic Complexity supporting tools	01/01/2021	31/12/2022
FCM06.1-NM02	Provide flight update information	01/01/2021	31/12/2022
FCM06.1-NM03	Integration of Automatic AFP in NM systems	01/01/2021	31/12/2022
FCM06.1-NM04	Upgrade the NM systems related to FF-ICE Release 1	01/01/2021	31/12/2022
FCM06.1-NM05	Safety Assessment	01/01/2021	31/12/2022
FCM06.1-NM06	Training	01/01/2021	31/12/2022
FCM06.1-NM07	Operational use	01/01/2021	31/12/2022

Description of finalised and deleted SLoAs is available on the eATM Portal @ https://www.eatmportal.eu/working/depl/essip_objectives

Expected Performance Benefits

Safety:	Enhanced safety.
Capacity:	Increased ATC capacity.
Operational Efficiency:	-
Cost Efficiency:	Increased cost efficiency. Reduced fuel and emissions.
Environment:	-
Security:	-

Detailed SLoA Descriptions

FCM06.1-ASP01	Automatically provide AFP for airborne flights	From:	By:
		01/01/2021	31/12/2022

Action by:	**ANS Providers**
Description & purpose:	Automatically provide IFPS with updated flight plan information on airborne flights by means of AFP message related to missing flights, change of route, diversion, change of flight rule, flight type, A/C type and equipment.
	Note :This SLoA needs to be synchronised between ANSPs and NM
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021
	Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme
Finalisation criteria:	1 - AFP messages are automatically provided to NM.

FCM06.1-ASP02	Processing of APL and ACH messages	From:	By:
		01/01/2021	31/12/2022

Action by:	**ANS Providers**
Description & purpose:	Process automatically by ATC systems, the real-time updates to flight plan information as provided by IFPS via APL and ACH messages.
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021
	Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme
Finalisation criteria:	1 - APL and ACH messages are automatically processed.

FCM06.1-ASP03	Use NM systems for traffic complexity management	From:	By:
		01/01/2021	31/12/2022

FCM06.1	Automated Support for Traffic Complexity Assessment and Flight Planning interfaces

Action by:	ANS Providers
Description & purpose:	Instead of procuring a separate traffic complexity tool, some ANSPs may opt to use the existing tools provided by NM (in context of Network Collaborative Management) for the de-complexation of traffic situation within their AoR.
	Note :FCM06.1-ASP03 and FCM06.1-ASP04 can be implemented in parallel. This SLoA needs to be synchronised between ANSPs and NM
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021 Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme
ATM Master Plan relationship:	[ER APP ATC 124]-Basic Resource Management and Planning Tools. [ER APP ATC 93]-Enhance Resource Management and Planning Tools to use Traffic Complexity Assessment. [NIMS-37]-Basic Complexity assessment tools
Finalisation criteria:	1 - NM complexity tool is used

FCM06.1-ASP04	Implement Local Traffic Complexity tool	From: 01/01/2021	By: 31/12/2022

Action by:	ANS Providers
Description & purpose:	Implement a local automated tool to support the continuous monitoring of the traffic loads per network node (sector, waypoint, route, route segment) according to declared capacities, assess the current and future sector plans and provide support to the local resource management. If deemed necessary, "sector" may include APP and/or TWR sectors.
	Note :FCM06.1-ASP03 and FCM06.1-ASP04 can be implemented in parallel.
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021 Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme
ATM Master Plan relationship:	[ER APP ATC 124]-Basic Resource Management and Planning Tools. [ER APP ATC 93]-Enhance Resource Management and Planning Tools to use Traffic Complexity Assessment. [NIMS-37]-Basic Complexity assessment tools
Finalisation criteria:	1 - The local complexity tool is implemented.

FCM06.1-ASP05	Process and Integrate EFD for Local Traffic Complexity Tool	From: 01/01/2021	By: 31/12/2022

Action by:	ANS Providers
Description & purpose:	The local traffic complexity tool to receive, process and integrate ETFMS Flight Data (EFD) or the flight data available via the NM B2B publish/subscribe mechanism. This activity is needed in order to supplement the local traffic count with the flight plan data from ETFMS.
	Note :This SLoA needs to be synchronised between ANSPs and NM.
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021 Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme
Finalisation criteria:	1 - EFD data (the flight data available via the NM B2B publish/subscribe mechanism) are processed and integrated into the local complexity tool.

FCM06.1-ASP06	Local Traffic Complexity procedures	From: 01/01/2021	By: 31/12/2022

Action by:	ANS Providers
Description & purpose:	Develop and Implement local traffic complexity procedures.
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021 Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme
ATM Master Plan relationship:	[PRO-220a]-ATC Procedures related to Detection and Resolution of Complexity, Density and Traffic Flow Problems [PRO-220b]-FCM procedures to describe how detection and resolution of complexity, density or traffic flow issues are managed.
Finalisation criteria:	1 - Local complexity procedures are developed and implemented.

FCM06.1-ASP07	Safety Assessment	From: 01/01/2021	By: 31/12/2022

Action by:	ANS Providers
Description & purpose:	The safety assessment of the changes must be developed and delivered to the competent authority.
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021 Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme
Finalisation criteria:	1 - Safety assessment has been developed and delivered to the competent authority.

FCM06.1-ASP08	Training	From: 01/01/2021	By: 31/12/2022

FCM06.1	Automated Support for Traffic Complexity Assessment and Flight Planning interfaces

Action by:	ANS Providers		
Description & purpose:	All relevant staff must be duly trained.		
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021		
	Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme		
Finalisation criteria:	1 - Training has been completed.		
FCM06.1-ASP09	**Operational use**	From: 01/01/2021	By: 31/12/2022
Action by:	ANS Providers		
Description & purpose:	Automated Support for Traffic Complexity Assessment and Flight Planning interfaces is ready for operational use once the procedures are in place, the systems have been upgraded, the safety assessment has been delivered and approved, and the training has been completed.		
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021		
	Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme		
Finalisation criteria:	1 - Automated Support for Traffic Complexity Assessment and Flight Planning interfaces is put into service.		
FCM06.1-NM01	**Implement Traffic Complexity supporting tools**	From: 01/01/2021	By: 31/12/2022
Action by:	NM		
Description & purpose:	Implementation of tools in support of traffic complexity management in the pre-tactical phase. It is intended to support NM operations by identifying the possible mitigation strategies to be applied at the network or local level, in coordination with FMPs and airspace users.		
	Note :This SLoA needs to be synchronised between ANSPs, AUs and NM.		
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021		
	Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme		
ATM Master Plan relationship:	[NIMS-37]-Basic Complexity assessment tools		
	[PRO-220b]-FCM procedures to describe how detection and resolution of complexity, density or traffic flow issues are managed.		
Finalisation criteria:	1 - NM traffic complexity tool is implemented.		
FCM06.1-NM02	**Provide flight update information**	From: 01/01/2021	By: 31/12/2022
Action by:	NM		
Description & purpose:	Provide the dynamic flight updates via the EFD and via the NM B2B Services publish/subscribe mechanism to the local Traffic Complexity tool.		
	Note :This SLoA needs to be synchronised between ANSPs and NM.		
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021		
	Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme		
ATM Master Plan relationship:	[NIMS-02]-Provision , reception and processing of collaborative flight plan updates		
	[NIMS-20]-Provision, reception and processing of ATFCM flight progress messages		
Finalisation criteria:	1 - B2B services providing the dynamic flight updates via EFD are implemented and published to the local complexity tool.		
FCM06.1-NM03	**Integration of Automatic AFP in NM systems**	From: 01/01/2021	By: 31/12/2022
Action by:	NM		
Description & purpose:	The NM systems AFP integration activities related to trajectory improvement with ATC tactical updates, thus enhancing flight planning and complexity assessment. NM needs ensure the correctness of AFP messages by testing and validate them. If the testing is correct, the received AFP messages from a specific ATC unit will be integrated in NM systems.		
	Note :This SLoA needs to be synchronised between ANSPs and NM.		
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021		
	Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme		
ATM Master Plan relationship:	[NIMS-02]-Provision , reception and processing of collaborative flight plan updates		
Finalisation criteria:	1 - AFP messages are integrated into the NM system.		
FCM06.1-NM04	**Upgrade the NM systems related to FF-ICE Release 1**	From: 01/01/2021	By: 31/12/2022
Action by:	NM		
Description & purpose:	Upgrade the NM systems with FF-ICE Release 1 filing and trial service and support to mixed mode operations.		
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021		
	Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme		

FCM06.1	Automated Support for Traffic Complexity Assessment and Flight Planning interfaces

ATM Master Plan relationship:	[NIMS-02]-Provision , reception and processing of collaborative flight plan updates		
Finalisation criteria:	1 - FF-ICE release 1 filing and trial services are implemented in NM systems		
FCM06.1-NM05	**Safety Assessment**	From: 01/01/2021	By: 31/12/2022
Action by:	NM		
Description & purpose:	The safety assessment of the changes must be developed and delivered to the competent authority.		
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021 Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme		
Finalisation criteria:	1 - Safety assessment has been developed and delivered to the competent authority.		
FCM06.1-NM06	**Training**	From: 01/01/2021	By: 31/12/2022
Action by:	NM		
Description & purpose:	All relevant staff must be duly trained.		
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021 Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme		
Finalisation criteria:	1 - Training has been completed.		
FCM06.1-NM07	**Operational use**	From: 01/01/2021	By: 31/12/2022
Action by:	NM		
Description & purpose:	Initial AOP/NOP Information Sharing is ready for operational use once the procedures are in place, the systems have been upgraded, the safety assessment has been delivered and approved, and the training has been completed.		
Supporting material(s):	SDM - Standardisation and Regulation support to CP1 deployment 2021, Deliverable D1.1.1 07/2021 Url : https://www.sesardeploymentmanager.eu/publications/deployment-programme		
Finalisation criteria:	1 - Automated Support for Traffic Complexity Assessment and Flight Planning interfaces is put into service.		