

PCP		Active							ECAC+	
AOM21.2		Free Route Airspace								
REG	ASP	MIL	APO	USE	INT	IND	NM	MET	AIS	USP

Subject matter and scope

Free Route Airspace (FRA) is a specified airspace within which users may freely plan a route between a defined entry point and a defined exit point, with the possibility to route via intermediate (published or unpublished) waypoints, without reference to the ATS route network, subject to airspace availability. Within this airspace, flights remain subject to air traffic control.

The FRA concept brings significant flight efficiency benefits and a choice of user preferred routes to airspace users. As a step to full trajectory based operations the FRA concept brings increased flight predictability, reduced uncertainty for the Network which in turn can lead to potential capacity increases for ATM which will also benefit the user.

The PCP IR requires the deployment of Free Route Airspace (FRA) within Member States' airspace of the ICAO EUR region at and above FL 310. The implementation is coordinated through the NM European Route Network Improvement Plan (ERNIP) and the Network Operations Plan following the Strategic Objectives and Targets set in the Network Strategic Plan and in the Network Manager Performance Plan. All European ANSPs have included in the ERNIP Part 2 - ARN Version 2014-2019 projects for full or partial implementation of Free Route Airspace selecting their implementation step. Within the PCP the implementation of FRA is closely linked to the deployment of Airspace Management procedures and advanced Flexible use of airspace (A-FUA).

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 MIL Authorities.

Applicability Area(s) & Timescale(s)

Applicability Area	All ECAC States except: Azerbaijan, Belgium, Luxembourg, Netherlands. Plus: Morocco		
Timescales:	From:	By:	Applicable to:
Initial operational capability	01/01/2015		Applicability Area
Full operational capability		31/12/2021	Applicability Area

References

European ATM Master Plan

Ol step -	[AOM-0401]-Multiple Route Options & Airspace Organisation Scenarios									
	Enablers -	None								
Ol step -	[AOM-0402]-Further Improvements to Route Network and Airspace incl. Cross-Border Sectorisation and Further Routing Options									
	Enablers -	None								
Ol step -	[AOM-0501]-Free Routing for Flights both in cruise and vertically evolving within low to medium complexity environments									
	Enablers -	AAMS-06c AOM19.2	AAMS-09a AOM19.1	AAMS-11 AOM19.2, AOM19.3	AAMS-16a	AOC-ATM-10	ER APP ATC 129 ATC12.1	ER APP ATC 75	ER APP ATC 77 AOM19.2	
		ER ATC 91 ATC12.1	NIMS-21a FCM06, FCM07, FCM08	NIMS-29	NIMS-42 AOM19.2, AOM19.3	PRO-085	STD-033 FCM08	STD-061	STD-062	
		STD-063	STD-064	SWIM-APS- 01a INF08.1	SWIM-APS- 02a INF08.1	SWIM-APS- 03a INF08.1, INF08. 2	SWIM-APS- 04a INF08.1			
Ol step -	[AOM-0505]-Free Routing for Flights both in cruise and vertically evolving within high and very high complexity environments in Upper En Route airspace									
	Enablers -	ER APP ATC 129 ATC12.1	ER APP ATC 78	ER ATC 91 ATC12.1	NIMS-37 FCM06					
Ol step -	[CM-0102-A]-Dynamic Sectorisation based on complexity									
	Enablers -	CTE-C05a COM11.1	CTE-C05b COM11.1	ER APP ATC 15						

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
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Applicable legislation

- Regulation (EU) No 677/2011 laying down detailed rules for the implementation of air traffic management (ATM) network functions and amending Regulation (EU) No 691/2010
 - Regulation (EU) No 716/2014 on the establishment of the Pilot Common Project

Essential Operational Changes

- none -

SESAR Solution

#33 - Free Route through Free Routing for Flights both in cruise and vertically evolving above a specified Flight Level, #66 - Automated Support for Dynamic Sectorisation

ICAO GANP - ASBUs

B0-FRTO	Improved Operations through Enhanced En-Route Trajectories.
B1-FRTO	Improved Operations through Optimized ATS Routing

Deployment Programme

- none -

European Plan for Aviation Safety

- none -

Operating Environments

En-Route
 Network
 Terminal Airspace

Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
AOM21.2-ASP01	Implement procedures and processes in support of the network dimension	01/01/2015	31/12/2021
AOM21.2-ASP02	Implement system improvements	01/01/2015	31/12/2021
AOM21.2-ASP03	Implement dynamic sectorisation	01/01/2015	31/12/2021
AOM21.2-ASP04	Implement procedures and processes in support of the local dimension	01/01/2015	31/12/2021
AOM21.2-ASP05	Implement transversal activities in support to operational deployment of FRA (validation, safety case and training)	01/01/2015	31/12/2021
AOM21.2-USE01	Implement system improvements	01/01/2015	31/12/2021
AOM21.2-USE02	Implement procedures and processes	01/01/2015	31/12/2021
AOM21.2-USE03	Train aircrews and operational staff for FRA operations	01/01/2015	31/12/2021
AOM21.2-NM01	Implement system improvements	01/01/2015	31/12/2019
AOM21.2-NM02	Implement procedures and processes	01/01/2015	31/12/2017

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

Expected Performance Benefits

Safety:	Although the main benefits are expected in the area of environment the FRA implementation has the ambition to at least maintain the current level of safety.
Capacity:	Increased through better airspace utilisation to and reduced controller workload.
Operational Efficiency:	Savings in route distances and fuel efficiency through increased use of preferred flight profiles.
Cost Efficiency:	-
Environment:	Reductions in emissions through use of optimal routes.
Security:	N/A

Detailed SLoA Descriptions

AOM21.2	Free Route Airspace		
AOM21.2-ASP01	Implement procedures and processes in support of the network dimension	From: 01/01/2015	By: 31/12/2021
Action by:	ANS Providers		
Description & purpose:	Take the following actions: -Identify the FRA airspace volume (Lateral and Vertical) and applicable time -Identify FRA entry and exit points, arrival transition point and departure transition point, and intermediate points -Adapt Airspace design and ensure FRA horizontal and vertical connectivity -Validate airspace design with NM -Network overview - connectivity consistency of FRA cross-border application -ATFCM FRA procedures -Adapt RAD applicability -Validate RAD with NM		
Supporting material(s):	EUROCONTROL - European Route Network Improvement Plan (ERNIP) Part 1 - European Airspace Design Methodology - Guidelines - 2.0 / 12/2018 Url : https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-1		
ATM Master Plan relationship:	[PRO-148]-ASM Procedures for identifying and promulgating 'Free Route' areas		
Finalisation criteria:	1 - The local FRA airspace has been identified in coordination with the Network and FAB partners and the RAD has been updated accordingly. 2 - The local ATFCM procedures have been updated in cooperation with the network to take on board the FRA impact.		
AOM21.2-ASP02	Implement system improvements	From: 01/01/2015	By: 31/12/2021
Action by:	ANS Providers		
Description & purpose:	Take the following actions: -Upgrades FDP and CWP related to: - ATC clearances beyond AoR Differentiation between different traffic type airspaces; - Calculation of 4D trajectory with AoI - Editing function for 4D trajectories - Provision/integration of FP and real time data related to the FRA traffic to the Military ATS units - COP management for FRA - Enhance Conflict Management and Controller HMI functions to support conflict detection and resolution - Tactical Controller Tool (TCT), using the tactical trajectory and managing the clearances along that trajectory		
	Note :Additional System improvement which might be required for FRA are covered by other ESSIP Objectives like ATC 12.1 (MTCD, conflict resolution support info and MONA), ITY-COTR (OLDI), ATC17 (SYSCO) and ATC02.5 (APW) Note: No supporting material defined (subject to stakeholder analysis of the local needs)		
Supporting material(s):	EUROCONTROL - SPEC 142 - EUROCONTROL Specification for Monitoring Aids - Edition 2.0 / 03/2017 Url : https://www.eurocontrol.int/sites/default/files/publication/files/EUROCONTROL-SPEC-0142%20MONA%20Ed%202.0.pdf EUROCONTROL - SPEC 139 - EUROCONTROL Specification for Medium-Term Conflict Detection - Edition 2.0 / 03/2017 Url : https://www.eurocontrol.int/sites/default/files/publication/files/EUROCONTROL-SPEC-0139%20MTCD%20Ed%202.0.pdf EUROCONTROL - SPEC 106 - EUROCONTROL Specification for On-Line Data Interchange (OLDI) - Edition 4.3 - OJ 2011/C 146/11 / 12/2017 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-line-data-interchange-oldi EUROCONTROL - GUID-161 - EUROCONTROL Guidelines for Area Proximity Warning (APW) - Part I to III - 1.0 / 01/2017 Url : https://www.eurocontrol.int/publications/eurocontrol-guidelines-area-proximity-warning-apw-part-i-iii		
ATM Master Plan relationship:	[AAMS-16a]-Airspace management functions equipped with tools able to deal with free-routing [ER APP ATC 78]-Update FDP to support 4D trajectory direct segments in free routing airspace beyond local AoR		
Finalisation criteria:	1 - The ANSP system has been updated according to the specifications representing the identified necessary changes		
AOM21.2-ASP03	Implement dynamic sectorisation	From: 01/01/2015	By: 31/12/2021
Action by:	ANS Providers		
Description & purpose:	Upgrade FDP and CWP and implement procedures in relation to: - Dynamic sectorisation by an application of pre-defined elementary volumes or dynamically shaped sector boundaries. Note :This SLoA has been split from ASP02 with the purpose of being able to track the implementation of SESAR Solution #66		
Supporting material(s):	EUROCONTROL - European Route Network Improvement Plan (ERNIP) Part 1 - European Airspace Design Methodology - Guidelines - 2.0 / 12/2018 Url : https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-1		

AOM21.2	Free Route Airspace		
ATM Master Plan relationship:	[ER APP ATC 15]-Flight Data Processing: support Dynamic Sectorisation and Dynamic Constraint Management.		
Finalisation criteria:	1 - ATM systems upgraded to support dynamic sectorisation 2 - ATFM, ASM and ATC procedures updated in relation to dynamic sectorisation		
AOM21.2-ASP04	Implement procedures and processes in support of the local dimension	From: 01/01/2015	By: 31/12/2021
Action by:	ANS Providers		
Description & purpose:	Take the following actions: -Adapt the LoA with adjacent ATS units -Publish relevant data for FRA in AIP -Charts for FRA operations -Airspace management procedure for the implementation of free routes operation -ASM Procedures for identifying and promulgating 'Free Route' areas -ATC procedures to cover free route co-ordination and transfer of control, trajectory change in a free route environment, conflict detection -Validate airspace design, RAD and ASM procedures with NM.		
Supporting material(s):	EUROCONTROL - European Route Network Improvement Plan (ERNIP) Part 1 - European Airspace Design Methodology - Guidelines - 2.0 / 12/2018 Url : https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-1		
ATM Master Plan relationship:	[PRO-085]-ATC procedures to cover issues such as hand-off, transfer of control, and for defining trajectory changes necessitated by changes in airspace availability, weather constraints and other non-nominal events [PRO-148]-ASM Procedures for identifying and promulgating 'Free Route' areas		
Finalisation criteria:	1 - The FRA airspace has been described and published in the AIP and the charts. 2 - The Letters of Agreement have been updated if necessary. 3 - The ASM and ATC procedures have been updated to take on board the FRA impact.		
AOM21.2-ASP05	Implement transversal activities in support to operational deployment of FRA (validation, safety case and training)	From: 01/01/2015	By: 31/12/2021
Action by:	ANS Providers		
Description & purpose:	Take the following actions: -Validate FRA concept (airspace organisation, ATC/ATFCM and ASM procedures, airspace restrictions) -Train ATCOs on the application of FRA -Develop FRA Safety Argument.		
Supporting material(s):	EUROCONTROL - European Route Network Improvement Plan (ERNIP) Part 1 - European Airspace Design Methodology - Guidelines - 2.0 / 12/2018 Url : https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-1		
Finalisation criteria:	1 - FRA concept has been validated, safety argument has been developed and delivered to the Regulator/NSA/Competent Authority, as appropriate, depending on the severity of the identified risks or the introduction of new aviation standards. 2 - ATCO training has been conducted.		
AOM21.2-USE01	Implement system improvements	From: 01/01/2015	By: 31/12/2021
Action by:	Airspace Users		
Description & purpose:	Adapt as necessary the flight Planning system to support free routing. Note :No supporting material identified (subject to stakeholder analysis of the local needs)		
ATM Master Plan relationship:	[AOC-ATM-10]-Modification of AOC/WOC-ATM trajectory management system (or new systems) to allow quality of service requested by NOP for pre-flight trajectory with dynamic routing		
Finalisation criteria:	1 - Flight Planning system has been amended if necessary.		
AOM21.2-USE02	Implement procedures and processes	From: 01/01/2015	By: 31/12/2021
Action by:	Airspace Users		
Description & purpose:	Take the following actions: - Develop and apply operational Procedures for free route - Develop and apply operational Procedures to take into account airspace and traffic constraints when selecting a route.		
Supporting material(s):	EUROCONTROL - European Route Network Improvement Plan (ERNIP) Part 1 - European Airspace Design Methodology - Guidelines - 2.0 / 12/2018 Url : https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-1		
ATM Master Plan relationship:			
Finalisation criteria:	1 - Procedures have been updated to take into account Free Route Airspace.		
AOM21.2-USE03	Train aircrews and operational staff for FRA operations	From: 01/01/2015	By: 31/12/2021

AOM21.2	Free Route Airspace		
Action by:	Airspace Users		
Description & purpose:	Develop and apply training packages for pilots and personnel involved in flight planning, on the basis of procedures developed as described in SLoA AOM21-USE02.		
Finalisation criteria:	1 - Pilots and Flight Planners have been trained to Free Route operations.		
AOM21.2-NM01	Implement system improvements	From: 01/01/2015	By: 31/12/2019
Action by:	NM		
Description & purpose:	-Adaptations (tuning) of NM systems -New AUP/UUP template		
Supporting material(s):	EUROCONTROL - European Route Network Improvement Plan (ERNIP) Part 1 - European Airspace Design Methodology - Guidelines - 2.0 / 12/2018 Url : https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-1		
ATM Master Plan relationship:	[AAMS-16a]-Airspace management functions equipped with tools able to deal with free-routing [NIMS-29]-Network DCB sub-system enhanced for Network Operations Plan (NOP) preparation and dissemination		
Finalisation criteria:	1 - The required adaptations of NM systems (IFPS and Airspace Management tools) to FRA have been deployed		
AOM21.2-NM02	Implement procedures and processes	From: 01/01/2015	By: 31/12/2017
Action by:	NM		
Description & purpose:	Take the following actions in coordination with ANSPs: -Identify the FRA airspace volume (Lateral and Vertical) and applicable time -Identify FRA entry and exit points, arrival transition point and departure transition point, and intermediate points -Adapt Airspace design and ensure FRA horizontal and vertical connectivity -Network overview-connectivity consistency of FRA cross-border application -ATFCM FRA procedures -Adapt RAD applicability -Validate airspace design, RAD and ASM procedures with ANSPs.		
Supporting material(s):	EUROCONTROL - European Route Network Improvement Plan (ERNIP) Part 1 - European Airspace Design Methodology - Guidelines - 2.0 / 12/2018 Url : https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-1 EUROCONTROL - European Route Network Improvement Plan (ERNIP) Part 2 - European ATS Route Network - Version 2019-2024 - June 2019 / 07/2019 Url : https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-2 EUROCONTROL - European Route Network Improvement Plan (ERNIP) Part 3 - Airspace Management Handbook - Guidelines for Airspace Management - 5.5 / 11/2017 Url : https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-3		
ATM Master Plan relationship:	[PRO-148]-ASM Procedures for identifying and promulgating 'Free Route' areas		
Finalisation criteria:	1 - European Airspace has been updated with the integration of the coordinated FRA definition. 2 - Route Availability Document has been updated accordingly.		

