

CP1		Active							ECAC+	
AOM21.2		Initial Free Route Airspace								
REG	ASP	MIL	APO	USE	INT	IND	NM	MET	AIS	USP

Subject matter and scope

Free Route is an operational concept that enables airspace users to fly as close as possible to what they consider their optimal trajectory without the constraints of a fixed route network structure. Free Route Airspace (FRA) is a specified airspace within which users may freely plan a route between a defined FRA entry point and defined FRA exit point, with the possibility to route via intermediate (published or unpublished) waypoints, without reference to the ATS route network, subject to airspace availability.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 Initial FRA implementation may be achieved with some limitations, for example:

- laterally and vertically;
- during specific time periods;

The Initial FRA deployment shall be based on the following system improvements:

For NM systems:

- FPL processing and checking
- Dynamic rerouting
- Calculation and management of traffic load
- IFPS routing proposal
- Specific ASM improvements for FRA
- Network impact assessment for FRA
- CACD adaptations for FRA Initial deployment

For AU systems:

- FPL route planning for a complete flight taking into account the differences of limitations (e.g. in terms of opening time and/or flight level constraints) throughout the entire flight
- Long DCT with or without calculated intermediate points
- Capability to take into account different constraint e.g.: ATS, FRA, RAD, scenarios, FL constraints on part of the route only, etc
- FPL route planning for a complete flight taking into account the differences of implementations (FRA with or without partial implementation) throughout the entire flight.

ANSPs may decide which system improvements are needed for Initial FRA. The list below addresses the potential improvement to ATC systems. The choice of the appropriate tool/function to achieve Initial FRA remains a stakeholder decision based on the operational environment and may include any of the following tool/functions as follows:

- FDPS supporting the airspace structure and managing trajectories according to the flight plan;
- CWP and HMI supporting appropriate display and functions as required by operational needs;
- FDPS to calculate ground 4D trajectories within AoI and editing function for 4D trajectories including Cross AoR Points (Coordination Point COP management);
- ASM/ATFCM for FRA management;
- MTCD (detecting conflicts between A/C and A/C, and between A/C and airspace);
- CORA (conflict probe and passive conflict resolution advisor);
- MONA (conformance monitoring aids);
- ATC clearances beyond AoR;
- ATC to ATC Flight Data Exchange (OLDI and/or SYSCO);
- Dynamic sectorisation and constraint management;
- Dynamic Area Proximity Warning (APW) –Integrated with ASM tools;
- Provision/integration of FPL and real-time data related to the FRA traffic to the Military ATS units and or air defence organisations;
- Conflict Detection Tools which include the Tactical Controller Tool (TCT), using the tactical trajectory and managing the clearances along that trajectory.

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)

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Applicability Area 1	All EU SES States		
Applicability Area 2	Albania, Armenia, Bosnia and Herzegovina, Georgia, Moldova, Montenegro, Morocco, North Macedonia, Serbia, Türkiye, Ukraine, United Kingdom		
Timescales:	From:	By:	Applicable to:
Initial operational capability	01/01/2015		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

Ol step -	[AOM-0501]-Free Routing for Flights both in cruise and vertically evolving within low to medium complexity environments								
	Enablers -	AAMS-06c AOM19.5	AAMS-09a AOM19.5	AAMS-11 AOM19.5	AAMS-16a	AOC-ATM-10	ER APP ATC 129 ATC12.1	ER APP ATC 75	ER APP ATC 77 AOM19.4, AOM19.5
		ER ATC 91 ATC12.1	NIMS-21a FCM10	NIMS-29	NIMS-42 AOM19.5	PRO-085	STD-033	STD-061	STD-062
		STD-063	STD-064	SWIM-APS-01a	SWIM-APS-02a	SWIM-APS-03a	SWIM-APS-04a		
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 FCM06.1				
Ol step -	[CM-0102-A]-Dynamic Sectorisation based on complexity								
	Enablers -	CTE-C05a COM11.1, COM11.2	CTE-C05b COM11.1, COM11.2	ER APP ATC 15 AOM19.4	ER APP ATC 93 FCM06.1				
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

COMMISSION IMPLEMENTING REGULATION (EU) 2021/116 of 1 February 2021 on the establishment of the Common Project One supporting the implementation of the European Air Traffic Management Master Plan provided for in Regulation (EC) No 550/2004 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 409/2013 and repealing Commission Implementing Regulation (EU) No 716/2014 ct
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Essential Operational Changes

Fully Dynamic and Optimised Airspace

SESAR Solution

#32 - Free Route through the use of Direct Routing, #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
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ICAO GANP - ASBUs

FRTO-B1/1	Free Route Airspace (FRA)
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Deployment Programme

3.2.1	Initial FRA
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European Plan for Aviation Safety

- none -

Operating Environments

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En-Route
Network
Terminal Airspace

Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
AOM21.2-ASP01	Implement Initial FRA procedures and processes in support of the network dimension	01/01/2015	31/12/2022
AOM21.2-ASP02	Implement Initial FRA system improvements	01/01/2015	31/12/2022
AOM21.2-ASP03	Implement Initial FRA procedures and processes in support of the local dimension	01/01/2015	31/12/2022
AOM21.2-ASP04	Safety Assessment	01/01/2015	31/12/2022
AOM21.2-ASP05	Training	01/01/2015	31/12/2022
AOM21.2-ASP06	Operational use	01/01/2015	31/12/2022
AOM21.2-USE01	Implement Initial FRA system improvements	01/01/2015	31/12/2022
AOM21.2-USE02	Implement Initial FRA procedures and processes	01/01/2015	31/12/2022
AOM21.2-USE03	Training	01/01/2015	31/12/2022
AOM21.2-USE04	Operational use	01/01/2015	31/12/2022
AOM21.2-NM01	Implement Initial FRA system improvements	01/01/2015	31/12/2022
AOM21.2-NM02	Implement Initial FRA procedures and processes	01/01/2015	31/12/2022
AOM21.2-NM03	Safety Assessment	01/01/2015	31/12/2022
AOM21.2-NM04	Training	01/01/2015	31/12/2022
AOM21.2-NM05	Operational use	01/01/2015	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:	Although the main benefits impact the environment, FRA implementation has the ambition to at least maintain the current level of safety.
Capacity:	Increased capacity 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:	-

Detailed SLoA Descriptions

AOM21.2-ASP01	Implement Initial FRA procedures and processes in support of the network dimension	From: 01/01/2015	By: 31/12/2022
Action by:	ANS Providers		
Description & purpose:	Conduct the following actions: <ul style="list-style-type: none"> • 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 application; • ATFCM FRA procedures; • Adapt RAD applicability; • Validate RAD with NM. 		
	Note : This SLoA needs to be synchronised between ANSPs and 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 Initial FRA system improvements	From:	By:

AOM21.2		Initial Free Route Airspace	
		01/01/2015	31/12/2022
Action by:	ANS Providers		
Description & purpose:	Deploy the ATC tools/functions deemed appropriate: <ul style="list-style-type: none"> • COP management • ASM/ATFCM for FRA management • MTCD • MONA • ATC clearances beyond AoR • ATC to ATC Flight Data Exchange (Basic OLDI and SYSCO) • Dynamic sectorization and constraint management • Dynamic Area Proximity Warning (APW) • Tactical Controller Tool (TCT) 		
Supporting material(s):	EUROCONTROL - SPEC-139 - EUROCONTROL Specification for Medium-Term Conflict Detection - Edition 2.0 / 03/2017 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-medium-term-conflict-detection-mtcd EUROCONTROL - SPEC-142 - EUROCONTROL Specification for Monitoring Aids - Edition 2.0 / 03/2017 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-monitoring-aids-mona EUROCONTROL - GUID-176 - EUROCONTROL Guidelines for On-Line Data Interchange (OLDI) - Edition 1.1 / 07/2020 Url : https://www.eurocontrol.int/publication/eurocontrol-guidelines-line-data-interchange-oldi EUROCONTROL - SPEC-106 - EUROCONTROL Specification for On-Line Data Interchange (OLDI) - Edition 5.0 / 07/2020 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-line-data-interchange-oldi EUROCONTROL - GUID-161 - EUROCONTROL Guidelines for Area Proximity Warning - Part I to III - Edition 1.0 / 01/2017 Url : https://www.eurocontrol.int/publication/eurocontrol-guidelines-area-proximity-warning		
ATM Master Plan relationship:	[AAMS-16a]-Airspace management functions equipped with tools able to deal with free-routing [ER APP ATC 75]-Enhance FDP for Direct Route and Free Route Operations [ER APP ATC 78]-Update FDP to support 4D trajectory direct segments in free routing airspace beyond local AoR		
Finalisation criteria:	1 - The ATC system has been updated according to the specifications representing the identified necessary changes.		
AOM21.2-ASP03	Implement Initial FRA procedures and processes in support of the local dimension	From: 01/01/2015	By: 31/12/2022
Action by:	ANS Providers		
Description & purpose:	Take the following actions: <ul style="list-style-type: none"> • Adapt the LoA with adjacent ATS units; • Publish relevant data for FRA in AIP; • Chart FRA operations; • Develop airspace management procedure for the implementation of free routes operation; • Review ASM Procedures for 'Free Route' areas;; • Develop ATC procedures to cover free route co-ordination and transfer of control, trajectory change in a free route environment, alignment of procedures for conflict detection in FRA environment; ; • Validate airspace design, RAD and ASM procedures with NM. 		
	Note : This SLoA needs to be synchronised between ANSPs and 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-ASP04	Safety Assessment	From: 01/01/2015	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):	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 - Safety assessment has been developed and delivered to the competent authority.		

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AOM21.2-ASP05	Training	From: 01/01/2015	By: 31/12/2022
Action by:	ANS Providers		
Description & purpose:	All relevant staff must be duly trained.		
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 - Training has been completed.		
AOM21.2-ASP06	Operational use	From: 01/01/2015	By: 31/12/2022
Action by:	ANS Providers		
Description & purpose:	Initial FRA is in operational use once the systems have been implemented, the procedures are in place, the safety assessment has been delivered and approved, and the training has been completed.		
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 - Initial FRA is put into service.		
AOM21.2-USE01	Implement Initial FRA system improvements	From: 01/01/2015	By: 31/12/2022
Action by:	Airspace Users		
Description & purpose:	Adapt as necessary the flight Planning system to support FRA as follows: <ul style="list-style-type: none">• Provide the capability to take into account the different constraints, e.g.: ATS, FRA, RAD, scenarios, FL constraints on part of the route only;• Ensure FPL route planning for a complete flight taking into account the differences of implementation (FRA with or without partial implementation) throughout the entire flight.		
	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 adapted as necessary.		
AOM21.2-USE02	Implement Initial FRA procedures and processes	From: 01/01/2015	By: 31/12/2022
Action by:	Airspace Users		
Description & purpose:	Take the following actions: <ul style="list-style-type: none">• Develop and apply operational Procedures for free route;• Develop and apply operational Procedures to take into account airspace and traffic constraints when planning 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		
Finalisation criteria:	1 - Procedures taking into account Free Route Airspace operations have been promulgated.		
AOM21.2-USE03	Training	From: 01/01/2015	By: 31/12/2022
Action by:	Airspace Users		
Description & purpose:	All relevant staff must be duly trained.		
Finalisation criteria:	1 - Training has been completed		
AOM21.2-USE04	Operational use	From: Applicability Area 1: 01/01/2015	By: Applicability Area 1: 31/12/2022
Action by:	Airspace Users		
Description & purpose:	Initial FRA is in operational use once the systems have been implemented, the procedures are in place, the safety assessment has been delivered and approved, and the training has been completed		
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 - Initial FRA is put into service.		
AOM21.2-NM01	Implement Initial FRA system improvements	From:	By:

AOM21.2		Initial Free Route Airspace	
		Applicability Area 1: 01/01/2015	Applicability Area 1: 31/12/2022
Action by:	NM		
Description & purpose:	Upgrade NM system to support the following: <ul style="list-style-type: none"> • IFPS routing proposal • Specific ASM improvements for FRA • Network impact assessment for FRA • CACD adaptations for FRA Initial deployment 		
	Note : This SLoA needs to be synchronised between ANSPs, AUs and 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:	[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 Initial FRA procedures and processes	From: 01/01/2015	By: 31/12/2022
Action by:	NM		
Description & purpose:	Take the following actions in coordination with ANSPs: <ul style="list-style-type: none"> • 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 Initial FRA application; • ATFCM FRA procedures; • Adapt RAD applicability; • Validate airspace design, RAD and ASM procedures with ANSPs. 		
	Note : This SLoA needs to be synchronised between ANSPs and 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 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.		
AOM21.2-NM03	Safety Assessment	From: 01/01/2015	By: 31/12/2022
Action by:	NM		
Description & purpose:	The safety assessment of the changes must be developed and delivered to the competent authority.		
Finalisation criteria:	1 - Safety assessment has been developed and delivered to the competent authority.		
AOM21.2-NM04	Training	From: 01/01/2015	By: 31/12/2022
Action by:	NM		
Description & purpose:	All relevant staff must be duly trained		
Finalisation criteria:	1 - Training has been completed.		
AOM21.2-NM05	Operational use	From: 01/01/2015	By: 31/12/2022
Action by:			
Description & purpose:	Initial FRA is in operational use once the systems have been implemented, the procedures are in place, the safety assessment has been delivered and approved, and the training has been completed.		
Finalisation criteria:	1 - Initial FRA is put into service.		

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