

SES		Active							ECAC+	
NAV03.1		RNAV 1 in TMA Operations								
REG	ASP	MIL	APO	USE	INT	IND	NM	MET	AIS	USP

### Subject matter and scope

Performance-based navigation distinguishes between RNAV and RNP Specifications, both of which rely on area navigation techniques which allow aircraft to operate on any desired flight path within the coverage of station-referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of these. An RNAV 1 specification includes several requirements, one being a requirement for the lateral and longitudinal total system error (TSE) to be within +/- 1NM at least 95% of the flight time.

Individual States, ANSPs, and airports will evaluate the business need for SID routes or STAR routes. Where providers of ATM/ANS have established SID or STAR, they shall implement those routes in accordance with the requirements of RNAV 1 or RNP1 specification, as applicable.

PBN Regulation (EU) 2018/1048 of 18 July 2018, does not impose obligatory establishment of SID or STAR (business decision on having SID or STAR is up to an individual stakeholder). However, the regulation does prescribe obligatory set of specifications to be complied with, where a stakeholder had decided to establish SID or STAR.

NOTE: Where higher performance requirements than RNAV 1 are required in order to maintain air traffic capacity and safety in environments with high traffic density, traffic complexity or terrain features, SIDs or STARs shall be implemented in accordance with the requirements of the RNP 1 specification. See objective NAV 03.2 for details.

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)

<b>Applicability Area 1</b> (EU SES states instrument RWY ends)	All EU SES States		
<b>Applicability Area 2</b> (Other ECAC+ states' instrument RWY ends, except those already listed in Applicability Area 1.)	Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Georgia, Israel, Moldova, Morocco, North Macedonia, Serbia, Türkiye, Ukraine, United Kingdom		
<b>Timescales:</b>	<b>From:</b>	<b>By:</b>	<b>Applicable to:</b>
Initial operational capability	01/01/2001		Applicability Area 1 + Applicability Area 2
One SID and STAR per instrument RWY, where established		25/01/2024	Applicability Area 1
All SIDs and STARs per instrument RWY, where established		06/06/2030	Applicability Area 1
Locally determined number of RNAV1 SID/STAR, where established		06/06/2030	Applicability Area 2

### References

#### European ATM Master Plan

OI step -	<a href="#">[AOM-0601]-Terminal Airspace Organisation Adapted through Use of Best Practice</a>							
	Enablers -	MIL-STD-01	MIL-STD-02	PRO-021				
OI step -	<a href="#">- No OI Link -</a>							
	Enablers -	CTE-N08						

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

Commission Implementing Regulation (EU) 2018/1048 of 18 July 2018 laying down airspace usage requirements and operating procedures concerning performance-based navigation
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#### Essential Operational Changes

Airport and TMA performance
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#### SESAR Solution

<b>NAV03.1</b>	<b>RNAV 1 in TMA Operations</b>
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#62 - P-RNAV in a complex TMA
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#### ICAO GANP - ASBUs

APTA-B0/2	PBN SID and STAR procedures (with basic capabilities)
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#### Deployment Programme

- none -	
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#### European Plan for Aviation Safety

RMT.0445	Technical requirements and operational procedures for airspace design, including flight procedure design
RMT.0639	Performance-based navigation implementation in the European air traffic management network

#### Operating Environments

Terminal Airspace
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### Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
NAV03.1-REG01	Verify the transition plan for PBN in ANS provision	03/12/2020	06/06/2030
NAV03.1-ASP01	Develop an airspace concept based on RNAV 1 arrival and departure procedures	01/01/2001	06/06/2030
NAV03.1-ASP02	Provide appropriate terrestrial navigation infrastructure to support RNAV 1 operations	01/01/2001	06/06/2030
NAV03.1-ASP03	Train air traffic controllers in RNAV 1 procedures	01/01/2003	06/06/2030
NAV03.1-ASP04	Train procedure designers in RNAV 1 capabilities	<b>FINALISED</b>	
NAV03.1-ASP05	Develop and implement at least one RNAV 1 SID and RNAV 1 STAR per instrument RWY	01/01/2001	25/01/2024 06/06/2030
NAV03.1-ASP06	Publish in AIPs all co-ordinate data in WGS-84 meeting the quality requirements set out in ICAO Annex 15	<b>FINALISED</b>	
NAV03.1-ASP07	Define all RNAV procedures to be for RNAV 1 approved aircraft and designed in accordance with the EUROCONTROL guidelines and ICAO PANS OPS	<b>DELETED</b>	
NAV03.1-ASP08	Adapt ATS automated systems to ensure the availability of information regarding aircraft RNAV equipage for systematic display to relevant control positions	<b>FINALISED</b>	
NAV03.1-ASP09	Implement adaptations to ATS systems to permit the display on flight strips (and extended track labels) radar labels and/or radar position symbols, of aircraft RNAV equipage	<b>DELETED</b>	
NAV03.1-ASP10	Recommend to adapt ATS radar display systems to permit the display, on radar labels and/or radar position symbols, of aircraft RNAV equipage. Such display should be automatic. Manual updates should be possible	<b>DELETED</b>	
NAV03.1-ASP11	Develop a local RNAV 1 safety assessment	01/01/2001	06/06/2030
NAV03.1-ASP12	Establish the transition plan for PBN in ANS provision	03/12/2020	06/06/2030
NAV03.1-ASP13	Develop and implement all RNAV 1 SID and RNAV 1 STAR per instrument RWY	01/01/2001	06/06/2030
NAV03.1-USE01	Install appropriate RNAV 1 equipment	01/01/2001	31/12/2023
NAV03.1-USE02	Train flight crews in RNAV 1 TMA procedures	01/01/2001	31/12/2023

Description of finalised and deleted SLoAs is available on the eATM Portal @ [https://www.eatmportal.eu/working/depl/essip\\_objectives](https://www.eatmportal.eu/working/depl/essip_objectives)

### Expected Performance Benefits

<b>Safety:</b>	Increased situational awareness and indirect benefit to both ATC and pilot through reduction of workload during RNAV operations.
<b>Capacity:</b>	-
<b>Operational Efficiency:</b>	Reduction in fuel burn through optimised routes and TMA procedures.
<b>Cost Efficiency:</b>	-
<b>Environment:</b>	Emissions and noise nuisance reduced by use of optimal flight procedures and routings.
<b>Security:</b>	-

### Detailed SLoA Descriptions

NAV03.1-REG01	Verify the transition plan for PBN in ANS provision	From:	By:
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NAV03.1		RNAV 1 in TMA Operations	
		03/12/2020	06/06/2030
<b>Action by:</b>	<b>National Supervisory Authorities (NSAs)</b>		
<b>Description &amp; purpose:</b>	<p>This SLoA is mandatory only for the States subject to Commission Implementing Regulation (EU) 2018/1048 of 18 July 2018.</p> <p>Verify whether the draft transition plan, or the draft significant update thereof, complies with the requirements of PBN Implementing Regulation and in particular whether it takes account of the views of airspace users where appropriate, including those operating State aircraft.</p> <p>Inform the providers of ATM/ANS of the outcome of that verification without undue delay.</p> <p><b>Note :</b> This SLoA is recommended as the best practice to other ECAC+ States which are not subject to Commission Implementing Regulation (EU) 2018/1048 of 18 July 2018.</p>		
<b>Finalisation criteria:</b>	1 - The outcome of the verification has been notified to ANSP.		
<b>NAV03.1-ASP01</b>	<b>Develop an airspace concept based on RNAV 1 arrival and departure procedures</b>	From: 01/01/2001	By: 06/06/2030
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	Develop an airspace concept based on RNAV 1 arrival and departure procedures with a view to providing performance benefits.		
<b>Supporting material(s):</b>	<p>EUROCONTROL - Airspace Concept Handbook for the Implementation of Performance Based Navigation (PBN) - Edition 4.0 / 04/2021</p> <p>Url : <a href="https://www.eurocontrol.int/publication/airspace-concept-handbook-implementation-performance-based-navigation-pbn">https://www.eurocontrol.int/publication/airspace-concept-handbook-implementation-performance-based-navigation-pbn</a></p> <p>EUROCONTROL - European Route Network Improvement Plan (ERNIP) Part 1 - European Airspace Design Methodology - Guidelines - 2.0 / 12/2018</p> <p>Url : <a href="https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-1">https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-1</a></p> <p>ICAO - Doc 9613 - Performance-based Navigation (PBN) Manual - Edition 4 / 03/2013</p> <p>Url : <a href="https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613">https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613</a></p> <p>EASA - EASA Decision 2018/013/R - AMC &amp; GM to Regulation (EU) 2018/1048 (PBN IR) – Annex II to EASA Decision 2018/013/R 11/2018</p> <p>Url : <a href="https://www.easa.europa.eu/sites/default/files/dfu/Annexes%20to%20EDD%202018-013-R.pdf">https://www.easa.europa.eu/sites/default/files/dfu/Annexes%20to%20EDD%202018-013-R.pdf</a></p> <p>ICAO - Doc 9992 - Manual on the Use of Performance-based Navigation (PBN) in Airspace Design - First Edition / 01/2013</p> <p>Url : <a href="http://store1.icao.int/">http://store1.icao.int/</a></p> <p>ICAO - Doc 7030 - Regional supplementary Procedures - Edition 5 / 07/2011</p> <p>Url : <a href="https://www.icao.int/EURNAT/Pages/EUR-and-NAT-Document.aspx">https://www.icao.int/EURNAT/Pages/EUR-and-NAT-Document.aspx</a></p> <p>ICAO - Doc 8168-Volume II - Aircraft Operations - Volume II - Construction of Visual and Instrument Flight Procedures - Edition 5 / 11/2011</p> <p>Url : <a href="https://store.icao.int/">https://store.icao.int/</a></p>		
<b>ATM Master Plan relationship:</b>	<a href="#">[PRO-021]-ATC Procedures to facilitate the design and utilization of more noise sensitive and efficient SID/STAR routings including CDA and to integrate P-RNAV or RNAV with APV/Baro VNAV capabilities into the TMA route structure</a>		
<b>Finalisation criteria:</b>	1 - An airspace concept based on RNAV 1 arrival and departure procedures has been developed.		
<b>NAV03.1-ASP02</b>	<b>Provide appropriate terrestrial navigation infrastructure to support RNAV 1 operations</b>	From: 01/01/2001	By: 06/06/2030
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	Implement appropriate DME/DME Navaid Infrastructure to support nominal or non-nominal mode, dependant on the Airspace Concept at NAV03.1-ASP01. Where RNAV 1 procedures are dependent upon sufficient DME transponders being distributed geographically to allow for DME/DME navigation either in nominal or in non-nominal mode (in the absence of onboard GNSS equipment or GNSS failure), this may result in a requirement to install new DME stations and/or the relocation of existing units.		
<b>Supporting material(s):</b>	<p>EUROCONTROL - GUID-114 - Guidelines for RNAV 1 Infrastructure Assessment - Edition 2.0 / 07/2021</p> <p>Url : <a href="https://www.eurocontrol.int/publication/eurocontrol-guidelines-rnav-1-infrastructure-assessment">https://www.eurocontrol.int/publication/eurocontrol-guidelines-rnav-1-infrastructure-assessment</a></p> <p>ICAO - Doc 9613 - Performance-based Navigation (PBN) Manual - Edition 4 / 03/2013</p> <p>Url : <a href="https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613">https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613</a></p> <p>EUROCONTROL - Distance Measuring Equipment Tracer (DEMETER) Tool - Version 1.0.4 / 01/2012</p> <p>Url : <a href="https://www.eurocontrol.int/online-tool/distance-measuring-equipment-tracer">https://www.eurocontrol.int/online-tool/distance-measuring-equipment-tracer</a></p>		
<b>ATM Master Plan relationship:</b>	<a href="#">[CTE-N08]-DME Ground Infrastructure optimisation</a>		
<b>Finalisation criteria:</b>	1 - Infrastructure has been assessed and modified if required to meet the requirements for RNAV 1 procedures based on DME/DME procedures.		
<b>NAV03.1-ASP03</b>	<b>Train air traffic controllers in RNAV 1 procedures</b>	From: 01/01/2003	By: 06/06/2030

<b>NAV03.1</b>	<b>RNAV 1 in TMA Operations</b>		
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<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	Train ATCOs in RNAV capabilities and new methods of managing traffic on SID/STARs to ensure safe and expeditious operations. RNAV procedures could reduce the need for radar vectors up to the final approach point (FAP).		
<b>Supporting material(s):</b>	ICAO - Doc 8168-Volume I - Aircraft Operations - Volume I - Flight Procedures - Edition 5 / 11/2010 Url : <a href="https://store.icao.int/">https://store.icao.int/</a> ICAO - Doc 4444 - Air Traffic Management - Edition 16 / 11/2016 Url : <a href="https://store.icao.int/">https://store.icao.int/</a> ICAO - Doc 7030 - Regional supplementary Procedures - Edition 5 / 07/2011 Url : <a href="https://www.icao.int/EURNAT/Pages/EUR-and-NAT-Document.aspx">https://www.icao.int/EURNAT/Pages/EUR-and-NAT-Document.aspx</a> ICAO - Doc 8168-Volume II - Aircraft Operations - Volume II - Construction of Visual and Instrument Flight Procedures - Edition 5 / 11/2011 Url : <a href="https://store.icao.int/">https://store.icao.int/</a>		
<b>Finalisation criteria:</b>	1 - The necessary training has been given to controllers responsible for the operation of RNAV 1 terminal procedures.		
<b>NAV03.1-ASP04</b>	<b>Train procedure designers in RNAV 1 capabilities</b>	<b>From:</b> <b>Applicability Area 1:</b> 01/01/2001	<b>By:</b> <b>Applicability Area 1:</b> 31/01/2003
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	RNAV procedures require a more comprehensive understanding of aircraft performance, database coding, and certification. Tools have been developed to help the procedure designer in his/her task. Training is necessary to ensure the procedure design is safe and executable by the onboard systems.		
<b>Supporting material(s):</b>	ICAO - Doc 9906-Volume 1 - Quality Assurance Manual for Flight Procedure Design - Volume 1 - Flight Procedure Design Quality Assurance System - Edition 1 / 12/2009 Url : <a href="https://store.icao.int/">https://store.icao.int/</a>		
<b>Finalisation criteria:</b>	1 - The necessary training given to procedure designers responsible for the design of RNAV terminal procedures.		
<b>NAV03.1-ASP05</b>	<b>Develop and implement at least one RNAV 1 SID and RNAV 1 STAR per instrument RWY</b>	<b>From:</b> <b>Applicability Area 1:</b> 01/01/2001	<b>By:</b> <b>Applicability Area 1:</b> 25/01/2024 <b>Applicability Area 2:</b> 06/06/2030
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	Design, develop and implement RNAV 1 arrival and departure procedures based on the airspace concept and the transition plan. Publish the procedures in the State AIP. Where SID and STAR are established, at least one RNAV 1 SID and RNAV1 STAR shall be implemented at all instrument runway ends in EU SES states by 25 January 2024.		
	<b>Note :Note 1: Other ECAC+ States (i.e. non EU SES States) may chose to implement this SLoA by 06/06/2030.</b>		
<b>Supporting material(s):</b>	EUROCONTROL - Airspace Concept Handbook for the Implementation of Performance Based Navigation (PBN) - Edition 4.0 / 04/2021 Url : <a href="https://www.eurocontrol.int/publication/airspace-concept-handbook-implementation-performance-based-navigation-pbn">https://www.eurocontrol.int/publication/airspace-concept-handbook-implementation-performance-based-navigation-pbn</a> ICAO - Doc 9613 - Performance-based Navigation (PBN) Manual - Edition 4 / 03/2013 Url : <a href="https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613">https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613</a> EASA - EASA Decision 2018/013/R - AMC & GM to Regulation (EU) 2018/1048 (PBN IR) – Annex II to EASA Decision 2018/013/R 11/2018 Url : <a href="https://www.easa.europa.eu/sites/default/files/dfu/Annexes%20to%20EDD%202018-013-R.pdf">https://www.easa.europa.eu/sites/default/files/dfu/Annexes%20to%20EDD%202018-013-R.pdf</a> ICAO - Doc 8168-Volume II - Aircraft Operations - Volume II - Construction of Visual and Instrument Flight Procedures - Edition 5 / 11/2011 Url : <a href="https://store.icao.int/">https://store.icao.int/</a>		
<b>ATM Master Plan relationship:</b>	<a href="#">[PRO-021]-ATC Procedures to facilitate the design and utilization of more noise sensitive and efficient SID/STAR routings including CDA and to integrate P-RNAV or RNAV with APV/Baro VNAV capabilities into the TMA route structure</a>		
<b>Finalisation criteria:</b>	1 - At least one RNAV 1 SID and RNAV 1 STAR have been implemented.		
<b>NAV03.1-ASP06</b>	<b>Publish in AIPs all co-ordinate data in WGS-84 meeting the quality requirements set out in ICAO Annex 15</b>	<b>From:</b> <b>Applicability Area 1:</b> 01/01/2001	<b>By:</b> <b>Applicability Area 1:</b> 31/01/2005
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	It is an essential requirement that RNAV procedures are designed in accordance with PANS OPS and that all co-ordinate data published in AIPs, e.g. runway thresholds, navigation aids, waypoints, etc., are surveyed with reference to the WGS84 standard. Following a survey which must be undertaken in accordance with the EUROONROL standard for WGS 84 survey (Doc 007), the data must be maintained with adequate integrity.		

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<b>Supporting material(s):</b>	EC - REGULATION (EU) 2020/469 of 14 February 2020 - COMMISSION IMPLEMENTING REGULATION (EU) 2020/469 of 14 February 2020 amending Regulation (EU) No 923/2012, Regulation (EU) No 139/2014 and Regulation (EU) 2017/373 as regards requirements for air traffic management/air navigation services, design of airspace structures and data quality, runway safety and repealing Regulation (EC) No 73/2010. 01/2010 Url : <a href="https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R0469">https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R0469</a> ICAO - Doc 9613 - Performance-based Navigation (PBN) Manual - Edition 4 / 03/2013 Url : <a href="https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613">https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613</a> ICAO - Annex 15 - Aeronautical Information Services Url : <a href="https://store.icao.int/">https://store.icao.int/</a> ICAO - Doc 9674 - World Geodetic System - 1984 (WGS-84) Manual - Edition 2 / 12/2002 Url : <a href="https://store.icao.int/">https://store.icao.int/</a>		
<b>Finalisation criteria:</b>	1 - AIPs updated accordingly.		
<b>NAV03.1-ASP08</b>	<b>Adapt ATS automated systems to ensure the availability of information regarding aircraft RNAV equipage for systematic display to relevant control positions</b>	<b>From:</b> <b>Applicability Area 1:</b> 01/07/2002	<b>By:</b> <b>Applicability Area 1:</b> 31/03/2005
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	In as much as P-RNAV is not mandatory for terminal area operations, ATC must systematically distinguish aircraft, on the basis of individual aircraft RNAV equipage indicated in the FPL, so as to support an orderly and efficient assignment of SIDs/STARs.		
<b>Specific applicability:</b>	<a href="#">ECAC States where P-RNAV SIDs/STARs are implemented.</a>		
<b>Finalisation criteria:</b>	1 - Adaptations complete.		
<b>NAV03.1-ASP11</b>	<b>Develop a local RNAV 1 safety assessment</b>	<b>From:</b> 01/01/2001	<b>By:</b> 06/06/2030
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	Develop safety assessment of the changes related to the implementation of RNAV 1 procedures. The tasks to be done are as follows: - Conduct hazard identification, risk assessment in order to define safety objectives and safety requirements mitigating the risks; - Develop safety assessment; - Deliver a safety assessment report to the NSA, if new standards are applicable or if the severity class of identified risks is 1 or 2. This safety assessment shall be based on fully validated/recognised method.		
<b>Supporting material(s):</b>	EC - COMMISSION IMPLEMENTING REGULATION (EU) 2017/373 - (OJ L 62, 8.03.2017, p. 1) - COMMISSION IMPLEMENTING REGULATION (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 03/2017 Url : <a href="https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0373&amp;from=EN">https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0373&amp;from=EN</a> EUROCONTROL - Air Navigation Systems Safety Assessment Methodology (SAM) - Version 2.1 / 11/2006 Url : <a href="https://www.eurocontrol.int/tool/safety-assessment-methodology">https://www.eurocontrol.int/tool/safety-assessment-methodology</a>		
<b>Finalisation criteria:</b>	1 - The safety assessment report for the changes has been developed and delivered to the NSA as necessary.		
<b>NAV03.1-ASP12</b>	<b>Establish the transition plan for PBN in ANS provision</b>	<b>From:</b> 03/12/2020	<b>By:</b> 06/06/2030
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	This SLoA is mandatory only for the States subject to Commission Implementing Regulation (EU) 2018/1048 of 18 July 2018. Establish and implement a transition plan for using PBN. The transition plan shall be kept up-to-date. The transition plan shall be consistent with the European ATM Master Plan and the common projects referred to in Article 15a of Regulation (EC) No 550/2004 of the European Parliament and of the Council. Consult all of the following parties on the draft transition plan and the draft of any significant updates thereof and take account of their views where appropriate: a) aerodrome operators, airspace users and representative organisations of such airspace users affected by the provision of ANS services; b) the Network Manager; c) ANS providers in adjacent airspace blocks. The PBN Transition Plan will have to cover both aspects related to the navigation applications to be implemented, but also the related supporting infrastructure. Submit the results of the consultation, as well as the draft transition plan, or the draft significant update thereof, for approval to the competent authority.		
	<a href="#">Note :This SLoA is recommended as the best practice to other ECAC+ States which are not subject to Commission Implementing Regulation (EU) 2018/1048 of 18 July 2018.</a>		



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<b>Supporting material(s):</b>	<p>EUROCONTROL - Airspace Concept Handbook for the Implementation of Performance Based Navigation (PBN) - Edition 4.0 / 04/2021            Url : <a href="https://www.eurocontrol.int/publication/airspace-concept-handbook-implementation-performance-based-navigation-pbn">https://www.eurocontrol.int/publication/airspace-concept-handbook-implementation-performance-based-navigation-pbn</a></p> <p>EUROCONTROL - European Route Network Improvement Plan (ERNIP) Part 1 - European Airspace Design Methodology - Guidelines - 2.0 / 12/2018            Url : <a href="https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-1">https://www.eurocontrol.int/publication/european-route-network-improvement-plan-ernip-part-1</a></p> <p>ICAO - Doc 9613 - Performance-based Navigation (PBN) Manual - Edition 4 / 03/2013            Url : <a href="https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613">https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613</a></p> <p>EASA - EASA Decision 2018/013/R - AMC &amp; GM to Regulation (EU) 2018/1048 (PBN IR) – Annex II to EASA Decision 2018/013/R 11/2018            Url : <a href="https://www.easa.europa.eu/sites/default/files/dfu/Annexes%20to%20EDD%202018-013-R.pdf">https://www.easa.europa.eu/sites/default/files/dfu/Annexes%20to%20EDD%202018-013-R.pdf</a></p> <p>ICAO - Doc 7030 - Regional supplementary Procedures - Edition 5 / 07/2011            Url : <a href="https://www.icao.int/EURNAT/Pages/EUR-and-NAT-Documents.aspx">https://www.icao.int/EURNAT/Pages/EUR-and-NAT-Documents.aspx</a></p> <p>ICAO - Doc 8168-Volume II - Aircraft Operations - Volume II - Construction of Visual and Instrument Flight Procedures - Edition 5 / 11/2011            Url : <a href="https://store.icao.int/">https://store.icao.int/</a></p>		
<b>Finalisation criteria:</b>	0 - The draft transition plan, or the draft significant update thereof, has been submitted to the competent authority for approval		
<b>NAV03.1-ASP13</b>	<b>Develop and implement all RNAV 1 SID and RNAV 1 STAR per instrument RWY</b>	From: 01/01/2001	By: 06/06/2030
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	Design, develop and implement RNAV 1 arrival and departure procedures based on the airspace concept and the transition plan. Publish the procedures in the State AIP. Where SID and STAR are established, all SID and STAR shall be RNAV 1 at all instrument runway ends by 6 June 2030.		
	<a href="#">Note :Other ECAC+ States (i.e. non EU SES States) may chose to implement locally determined number of RNAV1 SID/STAR per instrument RWY, where established.</a>		
<b>Supporting material(s):</b>	<p>EUROCONTROL - Airspace Concept Handbook for the Implementation of Performance Based Navigation (PBN) - Edition 4.0 / 04/2021            Url : <a href="https://www.eurocontrol.int/publication/airspace-concept-handbook-implementation-performance-based-navigation-pbn">https://www.eurocontrol.int/publication/airspace-concept-handbook-implementation-performance-based-navigation-pbn</a></p> <p>ICAO - Doc 9613 - Performance-based Navigation (PBN) Manual - Edition 4 / 03/2013            Url : <a href="https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613">https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613</a></p> <p>EASA - EASA Decision 2018/013/R - AMC &amp; GM to Regulation (EU) 2018/1048 (PBN IR) – Annex II to EASA Decision 2018/013/R 11/2018            Url : <a href="https://www.easa.europa.eu/sites/default/files/dfu/Annexes%20to%20EDD%202018-013-R.pdf">https://www.easa.europa.eu/sites/default/files/dfu/Annexes%20to%20EDD%202018-013-R.pdf</a></p> <p>ICAO - Doc 8168-Volume II - Aircraft Operations - Volume II - Construction of Visual and Instrument Flight Procedures - Edition 5 / 11/2011            Url : <a href="https://store.icao.int/">https://store.icao.int/</a></p>		
<b>ATM Master Plan relationship:</b>	<a href="#">[PRO-021]-ATC Procedures to facilitate the design and utilization of more noise sensitive and efficient SID/STAR routings including CDA and to integrate P-RNAV or RNAV with APV/Baro VNAV capabilities into the TMA route structure</a>		
<b>Finalisation criteria:</b>	1 - All SID and STAR have been implemented as RNAV 1.		
<b>NAV03.1-USE01</b>	<b>Install appropriate RNAV 1 equipment</b>	From: 01/01/2001	By: 31/12/2023
<b>Action by:</b>	<b>Airspace Users</b>		
<b>Description &amp; purpose:</b>	Install equipment meeting RNAV 1 requirements. Where existing RNAV/FMS equipment meets only B-RNAV requirements, there will be a need to update or replace the systems. Aircraft already equipped with RNAV/FMS will need to gain regulatory approval which will include operational approval for the application of the system on RNAV 1 routes.		
<b>Supporting material(s):</b>	<p>ICAO - Doc 9613 - Performance-based Navigation (PBN) Manual - Edition 4 / 03/2013            Url : <a href="https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613">https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613</a></p> <p>JAA - TGL 10 Revision 1 - Airworthiness and Operational Approval for Precision RNAV Operations in Designated European Airspace 02/2005            Url : <a href="http://www.eurocontrol.int/articles/navigation-library">http://www.eurocontrol.int/articles/navigation-library</a></p>		
<b>ATM Master Plan relationship:</b>	<a href="#">[A/C-04]-Flight management and guidance for improved lateral navigation in approach via RNP</a> <a href="#">[A/C-71]-Aircraft Based Augmentation System (ABAS) for Military A/C</a>		
<b>Finalisation criteria:</b>	1 - Aircraft have been certified for RNAV 1 operations.		
<b>NAV03.1-USE02</b>	<b>Train flight crews in RNAV 1 TMA procedures</b>	From: 01/01/2001	By: 31/12/2023

<b>NAV03.1</b>	<b>RNAV 1 in TMA Operations</b>
<b>Action by:</b>	<b>Airspace Users</b>
<b>Description &amp; purpose:</b>	Train flight crews in the application of RNAV 1 TMA procedures.
<b>Supporting material(s):</b>	ICAO - Doc 9613 - Performance-based Navigation (PBN) Manual - Edition 4 / 03/2013 Url : <a href="https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613">https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613</a>
<b>Finalisation criteria:</b>	1 - Training manuals have been updated to include RNAV TMA procedures. 2 - The aircrew has been trained accordingly. 3 - The aircrew have met the regulatory requirements for RNAV1 operations.

