



iNM-Wave 0 Release Notes

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Classification: White



NETWORK
MANAGER





Important Notifications

- (1) **As part of NM's digital transformation, via the iNM programme, NM has opted for smartphone multi-factor authentication (MFA) as the sole method for logging onto the iNM platform. This change is to align with industry best practices, enhancing security and user experience.**
- (2) **To ensure individual MFA accounts are set-up before OPS, activation links will be sent to all stakeholders on 04/10/2024. Users must set up MFA accounts to access iNM applications.**
- (3) **Each user will receive an e-mail from noreply@okta.com and will have 7 days to activate the account & set-up MFA. Our CSO helpdesk is available to support in case of technical difficulties. Additional details in Section 4.0.**
- (4) **A user guide for MFA creation and iNM log-in is available – This guide will be sent via e-mail, along with the OPS URLs, but is also accessible via the dedicated Wave 0 webpage.**
- (5) **The OPS migration of the DNP Editor, RAD & CAL Digital Products from NM-MAINT-2 to iNM-Wave-0 will be executed on the 15/10/2024 in a single night migration.**
- (6) **The 3 products will be unavailable for 5 hours (starting 20:00 UTC) and are accessible for operational use as of 16/10/2024 – No other NM systems are affected by this migration.**
- (7) **To access the iNM operational products, use and bookmark one of the URLs below:**
 - a) iNM RAD: <https://nrp-ops.nmui.eurocontrol.int/rad>
 - b) iNM CAL: <https://nrp-ops.nmui.eurocontrol.int/cal>
 - c) iNM DNP: <https://nrp-ops.nmui.eurocontrol.int/dnp/plan>
- (8) **It is reminded that the NM-26.0 B2B will be decommissioned on the 3rd of December 2024. NM27.0 B2B version will remain supported.**
- (9) **In the unlikely case of 'fallback' meaning the 3 products are no longer accessible via MFA – DNP, RAD, CAL will be re-activated on NMP.**
- (10) **During fallback, while iNM connectivity is re-established, users will be instructed to log-in through NMP, using the RSA token provided by NM. Users are therefore required to keep both MFA and RSA at hand during this transition period.**




(11) **Below an illustrative overview of the key changes related to MFA:**


iNM programme – Wave 0

Benefits unlocked - transition period - minimal impact on users

Key considerations for transition

-  Existing NMP users to be migrated to iNM suite – MFA acc. activation e-mail on 4th OCT
-  NMP used as disaster recovery solution – Keep hardware tokens
-  No “public” access before NMUI – Will be available once products are integrated





Products affected during transition

RAD
CAL
DNP-Editor






iNM - Multi-Factor Authentication (MFA)

Impact on users mitigated

NM has opted for smartphone Multi-Factor Authentication (MFA) as sole log-in solution

MFA is aligned with industry best practices and brings several benefits...

-  **Secure** – MFA are constantly updated with the latest security features – Additional check also reduces risk of data breach
-  **Convenient** – No need for extra hardware; can be managed from day-to-day device (smartphone) & quicker to set-up
-  **User friendly** – Integrates with popular authenticator apps like Google, Microsoft, and OKTA – Industry leaders
-  **Resilient** – Hardware tokens can be lost, stolen, or damaged. Smartphones are less prone and can easily be replaced
-  **Cost-effective** – Less expensive than distributing and maintaining hardware tokens, esp. for large organizations

...with minimal disruption – 2 key requirements to be considered

Individualized Corporate Emails:

- > Each user must have an individualized corporate email account.
- > Shared or generic accounts will no longer be supported.

Smartphone MFA Installation:

- > All users will be required to install an MFA app on their smartphones – Google & Microsoft supported
- > Simple installation instructions and CSO support will be provided throughout.

DOCUMENT CHARACTERISTICS

Document Title	iNM-Wave 0 Release Notes
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Abstract	<p>This document describes the new and modified functions delivered by NM as part of the iNM-Wave 0 software release.</p> <p>This document is available at: https://www.eurocontrol.int/publication/inm-wave0-release-notes</p>
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Author(s)/Unit	iNM Wave Manager/NM/TEC
Contact Person(s)	nm.releases@eurocontrol.int
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Edition History

The following table records the history of the successive editions of the present document.

Edition No.	Edition Validity Date	Reason
1	09/08/2024	Initial edition
2	04/10/2024	Revised edition

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1 Introduction

- (1) NM releases include changes arising from different sources and coordinated via various fora. They allow the development and deployment of new functionalities, which implement the NM business plans.
- (2) The NM Release Notes are designed as a rolling document using successive editions, to provide NM service users with an early view of changes and deployment schedule, being refined as the release software is being developed. This rolling view is aimed at helping NM users to anticipate and assess the impact and opportunities on their operational procedures and/or systems.
- (3) The iNM program delivers updates to NM systems through multiple releases, known as Waves. Each Wave targets different sets of NM Systems, those released on the iNM Digital Platform being referred to as Digital Products. This Release Note outlines the changes in Wave-0 that:
 - a) May impact the operations of external NM service users,
 - b) Introduce significant technical improvements to enhance service quality for NM users,
 - c) Or increase efficiency within NMOC for better service delivery.
- (4) The objective of Wave-0 is on technical improvements (operationalization of the Digital Platform and migration of NM systems) and some minor functional improvements in the NM HMIs.
- (5) Currently, there is no planned NM MAINT-3 Release. After NM MAINT-2, releases are anticipated in the form of iNM Waves.
- (6) Users who wish to automatically receive by email the new editions of the NM Release Notes (and other communications related to the NM software releases) are invited to register at:
 - a) <http://www.eurocontrol.int/network-operations/self-registration-form>
(Within the form, choose "Subscribe to receive e-mail notifications when the NM Release Notes are updated" in the field "Purpose of the request".
 - b) Questions or comments related to this document should be sent to:
nm.releases@eurocontrol.int
- (7) Please note that, in case of service interruption/ degradation, the affected users must notify NM (phone call, email) upon identification of the degraded mode.

2 User's Guide of the NM Release Notes

2.1 Versioning

- (1) The NM Release Note versions are called "editions".
- (2) The NM Release Note editions are published independently of each other, with changes from the previous edition emphasised in **bold green**.

2.2 Document Structure

- (1) Chapter 3, named Network Development Programmes, reminds the reader about the programmes currently under development, which may bring changes to the NM systems in every NM release.
- (2) The context being set, the document provides all available schedule information and notifications regarding the NM release deployment in chapter 4, and the release contents in chapter 5.
- (3) References and abbreviations used across this document are provided in chapters 6 and 7 respectively.

2.3 Description of changes

- (1) The definition of a "Change" in this document is any feature that is changed or added as part of a release, and susceptible to impact the operations of the external NM service user.
- (2) Changes are described in a structured table, using the fields described below.
- (3) The granularity used in this document to express a change is the Change Request (CR). Each CR is described using the following attributes:

CR ...: Number and name of the change	
Objective	
Description	
Users potentially impacted and/or interested	
NM applications and services changed	
Impact category on external users	
Impact description	
Impact on NM Service Specifications	
Operational deployment plan	
User's testing	
Related documentation	

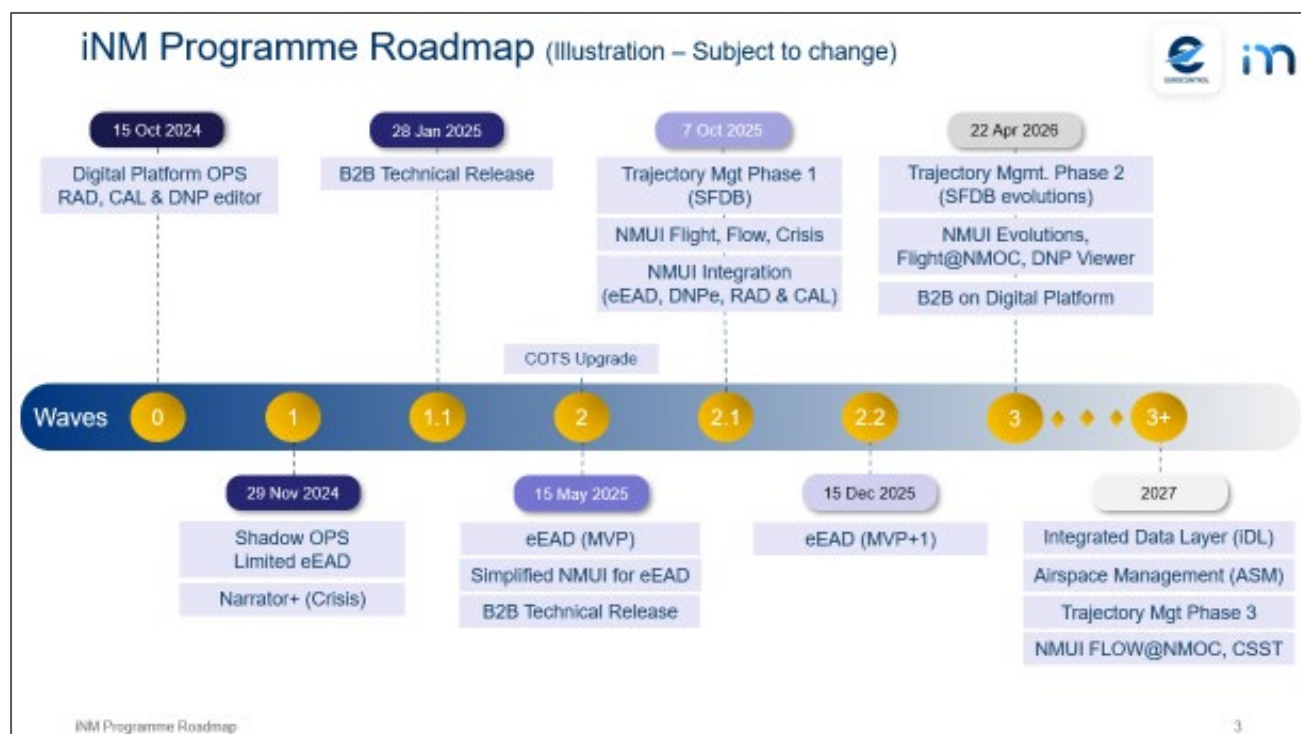
3 Network Development Programmes

- (1) This chapter provides a short description of the NM programmes, implemented as part of NM developments.
- (2) Most of these programmes are strategic developments, aiming to achieve the strategic objectives of the NSP (Network Strategy Plan), and are fully aligned with the ATM functionalities defined in the CP1 (Common Projects One) implementing regulation and the corresponding SESAR Deployment Programme.

3.2 iNM - The Integrated Network Management Programme

- (1) The EUROCONTROL Network Manager (NM) has embarked on a digital transformation journey to replace its core legacy systems which have successfully ensured flow and network management for over 25 years.
- (2) Known as iNM – the integrated Network Management programme will put in place a range of innovative Digital Products enabling EUROCONTROL, in its capacity as the Network Manager designated by the European Commission, to maximise the efficiency, safety and sustainability of the European aviation network through a new generation of cutting-edge, resilient and scalable operational systems.
- (3) The iNM programme envisages, by 2030, the incremental renewal of all the NM's main operational systems, resulting in a new digital architecture that will harness the power of innovation and enable NM to deliver ever more integrated business services and products to its stakeholders.
- (4) To enable such a transition, iNM (via Wave O) has prioritised advanced technical capabilities, to allow for the delivery of new services that support the evolution of operational concepts over the next decade and beyond, encompassing:
 - a) enterprise architecture;
 - b) agile development;
 - c) artificial intelligence and machine learning;
 - d) big data and data analytics;
 - e) probability modelling;
 - f) predictive analysis;
 - g) cloud solutions;
 - h) scalable systems;
 - i) cyber resilience.
- (5) iNM will enable NM to transform its business services, resulting in three key deliverables:
 - a) A Single Flight Manager System (SFDB) to seamlessly manage both flight & flow domains;
 - b) A unique dynamic airspace system that eliminates overlaps and inconsistencies between legacy systems and databases;
 - c) One API for internal and external human machine interfaces.

(6) The current iNM Roadmap:



The above is a provisional illustration – Subject to change and pending validation

3.3 Airport-Network Integration Strategic Project

- (1) The project addresses the full integration of airports and its operations as a component of the ATM network. The project contributes directly to the NSP Strategic Objective 4 (SO4) "Optimise Network Operations" and 5 (SO5) "Develop European connectivity and airport services".
- (2) The project aims at minimising airport disruptions and delays, in particular during adverse conditions, and at setting up the collaborative processes and tools improving airport and TMA integration with ATM operations, thereby positively affecting the overall network, as well as local performance.
- (3) The project includes the following main areas:
 - Improve flight plan/airport slot consistency
 - Improve the airport related operational partnership, starting with the integration of AOPs into the Network Operations Plan (including Target Times)
 - Implement the Advanced ATC Tower, Airport CDM and AOP/NOP integration concepts.

3.4 Airspace Management and Advanced FUA Strategic Project

- (1) The project addresses the coordinated airspace management improvements required to achieve the flight efficiency – and indirectly the capacity – RP3 and RP4 targets, both at network and local/FAB level. The project contributes directly to the NSP Strategic Objective 3 (SO3) "Optimise Network Design".

- (2) The project focuses on the implementation of improved ASM/ATFCM processes and on the Advanced Flexible Use of Airspace concept, combining operational procedures and technical systems support.
- (3) The project aims at:
 - Introducing performance-driven operations based on the management of airspace configurations in fixed route network and FRA environments
 - Providing processes that support the use of more dynamic and flexible elements
 - Describing a seamless, CDM-based process with an advanced real time management of airspace configurations as well as a continuous sharing of information among all ATM partner
- (4) The project includes the following main areas:
 - ASM solutions to improve network performance
 - Dynamic Airspace Configuration and CDM process
 - Rolling process ASM/ATFCM process
 - ASM operations in FRA environments
 - ASM performance monitoring

3.5 Cooperative Traffic Management Strategic Project (CTM)

- (1) The project addresses the collaborative process of determining and implementing optimal solutions for network operations through continuous information sharing of individual and local preferences, by cooperation between actors in the planning and execution phases of ATM. The project contributes directly to the NSP Strategic Objective 4 (SO4) "Optimise Network Operations".
- (2) The project aims at optimising traffic delivery through a transparent cooperative approach involving all operational stakeholders in the ATM network: ATC, Airport, AU and NM operations. It is the interface between local and network operations and aims at improving tactical coordination processes, reducing the gap between planning and execution phases, and enabling the application of flight and flow-specific targeted ATFCM measures, including Target Time measures.
- (3) The project includes the following main areas:
 - Flight Plan Predictability
 - Short Term ATFCM Measures (STAM), including Scenario Management
 - Target Times Operations
 - Support to (extended) Arrival Sequencing Initial User Driven Prioritisation

3.6 European ATM Information Management System Strategic project (EAIMS)

- (1) The project addresses the provision of a reference source of aeronautical and airspace data for use in ATM systems and operations, including flight operations and airport operations. The project contributes directly to the NSP Strategic Objective 2 (SO2) "Deploy and integrate interoperable and secure information management systems".
- (2) The project aims at providing a shared ATM Network Information Reference that allows planning of all stakeholders to be based on the same data and assumptions, that is the reference for any measure with network impact, and that supports any network-wide activity.

- (3) The project includes the following main areas:
- Airspace model evolutions of CACD for compliance with EAD
 - Semi-automatic download of EAD data into CACD and associated processes and procedures
 - Semi-automatic download of other context information to CACD (such as BADA) Improvements of airspace data management CDM processes

3.7 Flight Plan and Flight Data Evolution Strategic Project (FPFDE)

- (1) The project addresses the processes and systems required to elaborate and to share the 4D trajectory information for planning purposes, enabling improved quality ATM planning across the European ATM Network. The project contributes directly to the NSP Strategic Objective 5 – Facilitate business trajectories and cooperative traffic management (SO5).
- (2) The project aims at ensuring and coordinating a gradual implementation in a harmonised way of the ICAO Flight and Flow Information for a Collaborative Environment (FF-ICE), key enabler for the ICAO concept of Trajectory-Based Operations, while supporting all stakeholders in the transition.
- (3) The project includes the following main areas:
- FF-ICE/Release 1 Services, in support of pre-departure operations
 - FF-ICE/Release 2 Services, in support of post-departure operations
 - OAT flight plan integration
 - VFR flight planning support
 - Integration of ADS-C (EPP) data

3.8 Free Route Airspace Strategic Project (FRA)

- (1) The project addresses the required NM system changes and undertakes airspace design, simulation and validation activities required for FRA implementation, as well as monitoring and reporting on implementation progress. The project contributes directly to the NSP Strategic Objective 3 (SO3) "Optimise Network Design".
- (2) The project aims to support the implementation of the FRA concept, as described in the European Route Network Improvement Plan (ERNIP) Part 1 across the NM area.
- (3) The project includes the following main areas:
- Network performance and implementation scenarios
 - Operations Support (modelling, design, simulations, trials, etc.)
 - ATM systems and architecture in support of FRA
 - Concept, procedures and change

3.9 The iNM Network Management User Interface (NMUI)

- (1) The iNM Program is structured in Domains. The USER Domain addresses the provision of the NMUI – A platform supporting improved NM service interfaces.
- (2) NMUI's key objective is to transform NM interfaces into a single, redesigned HMI for all users, fit for purpose and flexible enough to meet the needs of the different user roles (both internal to NMOC and external). Through iNM releases, the NMUI will gradually incorporate Digital Products, to become NM's Single HMI for the entire community.

- (3) The project contributes directly to the NSP Strategic Objective 2 (SO2) “Deploy and integrate interoperable and secure information management systems”.
- (4) The project includes the following main areas:
 - Platform development
 - Service management
 - Single HMI for internal and external users
 - NM B2B Services migration and evolutions

3.10 Performance Strategic Project

- (1) The NM and Performance IRs stress the need for Monitoring and Reporting (M&R) of performance. The aim of this programme is to provide the data and reporting (including data warehouse and NMIR) that address the M&R needs.
- (2) The programme includes a wide variety of activities such as: the adaptation of algorithms or databases, creation of new data sets, modification of interfaces graphical identity, and new reports following users’ requests. The changes allow NM to fulfil its commitment on M&R, support other stakeholders with their M&R responsibilities and prepare NM for the next SES reference period.

3.11 Operational Improvements

3.11.1 Domain Improvements

- (1) Each release delivers new functionalities and enhancements to current capabilities into operations in line with NM strategic programmes and stakeholder requirements. These cover flight, flow and airspace domains and are facilitated by advances in NM B2B and other data exchanges.

3.11.2 TCF (Transponder Code Function)

- (1) In accordance with the NM mandate for the TCF, CCAMS is operated on behalf of states as one of the possible technological solutions supporting the unambiguous and continuous identification of aircraft.
- (2) The final goal is to have the use of the downlinked aircraft identification (e.g. through Mode S) operational in the whole area with CCAMS as a back-up technology. Therefore, CCAMS is implemented currently in many States and the number of users is expected to increase in the coming years.

4 Schedule

- (1) The following dates are meant to provide the user with an idea of the main events that take place all along the release development, up to deployment.
- (2) These dates are mostly stabilised around 3 months before migration, but can still slightly fluctuate, in which case notifications would be provided via a new edition of these NM Release Notes.

4.2 Important Notifications for Release Schedule

- (1) **To ensure individual MFA accounts are set-up before OPS, activation links will be sent to all stakeholders on 04/10/2024. Users must set-up MFA accounts to access iNM applications.**
- (2) **Each user will receive an e-mail from noreply@okta.com and will have 7 days to activate the account & set-up MFA. Contact the NM CSO helpdesk in case of technical difficulties.**

4.3 Deployment

Deployment Steps	2024											
	J	F	M	A	M	J	J	A	S	O	N	D
Release webinar (*)												
Network Operations Handbook publication												
OPT Instruction Guide publication (***)												
Start of PREOPS (**)												
Start of OPT (***)									20			
End of OPT (***)												
Start of migration										15		
End of migration										16		

(*) No release webinar is foreseen for a maintenance release

(**) No PREOPS migration is foreseen, since no impact on NM B2B systems

(***) A limited OPT test session with a predefined list of stakeholders is planned – Those involved will receive specific instructions.

4.3.1 Release Webinar

- (1) Several stakeholder touchpoints have been established for Wave O; major fora include:
 - a) **24.09.2024:** RND-SG covering RAD stakeholders
 - b) **25.09.2024:** iNM Information Session with stakeholder representatives and members of the Provisional Council
 - c) **03.10.2024:** ODSG: Covering operational stakeholders
 - d) **08.10.2024:** NETSYS/12: Wave-O content will be presented

4.3.2 Network Operations Handbook

- (1) The various documents forming the Network Operations Handbook are made available around one month before the NM Release migration at:
 - The NM Network Operations library:
<https://www.eurocontrol.int/library?f%5B0%5D=activity%3A774>
 - The NOP Portal (“Network Operations Handbook” portlet) is another way to access it:
 - [Public NOP Portal](#)
 - [Protected NOP Portal](#)

4.3.3 Operational Testing

- (1) The Operational Testing (OPT) enables users to assess the potential impact of the release against their systems or procedures before the release migration.
- (2) In general, the OPT period starts between one to two months before the operational release migration and lasts around one month.

4.3.4 Migration Plan – Information and Systems Unavailability

- (1) **The OPS migration of the DNP Editor, RAD & CAL Digital Products from NM-MAINT-2 to iNM-Wave-0 will be executed on the 15/10/2024, it is a single night migration – Systems are available as of 16/10/2024 (01:00 UTC).**
- (2) **To ensure individual MFA accounts are set-up in advance, activation links will be sent to all stakeholders on 04/10/2024. Users must set-up accounts to access iNM applications – Each link is sent via e-mail and available for 7 days – Activation must be done during this period.**
- (3) **No impact, no interruption at all on any other NM system like NM B2B, ETFMS, IFPS, CHMI, AMC CIAM ENV/CACD, DWH, NOP Portal, NMP Flight, NMP Flow.**
- (4) In the schedule tables below, indicated times are all in UTC.

Software / Service	Unavailable from	Unavailable till	Remark	Impact during migration
RAD, DNP E, CAL	15/10/2024 20:00	16/10/2024 01:00	Expected downtime 3h30 + 1h30 provision in case of rollback	No access to NMP RAD, CAL, DNP services

- (5) In the tables above, “Expected downtime x hours + y hours provision in case of rollback” means that the system or service should be unavailable maximum x hours in normal circumstances, and maximum (x + y) hours in case a rollback to the previous version would be required.

4.3.5 NM B2B

- (1) NM B2B service will not be impacted from this migration.
- (2) It is kindly reminded that the NM-26.0 B2B will be decommissioned on the **3rd of December 2024.**

- (3) For more details on the NM-26.0 and NM-27.0 B2B versions, please refer to the [NM B2B Documentation](#).

4.3.6 CHMI

- (1) CHMI is not impacted as part of the iNM Wave-0 release migration.

5 Contents

5.1 Important Notifications for Release Contents

- (1) <None>

5.2 Naming Conventions

- (1) Naming conventions have been introduced to make the document easier to read:
 - AIXM: Means AIXM 5.1.1

5.3 Supported Browsers and Operating Systems

- (1) For its web applications, NM recommends the following browsers:
 - Mozilla Firefox
 - Google Chrome
- (2) For these recommended browser brands, NM undertakes to investigate and attempt to resolve problems that can be reproduced on the latest stable version of that brand – for any other browser brand or version, issues will be analysed & resolution attempted on a best effort basis.
- (3) For all its client applications (web applications and CHMI), NM recommends the following operating system (OS): Microsoft Windows 10 64-bit.
- (4) For this recommended OS, NM undertakes to investigate and attempt to resolve problems – For any other OS or OS version, issues will be analysed, and resolution attempted on a best effort basis.

5.4 NM Service Specifications

- (1) NMD has created specifications that define the following services provided by the Network Manager:
 - Airspace data
 - Flight planning
 - Flow and capacity management
 - Central Code Allocation Management (CCAMS)
- (2) These NM Service Specifications cover at a high-level the functionality, performance and interfaces with the environment as well as the definition of the degraded modes of the service delivery. They support the agreements between the NM as service provider and other organisations and aviation undertakings as users of the services listed above.
- (3) The NM Service Specifications will be in due time available upon request to nm.sqs@eurocontrol.int

5.5 Statement of Compliance (SOC)

- (1) The **SOC** is a formal document published by the NM that provides evidence that a defined constituent meets the applicable baseline.
- (2) The NM system in operations is represented by two constituents:

- The NM Business Systems
 - The NM Client Layer
- (3) The application baseline consists of:
- The regulatory baseline, which defines the mandatory requirements specified in relevant EC regulations
 - The Means of Compliance (MoC) baseline, which consists of voluntary standards and specifications that the NM uses to ensure compliance with the regulatory baseline
- (4) The **SOCs** contain traceability to the requirements and referenced documents that were used for conformity assessment.
- (5) NM will create in due time the DSUs for the two constituents of the NM system in operations for all releases and will make them available upon request to nm.sqs@eurocontrol.int

5.6 NM B2B Focus

- (1) This section provides general information related to NM B2B.

5.6.1 NM B2B Documentation

- (1) Most NM B2B resources can be found from links in central NM B2B web page:
<https://www.eurocontrol.int/service/network-manager-business-business-b2b-web-services>, including the NM B2B access request form.
- (2) The entire NM B2B documentation, including technical, business and operational aspects, can be found [here](#).

5.6.2 External Testing and Validation of NM B2B – PREOPS

- (1) There is no PREOPS session planned for Wave-O since NM B2B system will be not impacted.
- (2) NM offers a pre-operational (PREOPS) platform that NM B2B users can use for testing purposes. The software to be released in the new NM release is deployed on the PREOPS platform around two months before its deployment in operations, so that users can start working on the new API prior to operational deployment. PREOPS services remain available after the operational release.
- (3) The PREOPS platform is not the operational platform. The quality of the PREOPS services may be lower than the quality of the operational services. In particular, availability is not guaranteed 24/7, as support is only available during office hours. Additionally, the quality of the data on the PREOPS platform depends on the specific service groups (please see the NM B2B Reference Manuals for further details).

5.6.3 No iNM-Wave-O B2B Version

- (1) There is no impact on B2B in iNM Wave-O, so B2B documentation is valid as modified in NM MAINT-2 under [NM-27.0 B2B documentation](#).

5.6.4 Decommissioning of NM B2B Services

- (1) The NM-26.0 B2B will be decommissioned on the 03/12/2024.
- (2) No decommissioning date is defined for the NM-27.0 B2B.

5.7 List of Changes

- (1) The following iNM Digital Products will be deployed as part of the iNM Wave-O release. This deployment includes significant technical enhancements as well as key corrections and tunings and limited functional improvements.
 - a) Digital Platform (DPLT)
 - b) Route Availability Document (RAD)
 - c) Dynamic Network Plan Editor (DNP-E)
 - d) Code Allocation List (CAL)
 - e) Login - Access Changes for RAD, DNP-E and CAL

5.8 Digital Platform

- (1) The iNM Digital Platform has been introduced at Wave-0 as primary building block of iNM Digital Product ecosystem. It is the platform the iNM Digital Products will be hosted on.
- (2) The Digital Platform will bring significant long-term benefits to ease integrated Product Deliveries in a more reliable and efficient manner. It will provide iNM Products with industry-standard technical capabilities regarding security, uptime, scalability and capacity.
- (3) As of Wave-0, NMP products RAD, CAL and DNP Editor are first to be migrated to the Digital Platform as iNM Digital Products. This marks a core technical milestone for the iNM program. Additional Waves will incrementally migrate iNM Digital Products on this Digital Platform.

5.9 Route Availability Document (RAD)

Objective	To replatform the RAD Application onto the new iNM Digital Platform and to improve its functionalities linked to the Export of files, handling of RAD Annex 4, handling of RAD Grammar and supporting a rolling RAD process.
Description	<p>This change addresses various improvements of the RAD Application based on the users' feedback and decisions taken by the RAD Management Group and endorsed by RNDSG.</p> <p>This release contains minor HMI design improvements, new logic for the maintenance of Annex 4 data, new logic for the validation of the TFRs against the RAD Grammar, automation for the export of the RAD data in support of the Rolling RAD process.</p> <ul style="list-style-type: none"> - Implementation of a new RAD Grammar RAD Application users will be able to validate the syntax of their TFRs against the RAD Grammar published in ERNIP Part 4. Users of the exported RAD Data can expect to see the definition of the TFRs change as it is being harmonized and aligned with the new Grammar. - Improvement of the handling of Annex 4 Data in the RAD Application. A simplified flow has been developed for managing the content of the Annex 4 data in the RAD Application. Users will be able to Create, Amend, Suspend and Unsuspend TFRs relevant for the Annex 4 by the toggle of a button. Users of the exported RAD Data will find information about the Annex 4 incorporated in the consolidated RAD file. - Implementation of a Rolling RAD process A new automatic generation of RAD data has been implemented supporting the Rolling RAD Process, where a single, consolidated RAD xls file (baseline) is generated with 28 days before the effective day of the AIRAC and it is followed by subsequent amendments whenever necessary, with a frequency of maximum 1 file per day. - Implementation of an automatic notification of RAD changes External users, upon request, will receive automatic notifications when a new version of the RAD has been generated by the application.

	<ul style="list-style-type: none"> - Consolidation of data for publication and improvement of the content. The RAD data will be generated and published as a single, consolidated xlsx file containing all the RAD Annexes. The Cover of the file has also been redesigned and includes amongst other hyperlinks towards relevant RAD resources as well as a consolidated view of the changes contained in the file. - Corrections and tuning This change contains, amongst others, changes to the RAD DMR workflow, forces users to use the existing grammar in some cases, defines clearer usage of the date definition formats, corrects bugs, and changes the formatting of the RAD export/output files.
Users potentially impacted and/or interested	<ul style="list-style-type: none"> • National and Local RAD coordinators • NMOC • Airspace Users or CFSPs
NM applications and services changed	<ul style="list-style-type: none"> • NMP RAD
Impact category on external users	<ul style="list-style-type: none"> • Impact on Human-Machine Interface • Impact on the timeline of data provision
Impact description	Quality improvements of the NMP RAD application
Impact on NM Service Specifications	None
Operational deployment plan	Deployed in operation along with the release migration
Users' testing	OPT test session is planned for selected users
Related documentation	iNM Online help (accessible from the application) RAD User Guide

5.10 Dynamic Network Plan Editor (DNP-E)

Objective	To replatform the DNP-E onto the new iNM Digital Platform and to improve the core functionalities of DNP Editor
Description	<p>This change addresses various improvements of the DNP Editor based on the users' feedback. It contains HMI design improvements, introduction of search bar for the network plans, automatic sorting, automatic creation of tasks, as well as integration of Network Brief and Feedback functionalities.</p> <ul style="list-style-type: none"> - Full automation of tasks & regulations Currently a DNP Operator has a list of ATFM tasks in the network plan. If a new regulation is being created in the backend system and that FMP already exist

	<p>in the list of tasks, it will be automatically linked to that task. However, if a regulation is created for an FMP that is not listed in the tasks, the regulation will be stored in a separate task card (called "Catch all"). A DNP Operator will then have to create manually an ATFCM task so that that regulation will be linked to the newly created task for that FMP. With this change, DNP Editor shall automatically create a task for an FMP if a regulation was created in the backend system but there was no task existing yet for that FMP.</p> <ul style="list-style-type: none"> - Simplify NAT tracks Currently the user is always pasting the picture from the same website (The one where NATS publishes the NAT track information). With this change, NAT tracks task template now contains a link to the NAT track website. - Integrating of Network Brief and Feedback The DNP Editor now integrates Network Brief and Feedback functionalities that are currently provided via FREE. - Sorting the list of tasks Currently a user can drag and drop the ATFCM tasks to order them as required. In addition to this function a user now has an option to order the ATFCM tasks alphabetically or per 'last modified' criteria. - Search bar in plans The DNP Editor offers now a search functionality in the list of network plans. It allows access to a set of network plans within a given date interval. - Accordion menu The DNP Editor has an accordion menu set up for the selection of the type of task. - Structured table view for ATFCM measures and locations of interest The ATFCM task now presents the list of ATFCM measures and locations of interest in the table view.
Users potentially impacted and/or interested	<ul style="list-style-type: none"> • NMOC
NM applications and services changed	<ul style="list-style-type: none"> • DNP Editor
Impact category on external users	<ul style="list-style-type: none"> • No Impact on external users
Impact description	<ul style="list-style-type: none"> • HMI design improvements (accordion menu, table view) • Introduction of FREE Network Brief and Feedback functionalities into DNP-E (FREE application will no longer be used) • Sorting and search functionality • Full automation of ATFCM tasks and regulations

Impact on NM Service Specifications	None
Operational deployment plan	Deployed in operation along with the release migration
Users' testing	OPT test session is planned for selected NMOC users
Related documentation	iNM Online help (accessible from the application) DNP Editor User Guide

5.11 Code Allocation List (CAL)

Objective	To replatform the NMP Code Allocation List (CAL) Tool, onto the new iNM Digital Platform.
Description	<p>The SSR Code Allocation List for the ICAO EUR Region (CAL) documents the agreed allocation of SSR codes to States and air traffic system (ATS) units.</p> <p>CAL is an internal tool used only by NMOC to manage SSR code allocation information across the ICAO EUR Region. It also supports post-operational procedures by providing this list to ETFMS.</p> <p>Key corrections and tunings were performed as part of the migration to the Digital Platform however, no new functional changes were released.</p>
Users potentially impacted and/or interested	<ul style="list-style-type: none"> NM
NM applications and services changed	<ul style="list-style-type: none"> CAL
Impact category on external users	<ul style="list-style-type: none"> No Impact on external users
Impact description	Quality corrections for the CAL application
Impact on NM Service Specifications	None
Operational deployment plan	Deployed in operation along with the release migration
Users' testing	OPT test session is planned for selected NM users
Related documentation	iNM Online help (accessible from the application) CAL User Guide

5.12 Login and Access Management Changes for RAD, DNP-E and CAL

Objective	Enhance security and user experience accessing iNM applications.
Description	<p>A major milestone for the first operational release (Wave-0) is the introduction of the Digital Platform.</p> <p>For this release, the first two major changes are introduced:</p> <ul style="list-style-type: none"> - Nominal accounts (a single account per user) to enhance security and access management and enable HMI customization at user level (in future releases) - Multi Factor Authentication (MFA) as a new way to access NM applications. <p>MFA will be visible during the login process. It requires the use of an authenticator application, which can be installed on a user's mobile device or desktop/ workstation.</p> <p>During authentication, users are prompted to input a username and password (the first factor – what they know), and an authentication response from their MFA device (the second factor – what they have).</p>
Users potentially impacted and/or interested	<ul style="list-style-type: none"> • National and Local RAD coordinators • NMOC RAD, DNP-Editor • NM CAL Users
NM applications and services changed	<ul style="list-style-type: none"> • NMP RAD • NMP DNP Editor • NMP CAL
Impact category on external users	<ul style="list-style-type: none"> • Impact on Human-Machine Interface
Impact description	<p>Accessibility: iNM Digital Products are not accessible for read-only users. Only operational users will have access to these products.</p> <p>NMP Account Migration: NMP accounts aligned with new requirements have been migrated. Additionally, new accounts have been created for all impacted users in coordination with the designated organizational points of contact.</p> <p>Not all accounts have been migrated. If access is required, the existing registration procedure shall be used.</p> <p>Registration: User will be asked to setup multi factor authenticator application on their smartphone during user account creation and activation step.</p> <p>Authentication: User will be asked to enter the password and response generated by the multi factor authenticator application to login into RAD, DNP Editor and CAL</p>
Impact on NM Service Specifications	None
Operational deployment plan	Deployed in operation along with the release migration
Users' testing	A requirement to access OPT.

Related documentation	<p>Login to iNM (clickhelp.co)</p> <p>Online Help contains detailed login guide link with screenshots (iNM)</p> <p>NMP Online help</p> <p>Online Help contains detailed login guide link with screenshots (NMP).</p>
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6 Documentation

Operational Manuals/Guides	
ATFCM User's Manual	Operational description of the NM ATFCM related actions, information and message exchange
ATFCM Operations Manual	Intended to provide Flow Management Positions (FMPs) and EUROCONTROL's Network Manager (NM) with common understanding of their roles in delivering the most effective Air Traffic Flow and Capacity Management (ATFCM) services to Air Traffic Control (ATC) and Aircraft Operators (AOs)
Yo-Yo and sharp-turn angle flight plans identification - Guidelines	This document describes the NM System tool for the detection of the Yo-Yo and sharp-turn angle flight plans (Turn) by aircraft operators (AOs) and flow management positions (FMPs) using the NM System. It also describes the conditions for rejection of critical Yo-Yo and TURN profiles by IFPS.
CHMI ATFCM Reference Guide	This reference guide is intended for the users of the ATFCM Collaboration Human Machine Interface (CHMI) application
API Implementation Guide	Provides an overview and description of the available API services
DPI Implementation Guide	Provides an overview and description of the available DPI services
IFPS User's Manual	The manual is intended to contain all the necessary procedures and information in order for users to be able to construct, transmit or when necessary to correct, flight plan and associated update messages. Procedures for the distribution of such messages after processing by the IFPS are also described.
Flight Plan Guide and IFPS Errors Guide	The Flight Plan Guide allows users to search for the correct format to be used for the different fields of the ICAO Flight Plan via an on-line database. The IFPS Errors Guide is an electronic version of the error definitions published in the NM IFPS User's Manual.
Flight Progress Messages Document	Contains a description of messages from and to systems external to the NM which have been identified as Flight Progress Messages. It contains both messages from/to the Integrated initial Flight Plan Processing System (IFPS) to/from the Enhanced Tactical Flow Management System (ETFMS) and the Centralised SSR Code Assignment and Management System (CCAMS).
FUA – AMC/CADF Operations Manual	Provides guidance to the Airspace Management Cell (AMC) and the EUROCONTROL/NM Centralised Airspace Data Function (CADF) personnel to help them perform their daily tasks and to prepare and release the consolidated European Airspace Use Plan (EAUP) and European Updated Airspace Use Plan(s) (EUUP(s)) daily.

Network Operations Flight Efficiency User's Manual	The purpose of this document is to frame the support of the flight efficiency initiative within the NMOC such as support to flight plan originator to improve their flight planning, support to major airspace design project etc. This document contains also all procedures applicable for Flight Efficiency support. Correct and accurate application of the procedures contained in this document is essential to the achievement of consistent support to the flight plan originators.
CHMI ASM Function Reference Guide	User guide for the ASM users of the CHMI
NOP Portal User's Manual	Reference source for using the NOP Portal
CCAMS User's Manual	Frames the support of the CCAMS operations and explains all procedures applicable for CCAMS operations
NMIR User's Guide	This document contains information for new users, the list of NMIR dashboards, their contents in term of available reports and the mapping between the migrated previous NMIR reports and the NMIR dashboards (Annex 1). The process to access the NMIR is also detailed.
Wave O Essentials (inc. Login Guide)	This webpage contains all key information related to Wave O. This includes the new product URLs for easy bookmarking, the product User Guides as well as a dedicated guide on log-in and a FAQ section.

NM B2B Documents

[NM B2B Documentation](#)

Folder of various technical and business documents related to the NM B2B, most importantly the NM B2B Reference Manuals and Release Notes, for the currently supported NM B2B versions.

Other Documents

[Network Operations Library](#)

A collection of EUROCONTROL/NM documents related to Network operations and operations planning

7 Abbreviations

Abbreviation	Description
AB	AirBlock
ACA	AUP/UUP Compilation(/Composition) Application
ACC	Approach Control Centre or Area Control Centre
ACC3	Air Cargo or Mail Carrier operating into the Union from a Third Country Airport
A-CDM	Airport-Collaborative Decision Making
ACH	ATC flight plan Change
ACK	IFPS Acknowledgement Message
AD	Airspace Data
ADES	Aerodrome of Destination
ADEXP	ATS Data Exchange Presentation
A-DPI	Airport-Departure Planning Information
ADS	Automatic Dependent Surveillance
ADS	NM Airspace Data Section
ADS	Airspace Data Service
ADS-B	Automatic Dependent Surveillance - Broadcast
AFP	ATC Flight Plan
AFTN	Aeronautical Fixed Telecommunication Network
AFUA	Advanced Flexible Use of Airspace
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information, Regulation and Control
AIS	Aeronautical Information Services
AIXM	Aeronautical Information Exchange Model
AMA	AMC Manageable Area
AMAN	Arrival Manager
AMC	Airspace Management Cell
ANI	Advanced Network Integrated (ANI) airports
ANSP	Air Navigation Service Provider
AO	Aircraft Operator
Aoi	Area of Interest
AOP	Airport Operations Plan
AoR	Area of Responsibility
AOWIR	Aircraft Operator What-if Reroute
API	Arrival Planning Information
APL	ATC Flight Plan
APOC	Airport Operations Centre

APP	Approach Control
APR	Aircraft (Operator) Position Report
ARO	Air Traffic Services Reporting Office
ARR	Arrival Message
ASM	Airspace Management
ASMSG	Airspace Management Sub-Group
ATC	Air Traffic Control
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
ATS	Air Traffic Services
AU	Airspace User
AUA	ATC Unit Airspace
AUAD	AUA Delegation
AUAG	ATC Units Airspaces Group
AUP	Airspace Use Plan
B2B	Business-to-Business
B2C	Business-to-Consumer
BADA	Base of Aircraft Data
C&T	Corrections and Tuning
CAA	Civil Aviation Authority
CACD	Central Airspace and Capacity Database (new name of ENV)
CADF	ECAC Centralized Airspace Data Function
CAP	Collaborative Advance Planning (DSNA tool)
CASA	Computer Assisted Slot Allocation
CASTAR	Computer Aided Synchronization Tool for Airspace Repositories
CCAMS	Centralised SSR Code Allocation and Management
CDM	Collaborative Decision Making
C-DPI	Cancel-Departure Planning Information
CDR	Conditional Route
CE	Change and Enhancement - or Central Europe
Cf C	Closed for Cruising
CFSP	Computerised flight plan service provider
CHG	Modification Message
CHMI	Collaboration Human Machine Interface
CIAM	Collaboration Interface for AMCs
CIAO	Collaboration Interface for AO
CIFLO	Collaboration Interface for Flow management position
CITO	Collaboration Interface for Tower
CNL	Cancellation Message

CNS	Communications, Navigation, Surveillance
COM	Communication
COM	Committee of Management
CP1	Common Project One
CPA	Collaboration Portal Application
CPR	Correlated Position Report
CR	Change Request
CS	Combined Sector
CSST	Call-Sign Similarities Tool
CTFM	Current Tactical Flight Model
CTM	Cooperative Traffic Management
CTO	Calculated Time Over
CTOT	Calculated Take-Off Time
CTA	Control Area
CTR	Control Zone
DAC	Dynamic Airspace Configuration
DCB	Demand and Capacity Balancing
DCT	Direct
DEP	Departure message
DES	De-Suspension Message
DLA	Delay or Delay Message
DLE	Delay or holding on route
DPI	Departure Planning Information
DSNA	Direction des Services de Navigation Aérienne
DSU	Division Support Unit
DWH	Data Warehouse system
EAD	European AIS Database
EAIMS	European ATM Information Management Service
EASA	European Union Aviation Safety Agency
EAUP	European Airspace Use Plan
EC	European Commission
ECAC	European Civil Aviation Conference
EDDP	Leipzig Halle Airport
EET	Estimated Elapsed Time
EFD	ETFMS Flight Data
eFPL	FF-ICE flight plan
EHMI	ETFMS HMI
EIBT	Estimated In-Block Time
ENV	NM Environment System (former name of CACD)
ENVCOOR	National Environment Coordinator

EOBT	Estimated Off Block Time
ERNIP	European Route Network Improvement Plan
ERR	Error Message
ES	Elementary Sector
ESP	Elementary Sector Part
eSS	Enhanced Slot Swapping
ETFMS	Enhanced Tactical Flow Management System
EU	European Union
EUROCONTROL	European Organization for the Safety of Air Navigation
EUUP	European Update airspace Use Plan
FAAS	Flight Assessment and Alert System
FAB	Functional Airspace Block
FAM	Flight Activation Monitoring
FB	Functional Block
FCM	Flight Confirmation Message
FEI	Flight Efficiency Initiative
FF-ICE	Flight and Flow Information for a Collaborative Environment
FIXM	Flight Information Exchange Model
FL	Flight Level
FLS	Flight Suspension Message
FMP	Flow Management Position
PPFDE	Flight Plan and Flight Data Evolution
FPL	Flight Plan message (ICAO format)
FPP	Flight Plan Processing
FRA	Free Route Airspace
FSA	First System Activation message
FSPD	Flight Specific Performance Data
FTFM	Filed Tactical Flight Model
FUA	Flexible Use of Airspace
GAT	General Air Traffic
GNSS	Global Navigation Satellite System
GRRT	Group Re-Routing Tool
GUFI	Globally Unique Flight Identifier
HMI	Human-Machine Interface
I2	Incident Type 2
IAF	Initial Approach Fix
IAP	Instrument Approach Procedure
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ID	Identifier

iDAP	integrated Digital ATFCM Platform
IDLA	Individual Delay (message)
IFPS	Integrated Initial Flight Plan Processing System
IFPUV	IFPS Unit for Validation
IFPZ	IFPS Zone
IFR	Instrument Flight Rules
iOAT	improved OAT
IR	Implementing Rule
KPI	Key Performance Indicator
M&R	Monitoring and Reporting
MCDM	Measure Collaborative Decision Making
MIN	Minimum
MoC	Memorandum of Cooperation
MSG	Message
MTTT	Minimum Turn-Round Time
MV	Monitoring Value
N/A	Not Applicable
NAM	Non AMC manageable Area
NATS	National Air Traffic Services (UK)
NAV	Navigation
NCAP	Network Collaborative Advance Planning (DSNA tool)
NCO	n-CONNECT
n-CONNECT	network-COMMON Enhanced Collaborative ATM
NIA	Network Impact Assessment
NID	Network Impact Display
NM	Nautical Mile
NM	Network Manager
NMD	Network Management Directorate
NMIR	NM Interactive Reporting
NMOC	Network Manager Operations Centre
NMP	NM Portal
NMVP	Network Manager Validation Platform
NOP	Network Operations Plan
NOP	Network Operations Portal
NOTAM	Notice to Airmen
NPP	Network Performance Plan
NPZ	No Planning Zone
NRC	National RAD Coordinator
NSP	Network Strategy Plan
OAI	Target Time-Over Arrival Planning Information

OAR	ATFM Rerouting
OAT	Operational Air Traffic
ODSG	Operations and Development Sub-Group
OPP	Opportunity
OPS	Operations
OPT	Operational Testing
ORGN	Originator
OS	Operating System
OTMV	Occupancy Traffic Monitoring Values
P/S	NM B2B Publish/Subscribe
PC	Provisional Council
PCP	Pilot Common Project
PDI	Predicted Departure Planning Information
P-DPI	Predicted DPI
PFD	Predicted Flight Data
PMS	Point Merge System
PREDICT	Variant of TACT used for Pre-Tactical Work
PSFD	Publish/Subscribe Flight Data (NM B2B)
PTR	Profile Tuning Restriction
R	Restricted Area
R	Right
R&D	Research and Development
R/R	NM B2B Request/Reply
RAD	Route Availability Document
REA	Ready Message
RFI	Ready For Improvement Message
RFR	Re-route after reroute cancellation
RJT	Rerouting Rejection message
RL	Reference Location
RP3	Reference Period 3
RP4	Reference Period 4
RQS	Requested Supplementary Information Message
RRM	Rerouting Proposal Creation
RRN	Rerouting Notification Message
RRP	Rerouting Proposal Message
RSA	Restricted Airspace
RSI	CASA Revoke slot proposal
RTFM	Regulated Tactical Flight Model (by ATFM Measures)
RWY	Runway
SAFA	Safety Assessment of Foreign Aircraft (Programme)

SAM	Slot Allocation Message
SB	Study Block
SCC	Single CDR Category
SCR	Single Constrained Route
SES	Single European Sky
SESAR	Single European Sky ATM Research
SIBT	Scheduled In-Block Time
SID	Standard Instrument Departure
SIP	Slot Improvement Proposal Message
SITA	Société Internationale de Télécommunications Aéronautiques
SLC	Slot Cancellation message
SMM	Slot Missed Message
SO	Strategic Objective
SOBT	Scheduled Off-Block Time
SPA	Slot Improvement Proposal Acceptance Message
SRC	Safety Regulation Commission
SRJ	Slot Proposal Rejection message
SRM	Slot Revision Message
SSP	CASA STAM Proposal
SSR	Secondary Surveillance Radar
STA	Sharp Turn Angle
STAM	Short-Term ATFCM Measures
STAR	Standard Terminal Arrival
SWIM	System-Wide Information Management
SWM	SIP Wanted Message
TACT	Tactical System (predecessor of ETFMS)
TAI	Target Take-Of f Arrival Planning Information
TB	Technical Block
TBD	To Be Determined, To Be Defined
TCF	Transponder Code Function
TLP	Traffic Light Protocol
TMA	Terminal Control Area
TOBT	Target Off Block Time
TP	Terminal Procedure
TP	Transport Protocol
TP	Trajectory Prediction
TSAT	Target Start-up Approval Time
TTL	Technical Team Leader
TTL	Time Table List
TTOT	Target Take Off Time

TV	Traffic Volume
TWR	Aerodrome Control Tower
UCD	Update MCDM Data
URL	Uniform Resource Locator
UTC	Coordinated Universal Time
UUP	Updated Airspace Use Plan
VFR	Visual Flight Rules
WG	Working Group
WKTRC	Wake Turbulence Category
WTC	Wake Turbulence Category
XCD	eXtended Conditions
YY	YoYo (as in YoYo flight)



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