ERNIP Part 4

RAD Users Manual

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SUPPORTING EUROPEAN AVIATION

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Chapter 10	Not amended.
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Executive Summary

The Route Availability Document (RAD) is created based on COMMISSION REGULATION (EU) No 255/2010 of 25th March 2010 laying down common rules on air traffic flow management where in accordance with Article 4 - General obligations of Member States, paragraph 4 where a common reference document containing the policies, procedures and description for route and traffic orientation shall be created.

The RAD is also created based on COMMISSION IMPLEMENTING REGULATION (EU) 2019/123 of 24th January 2019 lays down detailed rules for the implementation of air traffic management (ATM) network functions and repealing Commission Regulation (EU) No 677/2011, Annex I - The European Route Network Design (ERND) Function, Part A - Planning principle 4(d) stating that the European Route Network Improvement Plan (ERNIP) shall include route network and free route airspace utilisation rules and availability.

The RAD is designed as a part of the Network Manager Air Traffic Flow and Capacity Management (ATFCM) operation.

The need to establish improved links between the processes of Airspace Design and Airspace Utilisation in coordination with the Operational Stakeholders is one of the top priorities for the Network Manager.

To fulfil this requirement a multidisciplinary team had been established in support of Operational Stakeholders dealing with all aspects of the RAD from policy to implementation and review namely “NM RAD Team”.

The NM RAD Team, in close coordination with all the Operational Stakeholders, is responsible for preparing of a common RAD, collating, coordinating, validating and publishing it.

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1 RAD General Issues

1.1 Scope

(1) The RAD is a common reference document containing the policies, procedures and description for route and traffic orientation. It also includes route network and free route airspace utilisation rules and availability.

(2) The RAD is also an ATFCM tool that is designed as a sole-source flight-planning document, which integrates both structural and ATFCM requirements, geographically and vertically.

(3) The RAD is updated each AIRAC cycle following a structured standard process of:

a) Requirement.

b) Validation.

c) Publication by the Network Manager in cooperation/coordination with all Operational Stakeholders.

(4) The RAD is only applicable to the IFR part of the Flight Plan.

(5) The RAD consists of:

a) General description.

b) Annex 1 - Area Definition.

c) Annex 2 - Traffic Flow Rules, which includes three sub-annexes:

i) Annex 2A - Flight Level Capping Rules.

ii) Annex 2B - Local and Cross-border Capacity and Structural Rules.

iii) Annex 2C - FUA Traffic Flow Rules.

d) Annex 3 - Flight Planning Facilitation Options, which includes two sub-annexes:

i) Annex 3A - Aerodrome Connectivity Options.

ii) Annex 3B - En-route DCT Options.

e) Annex 4 - Special Events and Crises.

(6) The RAD may be suspended, or temporarily relaxed, in cases where it has an abnormally adverse impact upon the traffic flows. This action will always be co-ordinated through the cooperative decision-making (CDM) process between the Network Manager and its Operational Stakeholders.

(7) The NM RAD Team will publish RAD amendments:

a) 34 days in advance of the relevant AIRAC cycle.

b) As “Last minute” changes.

Each RAD amendment shall be highlighted accordingly and shall be annotated as either new, amended, suspended, unsuspended, unsuspended with amendment or deleted.

1.2 Control and management of the RAD

(1) The control and management of the RAD is carried out through a process described below:

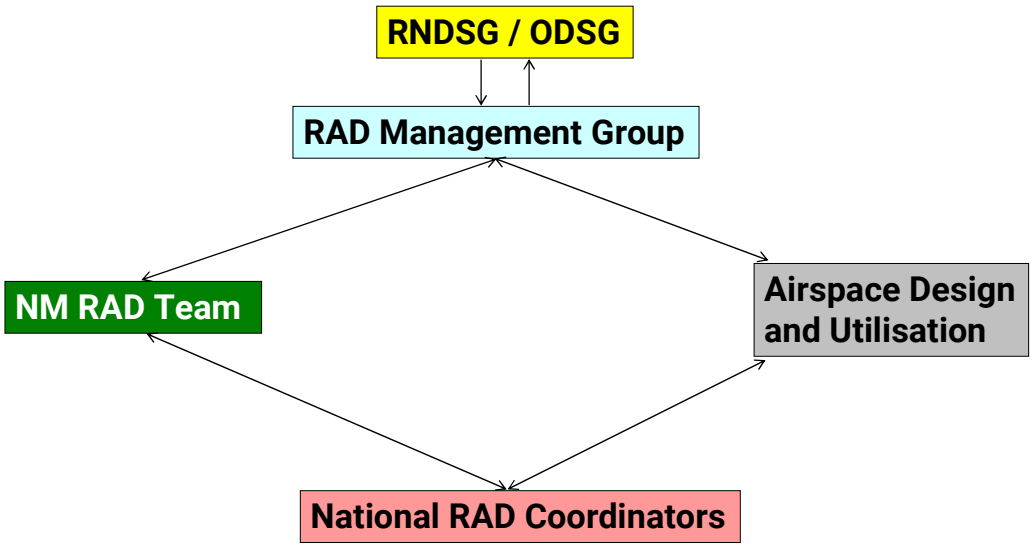

Figure 1: RAD Management

(2) The NM RAD Team is responsible for the maintenance and publication of the RAD. This is co-ordinated through liaison with the National RAD Coordinators (NRCs) on an AIRAC cycle basis. Development of the RAD is through the RAD Management Group (RMG) established to monitor the evolution of the RAD. The NRCs are contacted if and when necessary, on matters of procedure.

(3) The final content of any amendment to the RAD shall be positively agreed between the NM RAD Team and State/FAB/ANSP concerned.

1.3 Requirements

(1) The RAD provides a single fully integrated and co-ordinated list of traffic flow rules and flight planning facilitation options for all areas where the NM provides ATFCM services.

(2) Exceptions to the RAD are not envisaged under normal conditions, however, temporary changes to the RAD traffic flow rules and flight planning facilitation options due to exceptional circumstances or operational necessity shall be published by AIM giving details of the traffic affected, the period of activation and, where practical, the corresponding routings.

(3) The RAD shall also be available via the Network Manager Portal.

(4) The structure of each traffic flow rule and flight planning facilitation option is hierarchical and specific and has been arranged to facilitate parsing of the information into computer systems.

(5) For the usage of the referenced object (significant point, ATS route segment, allowed DCT, airspace volume (FIR/UIR, AoR of relevant ATC Unit - CTA/UTA, TMA, CTR or individual/collapsed control sector(s) within an ATC unit, Free Route Airspace, area/zone, etc.) there are 3 (three) main types of expression:

a) **Not available for …**

Flight planning via referenced object is forbidden for described flow(s).

b) **Only available for …**

Flight planning via referenced object is allowed exclusively for described flow(s).

c) **Compulsory for …**

Flight planning via referenced object is the only valid option for described flow(s).

(6) For the combination of elements that define the flow of traffic, there are 2 (two) types of expression - inclusive and exclusive:

a) **INCLUSIVE expression** - traffic must meet **ALL** of the conditions to be compliant with relevant rule or option. The implicit logical operator between the listed conditions is an "AND" - Logical Conjunction.

b) **EXCLUSIVE expression** - traffic only needs to meet **ONE** of the numbered sub-conditions to be compliant with relevant rule or option. The implicit logical operator between the numbered conditions is an "OR" - Logical Disjunction.

(7) Usage of combinations and terms in utilization expression is defined in ERNIP Part 1, Chapter 8, Section 8.1, paragraph 8.1.4.

1.4 Creation of the RAD

Important Note: The Data Modification Request (DMR) in this section refers to the NMOC system and shall not be misled with RAD Application DMR.

1.4.1 Strategic Phase

(1) The following diagram gives a flow presentation of the process of creation of the RAD, starting with the box on the top left and working through until publication.

(2) The NM RAD Team sends out a reminder to the NRCs at AIRAC -63 days (D -63) advising them of 1 (one) week to RAD Cut-off. The AIRAC -56 days (D -56) line depicts the RAD Cut-off date.

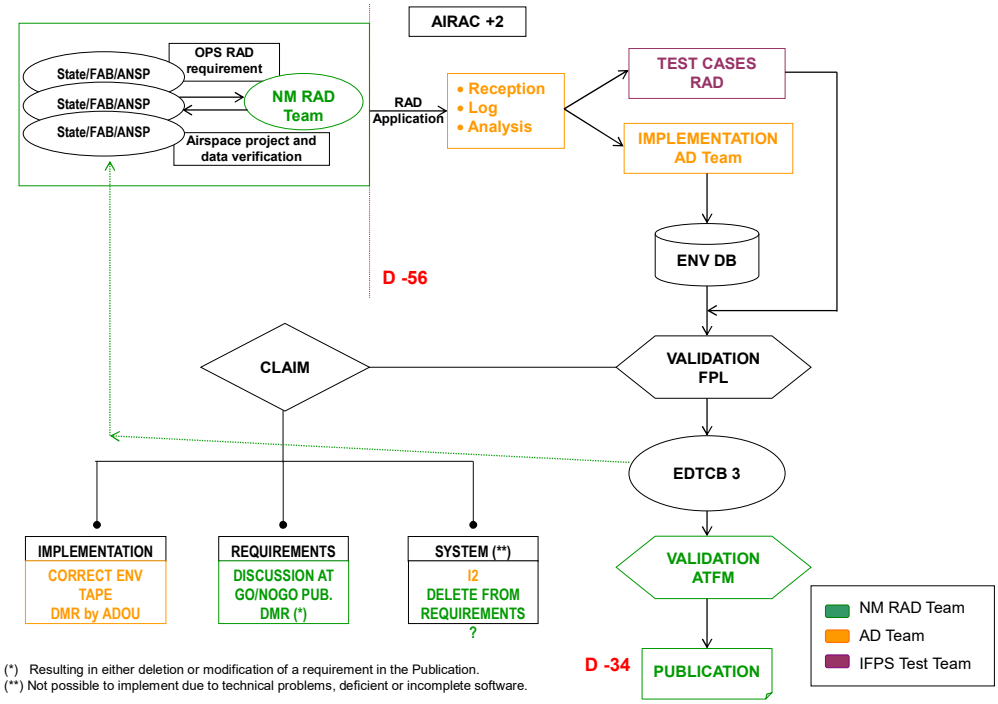

Figure 2: RAD Strategic Phase

(3) Once an Annex has been completed, the new traffic flow rules and/or flight planning facilitation options are taken by the Network Operations Airspace Validation Team (IFPS Test Team) and new/existing FPLs are used for testing the efficacy of the changed traffic flow rules and/or flight planning facilitation options. Concurrently, the requirements for change are sent to the Network Operations Airspace Data Team (AD Team) for creation/amendment of the traffic flow rule and/or flight planning facilitation option in the ENV database.

(4) Upon receipt of supporting AIS data, and only then, the revised/new traffic flow rules and/or flight planning facilitation options can be checked against the revised airspace by the use of the FPLs created by the Network Operations Validation Team.

(5) If inconsistencies are discovered, then claims are raised accordingly and allocated to one of the three categories (Implementation/Requirements/ System) for further handling.

(6) At the EDTCB3 (Environment Data Transfer Control Board) meeting all unsolved RAD errors are discussed and appropriate action is taken prior to publication.

(7) The traffic flow rules and/or flight planning facilitation options are then assessed for impact through the ATFM Validation process. Where a traffic flow rule and/or flight planning facilitation option is deemed to be particularly punitive or is affecting a disproportionate amount of traffic, it is referred back to the State/FAB/ANSP of origin.

(8) At AIRAC -34 days (D -34), additionally to the RAD Application, the RAD is also published via e-mail to the NRCs and promulgated on the Network Manager Portal.

1.4.2 Pre-Operational Phase

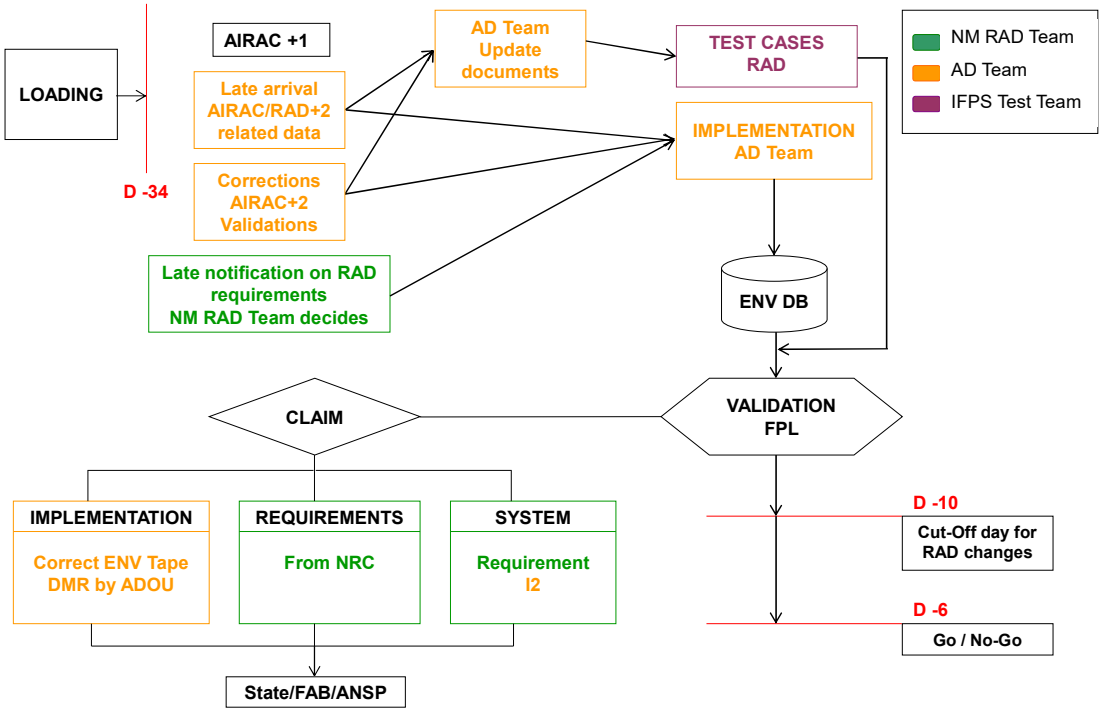

Figure 3: RAD Pre-Operational Phase

(1) After AIRAC -34 days (D -34) the RAD process continues into the validation and assessment phase. "Last minute" changes are implemented where possible, however once past AIRAC -34 days (D -34) this process is very cumbersome for all recipients.

(2) As the AIS data is received, the AD Team update the relevant AIPs etc. within the ENV library.

(3) At this stage a more comprehensive validation can be carried out by cross referring the RAD with the received AIS data.

(4) The same process is completed as described in the previous diagram, with creation/amendment of FPLs by the NOS Validation Team.

(5) At AIRAC -10 days (D -10) the final cut-off is effective, beyond which no further changes can be accepted in time to change the ENV database.

(6) Final cross checking of the ENV data is carried out between AIRAC -10 days (D -10) and AIRAC -6 days (D -6) at which point a go/no go decision is made for the ENV tape.

(7) RAD amendment publication methodology:

a) The DMR will be created by the NM RAD Team after the publication of relevant RAD amendment. or

b) In case that nobody from the NM RAD Team present and an urgent LIVE RAD update is required:

i) Any RAD traffic flow rule and/or flight planning facilitation option will be implemented, only after approval of the Operations Manager and the NM RAD Team and both IFPS are made aware by an e-mail.

1.4.3 Operational Phase

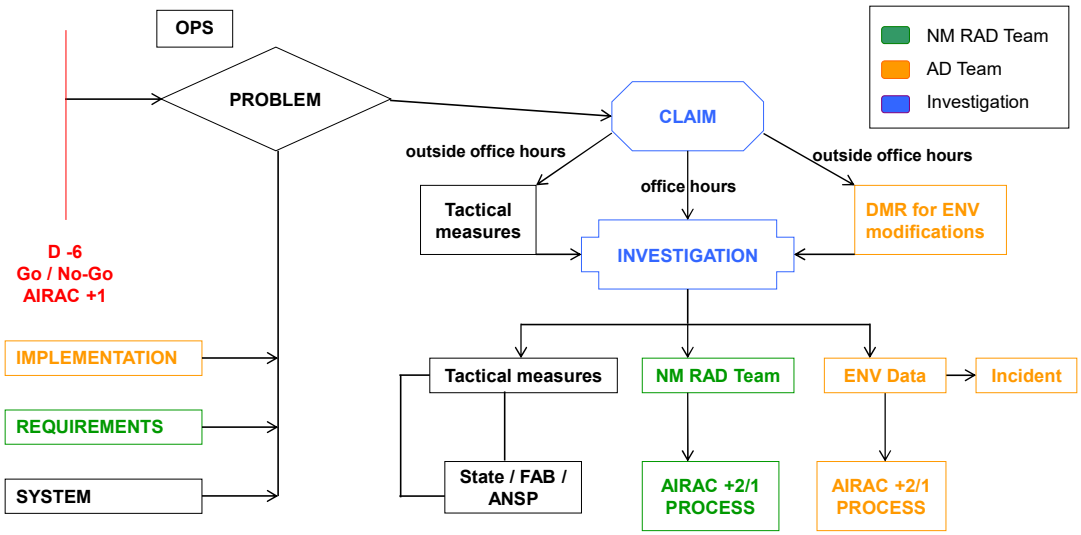

Figure 4: RAD Operational Phase

(1) After AIRAC -6 days (D -6) the RAD process enters into the Operational phase where any errors are notified to the AO community as RAD amendment.

(2) A Claim is raised and the method of resolution is determined outside office hours by the Airspace Data/IFPS Supervisor/NOS Team Leader and passed to the Investigation Team, or within office hours through the Investigation Team, either: Tactical measures if the error/change is considered of vital operational importance. The NM RAD Team updates the respective document for the next available AIRAC date or if it requires modification of the ENV data then a DMR is raised.

1.5 RAD Data Storage

(1) All files part of the RAD shall be generated via the RAD Application and shall be archived and stored by the NM RAD Team for the period of 10 (ten) years.

(2) The first withdrawn RAD file will be replaced by latest nonactive RAD file.

(3) The archived RAD data shall be stored either on internal NM RAD Team disk(s) or on the Network Manager Portal.

(4) Additional data storage is available in RAD Application.

2 NMOC RAD System Processing

2.1 General issues

(1) For NMOC system purpose, it is considered that the RAD includes restrictions and in this Chapter word “restriction” is used, where appropriate.

(2) A “restriction” imposes a measure for a single flight or a flow of traffic consists of the following elements:

a) The operational reason for this measure.

b) As from which date is this measure valid and during which parts of the week.

c) What is restricted?

d) Who is affected by this measure?

2.2 IFPS Behaviour

(1) Two types of flow restrictions exist within the IFPS for processing purposes:

a) Hard Traffic Flow Restrictions.

b) Soft Traffic Flow Restrictions.

(2) Where a flight plan violates a Hard Traffic Flow Restriction, that flight plan shall fail automatic processing and be passed for manual treatment by the IFPS staff. The IFPS staff shall normally try to contact the originator of the flight plan in order to find a solution to the problem. The invalidated message shall incorporate a clear error message (fictitious example below), which enables the IFPS staff or the message originator to correct the error.

Fictitious Example

ERROR PROF: RS: OFF MANDATORY ROUTE AT: HELEN LEVELS:F065..F999 REF:EHANNEX3A STAR HELEN UNIT:EHAM6010A BETWEEN:LFPB EHAM
ERROR PROF: RS: ON FORBIDDEN ROUTE: NIK COA LEVELS: F000..F195 REF: SASKIL179 NIK UNIT: EH 2007A BETWEEN: LFPG EBAW

(3) An error message issued when a flight plan violates a Traffic Flow Restriction shall contain the RAD identification. It shall indicate whether the flight plan is on a forbidden route or off a mandatory route. It shall also point as accurately as possible that part of the flight plan which has caused the error.

(4) Where a flight plan violates a Soft Traffic Flow Restriction, the IFPS shall automatically insert the IFP Indicator ‘IFP/ERROUTRAD’ in Item 18 of that message. Soft Traffic Flow Restriction violations do not cause messages to fail automatic processing in the IFPS.

(5) The Hard/Soft Traffic Flow Restrictions are the last aspects to be checked against by the IFPS when processing a flight plan message, thus, for example, a route availability error may mask a Hard Traffic Flow Restriction during processing, and only on correction of the route availability error will the RAD traffic flow rules and flight planning facilitation options violation become apparent.

(6) The content of RAD "Utilization" is considered by IFPS as Hard Traffic Flow Restriction while the content of RAD "Operational Goal" is supplementary and is not part of the processing.

2.2.2 IFPS Error Messages

Fictitious Examples

[P12] PROF : RS: OFF MANDATORY ROUTE:< > LEVELS: <FL_Band> REF: <Pub_Ref> UNIT: <Unit> BETWEEN: <Citypair>	
Reason: The route detailed in the submitted message does not comply with the specified mandatory RAD route.	**Requirements:** The filed route must comply with all relevant RAD traffic flow rules and/or flight planning facilitation options.
[P22] PROF : RS: ON FORBIDDEN ROUTE: < > LEVELS: <FL_Band> REF: <Pub_Ref> UNIT: <Unit> BETWEEN: <Citypair>	
Reason: The route detailed in the submitted message follows the listed forbidden RAD route.	**Requirements:** The filed route must comply with all relevant RAD traffic flow rules and/or flight planning facilitation options.

2.2.3 DCT Limitation Restriction

(1) The general en-route direct (DCT) distance limitation (including cross-border DCT) is defined as a maximum distance, in nautical miles, that may be filed as a DCT segment. These will serve to invalidate those flight plans that contain DCT segments which are too long for a defined airspace when submitted to the IFPS for processing.

(2) Individual DCT segments which are longer but nevertheless allowed may be defined as exceptions to this rule. Equally, there may be individual DCT segments that are shorter but not allowed. These will be expressed as secondary restrictions to the primary restriction which reveals the actual DCT distance limit.

(3) Secondary en-route DCT limitations can be defined to express deviating DCT limits on particular operational airspaces and/or specific flight types such as military.

(4) Similarly aerodrome departure and arrival DCT distance limits will be defined in a restriction. Such a restriction will also contain any allowed DCTs that replace the old connecting point procedures. The IFPS shall consider these allowed DCTs when making the general terminal procedure processing.

(5) The content of RAD "Utilization" is considered by IFPS as Hard Traffic Flow Restriction while the content of RAD "Operational Goal" is supplementary and is not part of the processing.

2.3 ETFMS Behaviour

2.3.1 Hard/Soft Traffic Flow Restriction

(1) Where a route violates a Hard Traffic Flow Restriction it will be become unusable for the AOWIR function.

2.3.2 DCT Limitations Restriction

(1) Where a route violates a DCT limitation, it will become unusable for the AOWIR function.

3 NM RAD Team

3.1 Organisation

3.1.1 Purpose

(1) The need to establish improved links between the processes of Airspace Design and Airspace Utilisation within the Network Management Directorate (NMD) in coordination with the Operational Stakeholders is a top priority for the Network Manager. Operational Stakeholders means the civil and military airspace users, civil and military air navigation service providers, airport operators, airport slot coordinators and operating organisations and any additional stakeholder groups considered relevant for the individual functions.

(2) To fulfil the above requirement, in close coordination with all the Operational Stakeholders, a multidisciplinary team within the NMD dealing with all aspects of RAD from policy to implementation and review has been established. It is named the “NM RAD Team”.

3.1.2 Role

(1) The NM RAD Team is responsible for preparing a common Route Availability reference Document (RAD), collating, coordinating, validating and publishing it.

(2) The NM RAD Team is the central co-ordinator for the entire RAD process.

(3) Considering that all policy and strategy aspects of the RAD are part of planning and the operation of the RAD part of operations, the NM RAD Team includes experts on the following Network Planning and Network Operations matters:

a) Planning - Airspace Design and Future projects.

b) Operations - Documentation maintenance, Database maintenance, Technical oversight, Implementation, Validation and Quality Control.

3.1.3 Responsibilities

(1) The NM RAD Team shall:

a) Receive, verify and cross check the new RAD requirements (Annexes).

b) Co-ordinate:

i) Internally within NMD the new RAD requirements - airspace design, IFPS, ENV, etc.

ii) Externally with the Operational Stakeholders the new RAD requirements.

c) Refuse and/or remove any RAD requirement, if not properly co-ordinated until the coordination process is completed. This might include as an example request for a cross-border traffic flow rules and flight planning facilitation options not properly coordinated with the neighbouring State/FAB/ANSP or traffic flow rules and flight planning facilitation options that following the internal NM RAD validation (or in an impact assessment) conflicts with another one (often in another State/FAB/ANSP).

d) Verify regularly (daily), co-ordinate and cross check the existing RAD content, together with liaison of cross-border traffic flow rules and flight planning facilitation options.

e) Properly document and store the internal and external co-ordination and confirmation of the new RAD requirements.

f) Maintain:

i) The RAD documentation and database.

ii) The RAD/AIRAC calendar.

iii) All other documentation in relation to the RAD.

g) Notify the Operational Stakeholders of:

i) “one week to cut-off” at AIRAC -63 days (D -63).

ii) “RAD Cut-off” at AIRAC -56 days (D -56).

h) Publish the RAD at AIRAC -34 days (D -34) via the Network Manager Portal and/or e-mail to the Operational Stakeholders.

i) Review on a regular basis the RAD with the Operational Stakeholders.

j) Assess the activation/disabling of late changes to the RAD.

k) Liaison:

i) Internally the creation/amendment of the RAD.

ii) Internally and externally the efficacy of the RAD.

l) Update regularly the RAD part of the Network Manager Portal.

m) Create and follow-up Change Requests to update the NMOC system RAD model in future NM software releases.

3.1.4 General administrative activities

(1) The NM RAD Team is also responsible for:

a) Participation at:

i) EDTCB meetings as follow-up of RAD validation (before publication) for AIRAC +2 days and RAD implementation for next AIRAC.

ii) NOS meetings as a follow-up of tactical problems with existing traffic flow rules and flight planning facilitation options.

iii) Morning briefings as a follow-up of tactical problems with existing traffic flow rules and flight planning facilitation options.

iv) Strategic/Pre-Tactical teleconferences for Special Events/Military exercises impacting RAD.

v) RNDSG and ODSG meetings.

vi) Regional Airspace and ATFCM Axis meetings, if required.

b) Organisation, chairing and participation of/at the:

i) RMG meetings - strategic RAD evolution, definition of scope, terms and responsibilities, interaction with other Agency groups.

ii) Cross-border RAD Review meetings - strategic co-ordination of new measures, negotiation of the Operational Stakeholders requests and problems with existing traffic flow rules and flight planning facilitation options.

3.1.5 Co-ordination

(1) Any time during the entire RAD process full co-ordination between the designated members of the NM RAD Team shall be established.

(2) The NM RAD Team shall meet at least once per month to discuss any planning and/or operations issues connected to the RAD.

3.1.6 Supervision

(1) The NM RAD Team is under supervision of the Head of Operations Planning Unit of Airspace and Capacity Division.

(2) All Network Planning and Network Operations issues connected to the entire RAD process shall be addressed to the RMG.

(3) The NM RAD Team additionally to the established administrative reporting structure also reports to the RMG.

(4) The NM RAD Team might propose RAD developments based on RMG role and responsibilities.

3.2 Role and Responsibilities of the NM RAD Team Members

3.2.1 Network Planning

(1) The role of this/these member(s) of the NM RAD Team is to provide assistance in verification of the RAD requirements versus the airspace design rules, airspace organisation and airspace utilisation in accordance with the relevant aeronautical publications. The relations between the RAD requirements and the future airspace projects shall also be part of this role.

(2) The main tasks of Airspace Design and Future projects member are to:

a) Verify and crosscheck the:

i) New or revised RAD requirements compatibility with:

- Existing and planned airspace organisation/structure in accordance with the relevant aeronautical publications.
- Established airspace design rules.
- Declared during the airspace design meetings airspace utilisation.

ii) Operational goal of the new or revised RAD requirements connectivity with airspace design.

b) Assure:

i) Proper distinction between available DCTs used for flight planning purposes and those used to avoid the established airspace design processes.

ii) That all available DCTs not applied to Free Route Airspace (FRA) are or will be included into the State's/ANSP's/FAB's airspace design plans.

iii) Proper relations between the future RAD requirements and airspace projects.

c) Propose for refusal and/or removal any RAD requirement:

i) If not compatible with existing and planned airspace organisation/ structure.

ii) Overlapping the existing airspace organisation and its need not properly defined and justified.

d) Initiate internal or external airspace design coordination in case if proposed operational goal(s) is/are connected to inappropriate airspace design.

e) Run mini ad-hoc simulations, loading traffic samples, using existing pre-validation systems.

3.2.2 Network Operations

(1) The role of this/these member(s) of the NM RAD Team is to provide assistance during the entire RAD process in documentation, database maintenance, technical oversight, NOS implementation, validation and quality control.

(2) The main tasks of Documentation and Database maintenance member are to:

a) Assure the internal NMD coordination.

b) Support the Operational Stakeholders in:

i) Co-ordination/negotiation - mitigating the RAD through negotiation.

ii) Helping to achieve their goal through the NMOC system RAD model (or orientation towards other methods).

iii) Defining the RAD traffic flow rules and flight planning facilitation options in a way for implementation into CACD.

c) Run mini ad-hoc simulations, loading traffic samples, using existing pre-validation systems.

d) Provide advice/technical expertise on questions regarding implementation on CACD/impact, on NM client systems etc.

e) Update the RAD at AIRAC -56 days (D -56): RAD cut-off, preparation of the RAD for AIRAC + 2 tape.

f) Update/correct the RAD in co-ordination with the States//FABs/ANSPs (between AIRAC -56 days (D -56) and AIRAC -34 days (D -34)).

g) Notify the Operational Stakeholders of the RAD closure for publication.

h) Publish the RAD in the Network Manager Portal.

(3) The main tasks of Technical oversight member are to:

a) Be part of testing:

i) Eventual participation on SAT/I sessions regarding airspace utilisation rules and availability for future releases.

ii) Creation of test cases and cross-check with client systems.

b) Be part of training:

i) Preparing documents and giving training to CACD teams regarding upgrades/software releases/consequence of bugs reported by I2.

c) Be part of technical co-ordination:

i) Submission of I2s regarding problems with airspace utilisation rules and availability in OPS.

ii) Eventual submission of Change Requests for faulty/new software requirements.

d) Do the Bug Tracing:

i) Incorporation in RAD briefing sheet (info page for CACD).

ii) Any mis working/bug identified during testing or reported by other means.

e) Deal with other airspace utilisation rules and availability:

i) Provide expertise for definition/discussion of other measures implemented through the NMOC system model that are not part of the RAD (PTRs, Aircraft Type restrictions on Terminal Procedures, closed for cruising levels, unavailable terminal procedures, aerodrome flight rules, CCAMS).

f) Participate in pre-validation exercises (follow-up of large scale airspace changes impacting RAD).

g) Consider the follow-up of other technical documentation as SRD, FAB, etc.

h) Support the ADT (provide airspace utilisation rules and availability/implementation/structure/referenced data expertise).

i) Redact the OPS Manual related to RAD.

j) Assist to other areas of NM regarding RAD process evolutions (NOP project for RAD data provision).

(4) The main tasks of OPS Implementation, Validation and Quality Control member are to:

a) Perform the actions to ensure the implementation/verification/network validation and follow-up of the RAD.

b) Copy the draft RAD on proper drive to enable implementation by ADT and validation before publication (RAD for AIRAC +2 days).

c) Create the DMRs to implement the data.

d) Cross-check with CACD (EDTCB_0) for AIRAC amendments/NIL publication received that will allow implementation of RAD data.

e) Analyse and action on:

i) Defaults raised by CACD against RAD (syntax).

ii) Claims raised by the Network Operations Airspace Validation Team against RAD or RAD effect (semantics).

iii) Claims raised by validation teams against RAD or RAD effect (AIRAC -22 days (D -22) Test Tape produced by ADT).

f) Publish the RAD (AIRAC -34 days (D -34)): copy the RAD on proper drive to enable implementation for Test Tape.

g) Create the DMRs to check of outstanding traffic flow rules and flight planning facilitation options against what has already been implemented for AIRAC +2 days Tape.

h) Co-ordinate with the Operational Stakeholders for problem solving (incoherent traffic flow rule or flight planning facilitation option, traffic flow rule or flight planning facilitation option conflict with neighbours, etc.).

i) Create and follow-up of DMRs for solutions to the above.

j) Provide expertise during the RAD "Live Cycle" for CCM resolution about RAD implementation. Creation of DMRs for live updates.

k) Assist and report on RAD status/collection at EDTCB 1/2/3/4.

Important Note: The Data Modification Request (DMR) in this paragraph refers to the NMOC system and shall not be misled with RAD Application DMR.

4 National RAD Coordinator

4.1 Role

(1) The role of the designated by each ANSP National RAD Coordinator (NRC) is to provide a single link between the NM RAD Team and the States/FABs/ANSPs to co-ordinate the accumulation, management and publication of the RAD pertinent to that State/FAB/ANSP.

4.2 Responsibilities

(1) The National RAD co-ordinator shall:

a) Carry out any necessary co-ordination within the State/FAB/ANSP to enable the creation/update and management of all pertinent content of the RAD in the agreed format and methodology.

b) Provide the NM RAD Team with the:

i) “Category” of each traffic flow rule.

ii) “Operational Goal” of each traffic flow rule and flight planning facilitation option.

c) Adhere to the published timetable (AIRAC -56 days (D -56)) for transmitting data to the NM RAD Team for publication. The RAD Cut-off and Publication dates could be found on the Network Manager Portal.

d) Provide the single link for discussion of the relevance or necessity for any RAD requirement identified by the NM RAD Team.

e) Carry out the necessary internal co-ordination in order to provide answers in a timely manner. This is especially important with regard to the responsibilities of the National ENV Co-ordinator.

f) Appoint and advise the NM RAD Team of a replacement on a permanent basis, or every time he/she will be unavailable for a period of days/weeks.

g) Make him/herself available for a review of the RAD on an annual basis, or more frequently if the necessity demands.

h) Review the respective RAD part on a regular basis.

i) Consult with adjacent States/FABs/ANSPs on cross-border traffic flow rules and flight planning facilitation options, or those that affect routes that cross borders, to achieve a harmonious result.

j) Be the contact point for all data relevant to the RAD.

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5 NRC RAD requirement request

5.1 General issues

5.1.1 Annex 4 - Special Events and Crises

5.1.1.1 Purpose and structure

(1) When required by the State(s)/FAB(s)/ANSP(s) for the purpose of special event or during crisis i.e. European/World Sport Events, Olympic Games, large-scale activity, Military activity/exercises, economic forums, etc., Annex 4 shall be created.

(2) Annex 4 is structured in accordance with structure of Annexes 1, 2 and 3.

(3) Annex 4 contains traffic flow rules and/or flight planning facilitation options of a temporary nature. These traffic flow rules and/or flight planning facilitation options overwrites those from Annexes 1, 2 and 3 in case of same identification.

5.1.1.2 Purpose and structure

(1) The network-wide traffic flow rules and flight planning facilitation options, identified by the Network Prefix code, are published only in Annex 4 and used only by the Network Manager.

5.1.1.3 “EU” restrictions

(1) States/FABs/ANSPs shall not use “EU” restriction(s), as described in ERNIP Part 1, Chapter 8, Section 8.2, paragraph 8.2.3.1, for strategic description of special events and crises, especially for military activity/exercises. The use of “EU” restriction(s) might lead to lack of relevant data, especially changes, for the Operational Stakeholders, as “EU” restriction(s) are available daily only via B2B.

(2) In case of amendment of already published Annex 4, by means of creating a new traffic flow rule and/or flight planning facilitation option and only during the period when the NM RAD Team is not available, temporary use of “EU” restriction(s) is allowed. Upon availability of the NM RAD Team, relevant “EU” restriction(s) shall be incorporated as an amendment to that Annex 4 and shall be deleted in NMOC to avoid duplication.

5.1.1.4 Publication

(1) The NRC shall respect the RAD content and established RAD process and coordinate with the NM RAD Team creation of Annex 4 based on all available data.

(2) The NM RAD Team shall publish relevant Annex 4:

a) Following proper agreement between all impacted Operational Stakeholders and the Network Manager.

b) As part of the RAD closest to the time of applicability of the special event(s).

c) As minimum, at D- 34 allowing sufficient time for its publicity, except the case of establishment of temporary areas (e.g. large-scale exercises/activity). In such case, Annex 4 can be published/updated up to D-2 before the events.

(3) The NM RAD Team shall publish any amendment, as new version of the relevant Annex 4. Amendments, including incorporation of "EU" restriction(s), shall be highlighted accordingly and shall be annotated as either new, amended or deleted.

(4) Except for the events related to the establishment of temporary areas, State AIS publication is not required for creation of Annex 4.

5.1.2 Specific issues in RAD requirement request

5.1.2.1 DCTs

(1) For all new available DCTs, all possible remarks concerning the airspace crossed by these DCTs shall be provided. Based on relevant State AIPs AOs shall be informed for DCTs passing by: Uncontrolled airspace, Danger areas, Prohibited areas, Restricted areas, TRAs, TSAs, CBAs, CTRs, TMAs, etc.

(2) Proper distinction between available DCTs used for flights planning purposes and those used to avoid the established airspace design processes shall be made.

(3) For all available DCTs not applied to FRA, information if they are or will be included into the State's/FAB's/ANSP's airspace design plans shall be provided.

(4) All DCT flight plan filing connections and/or connecting points to/from the aerodromes with officially published SIDs/STARs shall be justified and the reason clearly stated. If the reason is inappropriate airspace design this shall be mentioned and proper actions will be taken by the NM RAD Team.

(5) States/FABs/ANSPs may use the DCT - Rerouting Scenario options not as mandatory available tool but only when required and necessary considering the manual input required in NMOC.

5.1.2.2 Airspace volume based RAD requirement

(1) When submitting a new RAD requirement based on airspace volume (ATC Unit, AoR of relevant ATC Unit - CTA/UTA, TMA, CTR or individual/collapsed control sector(s) within an ATC unit, Free Route Airspace, area/zone, etc.) NRC shall provide to the NM RAD Team evidence where the relevant airspace volume is available - State AIP reference page(s) or map with dimension/location. Only after presented evidences the NM RAD Team shall accept the RAD requirement.

(2) Each NRC shall be responsible for updating the airspace volume data provided to the NM RAD Team not published in State AIP.

(3) State/FAB/ANSP should continue using airspace volume based RAD requirement to prevent an inappropriate flight planning, if required.

5.1.2.3 Traffic Flow Rules categorisation

(1) Each Traffic Flow Rule shall be categorised in accordance with ERNIP Part 1, Chapter 8, Section 8.1 and relevant category shall be provided to the NM RAD Team by the NRC.

(2) Combination in same traffic flow rule of two categories is not possible.

(3) In case, category split is considered difficult, relevant traffic flow rule shall be put on more evident category.

5.1.2.4 Operational Goal

(1) An "Operational Goal" clearly defined by the NRC shall accompany each RAD traffic flow rule and flight planning facilitation option.

(2) The NM RAD Team shall not accept a RAD traffic flow rule and flight planning facilitation option without an "Operational Goal".

(3) The NRC shall provide better description, clear definition and explanation in the "Operational Goal" of a RAD traffic flow rule and flight planning facilitation option aimed to prevent an inappropriate flight planning.

(4) The NRC, when providing a RAD traffic flow rule, might start the "Operational Goal" with a most relevant sub-category, to further clarify the main category. The sub-categories to be used can be as presented below, but are not be limited to:

a) **LoA**

Linked to flight profile linked with LoA, which needs validation by neighbours.

b) **CIV/MIL Segregation**

c) **Technical constraint**

Linked mainly with local FDPS issues, possible removal with coming technical evolution).

d) **Traffic organisation ARR/DEP (aerodrome(s) location indicator/s)**

Linked to vertical profile for ARR/DEP to particular aerodromes, i.e. sectors sequence imposed.

e) **Profile correction**

Linked to anti yo-yo, inappropriate routes, low/high filer, inappropriate turns.

f) **Flow orientation**

Linked with rationalisation of the flow to raise capacity in sectors, mainly when entering an ACC by such or such sector or to unload crowded sectors to put flight in other layers/routes.

g) **Seasonality capacity**

Linked to the main category "Capacity" but related to flow that only exists part of the year.

h) **Vertical profile**

Linked to avoid too frequent layer changes for flow that leads to costly coordination.

(5) Cross-border traffic flow rules and flight planning facilitation options might be or might not be part of the relevant LoA. The appropriate NRC as part of the operational goal shall give clear explanation for that.

(6) For any State/ANSP traffic flow rule and flight planning facilitation option, not defined as cross-border and considered that has impact on adjacent State/ANSP, the appropriate NRC as part of the operational goal shall also give clear explanation for that.

5.1.2.5 RAD versus AIP

(1) The airspace FL limitation published in State AIPs is not part of the RAD and shall be published as EURO restrictions.

(2) The RAD shall not be used to “correct” the State AIP publications.

5.1.2.6 “Flying above the airspace”/“RFL above the airspace”

(1) For larger airspaces, if there is a need to express the checking of the FL/RFL in a more specific way States/FABs/ANSPs shall use term “above FL… in airspace” or “with RFL above FL… in airspace” with clear definition of the airspace concerned.

5.1.3 Numbering of RAD requirement

(1) RAD requirements are numbered and identifiers shall be assigned in accordance with ERNIP Part 1, Chapter 8, Section 8.1.

(2) The numbering is sequential. When a new traffic flow rule or flight planning facilitation option is introduced, it is allocated the next number in sequence from the last number that was introduced. When a traffic flow rule or flight planning facilitation option is withdrawn, the number is not re-allocated until the entire sequence has been exhausted.

(3) When a restriction is created in CACD a letter is always added after each RAD unit identifier by the ENV Team. If the creation in CACD comprises more than one part in order to satisfy all of the requirements of the traffic flow rule or flight planning facilitation option the ENV Team will allocate a further “alpha” identifier, for example: E_2778A, E_2778B, etc.

5.1.4 Coordination and change of RAD requirement

5.1.4.1 State/ANSP Requirement

(1) Each RAD requirement identified as State/ANSP (LB, etc.), shall be coordinated and changed only by the NRC from the State/ANSP of origin, unless otherwise agreed.

(2) Each RAD requirement identified as Maastricht UAC (YX) one, shall be coordinated with relevant State(s) - Belgium, Germany and/or Netherlands and changed only by the NRC of Maastricht UAC.

5.1.4.2 Cross-border Requirement

(1) Each RAD requirement identified as cross-border, except the Network-wide one, (LBLR, DU, DUBM, RE, etc.), shall be coordinated BEFORE submission for inclusion in the RAD and changed only after mutual approval by the NRCs of States/FABs/ANSPs concerned. The NM RAD Team may also perform this coordination on behalf of the involved NRCs, when requested.

(2) Any cross-border RAD requirement, except the Network-wide one, discovered by the NM RAD Team that has not been coordinated will be removed from the RAD until the coordination process has been completed.

(3) Each RAD requirement identified as Network-wide (NM) shall be:

a) Coordinated by the Network Manager with all impacted Operational Stakeholders.

b) Managed by the Network Manager during its entire lifecycle (creation-amendment-deletion) following the established CDM process in accordance with ERNIP Part 1, Chapter 8, Section 8.1.

5.1.5 "Last minute" Changes and "Increment File"

(1) "Last minute" changes are:

a) Changes required:

i) Due to exceptional circumstances.

ii) Only when they have a significant impact on operational requirements.

b) Promulgated by the NM RAD Team:

i) For Annexes 1, 2 and 3 - via the "Increment File".

ii) For Annex 4 - via newly published version, replacing the previous one.

c) Incorporated by the NM RAD Team into the subsequent RAD publication as new, amended or deleted.

(2) The "Increment File":

a) Shall continue to be used, if necessary, for "DAILY" announcement of any "last minute" change.

b) Shall be structured to include the "last minute" change data expressed in accordance with structure of Annexes 1, 2 and 3.

c) Shall be published by the NM RAD Team at relevant day at 14:00UTC. Each newly published version will be numbered and will replace the previous one.

d) Data changes shall be implemented in NMOC system to be effective for FPL processing on the next day at 00:00UTC. In case of urgent issue, the "last minute" change will be implemented with immediate effect.

5.2 Submission of RAD requirement

(1) The submission to the NM RAD Team of any new RAD requirements, amendment and withdrawal shall be done based on the RAD publication timetable via the RAD Application in accordance with RAD Application User Manual.

(2) The RAD Application output generated xls files are to be considered as an integral part of the RAD.

5.3 Dynamic Management of RAD requirement

5.3.1 General provisions

(1) Dynamic management of the RAD is defined as a pre-tactical and tactical ATFCM process (D-6), performed by the Network Manager on behalf of State(s)/FAB(s)/ANSP(s).

(2) The dynamic management (pre-tactical/tactical activation/de-activation) process is not part of the NM RAD Team responsibilities. A dynamically managed traffic flow rule or flight planning facilitation option cannot be considered as a change required due to exceptional circumstances and/or

having a significant impact on operational requirements and shall not be processed as a “Last minute” change and promulgated via the “Increment File”.

(3) The NRC, before the RAD publication (D-34), shall identify by the expression “DYNAMIC” as availability/applicability any dynamically managed traffic flow rule or flight planning facilitation option.

(4) After the RAD publication (D-34), any change of dynamically managed traffic flow rule or flight planning facilitation option shall be considered as a change required due to exceptional circumstances and/or having a significant impact on operational requirements and shall be processed as a “Last minute” change and promulgated via the “Increment File”.

(5) Inclusion of a traffic flow rule or flight planning facilitation option for dynamic management is coordinated and agreed through the existing RAD CDM process.

(6) Until further developments being performed in NM system, the dynamic management of the RAD will be done via the ASM processes.

5.3.2 Annex 2

(1) A traffic flow rule in Annex 2A and Annex 2B is eligible for dynamic management, which means the following:

a) Annex 2A:

“Time Availability” - temporary or partial relaxation of the period in which each FL capping limitation is available.

b) Annex 2B:

“Time Applicability” - temporary or partial relaxation of the period in which each local and cross-border capacity and structural rule is applied.

(2) A traffic flow rule from Annex 2C is not eligible for dynamic management due to its specificity and being already managed dynamically via the ASM processes.

5.3.3 Annex 3

(1) A flight planning facilitation option in Annex 3 is eligible for dynamic management, which means the following:

a) Annex 3A:

“Time Applicability” - temporary or partial relaxation of the period in which each ARR/DEP aerodrome connectivity option is applied.

b) Annex 3B:

i) Same DCT availability and Utilisation applicability:

Temporary or partial relaxation of the time period in which each en-route DCT option is available and utilisation is applied.

ii) Different DCT availability and Utilisation applicability:

- "DCT Time Availability"

  Temporary or partial relaxation of the period in which each en-route DCT option is available.

  OR

- "Utilisation"

  Temporary or partial relaxation of the period when the utilisation constraint applies only for part of the period when the DCT is available.

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6 RAD impact assessment process

6.1 Purpose

(1) The purpose of the RAD impact assessment is to identify possible adaptation, simplification, inconsistencies and dependencies between proposed - new or modified and existing RAD traffic flow rules.

(2) This is a coordinated process based on continues communication and coordination between the NM and States/FABs/ANSPs, with the involvement of the other operational stakeholders with aim to achieve agreement on the proposed RAD traffic flow rules.

6.2 Process

(1) The timeline is set to allow the NM to compile the RAD, to resolve errors/conflicts and assess the impact of any new RAD traffic flow rule. The timeline for provision of impact assessment results by NM for any new RAD traffic flow rule is also clearly defined.

Before D-56 - the cut-off date before implementation

(2) A detailed input from the NRCs for the introduction of new or modification of the existing RAD traffic flow rule needs to be sent to the NM RAD Team, and shall include but not be limited to:

a) Traffic Flow Rule definition and categorisation.

b) Detailed and unambiguous Traffic Flow Rule objective description as part of the Operational Goal.

c) Additional explanation, if necessary, including possible flows affected, expected number of flights affected, list of safety-related issues/concerns and reasons for the RAD definition, expected outcome, possible links with other rules for each rule submitted (part of Operational Goal or separate explanation).

Between D-56 and D-14 before implementation

(3) The initial RAD impact assessment would be performed by the NM Airspace Design Team with support of the NM RAD Team and will include but is not limited to:

a) Analyses of provided Categorisation and Operational Goal.

b) SAAM/NEST analysis to verify the impact on traffic subject to the rule.

c) Correlation between proposed traffic flow rule and other rules in the network.

d) Evaluate the impact on flight efficiency.

e) Propose simplification, flows exclusions, applicability periods of the traffic flow rule.

f) Propose alternative airspace design solution, structural airspace changes, to reflect the operational goal of the traffic flow rule or other ATFCM solutions, including scenarios.

g) Propose further RAD cross-border coordination and definition of network-oriented RAD traffic flow rule.

h) Request additional details related to the traffic flow rule operational goal explanation.

(4) The RAD traffic flow rules will also be assessed for impact through the ATFM validation process.

(5) Following the impact assessment, if RAD traffic flow rule is deemed to be particularly punitive, is affecting a disproportionate amount of traffic at Network level, does not address the operational goal or it has a negative impact on other ANSPs it will be referenced back to the originating State/FAB/ANSP for further consideration.

(6) The final content of any amendment to the RAD shall be positively agreed between the NM RAD Team and State/FAB/ANSP concerned. The NM RAD Team will properly record the relevant agreements and the assessments and comments made.

(7) Possible lack of agreement on the definition of particular RAD traffic flow rule will not delay the implementation (e.g. due to safety concerns, an operational necessity that has to be clearly expressed, etc.), but will continue to be addressed for further clarification and possible alternative solutions.

(8) Furthermore, NM Airspace Design Team will perform continuous RAD impact assessment to evaluate the effectiveness, applicability and utilisation, network impact significance of already implemented RAD traffic flow rules in order to propose further simplification or complete or partial suppression of relevant rule.

Between D-14 and D-10 before implementation

(9) Any “Last minute” change provided to the NM RAD Team for inclusion in the RAD will be kept to a strict minimum and will be based on very clearly justified operational or safety needs. It will be also subject to assessments provided to the relevant NRCs.

Initial post implementation

(10) All uncertain cases from assessment results (e.g. no agreement, inconsistency with Operational Goal, lately provided and assessed last changes, etc.) shall be recorded by the NM RAD Team and discussed in the operational stakeholders meeting group (RMG, RNDSG or AOG).

7 RAD Management Group

7.1 Role

(1) The RMG is a specialised group of the RNDSG and ODSG constituted in order to support them with technical and operational expertise on activities related to the RAD. Within the frame of its activities, the RMG reports to the RNDSG and ODSG from which it receives instructions and guidance.

(2) The RMG is the co-ordination forum for European RAD and will confine its discussions to RAD related issues.

(3) The RMG is to carry out work mandated by RNDSG and ODSG and deliver the output of that work to them for endorsement by NETOPS for the main purpose of enabling improvement of the RAD and its related processes.

7.2 Responsibilities

(1) With regard to the RAD the RMG is responsible to:

a) Monitor the:

i) Scope of the RAD.

ii) Validation process.

iii) Developments of the RAD Application.

b) Make proposals for the amendment and publication processes.

c) Propose the development of procedures, including:

i) How to establish a RAD Annex.

ii) How to amend a RAD Annex.

d) Roles and responsibilities of a RAD Coordinator.

e) Processes and techniques involved in maintaining a RAD Annex.

f) Establishing:

i) A formal Review procedure.

ii) The user requirements, including the format of output files (xls, pdf, etc.), of the RAD Application.

g) Ensuring the RAD is utilised solely for Operational Requirements.

h) Maintain close coordination with other appropriate sub-groups/groups of the NETOPS via RNDSG and ODSG as required.

i) Review periodically its Terms of Reference and propose amendments as necessary.

7.3 General Working Arrangements

7.3.1 Fast-time Coordination Procedure

(1) For coordination of editorial or textual RAD changed without changing the scope of the RAD the following shall be used:

a) The NM RAD Team prepares a draft proposal and circulates it to the Operational Stakeholders for confirmation.

b) **4 (four) weeks** deadline for comments.

c) "**Silent procedure**" applies (i.e. no comments received means agreement).

d) After the confirmation stage, if no objections received, the NM RAD Team will start the coordination of necessary changes required and introduction into the RAD on commonly agreed date.

e) In case of irresolvable issues the NM RAD Team shall present them for discussions at forthcoming RMG meeting. Until then the proposed changes will not be incorporated into the RAD.

(2) This procedure can also be used by the NM RAD Team in case of any RAD related documents updates.

7.3.2 Procedure for RAD requirement proposals submission

(1) AOs/CFSPs shall submit their RAD requirement proposal(s) either to the NM RAD Team or the RNDSG Secretariat.

(2) Each RAD requirement proposal should contain the reason why the NRCs should consider withdrawing/amending certain traffic flow rules. The following reason(s) could be taken as fictitious example: "no proper access to ATS route …… leading/coming from AD XXXX or leading to AD YYYY" or "detour of …. NM due to network effect of RAD traffic flow rule …… ".

(3) If any RAD requirement proposal is planned to be discussed at RAD related meetings including RMG it should be submitted to the NM RAD Team and appropriate NRCs at least 10 (ten) days prior the meeting in order to give the NRCs a chance for proper preparation even offer (better) options for special requests.

8 RAD publication timetable

(1) The following publication timetable is used to maintain the RAD.

DAY	PROCESS	ACTION
D-63	Notification to States/FABs/ANSPs "One week to Cut-off".	**NM**
D-56	Finalisation of States/FABs/ANSPs requirements.	**States FABs ANSPs**
	Cut-off date. States/FABs/ANSPs provide amendments to NM.	
	Three weeks to compile the RAD and to resolve errors/conflicts.	**NM**
D-34	Publication.	**NM**
	Two weeks to assess impact of new traffic flow rules.	
D-14	Results of impact assessment of new traffic flow rules.	**NM**
	Amendments to be promulgated on the Network Manager Portal.	
D-10	Freeze of ENVironment tape for AIRAC.	**NM**

Table 1: RAD Publication Timetable

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9 General provisions

(1) The provisions from this Manual shall be followed by the NM RAD Team and other OPL/NOS Teams in the entire RAD process.

(2) The provisions from this Manual shall also be followed by all State/ANSP NRCs in the RAD process.

(3) This RAD Users Manual supersedes all previous versions.

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ABBREVIARIONS

Acronym	Definition
ACC	Area Control Centre
AD	Airspace Data
ADT	Airspace Data Team
AIM	Aeronautical Information Message
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation And Control
AIS	Aeronautical Information Service
ANSP	Air National Service Provider
AO	Aircraft Operator
AOWIR	Aircraft Operator WHAT-IF Reroute
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
CACD	Central Airspace and Capacity Database
CBA	Cross Border Area
CCAMS	Centralised SSR Code Assignment Management System
CCM	Claim Centralized Management
CDM	Cooperative Decision-Making
CTR	Control Area
DB	Data Base
DCT	Direct
DMR	Data Modification Request
EDTCB	Environment Data Transfer Control Board
ENR	En-route

ENV	Environment
ERND	European Route Network Design
ERNIP	European Route Network Improvement Plan
ETFMS	Enhanced Tactical Flow Management System
EU	European Union
FAB	Functional Airspace Block
FIR	Flight Information Region
FMP	Flow Management Position
FPL	Flight Plan
FRA	Free Route Airspace
GAT	General Air Traffic
IFPS	Integrated Initial Flight Plan Processing System
IFR	Instrument Flight Rules
I2	Incident type 2
MIL	Military
NAT	North Atlantic
NEST	Network Strategic Tool
NETOPS	Network Operations Team
NM	Network Manager
NMD	Network Management Directorate
NOP	Network Operations Plan
NOS	Network Operations
NRC	National RAD Co-ordinator
ODSG	Operations and Development Sub-Group

OM	Operations Manager
OPL	Operations Planning
OPS	Operations
PAMS	Published AIP management system
PTR	Profile Tuning Restriction
RAD	Route Availability Document
RFL	Requested Flight Level
RMG	RAD Management Group
RNDSG	Route Network Development Sub-Group
SAAM	System for traffic Assignment and Analyses at a Macroscopic level
SAT/I	System acceptance testing integration
SID	Standard Instrument Departure
SRD	Standard Route Document
SSR	Secondary Surveillance Radar
STAR	Standard Arrival Route
TMA	Terminal Control Area
TRA	Temporary Reserved Area
TSA	Temporary Segregated Area

Table 2: Abbreviations table

EUROCONTROL

SUPPORTING EUROPEAN AVIATION

www.eurocontrol.int