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LESSONS LEARNT FROM INDONESIA'S JOURNEY

TOWARD ICAO 5LNC RESOLUTION COMPLIANCE

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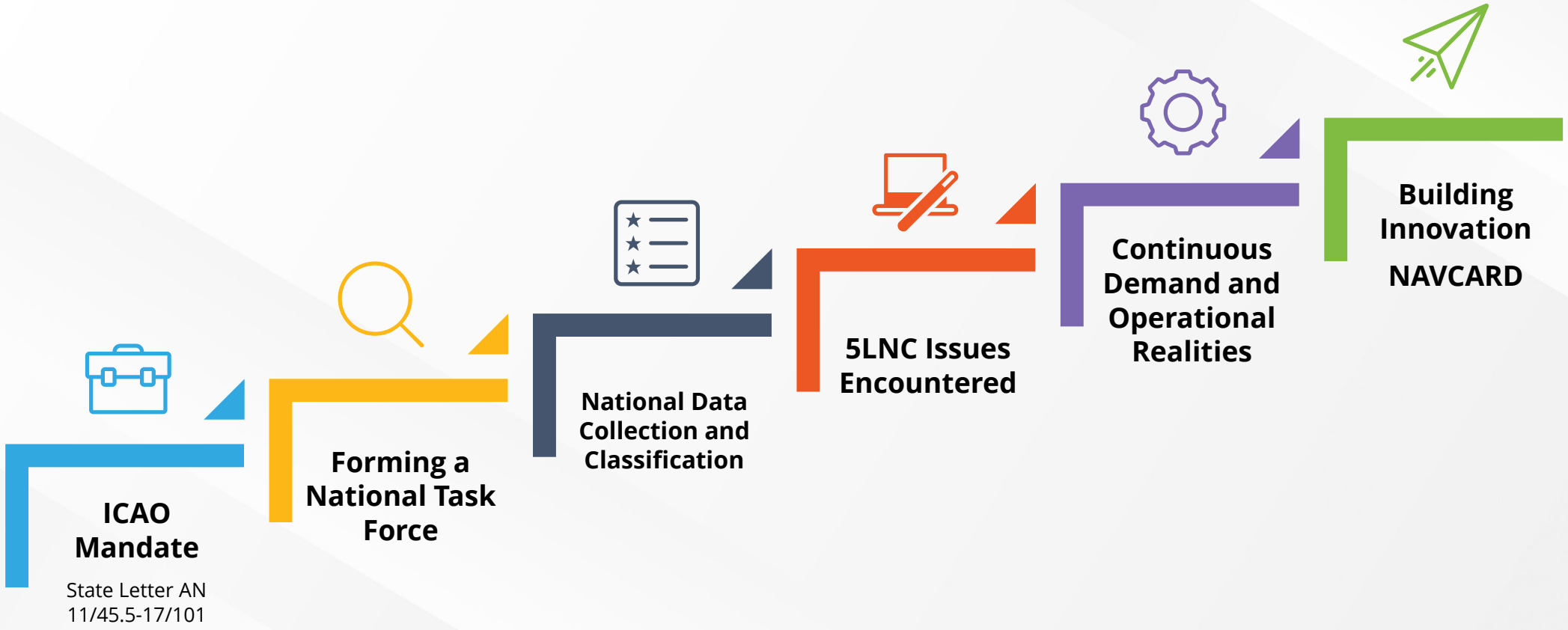
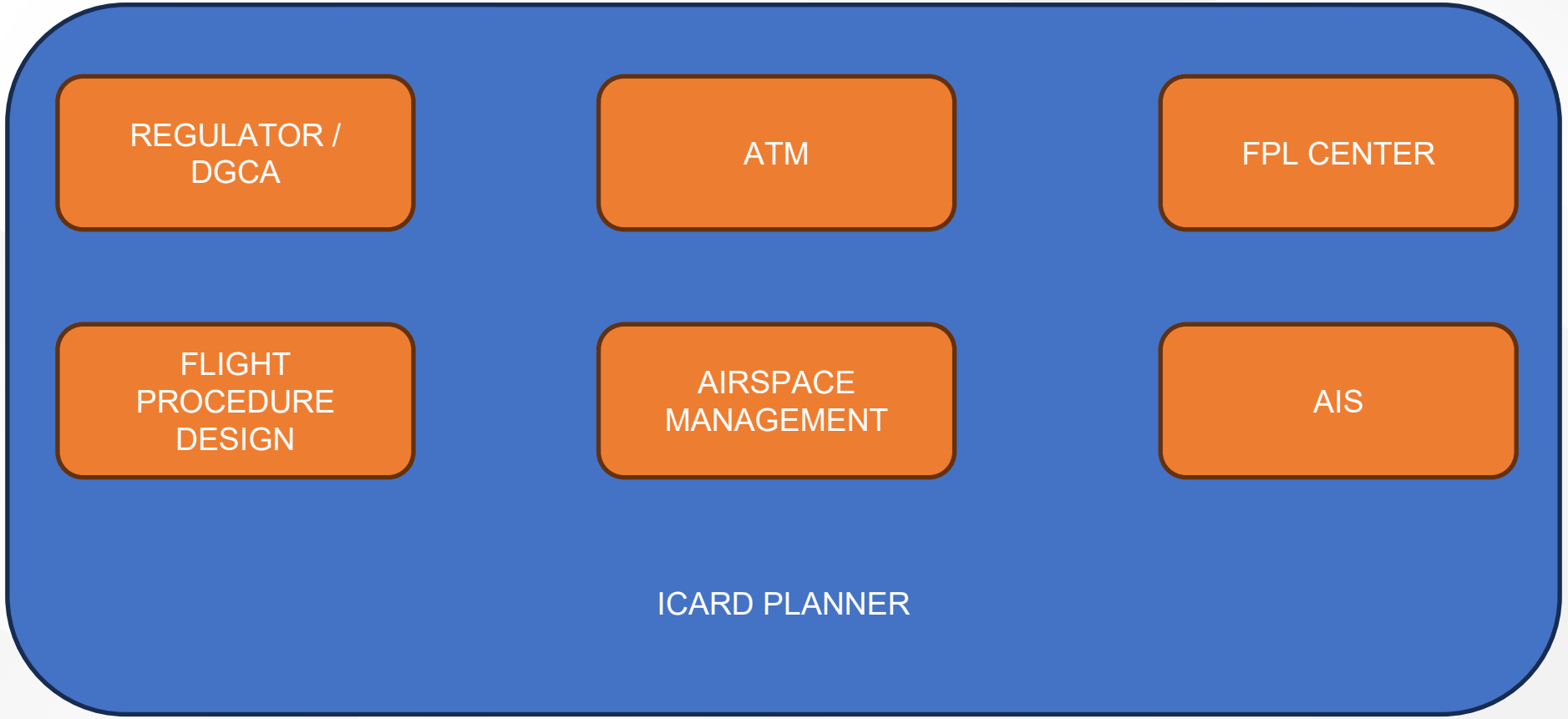
Flight Procedure Designer - AirNav Indonesia

Chitose, 11 June 2025

OUR JOURNEY


ICAO Mandate
State Letter AN 11/45.5-17/101
Forming a National Task Force
National Data Collection and Classification
5LNC Issues Encountered
Continuous Demand and Operational Realities
Building Innovation
NAVCARD

FORMING NATIONAL TASK FORCE



National Data Collection and Classification

5LNC status	Purpose		Total
	ENR	TA	
Registered	154	11	**165**
Available in ICARD	33	35	**68**
Duplicated with other States	111	313	**424**
Reserved by other States	15	25	**40**
Not in ICARD list	87	265	**352**
Available in other Regions	31	123	**154**
Sub Total			**1203**

Figure 1. List of 5LNCs published AIP Indonesia

OUTLINE:

01 Completion of 5LNC issue

02 5LNC Daily operation

03 Implementation 5ANNC in Indonesia

Completion of 5LNC issue

Completion of 5LNC issue

5LNC Issues Encountered: (1/2)

01

Issue

5LNC Status and Handling Process

- 165 5LNCs are "Registered“
- 68 5LNCs are "Available in ICARD“
- 424 5LNCs are "Duplicated with other States“ Priority Not Indonesia
- 40 5LNCs are "Reserved by other States“
- 352 5LNCs are "Not in ICARD list“
- 154 5LNCs are "Available in other Regions"

Action

Solve problems with various solution methods as follows:

- Update attributes
- Proceed with registration in ICARD
- 5LNCs that are not Indonesia's priority will be replaced by new 5LNC using the "Find Available List" feature in ICARD to avoid proximity issues before registering them
- Replaced by new 5LNC using the "Find Available List" feature in ICARD to avoid proximity issues before registering them
- Asking ICARD Manager to build new code into the ICARD, however this involves internal safety assessment and is quite a time consuming process.
- For several 5LNCs, we request ICARD Manager to transfer the codes to the APAC Region. For those that could not be transferred, we replace the 5LNCs with new codes.

Outcomes

- 165 5LNCs are registered has been updated
- 68 5LNCs areAvailable in ICARD has been registered
- 424 5LNCs are not our priority replaced by new one
- 40 5LNCs are reserved by other states has been replaced by new one
- 352 5LNCs are Not in ICARD list has been build into the ICARD
- 141 5LNCs are successfully transferred following 5LNCs from other region and for 13 codes couldn’t be transferred to APAC then replaced by new one

5LNC Issues Encountered: (2/2)

	Issue	Action	Outcomes
02	Lack of ICARD Planner	To accelerate the resolution of duplications and other issues related to 5LNCs, we added several more ICARD Planners.	10 ICARD Planner
03	Difficulty monitoring the status of 5LNC in progress because there is no 5LNC database	• Created a centralized waypoint database that includes the status of each 5LNC (e.g., Allocated, Registered, Available in Other Regions, etc.). • Developed a monitoring system to track the status of each individual 5LNC	NAVCARD (In-house System)
04	5LNC rejection of final draft AIP Publication	• Established a binding SOP between FPD and ICARD Planners to govern the end-to-end process. • Conducted regular meetings between FPD and the 5LNC team. • Set a fixed schedule for 5LNC submissions by FPD.	SOP

NAVCARD

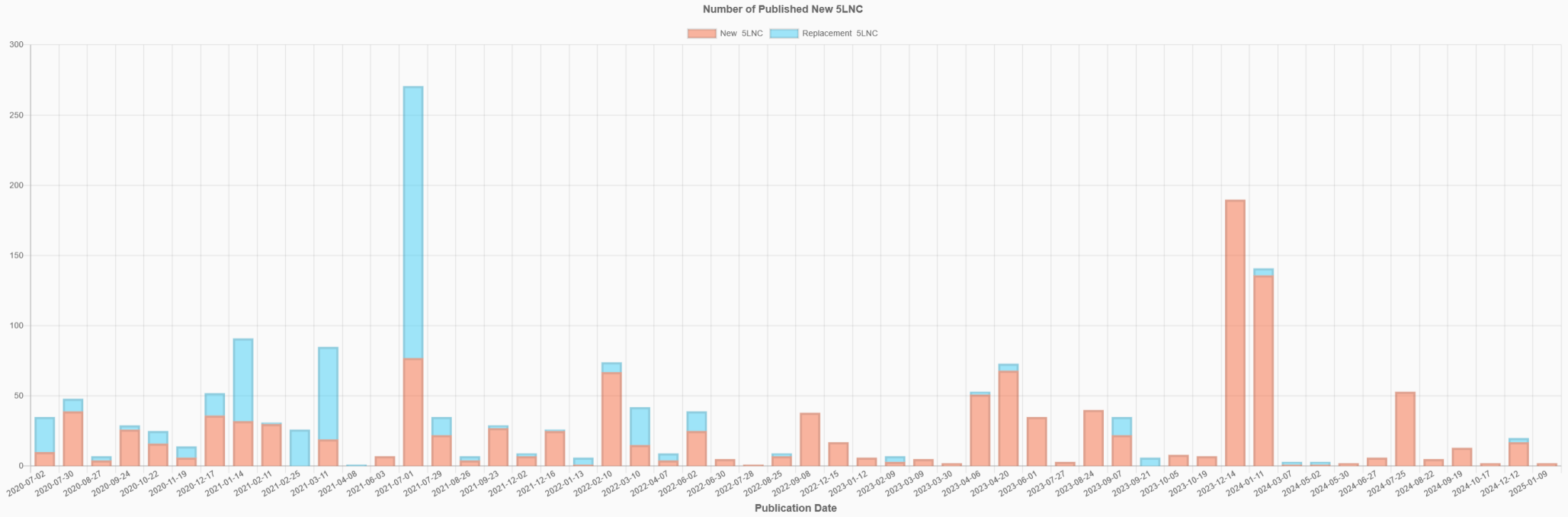
Navcard

New 5LNC
- Status of New 5LNC
- Add Name
- Reserved
- Submitted
- Approved
- Amendment
- Published
- Rejected (Planner)
- Rejected (ICAO)
- All Point

Alphanumeric
Progress Change of 5LNC
Database 5LNC
About
← Back to Homepage

Status Progress of New 5LNC

Status	Number of Name/Points
Available	2
Reserved	0
Rejected (Planner)	16
Submitted/Pending	3
Approved	223
Amendment	4
Published	1779
Rejected (ICAO)	36



NAVCARD

Progress of Change 5LNC

ICARD Status	Reserved	Submitted	Rejected (Planner)	Approved	Amendment	Published	Rejected (ICAO)	Deleted	Total (Progress)	Not Purpose to Change
ALLOCATED	0	0	0	12	0	431	0	15	458	0
AVAILABLE	0	0	0	0	0	0	0	0	0	0
NOT IN LIST	0	0	0	0	0	14	0	1	15	4
NOT STANDARD	0	0	0	1	0	3	0	0	4	0
REGISTERED	0	0	0	1	0	687	0	0	688	0
RESERVED	0	0	0	1	0	45	0	0	46	0
UNAVAILABLE	0	0	0	1	0	5	0	0	6	0

Show 10 entries

Search:

Old 5LNC	ICARD Status	New 5LNC	Purpose	Progress	FIR	Aerodrome
ABADE	REGISTERED		ENR	Published	WAAF	
ABANG	REGISTERED		ENR	Published	WIIF	
ABASA	REGISTERED		ENR	Published	WIIF	WIII, WIHH
ABDEG	REGISTERED		TA	Published	WAAF	WAHI
ABEKO	ALLOCATED	LEGIT	TA	Published	WAAF	WAWW
ABIJU	REGISTERED		TA	Published	WAAF	WAFF
ABILO	ALLOCATED	AKSOX	ENR	Published	WIIF	WIII
ABINA	ALLOCATED	MOLNI	TA	Published	WIIF	WIMM
ABINU	ALLOCATED	APULA	TA	Published	WAAF	WAAA
ADAVI	ALLOCATED	DUKUG	TA	Published	WAAF	WAAA

5LNC Daily operation

5LNC Daily operation

FLIGHT PROCEDURE DESIGN PERSPECTIVE

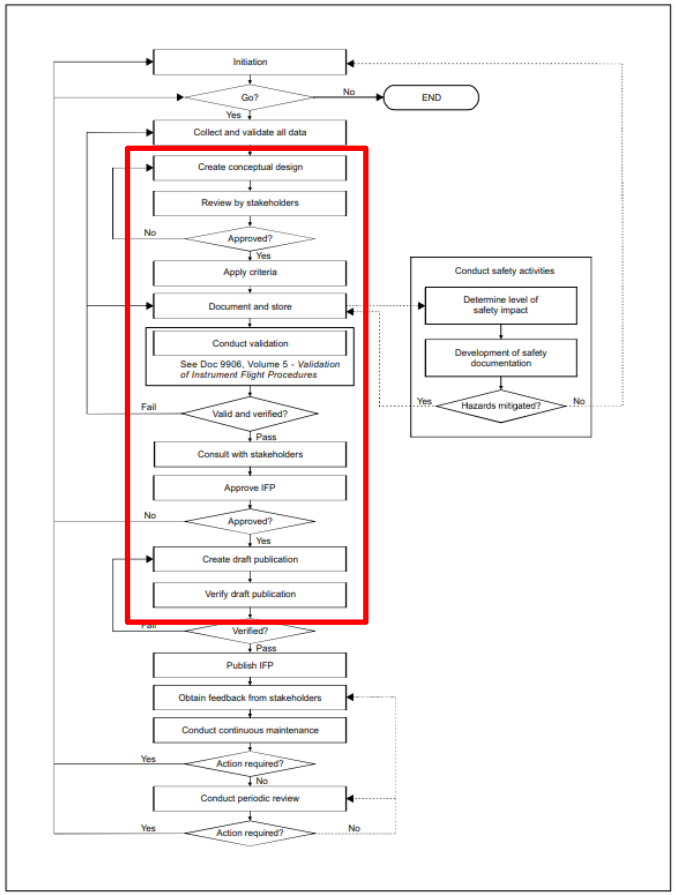
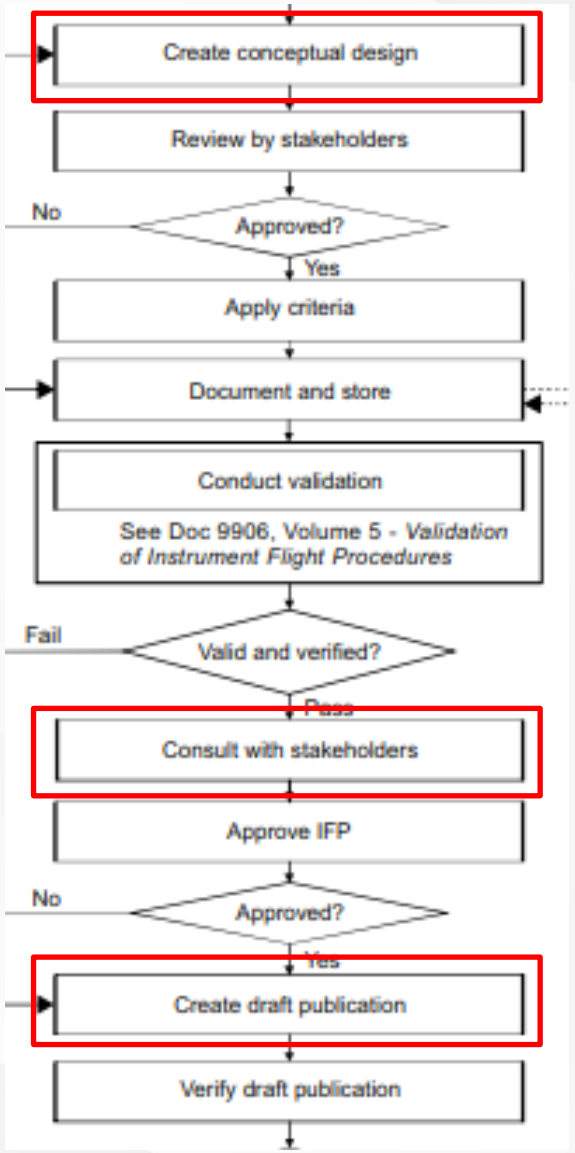


Figure 2. IFP process flow diagram.



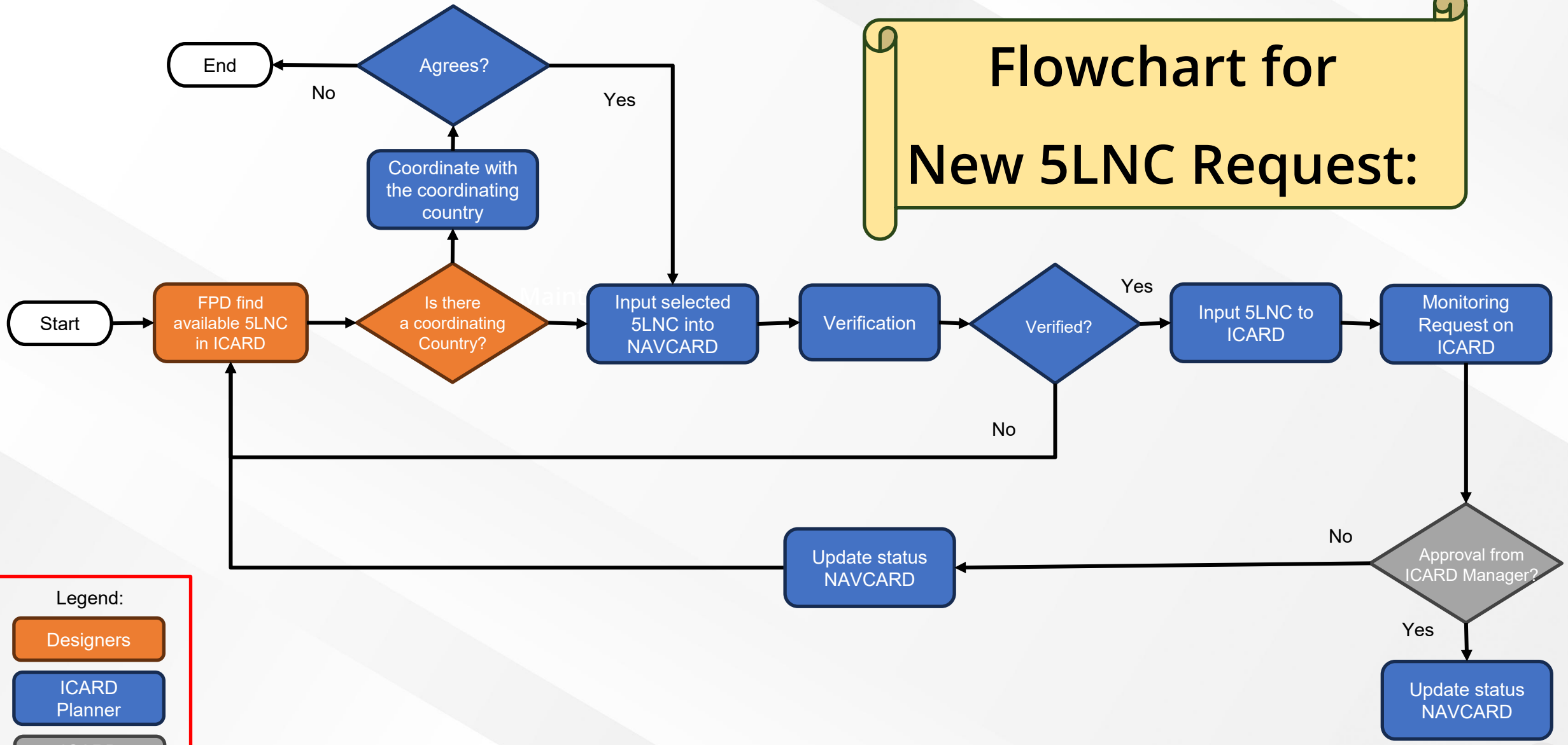
5ANNC usage

5LNC needs Identification

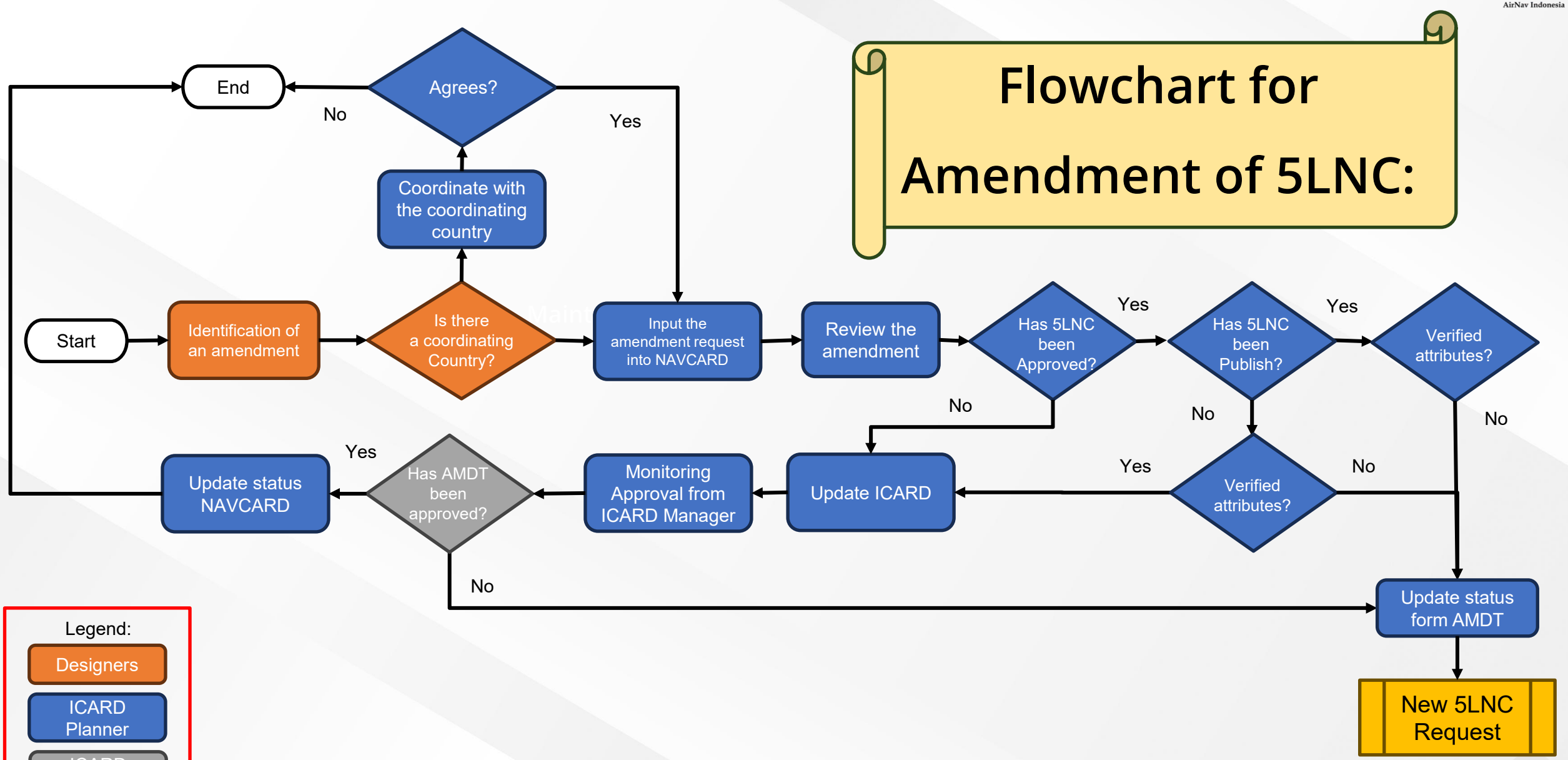
5LNC Submission

Procedures

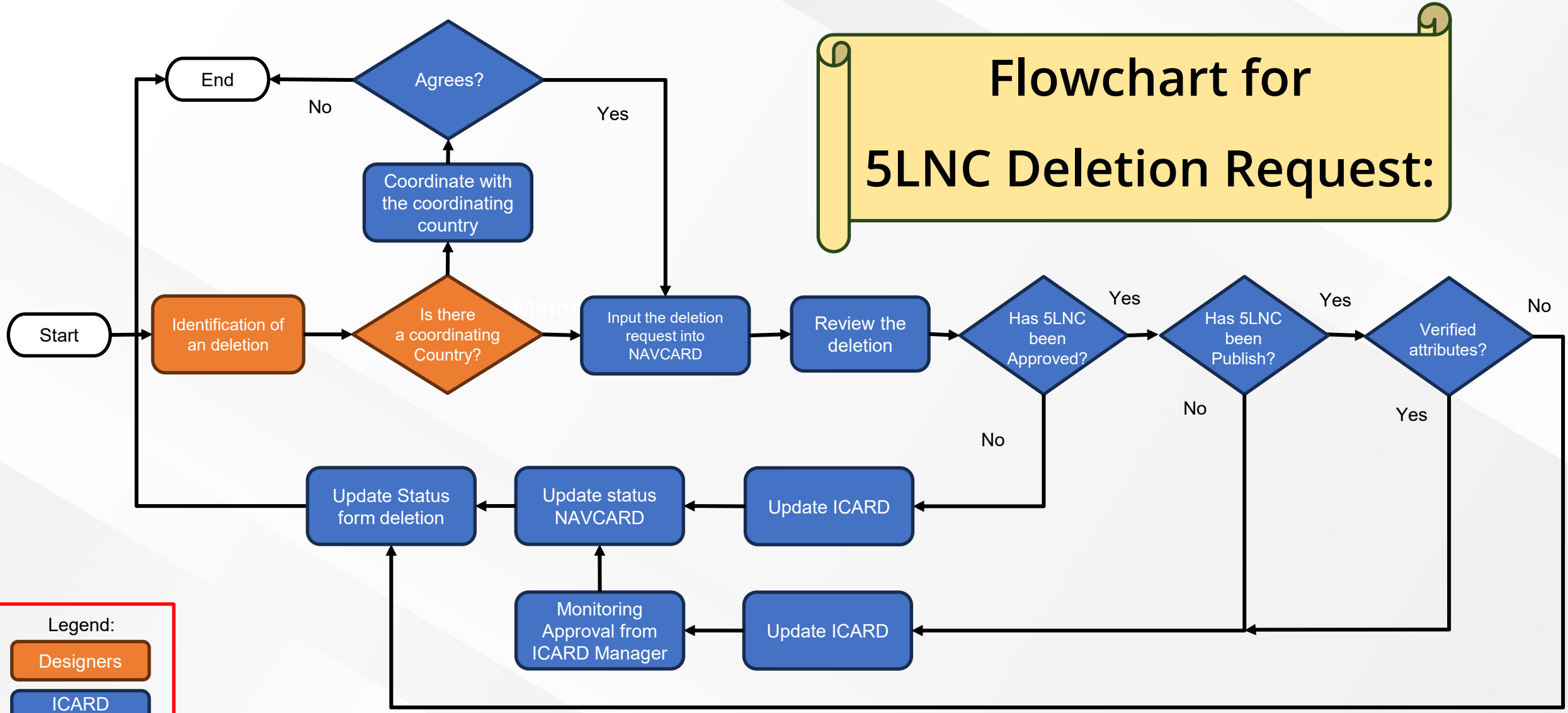
Flowchart for New 5LNC Request:



Procedures


Flowchart for Amendment of 5LNC:
Start
Identification of an amendment
Is there a coordinating Country?
Coordinate with the coordinating country
Agrees?
No
End
Yes
Input the amendment request into NAVCARD
Review the amendment
Has 5LNC been Approved?
Yes
No
Has 5LNC been Publish?
Yes
No
Verified attributes?
Yes
No
Update ICARD
Monitoring Approval from ICARD Manager
Has AMDT been approved?
Yes
No
Update status NAVCARD
Verified attributes?
Yes
No
Update status form AMDT
New 5LNC Request
Legend:
Designers
ICARD Planner
ICARD Manager

Procedures


Flowchart for
5LNC Deletion Request:
Start
Identification of an deletion
Is there a coordinating Country?
Coordinate with the coordinating country
Agrees?
No
End
Yes
Input the deletion request into NAVCARD
Review the deletion
Has 5LNC been Approved?
Yes
No
Has 5LNC been Publish?
Yes
No
Verified attributes?
No
Yes
Update ICARD
Update status NAVCARD
Update Status form deletion
Update ICARD
Monitoring Approval from ICARD Manager
Legend:
Designers
ICARD Planner
ICARD Manager

Implementation of 5ANNC

Implementation of 5ANNC

Implementation of 5ANNC in Indonesia

ICAO 8168 Naming Rules for Waypoints

1.6 WAYPOINT NAMING

1.6.1 Waypoints used in support of RNAV SIDs, STARs and instrument approach procedures shall be designated by either a unique, five-letter, pronounceable “name-code” or a five-alphanumeric name-code. The following principles apply:

a. waypoints shall be designated by a five-alphanumeric name-code only if they are used for waypoints unique to one aerodrome that has a properly assigned four-letter location indicator (in accordance with Doc 7910);
b. in the following cases a unique, five-letter, pronounceable “name-code”, in accordance with Annex 11, shall be applied:
    1) final waypoint of a SID;
    2) initial waypoint of a STAR;
    3) waypoints common to more than one terminal control area or used in a procedure common to more than one airport which are not used for en-route; and
    4) waypoints for ATC purposes.

1.6.2 The following criteria apply when five-alphanumeric name-codes are used:

a. the five-alphanumeric name-code convention that is adopted shall be applicable to all aerodromes within the State;
b. five-alphanumeric name-codes should contain characters taken from the airport designator, and/or characters indicating the use of the significant point, with all combinations containing no more than three digits;
c. the convention and the rules of application shall be published in the State AIP;
d. the five-alphanumeric name-code shall be unique within the terminal area in which it is used;
e. as global uniqueness cannot be assured, all waypoints that have a five-alphanumeric name-code identifier should be clearly listed as terminal waypoints in the AIP; and
f. as global uniqueness cannot be assured for waypoints containing five-alphanumeric name-codes, to avoid any potential misselection by the pilot, ATC should not use waypoints designated by five-alphanumeric name-codes in any re-routing from the en-route structure into a terminal procedure.

Implementation of 5ANNC in Indonesia

RULES

1. Naming Rules for Waypoints Based on Odd and Even Numbers

In Indonesia, the waypoint naming convention follows a clear system based on whether the runway is categorized as large or small, and the number assigned to the airport's FIR (Flight Information Region) location indicator.

- WI (Odd Numbers) - Jakarta FIR:
  Small Runway 1: MM50X
  Large Runway 1: MM70X
  Small Runway 2: MM51X
  Large Runway 2: MM71X
- WA (Even Numbers) - Ujung Pandang FIR:
  Small Runway 1: MM40X
  Large Runway 1: MM60X
  Small Runway 2: MM41X
  Large Runway 2: MM61X

This system assigns odd-numbered codes to Jakarta FIR and even-numbered codes to Ujung Pandang FIR, helping to distinguish waypoints across Indonesian airports.

2. Alternative Naming for Certain Location Indicators

To avoid confusion, waypoints with the last two letters "O" and "I" are avoided, as they resemble the numbers 0 and 1.

ISSUE IDENTIFICATION

Code Duplication Risk

The current system works well in Indonesia, but does not eliminate the risk of duplication with neighboring countries. For example, airports in Indonesia and Malaysia can use the same waypoint code, such as KK740 for WMKK (Malaysia), it is not impossible for WIKK/WAKK (Indonesia) to also use the same code name.

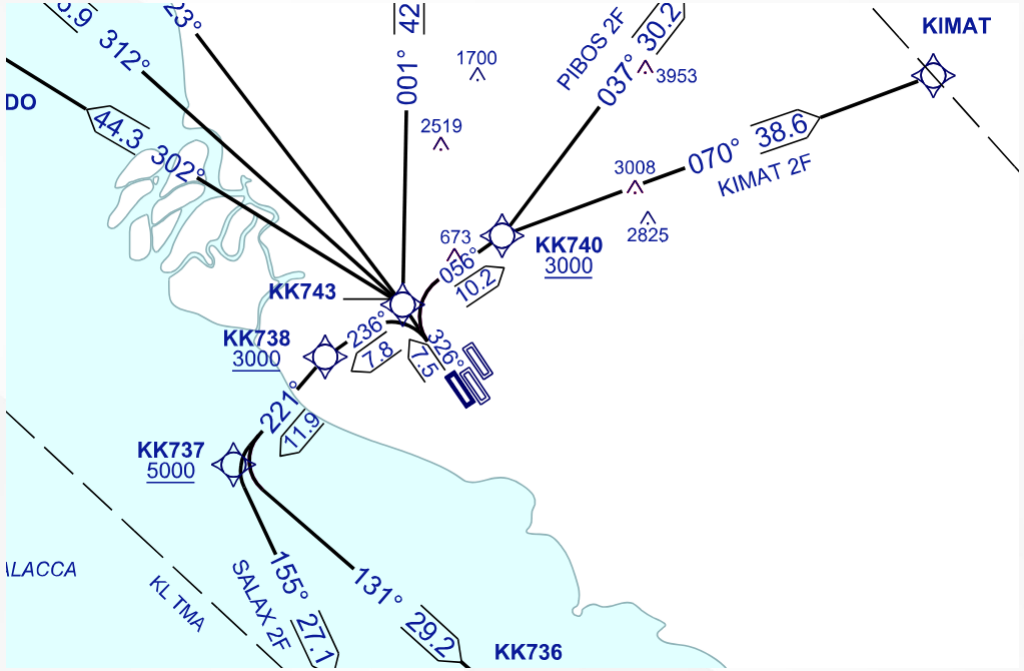


Figure 1 : SID RNP 1 RWY 33 – KL International (Malaysia)

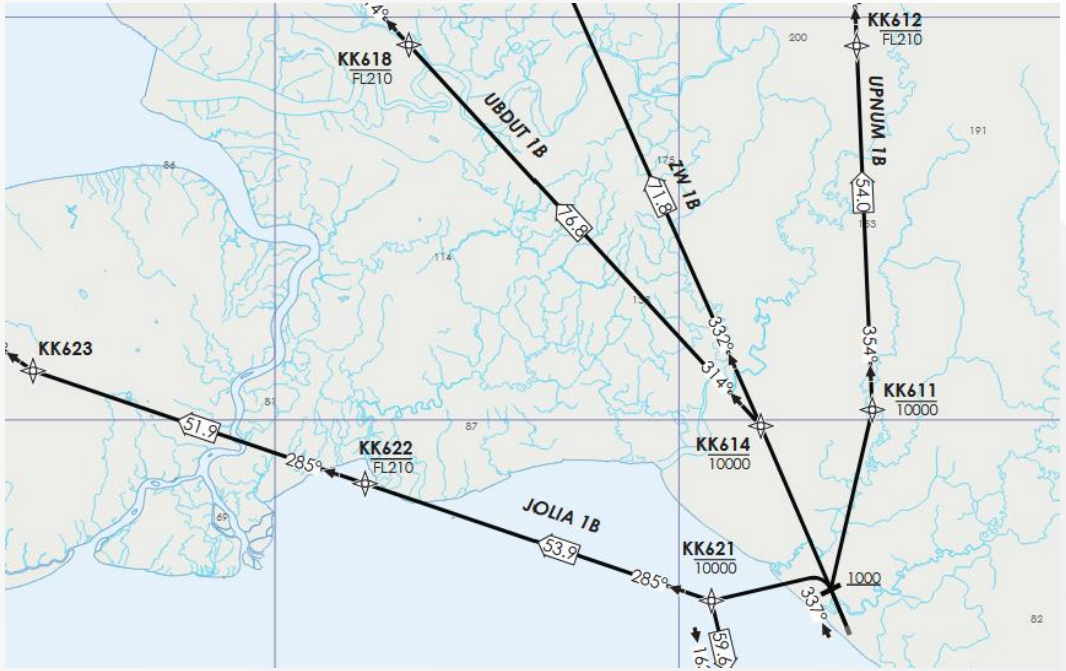


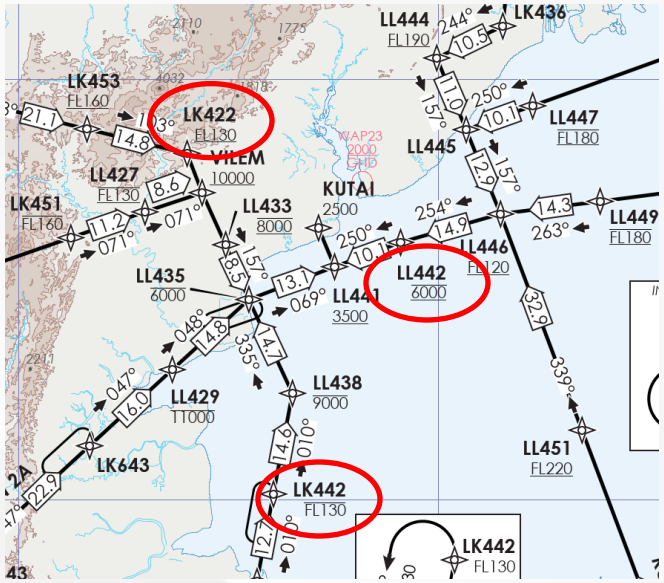
Figure 2 : SID RNP 1 RWY 34 – Merauke (Indonesia)

ISSUE IDENTIFICATION

Challenges in Implementing the 5AANC System in Surveillance Airports

Referring to the recommendation from the ICAO APAC Regional Office during AAITF/19, which encouraged States to review existing PBN SID and STAR procedures and consider the use of 5-character alphanumeric codes (5AANC) for non-compulsory waypoints, we have identified several challenges in implementing the 5AANC system, particularly at surveillance airports, as outlined below:

1. For vectoring purposes, communication becomes more difficult, as pronouncing identifiers such as “LL415” (“LIMA LIMA FOUR ONE FIVE”) is more complex and time-consuming compared to 5LNC i.e “ANRIL.”
2. Similar waypoint names, such as “LL442”, “LK442,” and “LK422” located at two nearby airports, may lead to miscommunication between pilots and air traffic controllers.



Example: STAR RNAV-1 RWY 07 – WALL – Balikpapan Airport

PROPOSED RESOLUTION

1. Replace with 5LNC

Replace the existing waypoints with five-letter name codes (5LNC) for waypoints that serve as intersections, turning points, and other operationally significant positions.

2. Call for ICAO Guidelines

Given these challenges, it is essential that we collectively encourage ICAO to establish formal guidelines for 5ANNC coding. These guidelines would help ensure that codes are unique across different countries, taking into account the proximity of airports and the potential for duplicate waypoint codes.

By introducing internationally recognized rules for waypoint naming, ICAO can help mitigate risks associated with data conflicts between neighboring countries and enhance the reliability and safety of global aviation operations.

BUMN UNTUK INDONESIA

AirNav Indonesia

ありがとうございました
THANK YOU
TERIMA KASIH