



SAFE SKIES.
**SUSTAINABLE
FUTURE.**

**CONTROLLED FLIGHT INTO TERRAIN
(CFIT) WORKSHOP**

Abuja, 6 – 8 October 2025



PBN approvals and their impact on safety and prevention of CFIT-related occurrences

African Flight Procedure Programme

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Introduction to the Performance-based navigation

- ❑ Concept developed by ICAO in 2007;
- ❑ PBN is a transition from the sensor-based navigation to area navigation in a globally harmonized manner.
- ❑ Concept based on performance rather than a specific sensor:
- ❑ Key performance criteria:
 - ☞ Accuracy;
 - ☞ Integrity;
 - ☞ Continuity;
 - ☞ Functionality.

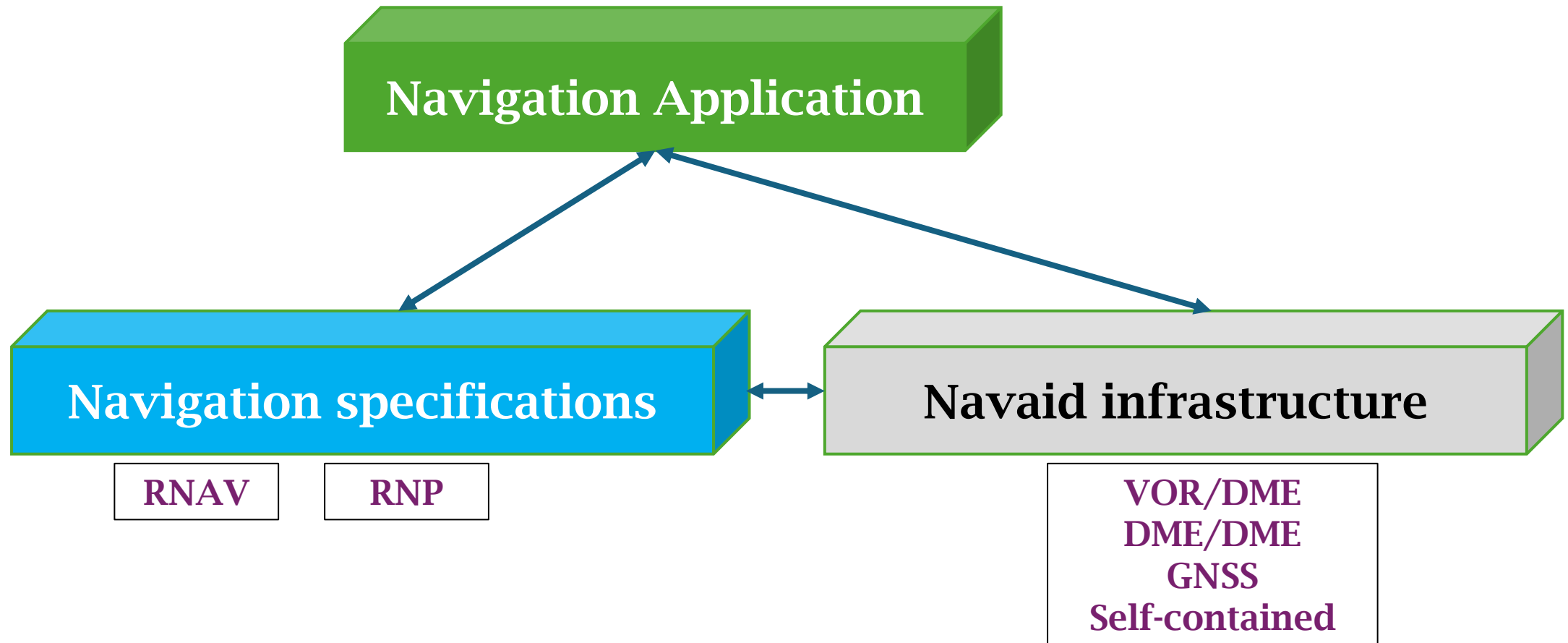
Introduction to the Performance-based navigation

Regulatory framework

- ❑ Doc. 9613 – PBN Manual
- ❑ Doc. 9997 – PBN Operational Approval Manual
- ❑ Doc. 9931 – Continuous Descent Operations Manual
- ❑ Doc. 9992 – PBN Airspace Design Manual
- ❑ Doc. 9993 – Continuous Climb Operations Manual
- ❑ Doc. 9905 – RNP AR Manual
- ❑ Doc. 8168 – Aircraft Operations
- ❑ Doc. 4444 – Pans-ATM

Introduction to the Performance-based navigation

PBN components



Introduction to the Performance-based navigation

APPLICATION	NAVIGATION SPECIFICATION	
	RNAV	RNP
Remote continental or en-route oceanic	RNAV 10	RNP 4, RNP 2, RNP 0.3
En-route continental	RNAV 5, 2, 1	RNP 2, 1, A-RNP
Terminal	RNAV 5, 2, 1	RNP 2, 1, A-RNP, RNP 0.3
Approach		RNP APCH RNP AR RNP 0.3

PBN approvals

❑ PBN operations require two types of Approval:

☞ Regulatory approval:

- States must ensure that instrument flight procedures are design following the ICAO applicable provisions.

☞ Operational approval:

- States shall ensure that aircraft and aircrew meet the ICAO applicable rules:
 - Airworthiness;
 - Continued airworthiness;
 - Flight operations.

Impact on safety and prevention of CFIT-related occurrences

- ❑ CFIT mostly intervenes in terminal area (unstable approach);
- ❑ PBN can assist avoiding CFIT in final approach:
 - ➡ APV baro-VNAV;
 - ➡ APV 1;
 - ➡ LPV.

Impact on safety and prevention of CFIT-related occurrences

- ❑ When correctly done, regulatory approval can prevent CFIT occurrences:
 - ☞ Use of ICAO applicable design criteria;
 - ☞ Ability of the design stakeholders (designers, flight validation pilots, WGS-84 data providers, cartographers, etc.);
 - ☞ Accuracy, exhaustivity and currency of data used (WGS-84 data, terrain data, etc.).
- ❑ This helps preventing CFIT.

Impact on safety and prevention of CFIT-related occurrences

- ❑ PBN operations must be performed:
 - ☞ Using approved aircraft for the intended operation;
 - ☞ Qualified pilots for the intended operation.



Thank You!