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# PBN at Aerodromes

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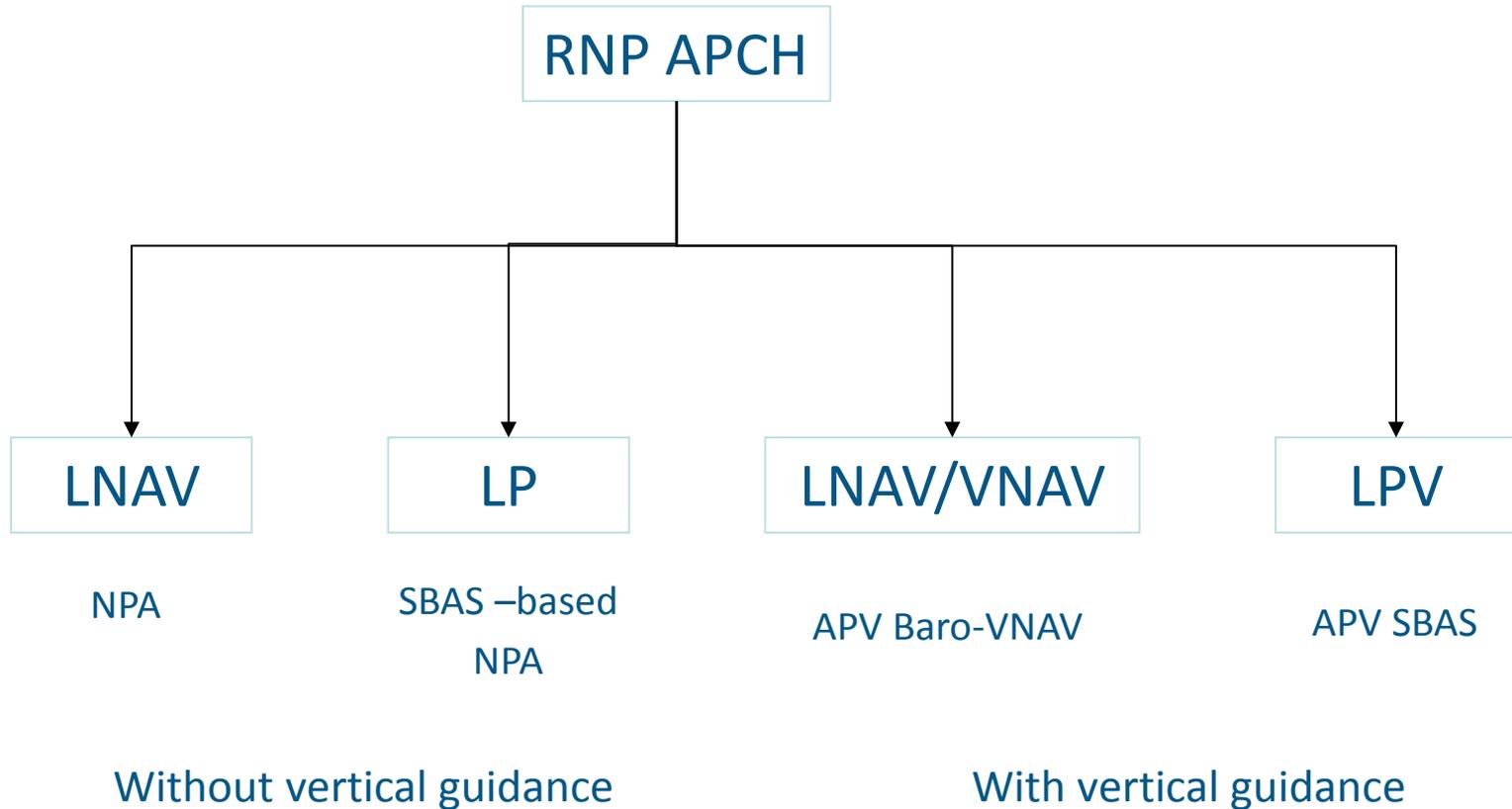
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# Background

- ▶ ICAO through Assembly Resolutions 36-23 and 37-11 is:
  - ▶ Encouraging all States to implement RNP APCH procedures; and
  - ▶ Requesting the publication of a PBN Implementation Plan

# Types of RNP APCH





# Benefits of RNP APCH operations

- ▶ Availability of high-performance RNAV systems (particularly GNSS) made possible the use of area navigation in the approach phase of flight with the following benefits:
  - ▶ Improvement on safety – better situational awareness than on conventional NPA
  - ▶ Better access can be provided to runways that are not equipped with precision approach and landing systems or where precision approach aid is out of service (APV operation back-up solution in case of ILS outages)
  - ▶ Withdrawal of some conventional nav aids thus saving costs for maintenance and flight calibration flights
  - ▶ Fewer building constraints on and around aerodromes and the possibility to develop and improve services



# Assessment of Airport Capabilities

- Implementation at non-instrument runway ends is not currently envisaged. First implementations should therefore take place at runways that already have an instrument approach procedure
- The assessment should address the following domains:
  - Aerodrome infrastructure – type of instrument runway (non-precision or precision) which has an impact to the DA/H that can be achieved
  - Meteorological data – wind statistics, cloud ceiling and RVR per runway end in order to estimate the benefits in terms of improved runway accessibility
  - GNSS infrastructure
  - Availability of local QNH
  - Survey of traffic characteristics – not all RNP APCH types are of interest to all categories of airspace users, i.e. RNP APCH based on Baro-VNAV are the preferred option for CAT operators



# Costs for ANSPs and Aerodromes

- Costs may emerge from the following:
  - Procedure design and implementation which may include flight trials for validation, chart preparation and AIP changes
  - Safety assessment
  - Runway upgrades – e.g. upgrade of runway lighting
  - Operational approvals – e.g. implementation of changes to airspace, design and publication of terminal procedures etc.
  - ATC training in PBN
  - No requirement to provide ground navaid infrastructure

- ▶ PBN Operations could:
  - ▶ Back up instrument approach procedures using conventional nav aids
  - ▶ Ground based infrastructure is not required
  - ▶ Cost for aerodrome operators is significantly low
  - ▶ Useful for aerodromes located in difficult environment
  - ▶ Enhance aerodrome utilization



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**Thank you very much for  
your attention**

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