



# Global PBN update

## APAC PBN Task Force



May 2011



# Commitment from States

2010 37th ICAO General Assembly



- Resolution A37-11 supersedes A36-23
- A37-11 urges all States to complete a national PBN implementation plan as soon as possible to achieve:
  - PBN for en route and terminal areas
    - According to established timelines and intermediate milestones;
  - PBN approach procedures with vertical guidance (APV) for all instrument runway ends (as primary or back-up for precision approach) by 2016 - 30% by 2010, 70% by 2014



# Commitment from States

## 2010 37th ICAO General Assembly



- Main additions to A37-11 compared to A36-23:
  - Requirement to add LNAV minima to any approach chart for approach procedures with vertical guidance
  - Allow States to publish LNAV only approach if there is no traffic equipped for operations with vertical guidance.



# Commitment from Stakeholders



- ICAO
- IATA
- CANSO
- IFATCA
- IFALPA
- IBAC
- IBACC
- ACI
- FHA
- FSF



## Industry Declaration in support of Performance-based Navigation (PBN)

### We, as representatives of the air transportation community,

Affirming our joint responsibility to seek continual improvements to the safety, access, capacity, efficiency and environmental sustainability of the air transportation system,

Recognizing that Performance-based Navigation (PBN) provides a catalyst for these improvements to air traffic operations, while enabling a seamless and cost effective solution throughout the entire flight,

Recognizing the work of ICAO in formulating and publishing globally harmonized Area Navigation (RNAV) and Required Navigation Performance (RNP) provisions, now known as Performance-based Navigation (PBN),

Recalling that Resolution A36-23 of the 36th ICAO General Assembly whereby States are urged to implement PBN procedures in accordance with the established timetable,

### We resolve:

To support the timetable set out by ICAO for the global implementation of PBN,

To collectively work to facilitate the implementation of PBN, and

To assist States, regions and other stakeholders in their development and execution of a complete PBN implementation plan.

### We call upon:

All leaders of the civil aviation community, to fully support implementation of PBN into the air navigation system according to the ICAO provisions and established timetable.



Roberto Kobeh González, Council President



Giovanni Bisignani, Director General and CEO



Alexander ter Kuile, Secretary General



Marc Baumgartner, President & CEO



Capt. Carlos Limon, President



Donald D. Spruston, Director General



François Gayet, Chairman



Angela Gittens, Director General



Matthew S. Zuccaro, President



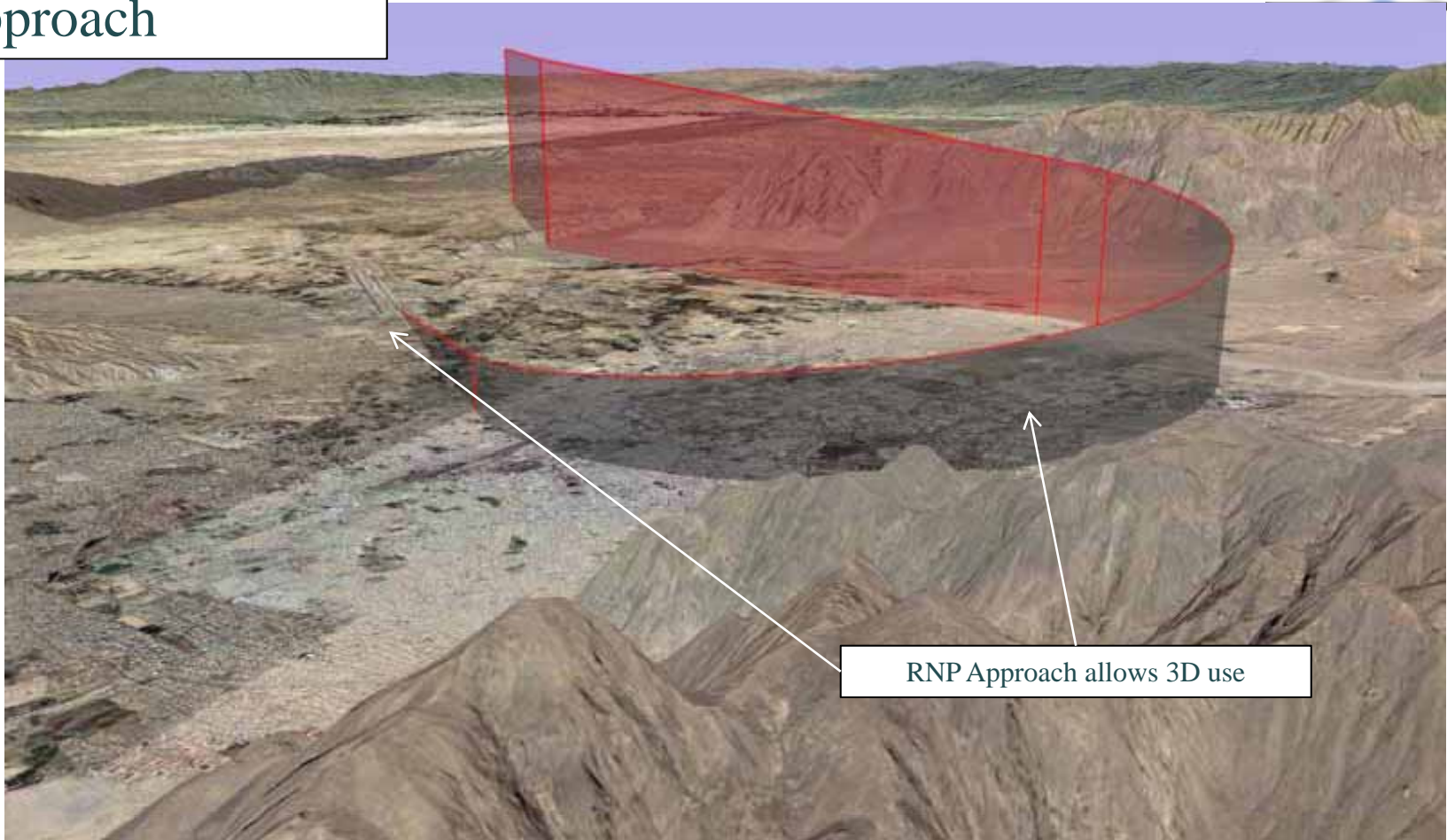
William R. Voss, President & CEO



**Commitment by positive business case: minimum investment by using existing airborne technology**



## Approach



RNP Approach allows 3D use

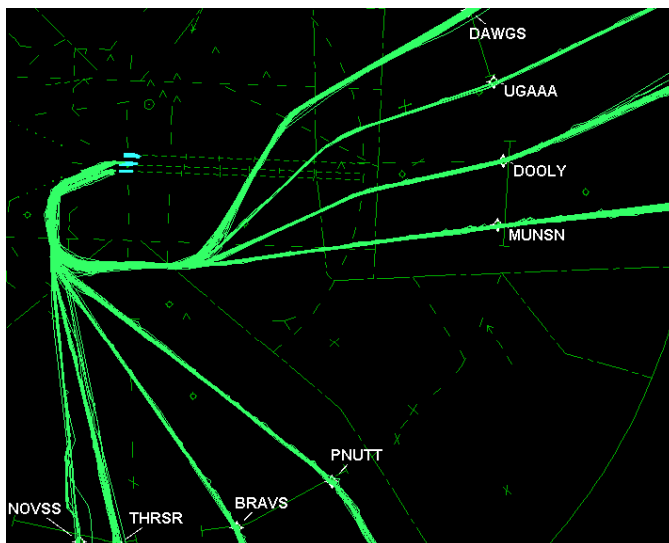
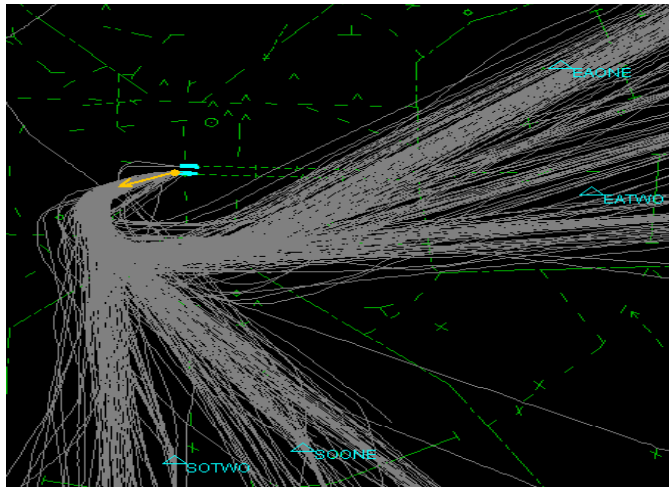
**Safety - accessibility**



# Commitment by positive business case: minimum investment by using existing airborne technology



## BEFORE RNAV



## Capacity - efficiency

Improving runway utilisation at the world's busiest airport – Atlanta (ATL) Capacity - efficiency

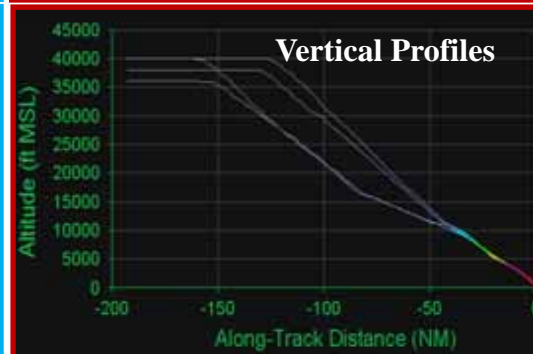
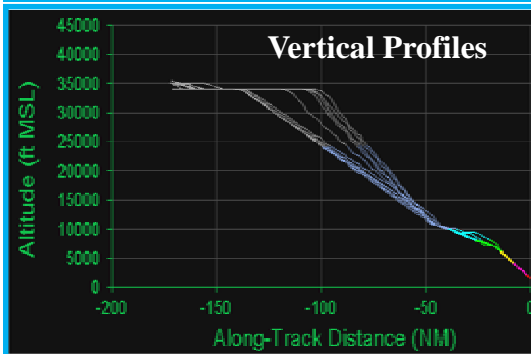
- Approximately 94% of daily departures are RNAV-capable
- More departure lanes and exit points to the en route airspace
  - Capacity gain of 9-12 departures per hour
- Repeatable and predictable paths
- Benefits
  - Increased throughput
  - Reduced departure delays
  - USD \$30M annual benefit (at 2007 demand levels)



# Commitment by positive business case: minimum investment by using existing airborne technology



## RNAV Arrivals: Continuous Descent Operation (CDO)



## Fuel savings/emission reduction

CDO's provide large benefits in fuel, emissions, and flight time reductions

### May 2008 Demos:

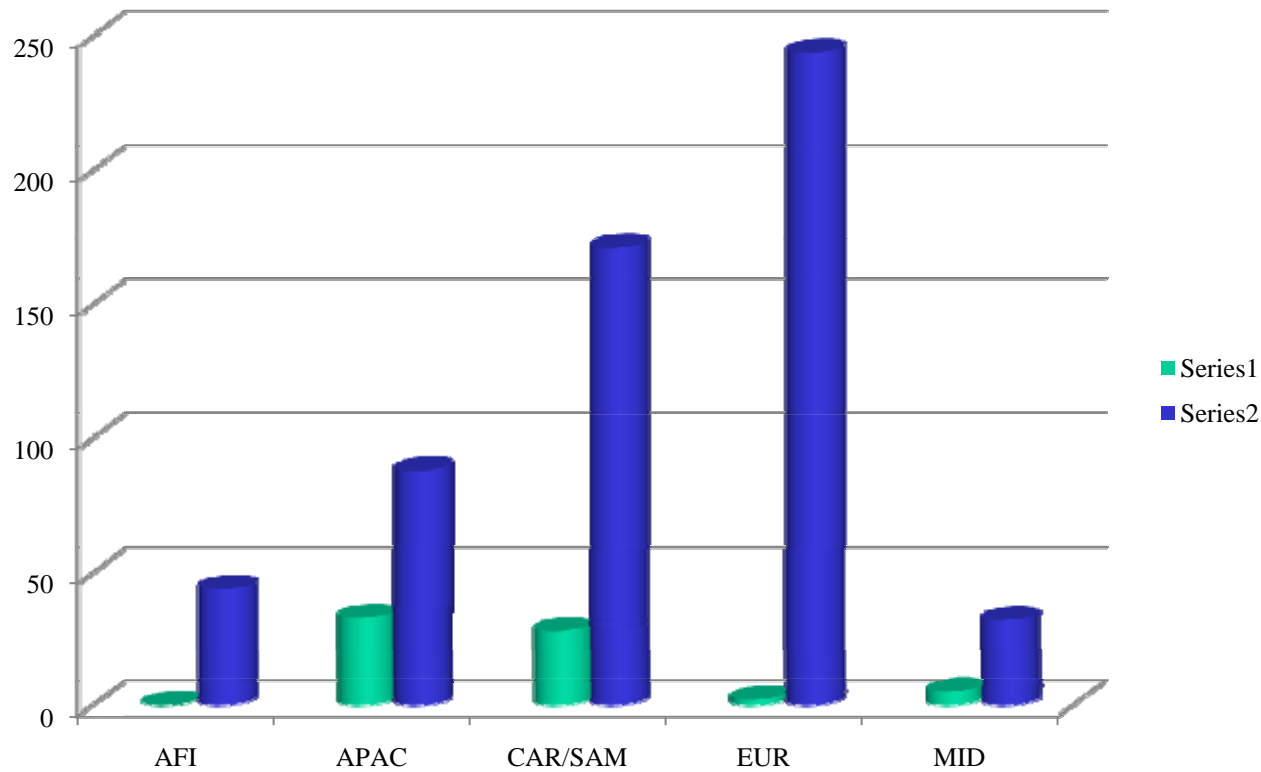
- North Arrival STAR at Atlanta (ATL)
  - 144 Liters of fuel savings and 360kg reduction in CO2 emissions per flight
- North Arrival STAR at Miami (MIA)
  - 182-197 liters of fuel savings and 460-500kg reduction in CO2 emissions per flight

### 600 CDO night demos at ATL from August – November 2008

- Two North Arrival STARs
- 151-227 liters of fuel savings and 380kg reduction in CO2 emissions per flight



# Commitment translated in the numbers



Number of RNP APCH from  
Jan 2008 to Jan 2011





**...But still not worldwide implemented!**



# Roadblocks



- 
- Lack of expertise
    - Airspace development
    - Operational approval process
    - Pilots and ATC Controllers training
  - Coordination between Stakeholders
    - National
    - Regional

And some Misconceptions...



# Misconceptions on PBN



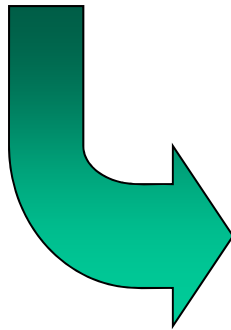
- PBN, it **looks** complicated but it is not:
  - It does **not** add new navigation philosophy, but just is a pragmatic tool to implement navigation procedures for aircraft capability that exists for more than 30 years!
  - It does **not** require States to completely overhaul navigation infrastructure, but can be implemented step-by-step
  - It does **not** require States to implement the most advanced navspec, only needs to accommodate the operational needs



# Need to transition from planning to implementation



- Focus from new Standards to implementation guidance and State assistance



Implementation guidance

Education

Direct assistance



## New implementation guidance



- CDO manual (Doc 9931)
- CCO manual (maybe combined with CDO manual) to be expected in draft by end this year/early next year
- Airspace design manual (based on Eurocontrol handbook/ICAO course material) to be finalized by end this year
- Ops approval manual (based on COSCAP handbook and to include sample regulatory approval guidance), finalized as early draft, to be finished end of this year
- GNSS manual. Revision to bring in line with PBN



# Education



- Airspace design
  - CDO design
  - Procedure design
  - Ops approval
- 
- For APAC coordination with FPP



# Direct assistance Go- teams



- Go-Team visits in coordination with IATA
  - 4 per year
  - Target: reasonably advanced PBN States who:
    - Have political will
    - Potential capability
    - Willingness to help other States in Region
  - Output:
    - Go-Team Report
      - Areas of improvement and recommendations
    - Enhancement of national PBN Implementation Plan
    - PBN Implementation Project – 3 years – including implementation plan for each airport and transition plan of conventional Navaids
    - On case by case basis: sample implementation project (CDO/approach)





## Direct assistance



- Regional Go-Teams
  - Strong need for further handholding of States
  - Developments under way in EUR/MID/CAR and APAC regions



- Collaboration with CANSO explored to work with ANSPs in follow-up process and measurement of implementation (fuel savings).



- Continued coordination with Regional offices on PBN implementation





# Beyond implementation New requirements ....



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## RF legs (winter 2011)

It is envisaged that RF legs will be available for RNP operations including intermediate segment.

## New navigation Specifications under consideration (winter 2011)

- a) RNP 2 (Remote and oceanic)
- b) Advanced RNP
- c) RNP 0.3

*New Navspecs still under scrutiny to ensure full operational justification*

**Accommodation of simple GNSS aircraft to be PBN approved by either:**

- a) New Navspec (RNP2 “light” under consideration) or
- b) Facilitation through easy approval mechanism



# Beyond implementation New requirements ....



## Procedure naming

- Objective: to ensure a consistent set of procedure naming to avoid confusion between paper chart, nav databases and RT phraseology
- Challenges: Minimize costs for aviation industry (nav database providers, training)
- Output: Early proposal end of the year, final proposal end of next year
- Applicability: not before nov 2013

## Separation

- 5NM separation in terminal airspace between RNP routes



**Thank you!**

