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UNITING AVIATION

NO COUNTRY LEFT BEHIND



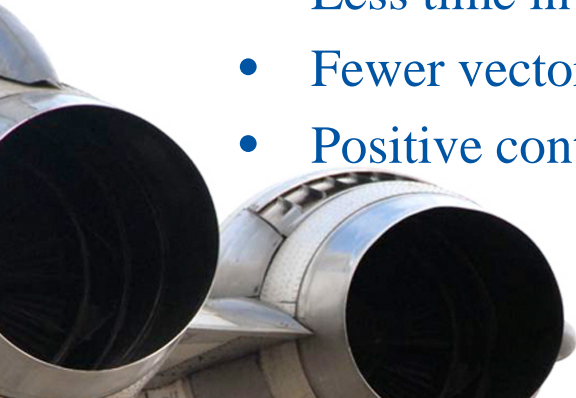
# Electronic Aeronautical Charts (Mexico City, Mexico, 24 to 27 August 2015)

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ICAO, Regional Officer, ATM



# PBN Benefits to ATC:

- Safety culture
- Fewer radio transmissions
- Reduces hearback/readback errors
- Less time in sector
- Fewer vectors
- Positive control





# PBN Benefits to operators:

- Improves accessibility of airports in a mountainous area
- Reduces track miles
- Results in stabilized approach
- Fewer missed approach
- Greater predictability





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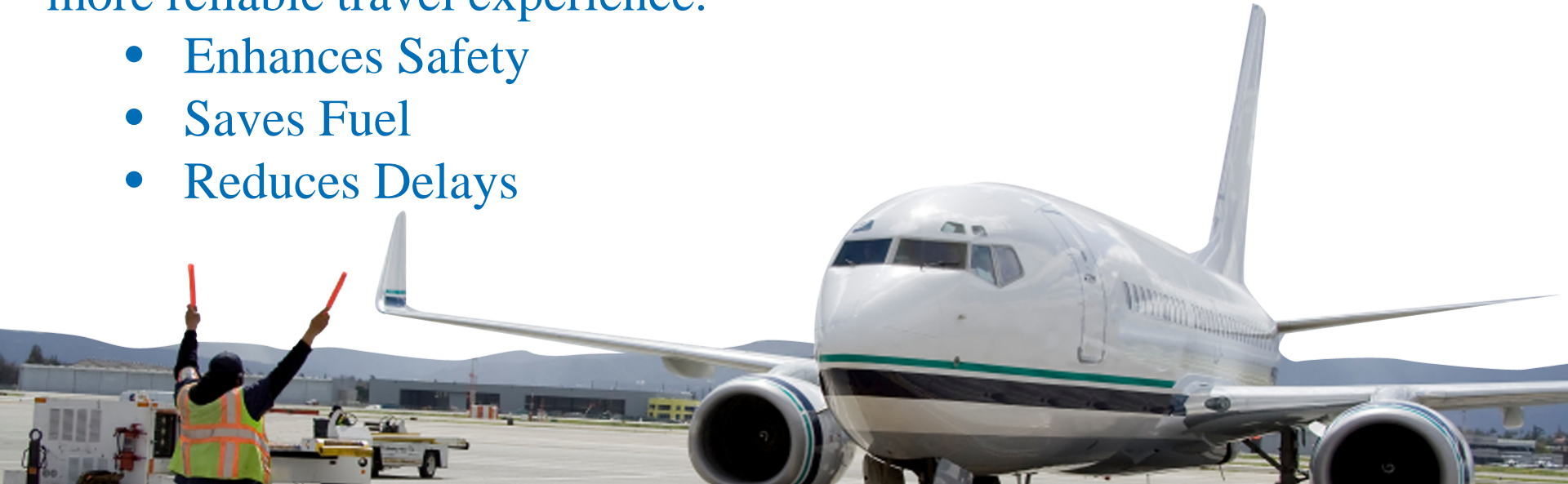
# End-to-End PBN Concept: Benefit Focused

- An integrated procedures concept will provide a framework for integration of PBN initiatives from departure to approach (including en-route).
- Integration of procedures includes:
  - Utilization of additional TRACON ingress/egress points that are not tied to ground-based NAVAIDS
  - Development and implementation of SIDs, STARs (including CDOs/CCOs)
  - Decoupling of operations between primary and satellite airports in complex TRACON airspace
  - Development of direct city/metroplex pair procedures through congested airspace



PBN - Integrates new and existing technologies, policies and procedures to enhance safety, save fuel, and reduce delays to deliver a more reliable travel experience.

- Enhances Safety
- Saves Fuel
- Reduces Delays





# Segregate traffic flows –

- Between arrival/departure and transition operations
- Between primary and satellite airport operations
- Between city pairs





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# Benefits of PBN

RNAV or RNP procedure implementation can provide benefits in one or more of the following areas:

Safety - Throughput - Efficiency - Access - Environment





## Benefits of PBN – SAFETY

- More accurate and reliable lateral and vertical paths.  
Enables reduced obstacle clearance criteria
- Allows new three-dimensional guided arrival, approach  
-and departure procedures
- Enhances consistency of traffic flow.
- Reduces the risk of communication errors.







## Benefits of PBN – **Throughput**

Reduced delays at airports and in crowded airspace through:

- Procedurally de-conflicted arrival and departure routes
- Parallel routes
- Additional ingress/egress points around busy terminal areas
- Improved flight rerouting capabilities
- Development of closely spaced procedures for more efficient use of airspace
- De-conflicting adjacent airport flows





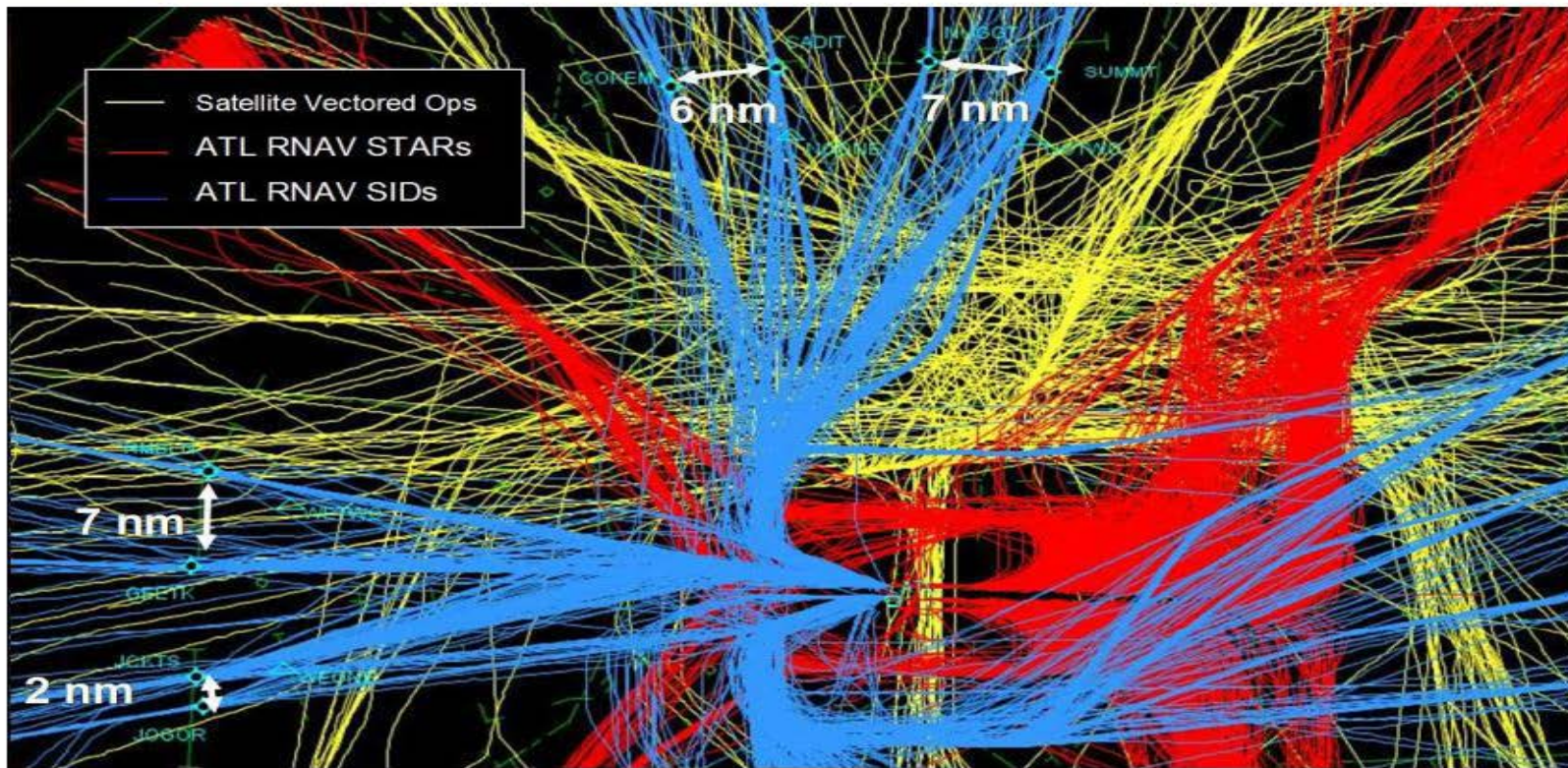
## Benefits of PBN – **Efficiency**

- Enhanced reliability, repeatability, and predictability of operations increases air traffic throughput.
  - More precise arrival, approach, and departure procedures reduce track dispersion and facilitate smoother traffic flows
  - Less restrictive climb and descent gradients with shorter and more predictable ground tracks





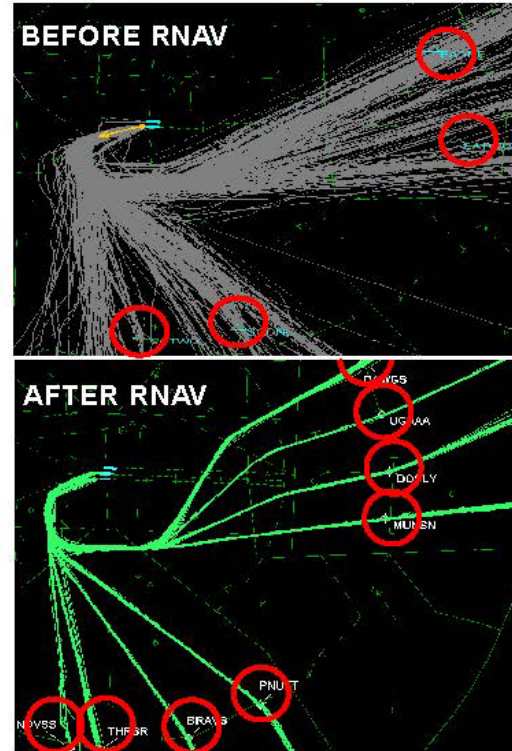
## PBN Addresses Complexities in the Terminal Domain





## Atlanta (ATL) Departure Procedures *Before and After*

- 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
  - \$30M annual benefit





# Post-RNAV Implementation

**ATL Communications Reduced up to:**

- 40% for Departure Controller with RNAV SID
- 50% for Approach Controller with RNAV STARs





North American  
Central American  
and Caribbean  
(NACC) Office  
Mexico City

South American  
(SAM) Office  
Lima

ICAO  
Headquarters  
Montreal

Western and  
Central African  
(WACAF) Office  
Dakar

European and  
North Atlantic  
(EUR/NAT) Office  
Paris

Middle East  
(MID) Office  
Cairo

Eastern and  
Southern African  
(ESAF) Office  
Nairobi

Asia and Pacific  
(APAC) Office  
Bangkok

**Thank You**

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