



International Civil Aviation Organization

# Packaging Tomorrow's Aviation System

Second Briefing on  
ICAO's Aviation System Block Upgrades

Issued: July 2012

# The 30'000 Feet View



- Air traffic growth expands two-fold once every 15 years
- Growth can be a double-edged sword
- Challenge is how to achieve both safety and operational improvements
  - Globally harmonized
  - Environmentally responsible
  - Cost-effective

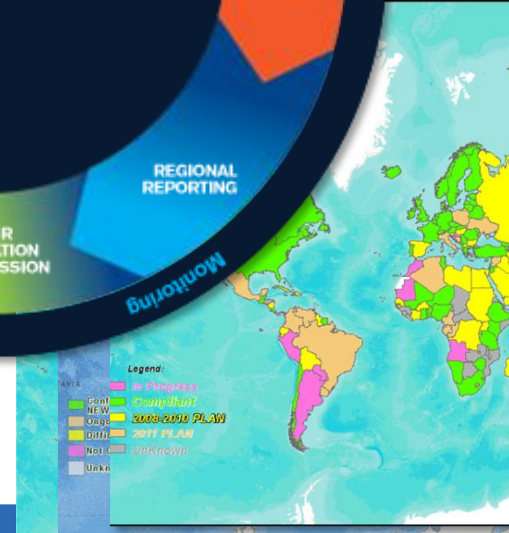
# A System of Systems



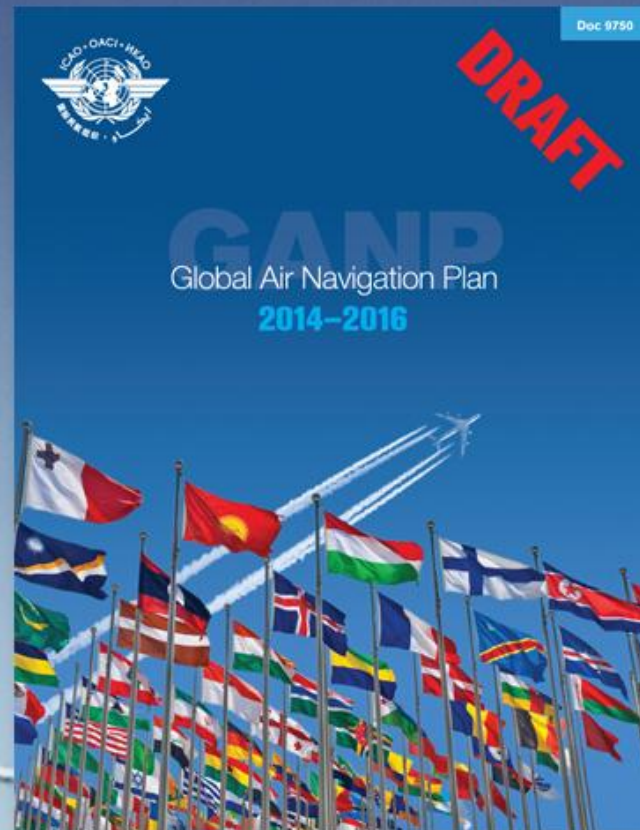
# Synchronizing the System of Systems



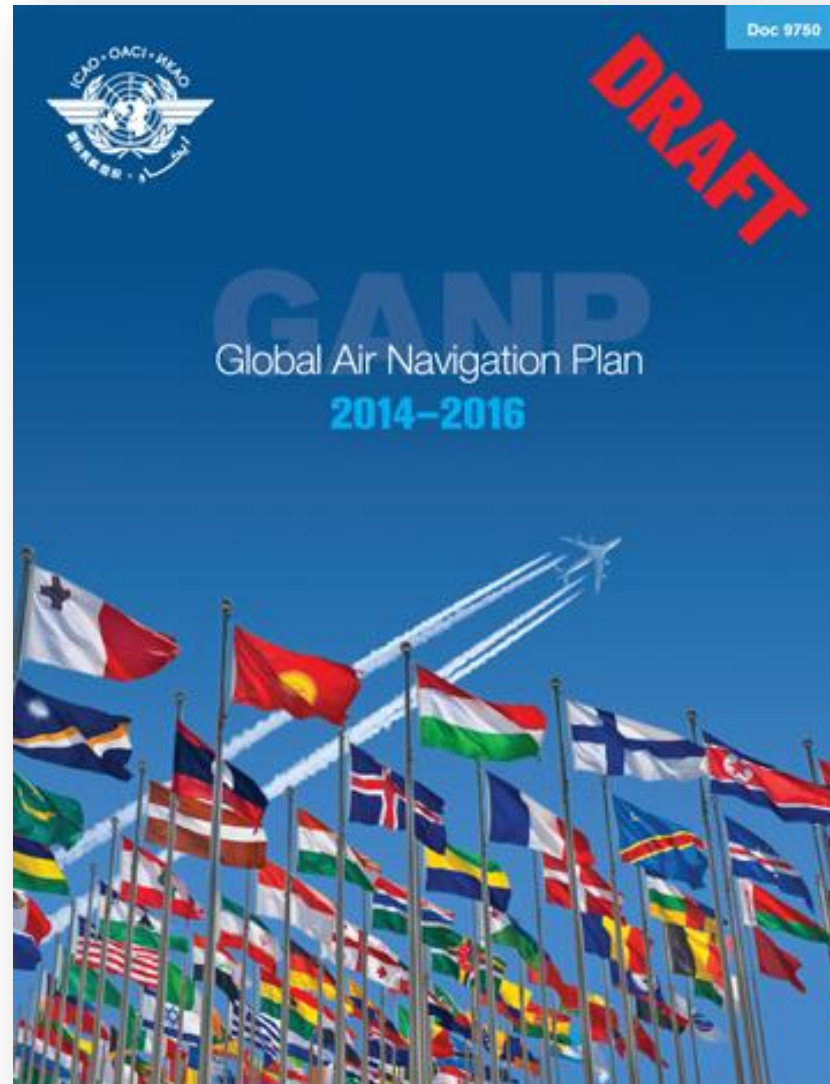
## System of Systems



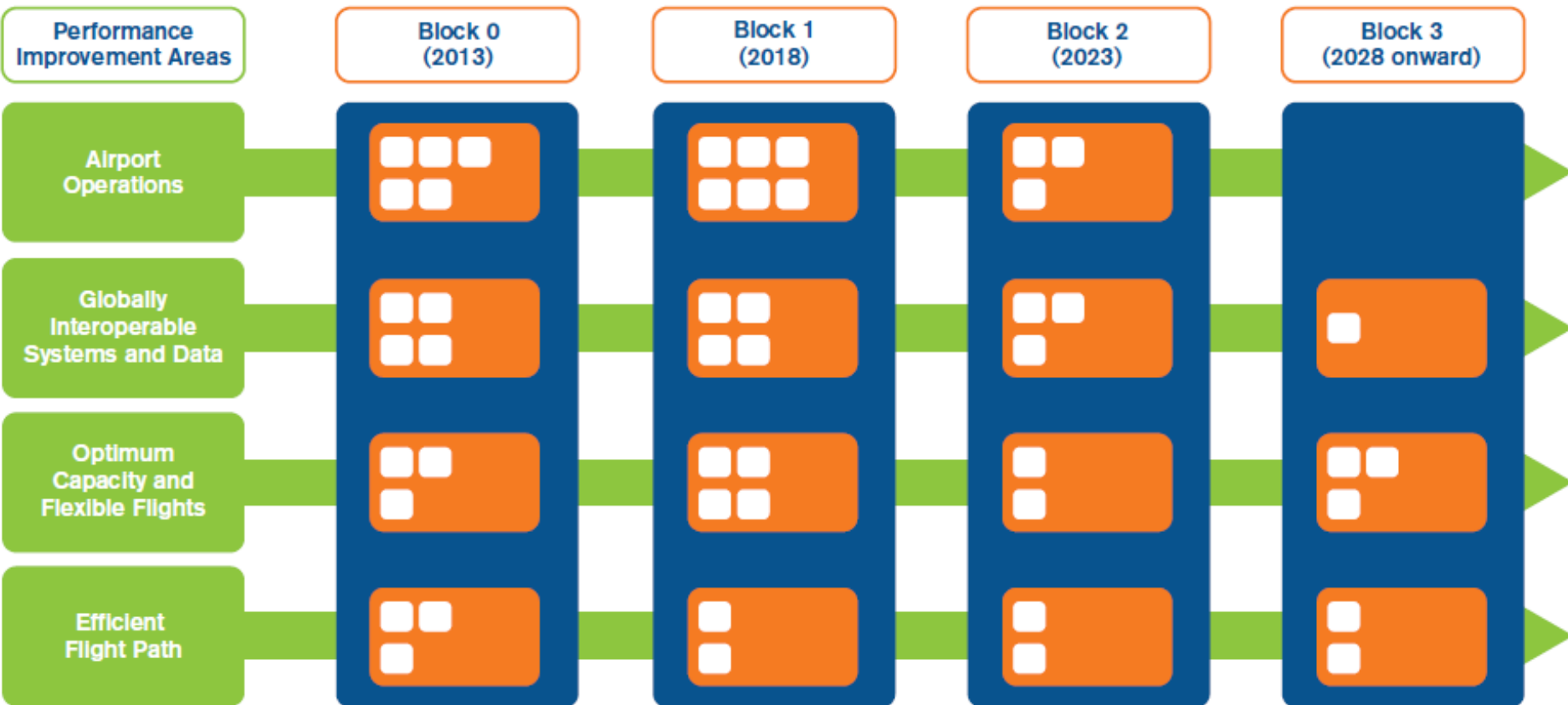
# ICAO's Strategic Approach



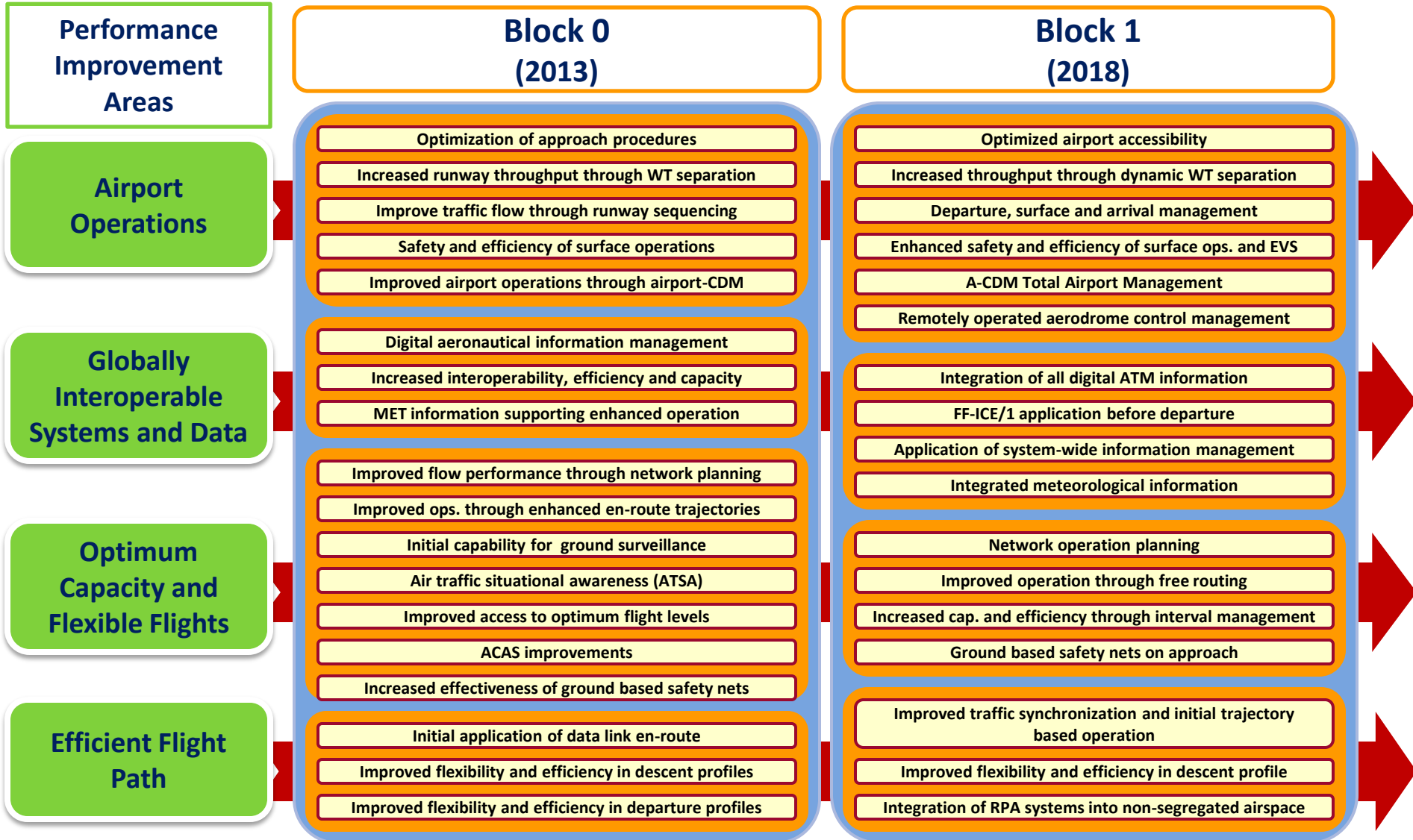
# ICAO's Strategic Approach



# Integrated Planning through Block Upgrades



# Near-Term Blocks & Modules





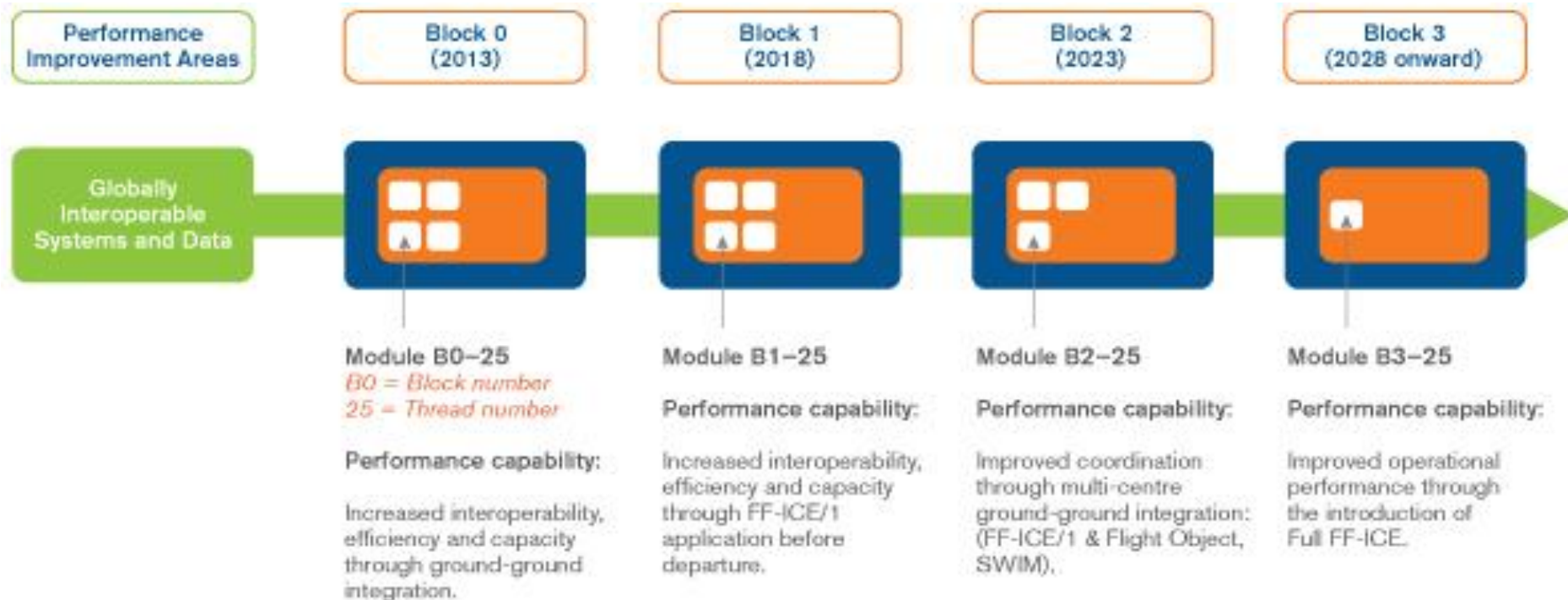
# Increased Runway Throughput Through Optimized Wake Turbulence Separation



<b>Summary</b>	Improved throughput on departure and arrival runways through optimized wake turbulence separation minima, revised aircraft wake turbulence categories and procedures.	
<b>Main performance impact as per Doc 9854</b>	KPA-02 – Capacity, KPA-06 – Flexibility.	
<b>Operating environment/ Phases of flight</b>	Arrival and departure	
<b>Applicability considerations</b>	Least complex – Implementation of revised wake turbulence categories is mainly procedural. No changes to automation systems are needed.	
<b>Global concept component(s) as per Doc 9854</b>	CM – conflict management	
<b>Global plan initiatives</b>	GPI-13: Aerodrome design GPI 14: Runway operations	
<b>Main dependencies</b>	Nil	
<b>Global readiness checklist</b>		Status (ready now or estimated date)
	Standards readiness	2013
	Avionics availability	N/A
	Ground systems availability	N/A
	Procedures available	2013
	Operations approvals	2013

# Benefiting from All the Modules

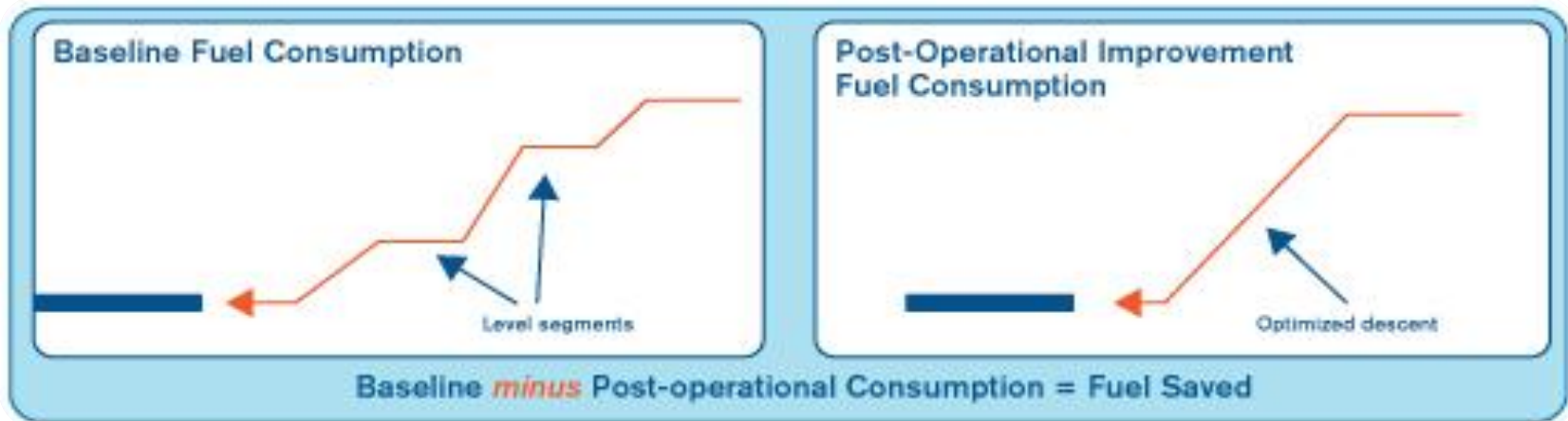
- There is added value in using all modules
  - States should view modules in B0 & B1 as critical:
    - Formalizing a minimum track
  - They will allow for benefits down the road in B2 & B3



# The Cost of Not Implementing

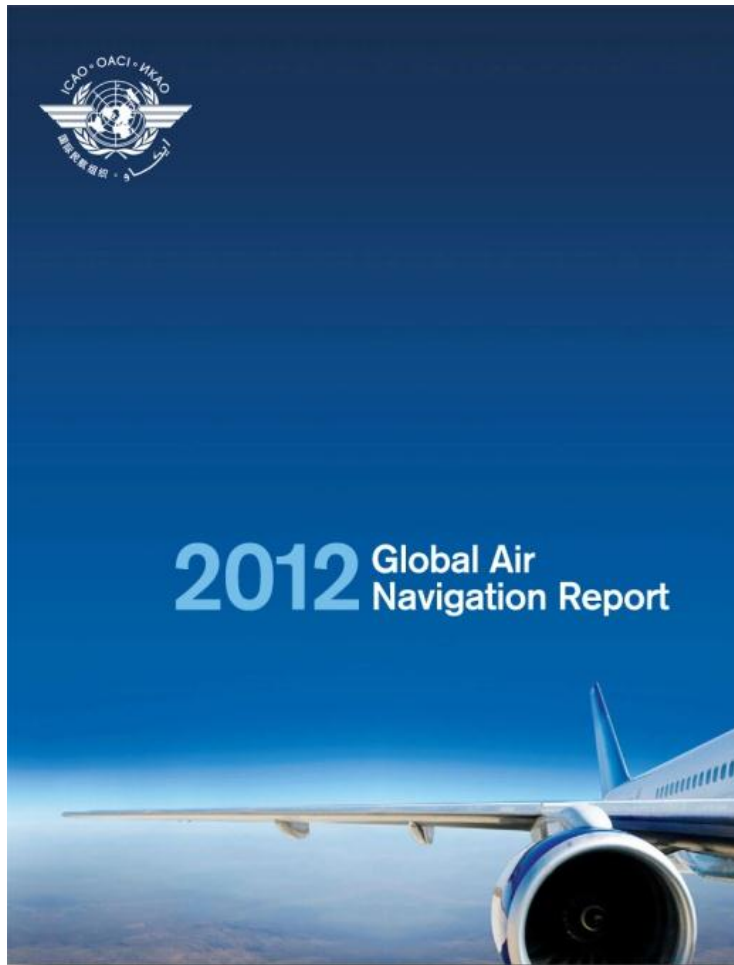


- Focusing on what it will cost if modules are not implemented:
  - Increased risk of serious incidents and accidents
  - Negative impact on operations
  - Environmental repercussions
  - etc.



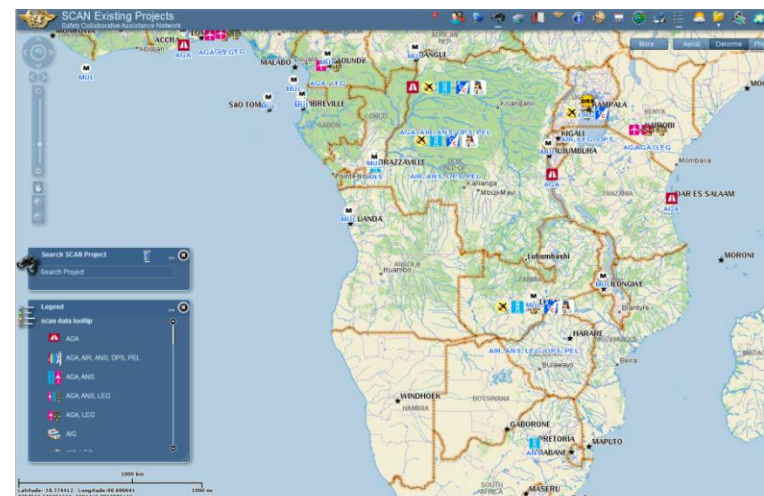
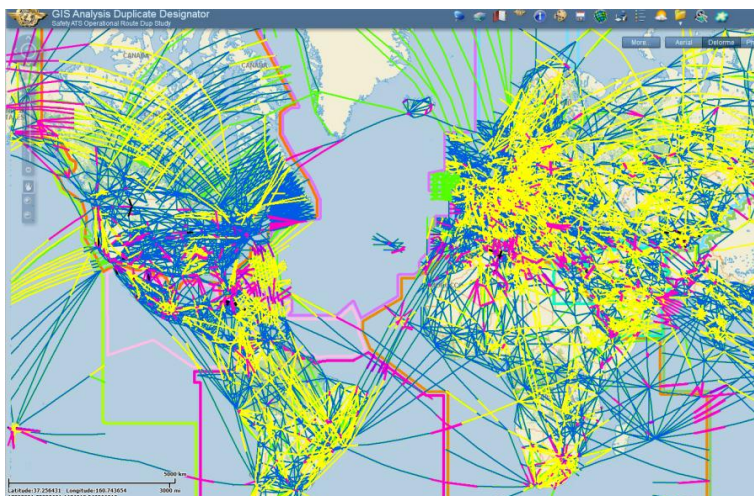
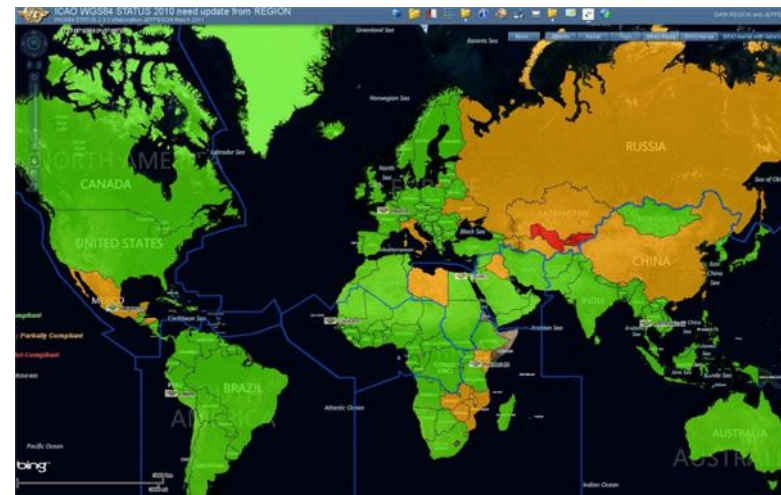
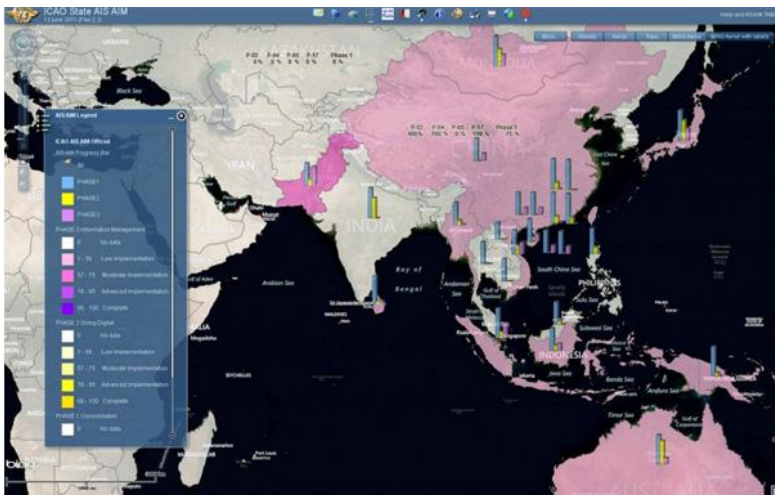
Baseline *minus* Post-operational Consumption = Fuel Saved

# Reporting Against the Global Plan...

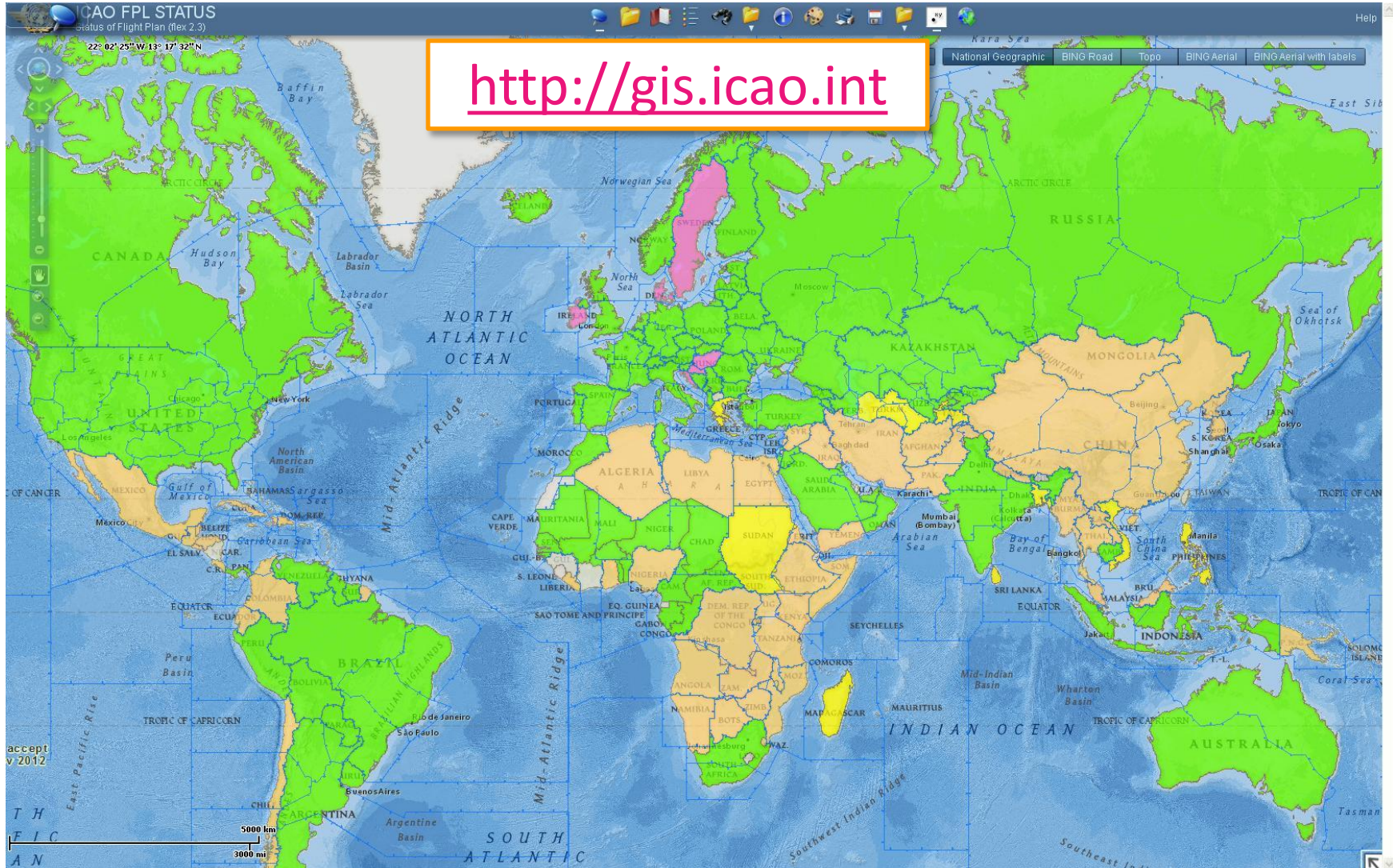


- Performance Monitoring
  - of individual modules
  - Air Navigation Report Form
- Annual Global Air Navigation Report
- Compare progress across regions
- Adjust ICAO work programme

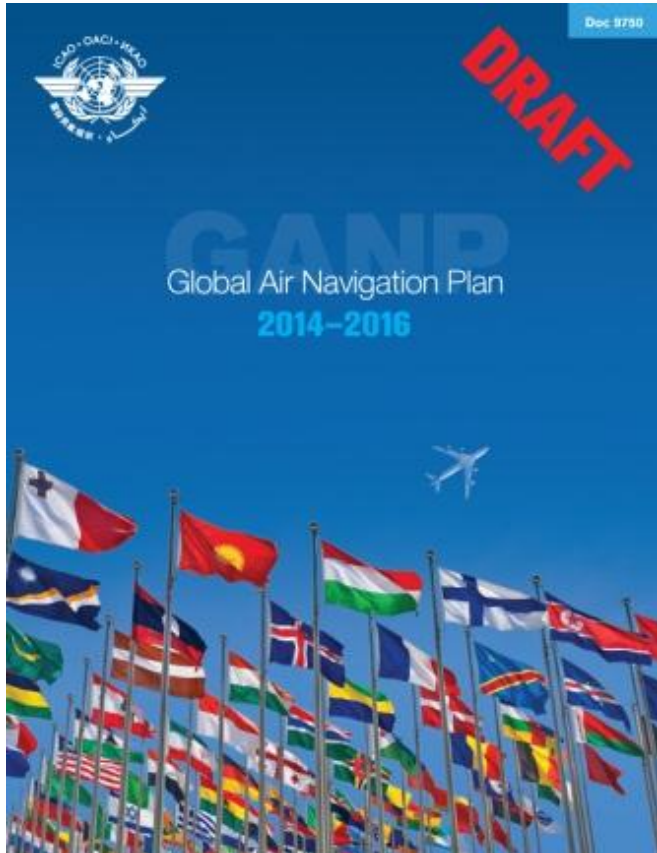
# ...through the Use of GIS Tools



# Tracking Implementation in States & Regions



# Aligning the Conference & the Global Air Navigation Plan



## CHAPTERS

## AN-CONF/12 WORKING PAPERS

1

Global Air Navigation Policy

2

Standardization: Aviation System Block Upgrades

3

Continuing Strategic Planning

4

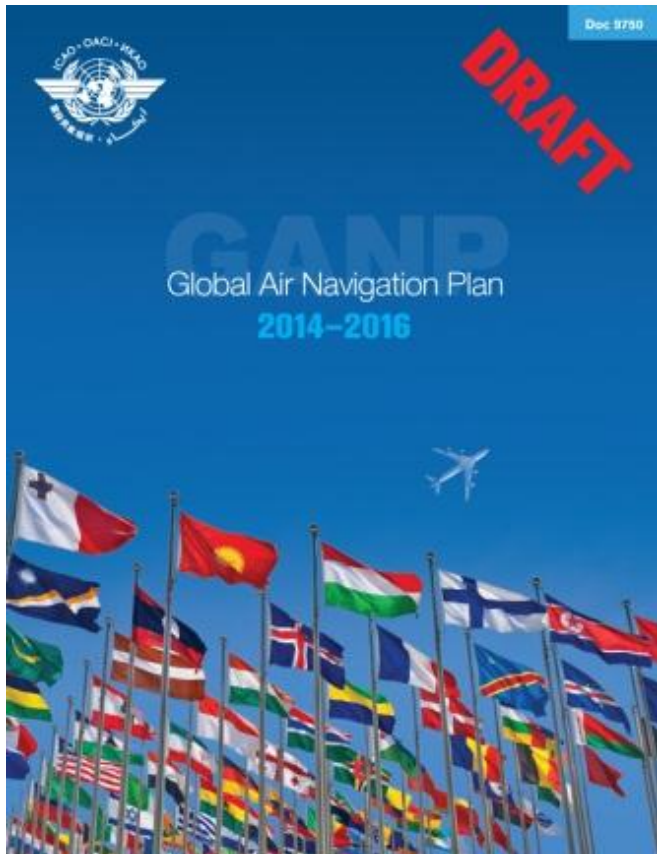
Implementing Globally Interoperable ATM

5

Aviation System Reporting & Performance Adjustments

- **WP3** – Revised Global Air Navigation Plan (GANP) – framework for global planning
- **WP5** – High-level Conference on Aviation Security (HLCAS)
- **WP13** – Civil/military coordination/cooperation and flexible use of airspace
- **WP25** – Minimum Path

# Aligning the Conference & the Global Air Navigation Plan



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## AN-CONF/12 WORKING PAPERS

### **Aviation System Block Upgrade**

#### **Modules on:**

- **WP4** – Airport Capacity
- **WP7** – SWIM
- **WP8** – FF-ICE
- **WP9** – Service improvement through digital AIM and ATM information
- **WP10** – Network Operations
- **WP11** – Airborne Separation
- **WP12** – Airborne collision avoidance systems and ground-based safety nets
- **WP14** – Integration of RPA into non-segregated airspace
- **WP15** – Meteorological Information
- **WP17** – TBO
- **WP23** – Standardization – in support of One Sky



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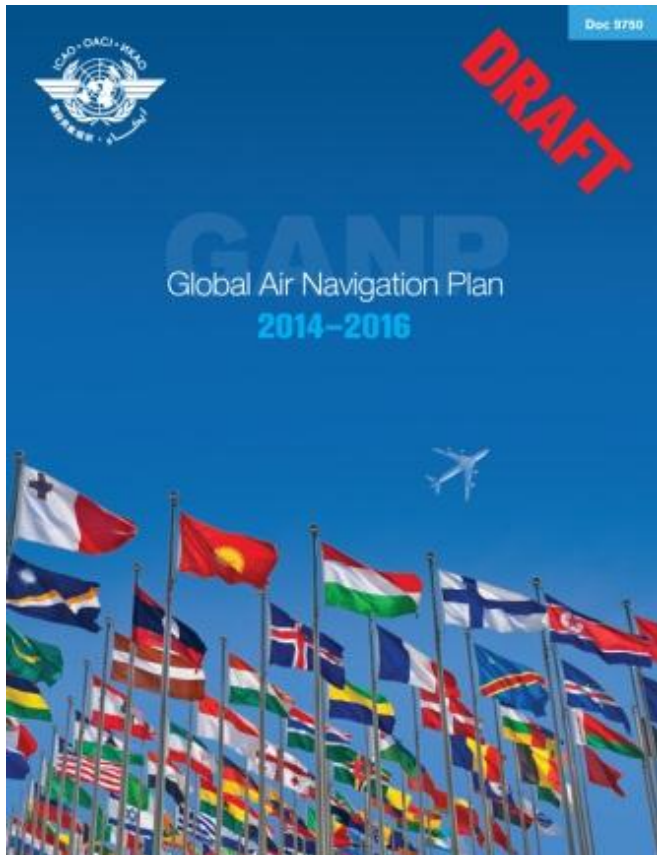
Implementing Globally Interoperable ATM

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Aviation System Reporting & Performance Adjustments

- **WP6** – PBN for terminal and approach operations
- **WP16** – PBN for en-route operations
- **WP18** – CCO & CDO
- **WP19** – Regional Performance Framework – planning methodologies and tools
- **WP20** – Human Performance
- **WP21** – GNSS implementation issues
- **WP22** – Rationalization of terrestrial navigation aids

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- **WP24** – Regional Performance Framework – alignment of areas of applicability of ANPs and regional SUPPs

# Desired Outcomes of AN-Conf/12



- Endorsement of:
  - Global Air Navigation Plan, as unified planning mechanism
- Agreement on:
  - Integrated work programme
  - Structure and management of “Expert Groups”
- Recommendations on ICAO technical work programme:
  - Endorsement for short term Block Upgrades
  - Agreement on Block 1
- Clear strategic direction for future infrastructure:
  - Endorsement for medium and long term Block Upgrades
  - Agreement on Blocks 2 & 3

# Today's Priorities



- Performance-based Navigation
- Continuous Descent Operations
- Continuous Climb Operations



# Further Addressing Technical Issues



- Aviation Data Link: Now and Tomorrow (2014)
  - Next steps for Data Link
- End-to-end System Demonstration of New ATM Concepts (2014)
  - Flight & Flow Information for a Collaborative Environment (FF-ICE)
  - Trajectory-based Operations
  - Human performance aspects
- Air Navigation Information Management Divisional Meeting (2015)
  - System Wide Information Management (SWIM)



# Further Addressing Policies



- Synergy between 12<sup>th</sup> Air Navigation Conference & 6<sup>th</sup> Air Transport Conference:
  - Policy on access and equity
  - Consideration of possible global mandates
    - for key infrastructure needs such as datalink & SWIM
  - Funding/financing of ground equipment & avionics for Block Upgrades



# Summary

- Follow-up to previous briefing:
  - Aviation System Block Upgrades
- Next steps in packaging tomorrow's aviation system
- ICAO's strategic approach
- Steps leading to 12<sup>th</sup> Air Navigation Conference
- ICAO Working Papers available as of 30 June 2012
- For more information: [www.icao.int/anconf12](http://www.icao.int/anconf12)



# ICAO

Uniting Aviation on

Safety | Security | Environment

