Aviation System Block Upgrade (ASBU) Methodology – An Overview
Outline

• Today’s Challenges
• Tomorrow’s Needs
• Why ASBU methodology
• ASBU explanation
• Global Plan
• Next Steps
Today’s Challenges

• Air traffic growth expands two-fold every 15 years

• Growth can be a double-edged sword. Challenge is how to achieve both safety and operational improvements

• The 37th session of ICAO General Assembly advised to redouble our efforts with focus on ensuring interoperability of systems while at the same time maintaining or enhancing aviation safety.
New National/Regional Plans - interoperability challenges

Examples..

Many Regional and National ATM modernization programmes are being developed worldwide

- They are following ICAO’s Global Air Navigation Plan and Operational Concept, but nevertheless they are different in their own way
- thus resulting in interoperability challenges
Tomorrow’s Needs

• Global framework is needed to ensure:
  – Safety is maintained and enhanced
  – ATM improvement programs are harmonized
  – Barriers to future efficiency and environmental gains are removed, at reasonable cost
Step 1
Get Harmonization on the Global Agenda

• Initial NextGen/SESAR Symposium (2008)

• Convened Standards Organization Roundtable (2009)

• Established working agreements with Standards Organizations on shared work programmes (2010)
Step 2

Global Aviation System Block upgrades

• ICAO established in 2011 Future Aviation Challenge Team (FACT) and Future Aviation Technical Team (FATT) to develop a new approach which should be
  – Interoperable and
  – Independent of when and where specific ATM improvement programs are introduced

• The approach thus developed will be the global framework and known as global aviation system block upgrades

Why this approach?
What is the Basis for Block Upgrades?

- Foundation of blocks originates from existing, near term implementation plans and extracted from (examples):
  - Aligned with ICAO ATM Operational Concept
  - Block upgrades will allow structured approach to meet regional and local needs, while considering associated business cases
  - They reflect recognition that all modules are not required in all airspaces
What is the difference between current and ASBU methodology?

• **Current methodology**
  – Scope covers only ground equipment for ANSPs
  – Planning based on short and medium term
  – Implementation process is through GPIs

• **ASBU methodology**
  – Scope extends to airspace users and regulators
  – Planning based on short, medium and long terms
  – Implementation process is through Blocks and corresponding modules
What are the advantages of ASBU methodology?

- Takes into account all related issues such as air/ground Systems, air/ground procedures, air/ground regulatory requirements and business case formulation,
- One stop planning at the same time flexible and scalable
- Modules provide a series of measurable, operational performance improvements, which could be introduced as needed
Aviation System Block Upgrades – Definition

• What is an ‘Aviation System Block Upgrade’ (ASBU)?

• Each Module is defined as follows:
  – Intended \textit{Operational Improvement/Metric} to determine success
  – Necessary \textit{Procedures}/Air and Ground
  – Necessary \textit{Technology}/Air and Ground
  – Positive \textit{Business Case} per Upgrade
  – \textit{Regulatory Approval Plan}/Air and Ground
  – \textit{Well understood} by a Global Demonstration Trial
    • All synchronized to allow initial implementation
    • Won’t matter \textit{when or where} implemented
Understanding the Relationships

Performance Improvement Areas
- Airport Operations
- Globally Interoperable Systems and Data
- Optimum Capacity and Flexible Flights
- Efficient Flight Path

Block 0
18 Modules (2013)

Block 1
17 Modules (2018)

Block 2
10 Modules (2023)

Block 3
7 Modules (2028 & >)

Module
Threads Between Modules... and Across Blocks

Airport Operations

Block 0
- Improved Traffic Flow through Runway Metering

Block 1
- Improved Approach & Departure Management through Integration

Block 2
- Linked AMAN/DMAN

Block 3
- Integrated AMAN/DMAN/SMAN

Available Now 2018 2023 2028>
How Blocks are organized?

• Timing/sizing of the block upgrades are in response to
  – need for Mature standards,
  – Integrated air and ground solutions and
  – Establishment of positive business cases
• Block “0” optimizes current onboard equipage and provides baseline
• Modules lacking specific maturity are purposefully placed in later blocks
Summary of ASBU Approach

• Addresses ANSP, aircraft and regularity requirements
• Identified 4 improvement areas
• Implementation through Block Upgrades (0, 1, 2, and 3) each comprising a number of modules
• Each module is explained in a standardized 4-5 pages template
  – provide a series of measurable, operational performance improvements
  – Organized into flexible & scalable building blocks
  – Could be introduced as needed
  – all modules are not required in all airspaces
ASBU Implementation Timeline

Pre-Implementation/Standardization (Global)

Implementation (Regional/National)

WHY?
- Benefits
- Others

WHAT?
- ASBUs

WHEN?
- Demonstration
- Validation
- Standards Availability

WHERE?
- Operational Improvements/Benefits
- Prioritization and Decision by PIRGs/States
- Implementation

Results

Operational Improvements/Benefits

Prioritization and Decision by PIRGs/States

Implementation

Pre-Implementation/Standardization (Global)

Implementation (Regional/National)
Optimum Capacity and Flexible Flights

Globally Interoperable Systems and Data

Efficient Flight Path

Airport Operations
Step 3
Global Rollout & Feedback

• Held Global Air Navigation Industry Symposium (GANIS) in September 2011
  – Facilitated over 500 participants from Industry, States and International Organizations to gain insight
  – Ultimately commit to the initiative
  – Platform established to enable continuous feedback

http://www2.icao.int/en/GANIS/Pages/Documentation.aspx
### Step 3
Global Rollout & Preparation for AN-Conf/12

#### ASBU Briefings -2011/12

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#### ASBU Workshops -2012

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Step 4
International Agreement at AN-Conf/12

- **Montréal, 19-30 November 2012**
- Opportunity to formalize future of infrastructure through ASBUs
- More assistance to States for all ASBU Block 0 Modules
  - Implementation kits for ASBU Modules will be delivered
- Agreement of ASBU Block 1 upgrades
  - Level of certainty for all stakeholders
  - Encourage more efficient implementation
- Strategies for longer-term requirements – ASBU Blocks 2 and 3
- Approval of GANP
  - Operational capabilities to manage ATM system requirements
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