International Civil Aviation Organization
ICAO South American Regional Office
Twelfth Meeting of the Civil Aviation Authorities of the SAM Region (RAAC/12)
(Lima, Peru, 3 – 6 October 2011)

Agenda Item 2: Air navigation regional activities

Aviation System Block Upgrades

Presented by IATA

SUMMARY

ICAO launched the Aviation System Block Upgrades initiative to progress outcomes of its 37th General Assembly in terms of facilitating interoperability, harmonization, and modernization of air transportation worldwide. To that end, ICAO established a programmatic, collaborative approach to develop a set of air traffic management (ATM) solutions to meet the global needs for an interoperable airspace that takes advantage of current equipage, establishes a transition plan that provides key performance improvements, and enables global interoperability.
IATA supports the Aviation System Block Upgrades work as it acts as an ICAO vehicle to help ensure harmonization and interoperability. Nevertheless there are some hurdles to be overcome to ensure an efficient implementation.

Action by the meeting is in Paragraph 5.

1 Introduction

1.1 As the world economy grows, air traffic and airspace congestion grow, exerting increasing pressure on infrastructure and facilities already stretched to the limit in many parts of the world. Inevitably, delays will multiply while access and predictability will suffer.

1.2 In an effort to harmonize NextGen and SESAR and to avoid proliferation of different regional ATM programs, ICAO has initiated the “Aviation System Block Upgrades” (ASBU) project. The ASBU initiative is designed to be a pragmatic framework that develops a set of air traffic management solutions or upgrades, takes advantage of current equipage, establishes a transition plan, and enables global interoperability.

2 Aviation System Block Upgrades (ASBU)

2.1 The ASBU is structured in building blocks of operational improvements that can be globally implemented depending on regional operational requirements. Regions are not expected to implement all blocks at the same time but when they decide to do it, every region (State) will implement in the same way.

2.2 The rationale behind the definition of the Block dates is that by that timeframe is expected to have all supporting regulations/standards and technologies available to allow implementation. These requirements are crucial for implementation.

2.3 The ASBU blocks are defined as follow:

2.3.1 Block 0: available to be implemented now. Designed to provide operational improvements based on available air/ground technologies. These include, Performance Based Navigation, Continuous Descent Operations (CDO) and Continuous Climb Operations (CCO). These initiatives should be implemented as a priority in order to lay the foundation for the other blocks.

2.3.2 Block 1: available to be deployed globally from 2018. Block 1 is based on the implementation of Trajectory Based Operations (TBO) through Collaborative Decision Making (CDM) and heavily dependent on the implementation of SWIM (System Wide Information Management). Fundamental for Block 1 is the development of Business Case Analysis to support investment decisions. There is also need to develop global standards and guidance material to support implementation. A comprehensive CNS/AIM roadmap and an avionics roadmap must be developed to avoid dissemination of different technologies and to guarantee global interoperability.

2.3.3 Block 2: available to be deployed globally from 2023

2.3.4 Block 3: available to be deployed globally from 2028 and beyond.

2.3.5 Blocks 2 and 3 operational improvements are still on a conceptual phase and are dependent on R&D efforts. Blocks 2 and 3 envisage the full integration of airborne and ground systems through real time data sharing. This interchange of data will allow full 4 D trajectory, airborne separation, integration of UAV on non-segregated airspace and traffic complex management.

2.4 Each block comprises a suite of modules, having the essential qualities of:

a) A clearly-defined measurable operational improvement and success metric;
b) Necessary equipment and/or systems in aircraft and on ground along with an operational approval or certification plan;
c) Standards and procedures for both airborne and ground systems; and
d) A positive business case over a clearly defined period of time.

2.5 Blocks are mapped against specific Performance Improving Areas shown in green on the diagram below.

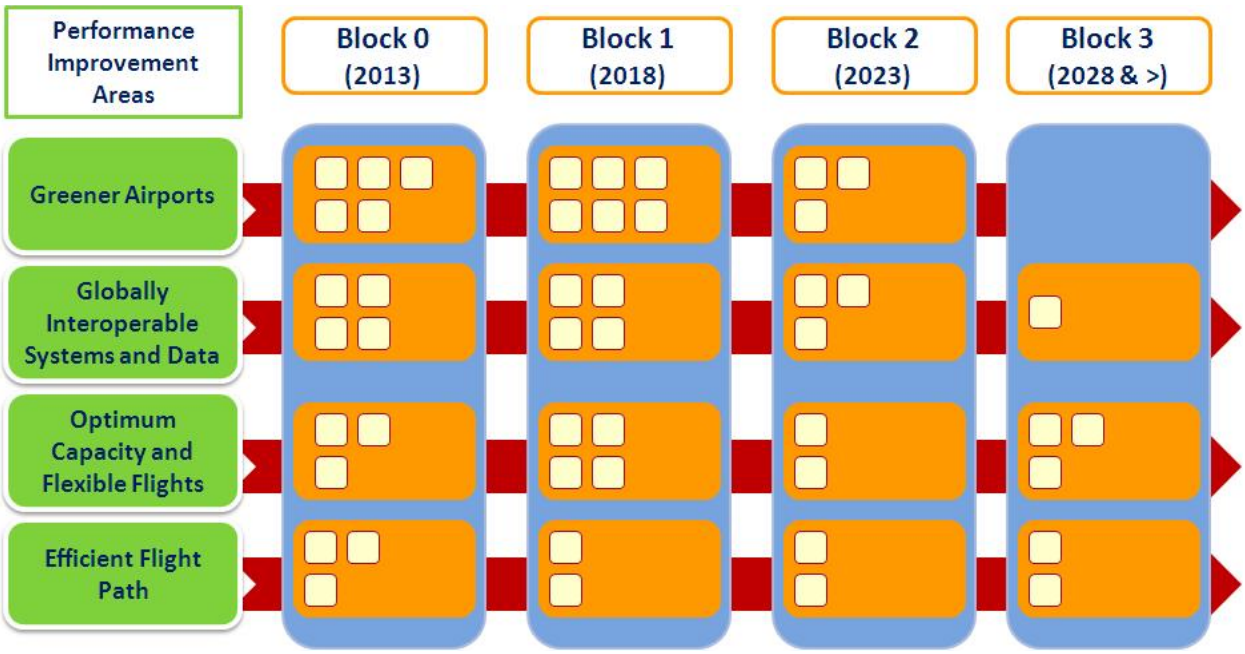

Figure extracted from the Aviation System Block Upgrades Framework Document

3 Discussion

3.1 IATA is committed with the ASBU work as it acts as an ICAO vehicle to help ensure harmonization and interoperability. However, there are several hurdles to implement all these initiatives, as follows:

3.2 Funding

a) Cost of airborne equipment will constitute a significant portion of the overall future ATM system.
b) Aircraft needs to be considered as part of the infrastructure system.
c) Means have to be found to facilitate financing, such as incentives and funding mechanisms.

3.3 Avionics

a) Avionics requirements must be globally harmonized.
b) The transition has to leverage on existing onboard technologies.

3.4 Building a business case

a) Operational business case is essential. Business case justification for future equipage will be strengthened by demonstrating benefits from the use of current equipage.
b) Decisions have to made soon, airplanes flying in 2025 will have their capability decided well advanced

4 Conclusion

4.1 The stakes are high. The global growth of air traffic and airspace congestion, the increasing pressure on infrastructure and facilities, which are already stretched to the limit and the potential lack of global harmonization, will restrict air transportation if we continue along the same path.

4.2 Ultimately, the future of global economic depends on more, not less, connectivity. As a result, the future ATM programmes simply have to work and must be interoperable; and their implementation will depend on what we do today.

5 Action by the meeting

5.1 The meeting is requested to:

a) Acknowledge the information presented in this paper;

b) Ensure South American Region adherence to the ICAO Global Block upgrade initiative;

c) Recognize that any Block 0 initiative must leverage on existing on-board avionics and should prioritize:

I. A Global harmonized PBN implementation
II. Expedite the implementation of Continuous Descent Operations (CDO) and Continuous Climb Operations (CCO)

- END --