



**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

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# Categorization of ASBU Modules

**H.SUDARSHAN**  
**Air Navigation Bureau**

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# Introduction

## ASBU Modules



- The ASBU modules are organized into logical and scalable groupings
- Implementation depending on the operational need
- Implementation of a particular module is not mandatory in all areas or circumstances.
- The broad timescales associated with the ASBU framework (Block 0 = 2013, Block 1 = 2018, Block 2 = 2023, Block 3 = 2028) are intended only to depict the initial readiness of all components, including ICAO SARPs, and guidance material and do not imply a mandated State or regional implementation timeframe.

# Prioritizing ASBUs

## Benefits



- The benefits from an integrated implementation of a number of modules may be greater than the benefits from a series of isolated implementations.
- Similarly, the benefits from the coordinated deployment of one module simultaneously across a wide area (e.g. a number of proximate airports or a number of contiguous airspaces/flight information regions) may exceed the benefits of the implementations conducted on an ad hoc or isolated basis.

# Prioritizing ASBUs Approach



- Rather than implementing State-by-State, deployments on a global, regional and sub-regional basis should be considered and In this way implementation, including applicability dates, can be agreed and applied by all stakeholders involved.
- An example of a need for global applicability would be PBN. Assembly Resolution A37-11 urges all States to implement approach procedures with vertical guidance in accordance with the PBN concept. Therefore, the ASBU modules on PBN approaches should be seen as required for implementation at all airports.

# Prioritizing ASBUs

## How?



- Rationalizing the block modules into categories of priority would assist with the understanding of how the ASBU modules relate to the global system
- This prioritization and categorization exercise could be done by individual States and regionally by the PIRGs
- Some modules may need to be categorized at a global level in order to ensure global interoperability or to improve safety. May eventually become the subject of ICAO Standards with mandated implementation dates
- For other modules, implementation should follow common methodologies

# Prioritizing ASBUs

## Proposed Categorization



- The proposed categories are:
  - **Essential (E):** These are the ASBU modules that provide substantial contribution towards global interoperability, safety or regularity. Examples: FICE, AIM
  - **Desirable (D):** These are the ASBU modules that, because of their strong business and/or safety case, are recommended for implementation almost everywhere  
examples APV, ACDM, MET
  - **Specific (S):** These are the ASBU modules that are recommended for implementation to address a particular operational environment or mitigate identified risks. Examples: RPAS
  - **Optional (O):** These are the ASBU modules that address particular operational requirements and provide additional benefits that may not be common everywhere. Examples: Runway seq,

# Global Interoperability Minimum Path -Approach



- Given the large number of modules, the identification by stakeholders of which modules to implement first and their target implementation timeframes is important:
  - some modules must be implemented globally, and therefore must be designated as forming an Essential part of the minimum path to global interoperability;
  - deployment of such modules in the earliest available timeframe will result in maximum system benefits;
  - implementations of any such module should take place within the same approximate time periods.

# Global Interoperability

## Minimum Path -Principles



- Principles in Minimum Path for safety and interoperability:
  - Provide direct and tangible safety improvements;
  - Need for interoperability of ground-to-ground systems, recognizing the desirability of automation systems (including flight planning, AIM, MET, ATM and eventually SWIM systems) to be able to effectively communicate globally; or
  - Need for interoperability of air-to-air systems, recognizing the need for airborne applications such as ACAS and the ASAS airborne tools to be able to interact without restriction.



# Block 0 Modules Minimum Path



- Minimum path considerations for Block 0 modules should take into account that, in many cases ICAO SARPS and PANS provisions are already available, along with guidance material.
- Accordingly, in terms of the minimum path to global interoperability and recognizing that the Block 0 modules in many cases provide the foundation for future development, all Block 0 modules should be considered for early implementation by States, according to their operational needs.

# Proposal for Categorization Block 1 Modules (1/6)



Current ASBU Identifier	Proposed ASBU Identifier	Proposed Global Level Categorization	Proposed Short Title	Rationale for Global Categorization Proposal
B1-65	1-PAPP (Performance-based APPROach)	Desirable	Optimized airport accessibility	This module is not considered as Essential at a global level although it contributes to the improvement of the efficiency of the aviation system.
B1-70	1-WAKE (WAKE turbulence separation)	Optional	Increased runway throughput through dynamic wake turbulence separation	This module is not considered as Essential although it contributes to the improvement of efficiency of flights on some constrained airports.
B1-15	1-RSEQ (Runway SEQuencing)	Optional	Improved airport operations through departure, surface and arrival management	This module is not considered as Essential although it contributes to the improvement of efficiency of the aviation system.
B1-75	1-SMGC (Surface Movement Guidance and Control)	Optional	Enhanced safety and efficiency of surface operations (A-SMGCS/SURF IA) and EVS	This module is not considered as Essential although it contributes to the improvement of efficiency of the aviation system. It may be needed to improve safety in some specific operational environments.

# Proposal for Categorization

## Block 1 Modules (2/6)



Current ASBU Identifier	Proposed ASBU Identifier	Proposed Global Level Categorization	Proposed Short Title	Rationale for Global Categorization Proposal
<b>B1-80</b>	<b><i>1-ACDM</i></b> (Airport Collaborative Decision-Making)	<i>Desirable</i>	Optimized airport operations through airport-CDM	This module could have been considered as Essential because it is a fundamental one to solve any type of issue on an airport and may generate big benefits in safety and efficiency without big investments. However it was considered as Desirable because it was not contributing globally to interoperability.
<b>B1-81</b>	<b><i>1-RTWR</i></b> (Remote ToWeR)	<i>Optional</i>	Remote operated aerodrome control tower	This module is not considered as Essential since it is basically related to some particular operational environments.
<b>B1-25</b>	<b><i>1-FICE</i></b> (Flight/flow Information for a Collaborative Environment)	<b><i>Essential</i></b>	Increased interoperability, efficiency and capacity through FF-ICE/1 application before departure	This module is proposed to be <b>Essential</b> because it is one of the key elements of the future aviation system in order to solve actual restrictions on the flight plan format and permit the proper level of exchange of information to support efficient operations. It is a prerequisite for a lot of operational improvements considered by other modules in Blocks 1, 2 and 3.

# Proposal for Categorization Block 1 Modules (3/6)



Current ASBU Identifier	Proposed ASBU Identifier	Proposed Global Level Categorization	Proposed Short Title	Rationale for Global Categorization Proposal
B1-30	<i>I-DAIM</i> (Digital Aeronautical Information Management)	<i>Essential</i>	Service improvement through integration of all digital ATM information	This module is proposed to be Essential because it is one of the key elements of the future aviation system in order to exchange aeronautical, ATM and meteorological information with the proper content and the proper level of integrity. It is a prerequisite for a lot of operational improvements considered by other modules in Blocks 1, 2 and 3.
B1-31	<i>I-SWIM</i> (System-Wide Information Management)	<i>Essential</i>	Performance improvement through the application of system-wide information management (SWIM)	Implementation of SWIM services (applications and infrastructure) could be considered only Desirable at the level of Block 1. However This module is proposed to be Essential because it should constitute part of the skeleton of the future aviation system. It is a prerequisite for a lot of operational improvements considered by other ASBU modules in Block 1, 2 and 3.
B1-105	<i>I-DMET</i> (Digital METeorological information)	<i>Desirable</i>	Better operational decisions through integrated weather information (Strategic>40 Minutes)	This module is not considered as Essential although it contributes to the improvement of efficiency of the aviation system. In some regions of the world, it may be classified as Essential for safety reason because of major meteorological hazards. The need for real time meteorological information in the future may generate a change to the category Essential at a global level.

# Proposal for Categorization Block 1 Modules (4/6)



Current ASBU Identifier	Proposed ASBU Identifier	Proposed Global Level Categorization	Proposed Short Title	Rationale for Global Categorization Proposal
B1-10	<i>1-FRTO</i> (Enhanced En Route Trajectories)	<i>Optional</i>	Operations through free routing	This module is not considered as Essential although it contributes to the improvement of efficiency of the aviation system.
B1-35	<i>1-NOPM</i> (Network Operations Planning and Management)	<i>Desirable</i>	Enhanced flow performance through network operational planning	This module is not considered as Essential although it contributes to the improvement of efficiency of the aviation system. It is Essential at a regional level in order to ensure smooth and efficient management of traffic.
B1-85	<i>1-ASAS</i> (Airborne Separation Assurance Systems)	<i>Essential</i>	Increased capacity and flexibility through interval management	Although this module would naturally appear as a Desirable one since it is supporting capacity improvement which is not needed everywhere, it will imply a high level of harmonization in operational procedures and avionics systems. This module is also candidate to assist in creating some efficient solutions in areas where ground equipment is difficult to implement. Therefore it was categorized as Essential at a global level.

# Proposal for Categorization Block 1 Modules (5/6)



Current ASBU Identifier	Proposed ASBU Identifier	Proposed Global Level Categorization	Proposed Short Title	Rationale for Global Categorization Proposal
<b>B1-102</b>	<b><i>1-SNET</i></b> (Safety NETs)	<i>Desirable</i>	Ground-based safety nets on approach	This module is not considered as Essential although it contributes to the improvement of safety and efficiency of the aviation system. In some regions of the world, it may be classified as Essential for safety reason.
<b>B1-05</b>	<b><i>1-CDO</i></b> (Continuous Descent Operations)	<i>Desirable</i>	Improved flexibility and efficiency in descent profiles	This module is not considered as Essential at a global level although it contributes to the improvement of the efficiency of the aviation system.
<b>B1-40</b>	<b><i>1-TBO</i></b> (Trajectory-Based Operations)	<i>Desirable</i>	Improved traffic synchronization and initial trajectory-based operation	Although this module is the beginning of trajectory-based operations that will constitute the corner stone of the future aviation system, it is not considered as Essential at the stage of Block 1. For some high-density area in the world and considering the need for harmonized operational procedures and avionics systems, it should be classified as Essential.



# Proposal for Categorization Block 1 Modules (6/6)



Current ASBU Identifier	Proposed ASBU Identifier	Proposed Global Level Categorization	Proposed Short Title	Rationale for Global Categorization Proposal
B1-90	<i>1-RPAS</i> (Remotely Piloted Aircraft Systems)	<i>Specific</i>	Initial integration of remotely piloted aircraft (RPA) systems into non-segregated airspace	This module is not considered as Essential at a global level since it is corresponding to very specific type of operations.



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Thank You