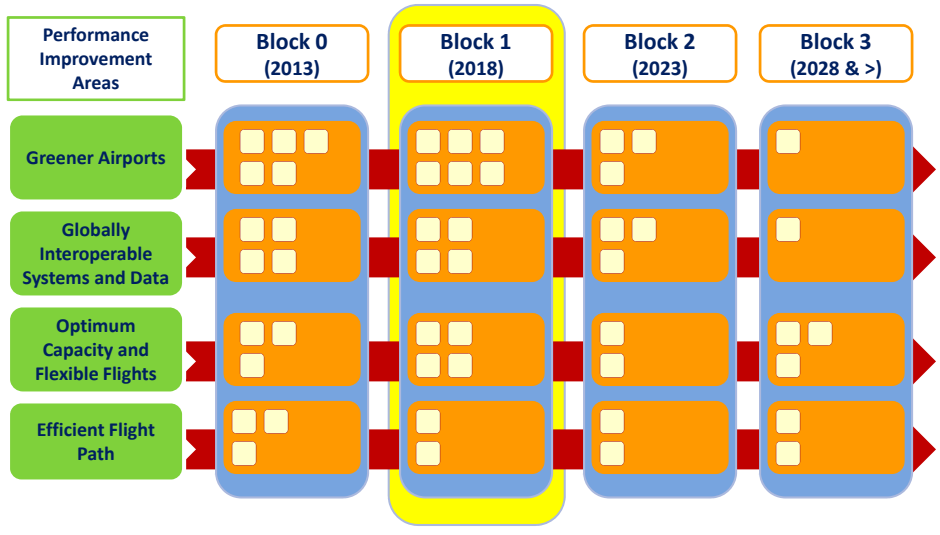
International Civil Aviation Organization

Aviation System Block Upgrades
Block 1

Preparations for AN-Conf/12 – ASBU Methodology

Lima, 15 May 2012

Block 1

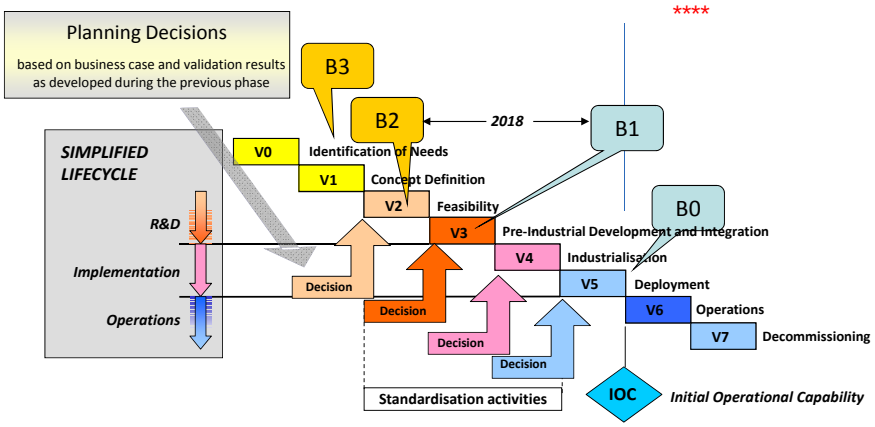


Block 1

- 4 Main Performance improvement areas
  - Greener Airports (6 modules)
  - Globally interoperable systems & data (3 modules)
  - Optimum capacity & flexible flights (4 modules)
  - Efficient flight path (3 modules)

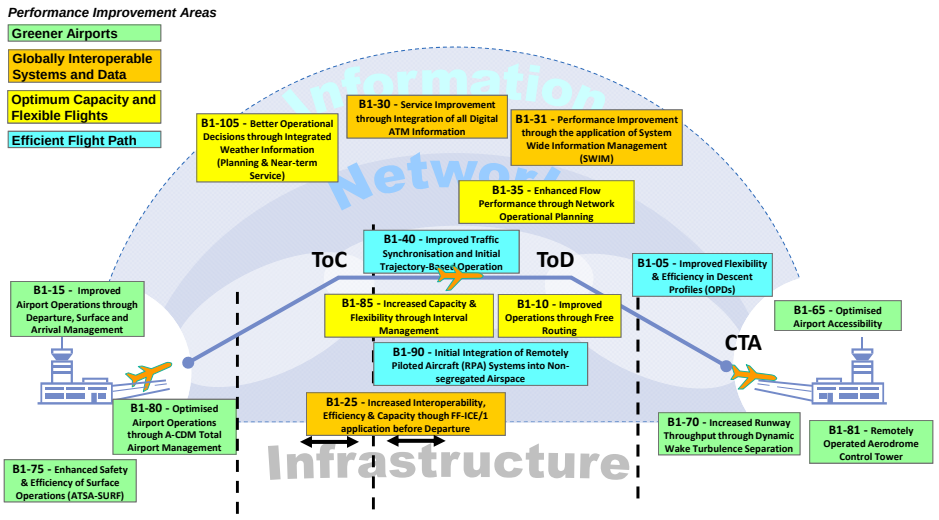
  - Block 1 will serve as the enabler and foundation for the envisioned future aviation systems.

Block Maturity Lifecycle



Block 1 will see critical ANSP capabilities synchronized.

Block 1 in Perspective



B1-15 – - Improved Approach & Departure Management through Integration

B1-15 - Improved Airport Operations through Departure, Surface and Arrival Management

Summary	Extended arrival metering, Integration of surface management with departure sequencing bring robustness to runways management and increase airport performances and flight efficiency.
Main Performance Impact	KPA-02 Capacity; KPA-04 Efficiency; **KPA-09 Predictability**, KPA-06 Flexibility
Domain / Flight Phases	Aerodrome and Terminal
Applicability Considerations	Runways and Terminal Manoeuvring Area in major hubs and metropolitan areas will be most in need of these improvements. Complexity in implementation of this module depends on several factors. Some locations might have to confront environmental and operational challenges that will increase the complexity of development and implementation of technology and procedures to realize this module.PBN routes need to be in place.

B1-70 Increased Runway Throughput through Dynamic Wake Turbulence Separation

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Summary	Improved throughput on departure and arrival runways through the dynamic management of wake turbulence separation minima based on the real-time identification of wake turbulence hazards.
Main Performance Impact	**KPA-02 Capacity,** KPA-04 Efficiency, KPA-05 Environment, KPA-06 Flexibility.
Domain / Flight Phases	Aerodrome
Applicability Considerations	Least Complex – Implementation of re-categorized wake turbulence is mainly procedural. No changes to automation systems are needed.

B1-70 → B2-70

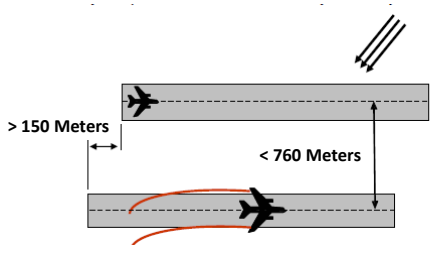
B1-70 Increased Runway Throughput through Dynamic Wake Turbulence Separation

• Wake vortex separation can be reduced under certain crosswind conditions.

This upgrade requires:

- Tactical Wind Prediction and Monitor function (for next departure)
- Strategic Weather function (for planning horizon)
- Stability of operation to ensure usability/reliability

Mid Term (Block I)



B1-30 Service Improvement through Integration of all Digital ATM Information

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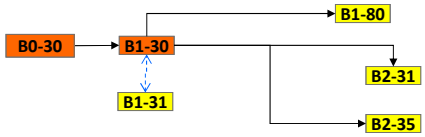
Summary	Implementation of the ATM information reference model integrating all ATM information using UML and enabling XML data representations and data exchange based on internet protocols with WXXM for meteorological information.
Main Performance Impact	KPA-01 Access & Equity; **KPA-03 Cost-Effectiveness**; KPA-10 Safety
Domain / Flight Phases	All Phases of Flight
Applicability Considerations	Applicable at State level, with increased benefits as more States participate



B1-105 - Better Operational Decisions through Integrated Weather Information (Planning and Near-Term Service)

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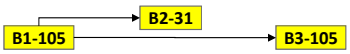
Summary	This module develops weather information supporting automated decision process or aids involving: weather information, weather translation, ATM impact conversion and ATM decision support. This module enables the reliable identification of applicable air traffic management (ATM) solutions when weather phenomena are impacting, or forecast to impact, aerodromes or airspace. In order to achieve this goal, full ATM-Weather Integration is necessary. ATM-Weather Integration means that weather information is included in the logic of a decision process or aid such that the impact of the weather constraint is automatically calculated and taken into account when the decision is made or recommended. The decision horizons considered are from several hours out to support planning, down to several minutes out to support in-flight avoidance of weather.
Main Performance Impact	KPA-02 Capacity, KPA-04 Efficiency, KPA-09 Predictability, KPA-10 Safety
Domain / Flight Phases	Aerodrome
Applicability Considerations	Applicable to traffic flow planning, and to all aircraft operations in all domains and flight phases, regardless of level of aircraft equipage.



B1-5 - Improved Flexibility & Efficiency in Descent Profiles (OPDs)

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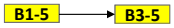
Summary	This module provides the baseline for use Required Navigation Performance (RNP) with Barometric Vertical Navigation (VNAV). Baro-VNAV requires that the vertical system accuracy is at the 99.7% probability level. It indicates the normal operating error characteristics of a navigation system. The system is designed to enhance vertical flight path precision during descent, arrival, and while in the non-precision environment and enables aircraft to fly an approach procedure not reliant on ground based equipment for vertical guidance.
Main Performance Impact	KPA-02 Capacity, **KPA-04 Efficiency,** KPA-06 Predictability, KPA-10 Safety
Domain / Flight Phases	Descent, Arrival, Flight in Terminal Area
Applicability Considerations	



Challenges - How to Get There?

- Budget considerations are greater for Block 1 since these modules do involve technology insertion in either ground/air or both.
- Block 1 has a strong dependency on moving to network based communications for aviation.
- There are regional synchronization issues of equipage and capabilities to achieve much of Block 1. This is essential to the successful implementation to the future Blocks.
  - Global standards can alleviate such risks and ensure interoperability between regional ANSPs. Global standards also offers stakeholders a common rubric.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