

International Civil Aviation Organization


ASBU/SIP/Lima/2012-WP/12

ASBU Methodology Summary of Block 2 and 3 Modules


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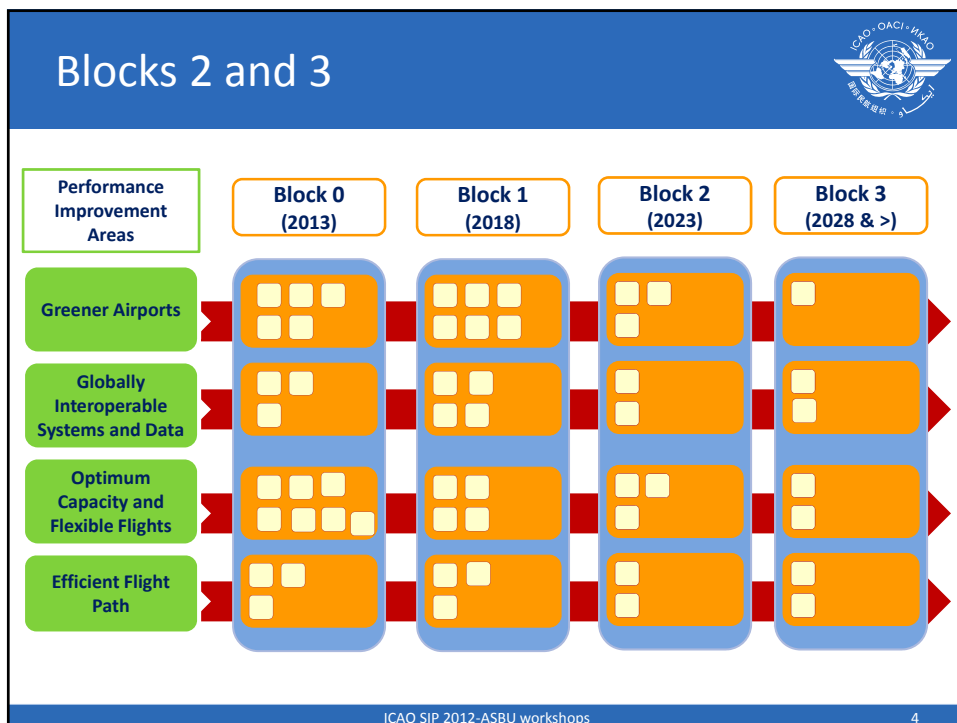
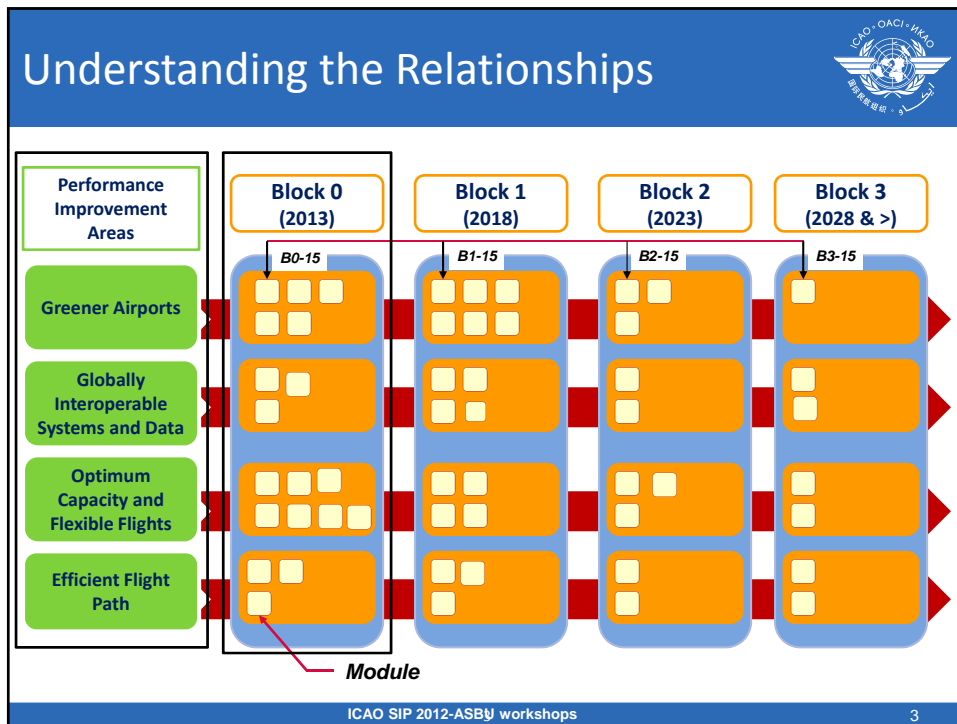
Workshop on preparations for ANConf/12 – ASBU methodology
(Lima, 16-20 April 2012)

Outline



- Maturity cycle
- Block 2 in perspective
- Block 3 in perspective
- Challenges –how to get there





Longer-term Objective: High Performance

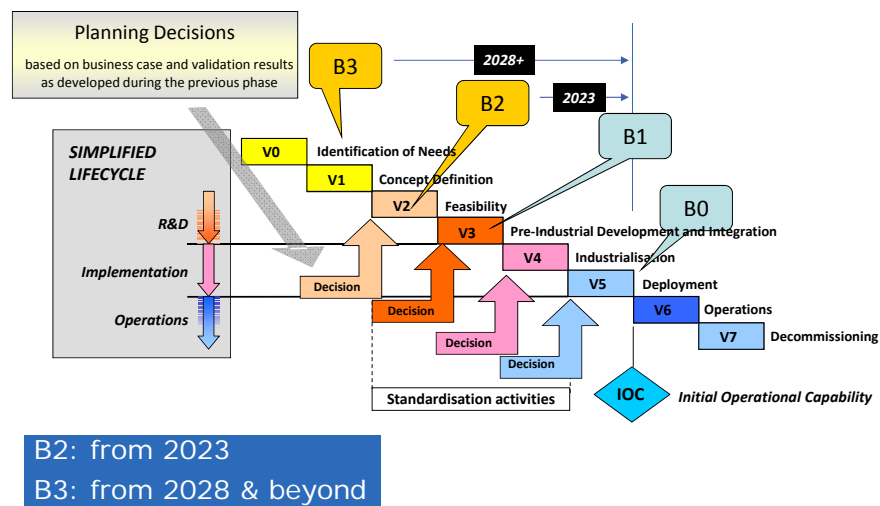


- 4 Main Performance improvement areas
 - Greener Airports
 - Globally interoperable systems & data
 - Optimum capacity & flexible flights
 - Efficient flight path
- ... increasingly interrelated as ATM is closer to optimum functioning

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Block Maturity Lifecycle



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3 Essential Considerations in the Global ATM Operational Concept



The network of actors & assets

The flight trajectory over time

Measured business performance



Informed decisions taken collaboratively on early and accurate information

Partnership – Interoperability

SWIM and data comm. are cornerstones

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International Technical Challenges



- To ensure interoperability, in particular
 - Common time reference
 - New concept for flight planning / flight object (FF-ICE)
 - 4D Trajectory exchange format
 - Information Management (data models, quality of service requirements, sharing rules, distribution process)
 - D/L applications for trajectory data exchange
 - Procedures for delegation ATC/Pilots
 - Time based separations
 - New wake vortex separations based on time
 - Participation of all airspace users

Will require new ICAO material and industry standards

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Global Perspective



Global traffic development spreads the same issues globally

- > *We need global standards/interoperability, and not wait too long for that*
- > *Too many intermediate steps/standards make evolution more difficult*

Deployment where and when needed, but based on common principles/rules/data & interoperable technologies

- > *One size does not fit all*
- > *B2/3 implementation decisions not required now!*

Cooperation early in life cycle is more efficient

- > *Among programmes, within/across regions, with ICAO*
- > *On requirements, R&D activities*



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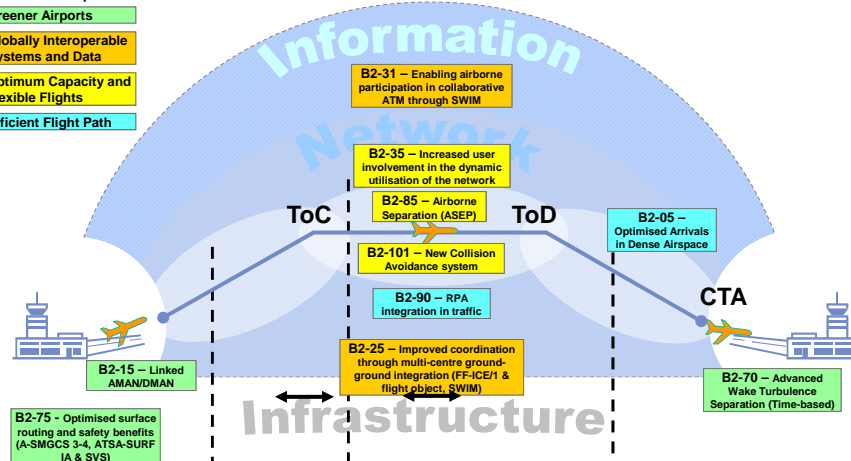
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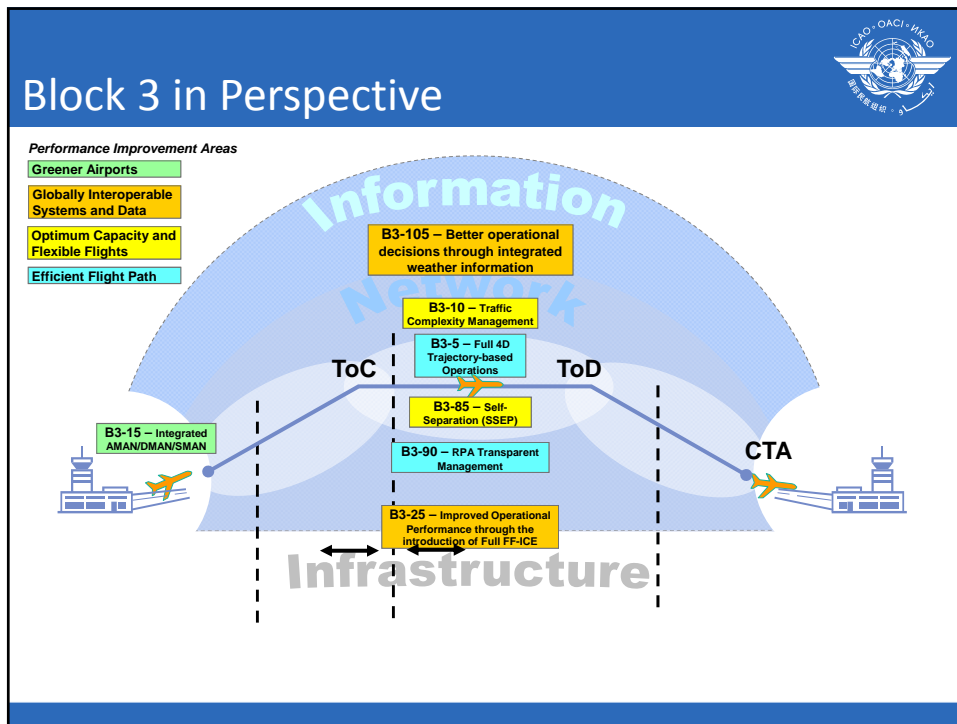
Block 2 in Perspective



Performance Improvement Areas

- Greener Airports
- Globally Interoperable Systems and Data
- Optimum Capacity and Flexible Flights
- Efficient Flight Path





B2-31 – Enabling airborne participation in collaborative ATM through SWIM

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Summary	Aircraft fully connected as an information node in SWIM, enabling: <ul style="list-style-type: none"> - full participation in collaborative ATM processes - access to voluminous dynamic data including meteorology Start with non-safety critical exchanges supported by commercial data links, but will require new generation data link Applications integrated into the processes & information infrastructure evolved over the previous blocks
Main Performance Impact	Access & Equity, Efficiency, Environment, Participation by the ATM Community, Predictability, Safety
Domain / Flight Phases	All phases of flight
Applicability Considerations	long-term evolution potentially applicable to all environments

B1-30 (Digital information)

B1-31 (SWIM)

B2-31

B3-25 (Full FF-ICE)

B3-105 (tactical weather)

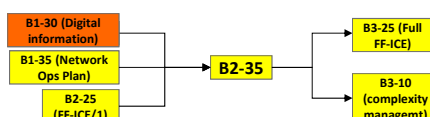
B3-5 (Full 4D TOps)

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B2-35 – Increased user involvement in the dynamic utilisation of the network



Summary	<p>CDM applications: ATM able to offer/delegate to the users the optimisation of solutions to flow problems</p> <ul style="list-style-type: none"> - user community takes care of competition and own priorities in situations when network or nodes (airports, sector) actual capacity no longer commensurate with plans <p>Brings B1-35 (initial User Driven Prioritization Process, focused on issues at an airport) forward, building on SWIM for more complex situations</p>
Main Performance Impact	Capacity, Predictability
Domain / Flight Phases	Pre-flight phases
Applicability Considerations	Region or sub-region



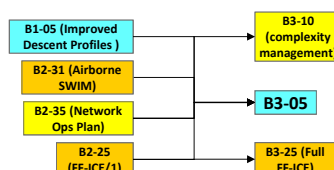
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B3-05 – Full 4D Trajectory-based Operations



Summary	<p>Advanced concepts supported by necessary technologies, for using four dimensional trajectories to enhance global ATM decision making.</p> <p>Integrating and exchanging all relevant flight information to obtain the most accurate trajectory representation in support of automation support.</p>
Main Performance Impact	Efficiency, Environment, Predictability
Domain / Flight Phases	All Flight phases
Applicability Considerations	Region or sub-region

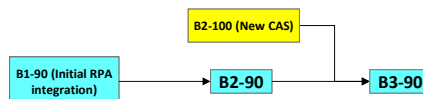


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B2-90 – RPA integration in traffic**B3-90 – RPA transparent management**

Summary	<p>Stepped improvements:</p> <ul style="list-style-type: none"> -B2: RPAS access to non-segregated airspace, refined RPAS operational procedures, standardized lost link procedures, working on detect and avoid technologies, moving RPAS toward full autonomous operations - B3: certification for RPAs in all classes of airspace, reliable C2 link, certified autonomous responses to potential incursions, airborne detection and avoidance, integration of RPA into aerodrome procedures
Main Performance Impact	Access & Equity, Capacity, Safety
Domain / Flight Phases	All phases of flight
Applicability Considerations	Region or sub-region



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Challenges - How to Get There?

- **Technical evolution towards Global ATM Concept**
 - Multi-facility (ATC, aircraft, airport) consistency
 - Network-wide effects increase interdependence & sensitivity of solutions to local situations & perturbations
 - Increased cooperation within regions to optimise synchronised deployments
 - Inter-regional flights & cooperation as cement
 - Particular care to non-nominal situations upstream in the work
 - Need for interoperability / new standards
- **Validate, demonstrate, standardise**

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Challenges - How to Get There?



- Ensure timely success of B0 & B1
 - As success story of an unprecedented global effort
 - As preparatory/initial steps (not requiring implementation of all modules)
 - To ensure availability of resources
- Agree on the way ahead and research programme
 - No implementation decision now!

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