International Civil Aviation Organization

Safety and efficiency performance framework - ASBU methodology-

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Presentation Outline

- Performance framework
  - Adoption by PIRGs and States, PFF
- Seamless global air navigation systems
  - Integration HQ /Regional work programme
- Why we need change
- Transition to ASBU approach
- Definition of ASBU methodology
- Incorporation of ASBU in Global Plan, Regional Plan and National Plan
- Feedback on ASBU and its rollout
- Upcoming Revised Global Plan - summary
- Comparative analysis of Current and upcoming Revised Global Plan

Performance Framework - Background

- In the 1990s the aviation industry was evolving into corporatized environment with greater accountabilities and consequently adopted a performance-based approach to planning
- Recognizing global developments, the Eleventh AN Conf (2003) and A35 (2004) called upon ICAO to develop a performance framework for air navigation systems
- ICAO in 2008 completed the development of relevant guidance material

Performance Framework: Regional/National Follow-up

- In 2008 all PIRGs adopted a regional performance framework and invited States to implement national performance framework for air navigation systems. Current methodology addresses ANSPs requirements only.
- ICAO is providing more guidance to States through a series of workshops world over
- All PIRGs are in the process of developing regional performance objectives, related Performance Framework Forms (PFFs) and metrics

PERFORMANCE FRAMEWORK FORM (for illustration purpose only)

PERFORMANCE OBJECTIVE ENHANCE ENROUTE AIRSPACE CAPACITY AND EFFICIENCY				
Performance Benefits				
Safety	• safety level maintained or improved			
Environment	• reduced green house gas emissions through shorter flights and use of optimum routes/trajectories			
Efficiency	• increased capacity through better utilization airspace resources			
Cost effectives	• fuel cost reduction through availability of more optimized routes/trajectories and ability of aircraft to conduct flight more closely to preferred trajectories			
Performance Measurement				
Metrics	• number of PBN routes implemented; • Percent difference between optimal and actual route • Number of aircraft entering a specified volume of airspace/hr • Pounds of fuel burn per operations			
Strategy **Medium term *(2011 - 2014)***				
ATM Operational Concept Components	**PROJECTS / TASKS**	**TIME FRAME START-END**	**RESPONSIBILITY**	**STATUS (as of ….)**
Airspace organization and management (AOM)	• formulate airspace concept and determine near term requirements for quick wins	May 2011 - October 2011	CAA/Country X	Database under preparation
	• analyze the en-route ATS route structure; reduce horizontal separation between aircraft			
	• implement PBN			
	• Implement WGS-84			
	• transition to new flight plan			
	• improve data and voice communications and enhance situational awareness			
Linkage to GPIs	GPI/5: performance-based navigation; GPI/7: dynamic and flexible ATS route management; GPI/8: collaborative airspace design and management; GPI/9: situational awareness; GPI/12: FMS-based arrival procedures; GPI/17 Data link applications; GPI/18 Aeronautical information; GPI/19 Meteorological systems; GPI/20 WGS-84; GPI/21 Navigation systems; and GPI/22 Communication infrastructure.			

VISION - A seamless, global air navigation system

Strategic Objectives – Safety and Environment/Sustainability

Major global programmes

Strategic Operational Improvements

Enhance navigation infrastructure

The incorporation of advanced aircraft navigation capabilities into the air navigation system infrastructure.

Related Operational Concept Components: AUO and AOM

HQ and Regional Work Programmes

Criteria for terminal separation minima

Continuous Descent Operations

RNP 2 in Oceanic airspace

RNAV 5 in all non-oceanic enroute airspace

PBN SIDs and STARs

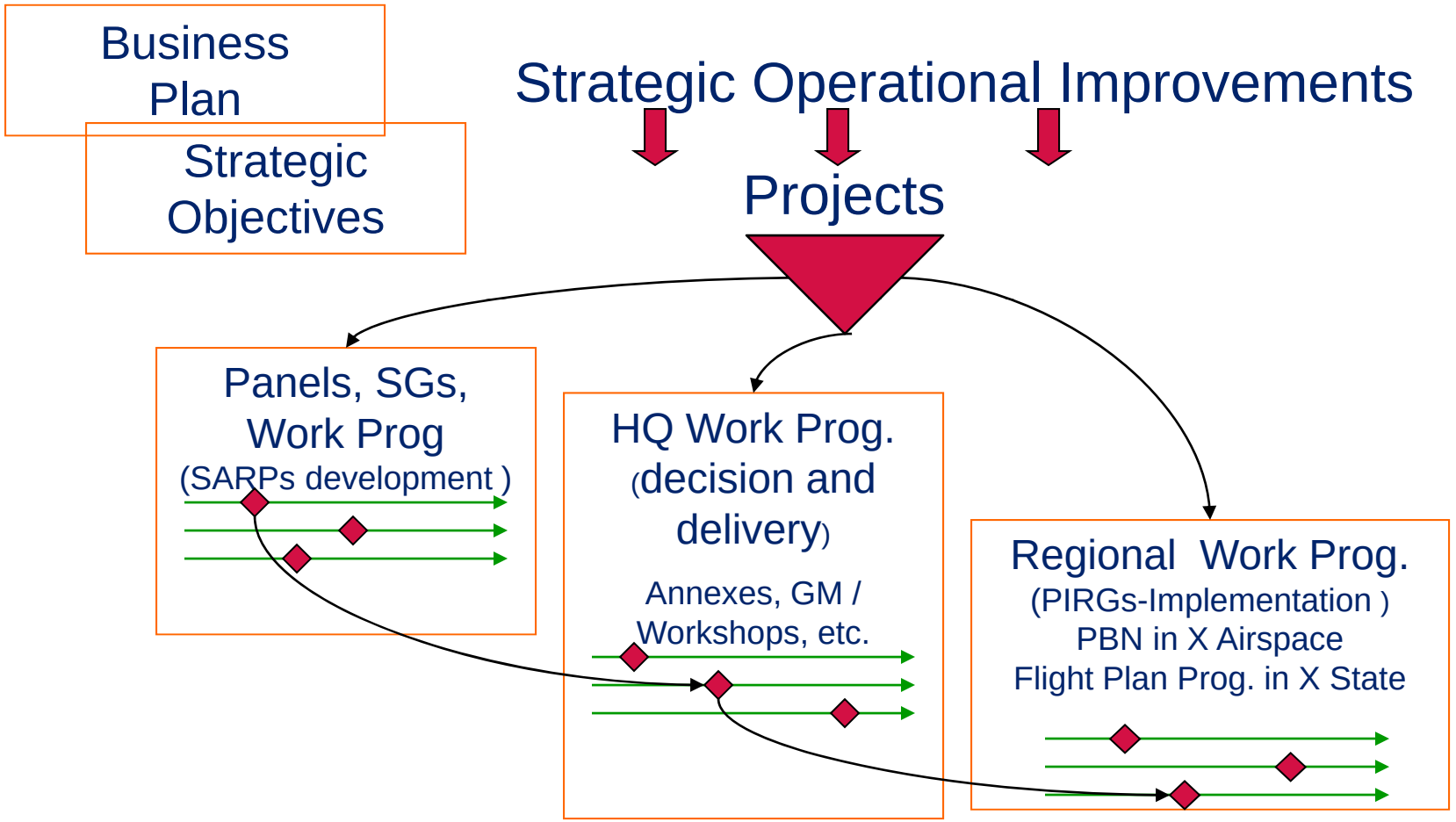
Resources

PIRGs

ANC Panels and

ANC Study groups

Integration of ICAO HQ & Regional Work Programmes



Directive from A37

- 37th Session of ICAO Assembly (2010) directed Organization to sustain its focus on safety and redouble its efforts to support global interoperability
- Consequently, ICAO established a Technical Team (TT) and corresponding Challenge Team (CT) to come together to develop Aviation System Block Upgrade concept
  - States/International organizations/ Industry/Standard making bodies are members of TT/CT

Why we need change

- The different regional/national ATM modernisation programmes, such as NextGen, SESAR or CARATS, share the fundamental principles expressed in the Operational Concept and Global Plan
- However, they cannot be spelled out in all details in the same way
- They are developed and governed and funded in the context of, and for, different audiences/stakeholders/culture
- They face different practical issues in terms of transition from legacy, specific business case etc
- This results in a large collection of disconnected and/or competing descriptions

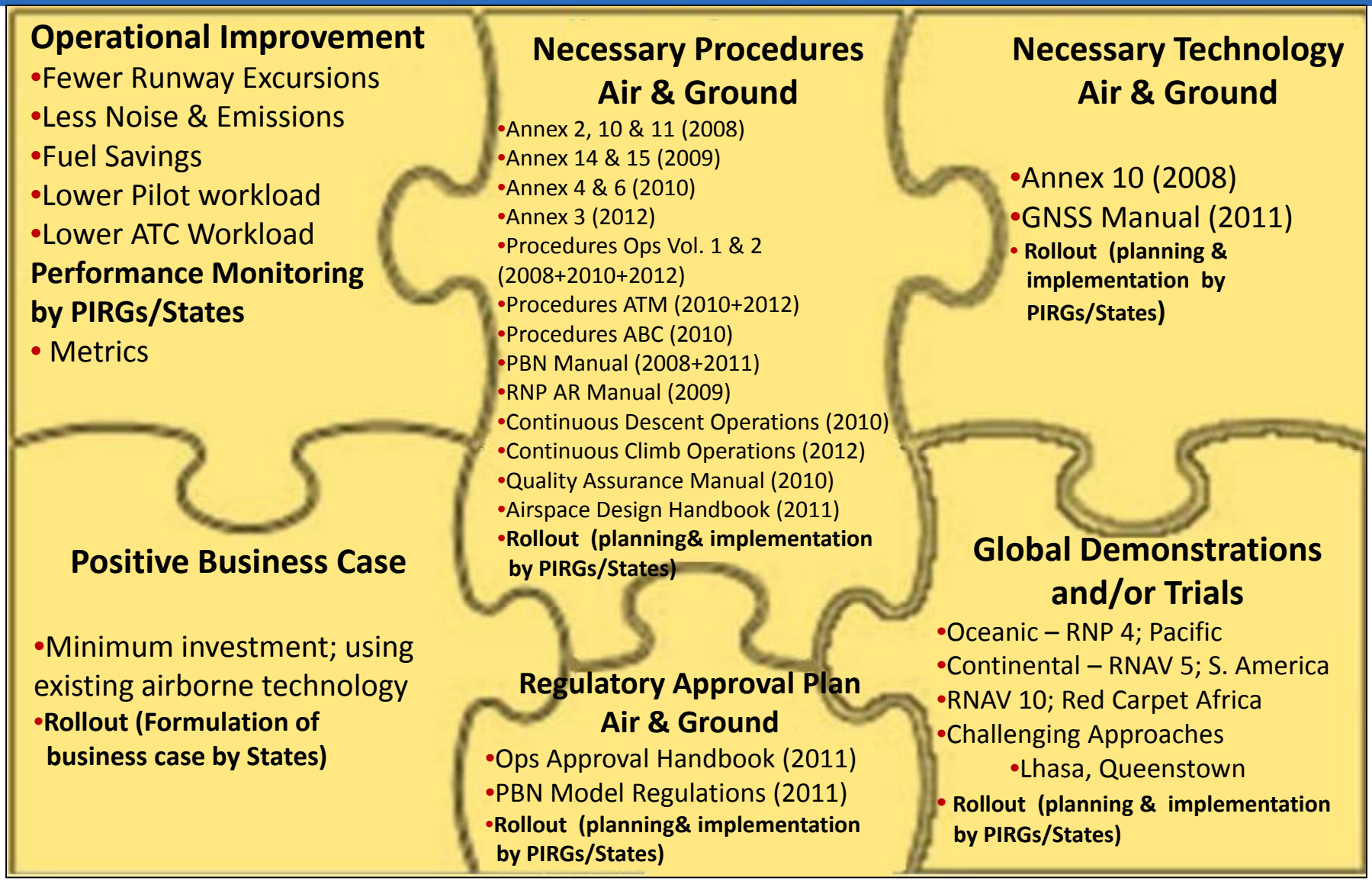
An inclusive approach is required

- Implementation of Performance based approach (PBA) by PIRGs and States in 2009 is on the basis of Global Air Navigation Plan
- Current planning methodology adopted by PIRGs covers only ANSPs requirements.
- We need an inclusive approach that employs Performance Framework and at the same time takes into account both ANSP and Aircraft requirements as well as Regulatory aspects
- This methodology is known as Aviation System Block Upgrade (ASBU)

Aviation System Block Upgrade – Definition

- What is an ‘Aviation System Block Upgrade’ (ASBU)?
  - Intended *Operational Improvement*/*Metric* to determine success
  - Necessary *Procedures*/Air and Ground
  - Necessary *Technology*/Air and Ground
  - Positive *Business Case* per Upgrade
  - *Regulatory Approval* Plan/Air and Ground
  - *Well understood* by a Global Demonstration Trial
    - All synchronized to allow initial implementation
    - Won’t matter ***when or where*** implemented

Performance-based Navigation: An example of ASBU approach



ASBUs description

- ASBUs address ANSP, Aircraft and Regulatory requirements
- Comprises of 4 key Performance Improvement Areas (PIA):
  - Greener Airports
  - Globally Interoperable Systems and Data
  - Optimum Capacity and Flexible Flights
  - Efficient Flight Path
- Each PIA has 4 Blocks (Blocks 0,1,2 and3)
- Each block has a number of corresponding modules described in standardized templates

ASBU- Definition of Blocks

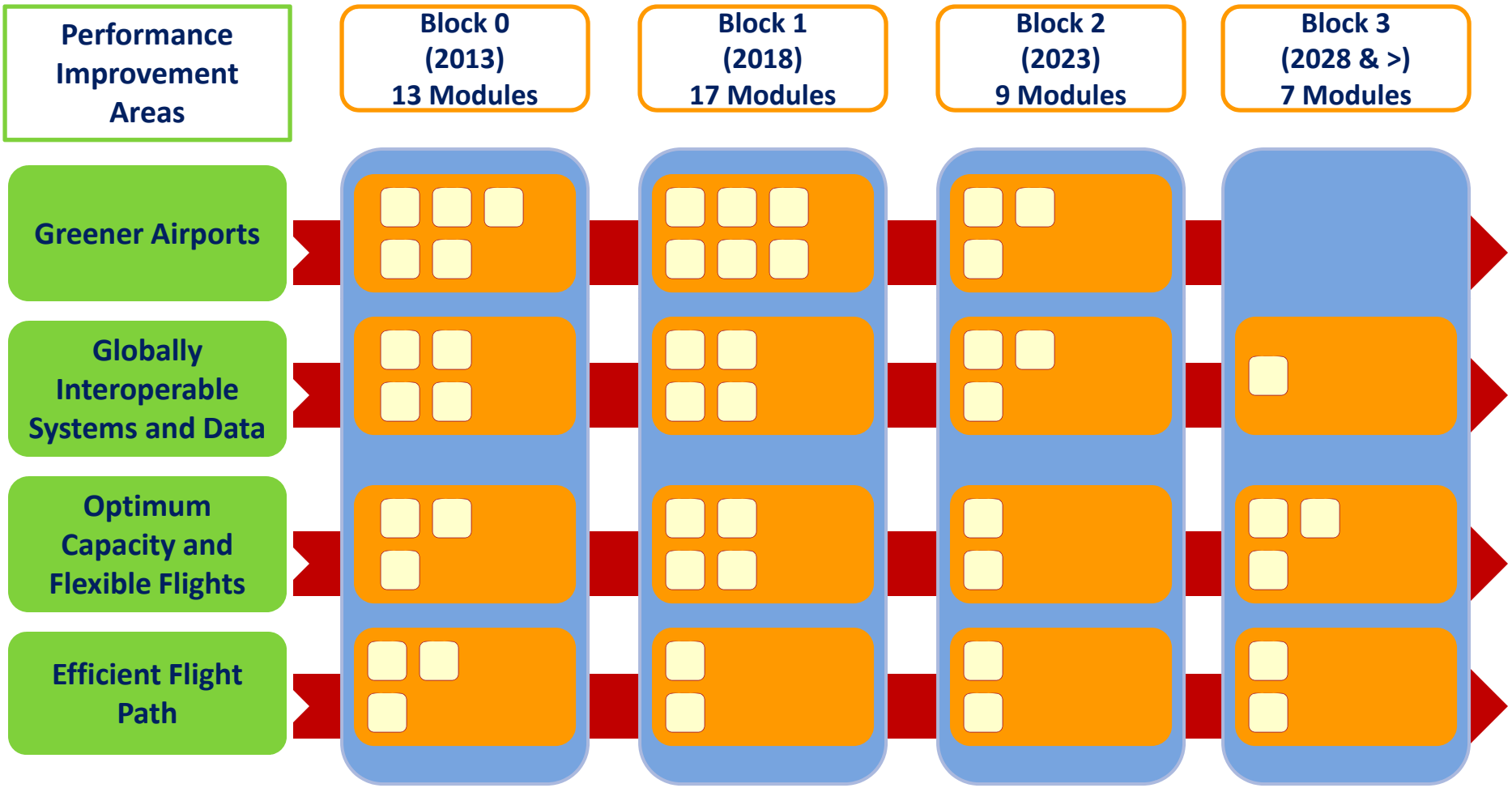
- **Block 0 – Baseline (13 modules): 2013**
- **Block 1 (17 modules): from 2018**
- **Block 2 (9 modules): from 2023**
- **Block 3 (7 modules): from 2028/beyond**

- Block “0” optimizes current onboard equipage and provides baseline
  - ICAO Gap analysis is underway for any missing elements impeding implementation and will be presented to upcoming GANIS

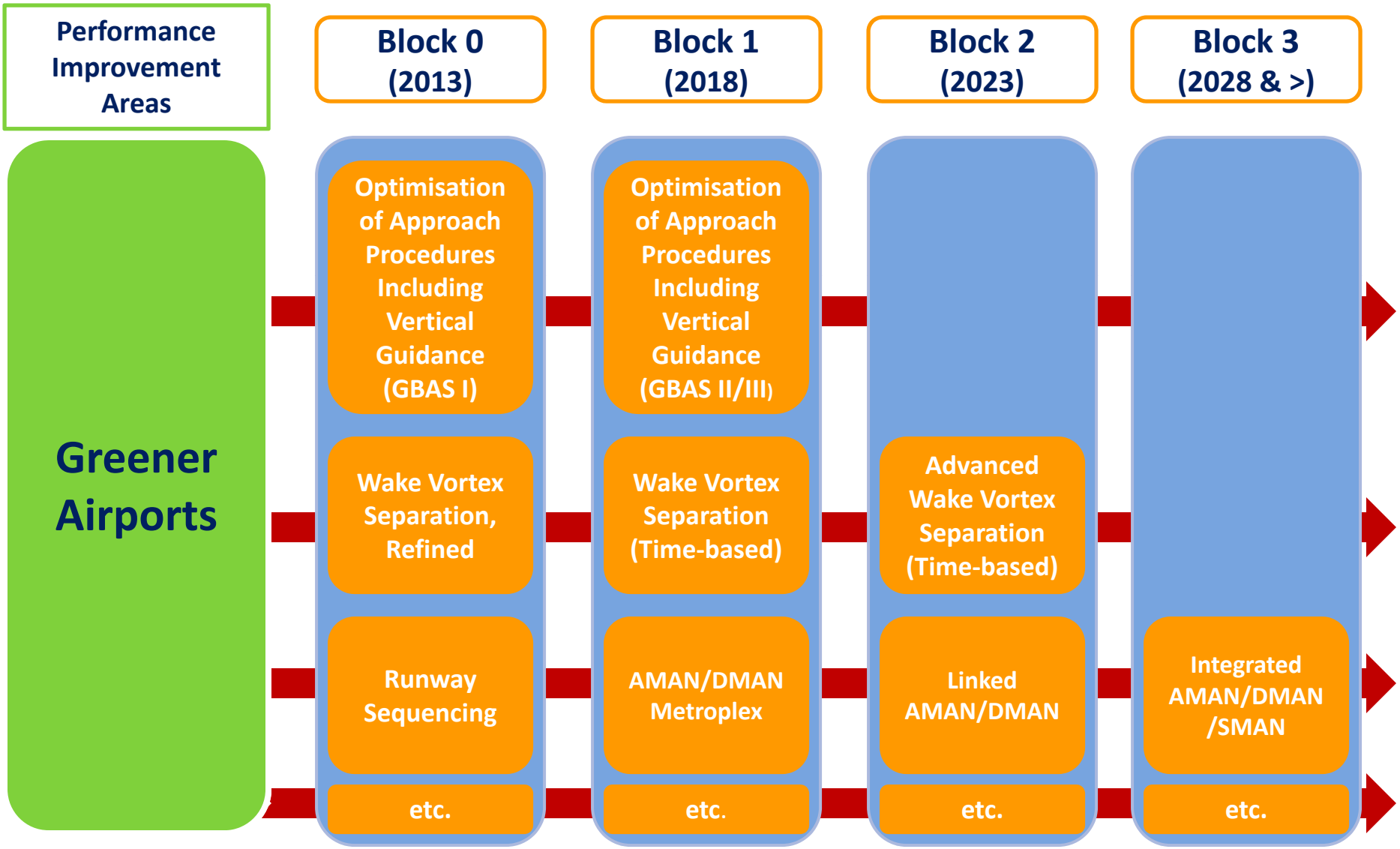
ASBU – Explanation of Blocks

- A Block is a deployable performance package or capability, or an opportunistic grouping as well.
- A block should propose an understandable performance benefit, related to a change in operations, supported by procedures, technology, regulation/standards as necessary and a positive business case.
- A block should not be seen in isolation or as a final achievement.
- Each block, comprising of number of modules, deliver progress and creating the basis for the subsequent improvements.

Improvement Areas, Blocks & Modules



Example of Mapping



Summary of ICAO's 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

ICAO's ASBU Approach – Inclusion in Global Plan, Regional Plans and National Plans

- **Revised Global plan will have an explanation of ASBU methodology as well as all templates of the modules of different Blocks**
- **In terms of Regional Plans, the ASBU methodology will be included in the FASID tables that reflects ANSP, Aircraft and Regulatory requirements**
- **For the National Plans, the Performance Framework Form (PFF) will be amended appropriately to reflect ANSP, Aircraft and Regulatory requirements**

ASBU -Feedback
GANIS: 21-23 September 2011

- ICAO will host a GANIS (Global Air Navigation Industry Symposium) which provides the opportunity to:
  - Outline Aviation System Block Upgrades to int'l community to gain their buy in and get their feedback
  - ASBU working document is uploaded to ICAO/GANIS website
  - States/IOs to provide comments on ASBU document through feedback form available on GANIS website.
  - Also reviews CNS, AIM and Avionics roadmaps

Sealing the Global Deal for One Sky
12 ANConf :19-27 November 2012

- **ICAO 12th Air Navigation Conference**
  - Will approve a revised Global Air Navigation Plan that includes ASBU methodology
  - Agreement on CNS, AIM and Avionics Roadmaps
- ICAO will also rollout ***electronic*** **Regional Air Navigation Plans** which will:
  - Provide web based real time data and transparency at the regional level
  - Include ASBU approach (ANSP, Aircraft and Regulatory requirements) by reflecting appropriate changes to FASID tables

ASBU- Rollout

- 2 days Regional Seminars
  - Europe TBD
  - Asia/Pacific Completed
  - CAR/SAM Fall 2011
  - Middle East TBD
  - Africa TBD
- 5 days National Workshops
  - Planned under SIP mechanism for all regions from January to September 2012 as a preparation leading to 12 ANConf

Upcoming Revised Global Air Navigation Plan (GANP)- Summary

- **New Revised GANP will be presented to 12 ANConf**
- **Synergies between GANP and Global Aviation Safety Plan (GASP)**
  - 4 page umbrella document will appear in both GANP and GASP
  - A paragraph referring to GASP will be included in the Foreword of GANP and vice-versa; provide a similar look to GANP/GASP docs
  - A linkage will be established between GPIs/GSIs
- **Contents of New GANP :**
  - Global planning methodology including ASBU approach
  - Explanation of GPIs
  - Appendices include – ASBU templates for all modules; BORPC; CNS, AIM and Avionics Roadmaps; sample PFF; guidance on environment, air transport issues, CBA/BC, TC matters and competency based training guidance

International Civil Aviation Organization

GLOBAL AIR NAVIGATION PLAN

Comparative Analysis of Current and Upcoming Revised Versions

What is new in the revised Global Plan?

International Civil Aviation Organization

No	Current version (Nov 2006)	Upcoming revised version (Nov 2012)
1	Covers only Air Navigation Service Providers (ANSP) Requirements	Expands to Regulatory and Aircraft requirements
2	P (paper)–based	E (electronic)–based

What is new in the revised Global Plan?

International Civil Aviation Organization

No	Current version (Nov 2006)	Upcoming revised version (Nov 2012)
3	Does not support planning tools for its implementation	Number of planning tools (software, web-based, project mgt, etc.) available
4	Addresses individual improvements	Addresses a package of improvements

What is new in the revised Global Plan?

International Civil Aviation Organization

No	Current version (Nov 2006)	Upcoming revised version (Nov 2012)
5	No individual roadmap for enablers	Separate roadmaps for C, N, S and AIM Included
6	Aircraft equipage not specified	Avionics roadmap included

What is new in the revised Global Plan?

International Civil Aviation Organization

No	Current version (Nov 2006)	Upcoming revised version (Nov 2012)
7	Module description for ATM Improvements/Enablers not available	Detailed description in a template format is included for each module
8	BORPC that provides high level strategy is not part of Global Plan	BORPC is explained in this revised plan

What is new in the revised Global Plan?

International Civil Aviation Organization

No	Current version (Nov 2006)	Upcoming revised version (Nov 2012)
9	Global plan was not presented to Industry forum	Global Plan reviewed by GANIS
10	Implementation was based on near term and medium terms	Implementation is based on Blocks (Block 0, 1, 2 and 3)

What is new in the revised Global Plan?

International Civil Aviation Organization

No	Current version (Nov 2006)	Upcoming revised version (Nov 2012)
11	Performance improvement areas not specified	Four Performance Improvement Areas have been designated
12	Limited guidance on performance framework	Detailed guidance on performance framework and PFF template included

What is new in the revised Global Plan?

International Civil Aviation Organization

No	Current version (Nov 2006)	Upcoming revised version (Nov 2012)
13	Supported by paper based Regional ANPs	Supported by web based Regional ANPs
14	Quantification of fuel savings and corresponding environmental benefits is not available	ICAO Fuel Savings Estimation Tool (IFSET) will be a part of the revised global plan

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