International Civil Aviation Organization
North American, Central American and Caribbean Office (NACC)
**First Eastern Caribbean Civil Aviation Technical Group Meeting
(E/CAR/CATG/1)**
Martinique, French Antilles, France, 19 to 21 June 2013

Agenda Item 4   **Air Navigation Matters**
                      **4.2   Follow-up on the implementation of the NAM/CAR Regional
                      Performance Based Air Navigation Plan (RPBANIP) in Eastern
                      Caribbean**

**NAM/CAR REGIONAL PERFORMANCE BASED AIR NAVIGATION IMPLEMENTATION
PLAN (RPBANIP) METRICS, ACHIEVEMENTS AND NEW REPORTING FORMS TO ADOPT**

(Presented by the Secretariat)

SUMMARY
This Working Paper presents a briefing on the metrics and achievements made with the Regional Performance Based Air Navigation Implementation Plan for the NAM/CAR Regions (NAM/CAR RPBANIP) and ICAO new reporting forms to be adopted.

References:
• 33rd Eastern Caribbean Working Group (E/CAR/WG/33) Meeting, Barbados, June 2012 • ASBU Framework: Planning, Implementation and Monitoring Workshop, ICAO NACC Regional Office, Mexico City, Mexico, 22 to 26 July 2013 • NAM/CAR Regional Performance Based Air Navigation Plan (NAM/CAR RPBANIP) http://www.mexico.icao.int/RegionalGroups/NAMCARRPBANIPV02May2011en.pdf

| ***Strategic Objectives***	*This working paper is related to Strategic Objectives A and C.*

1.   Introduction

1.1   During the E/CAR/WG/33 Meeting, a review of the benefits and achievements was made as reported to the NACC/DCA/4 Meeting. **Appendix A** shows the benefits and achievements made based on the performance metrics adopted.

1.2   Similarly the E/CAR/WG/33 Meeting was informed that as part of the measurement process, ICAO will introduce a Global Air Navigation Report (Global AN Report) for air navigation systems, starting in 2013, through which States may establish a mechanism for data collection, processing and storage and to provide the information to the ICAO NACC Regional Office for the identified regional performance-based metrics.

2.   Discussion

2.1   The RPBANIP was a major step towards adopting a performance based approach to Air Navigation services and systems. In essence, this Performance Framework encounters a set of principles, requirements, terminology, describes the building blocks/tools and is used by ATM community members to collaborate and cooperate on performance driven activities/tasks.
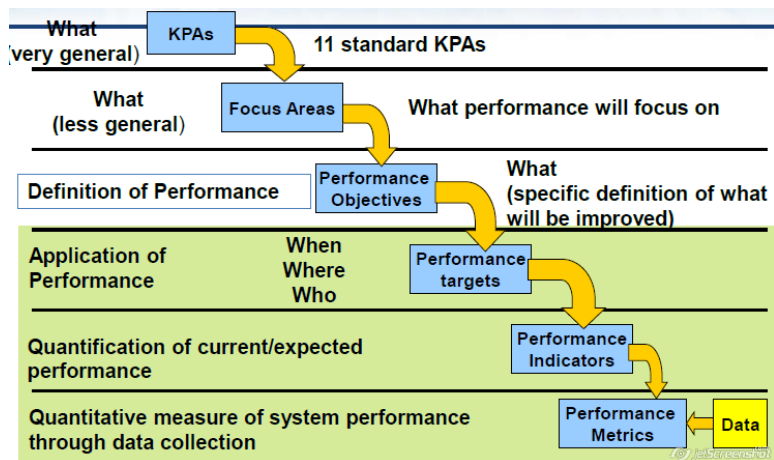
2.2   The performance approach adopted should consider the gap analysis, safety analysis and economic analysis for deciding to implement.
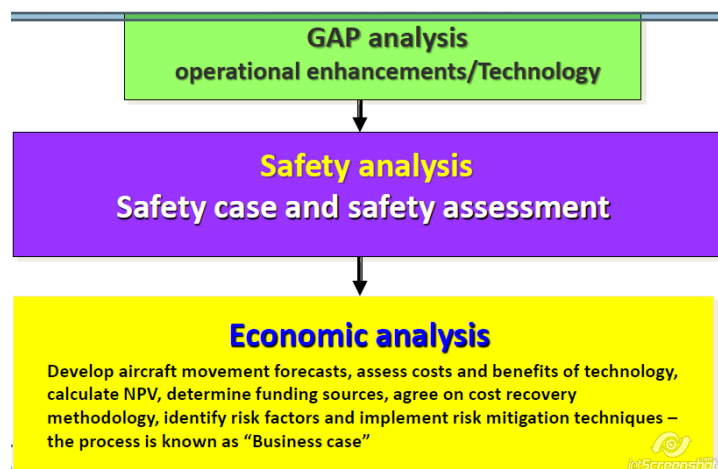
2.3   **Appendix B** shows a briefing on performance based approach.

2.4   In this Performance Framework of the RPANIP, even though benefits and achievements are reported based on a set of metrics, it is necessary to establish measurement and a reporting strategy: While regionally we are progressively identifying a set of regional performance indicators and supporting metrics, States have recognized that data compilation, processing, storage and reporting for the identified regional performance metrics are fundamental to success of the performance-based approach. States are expected to support the ICAO Regional Office by providing the requisite information to demonstrate operational improvements; and States, that have not yet done so, to establish a performance measurement strategy for their air navigation system.


2.5   An annual global Air Navigation Report will be implemented by ICAO based on the individual regions information. This report will represent the global Performance Monitoring, allowing the comparison progress across regions for therefore the adjust of ICAO work programme and States improvements.

2.6   This report will be link and graphically available for States, making use of the existing and new graphic applications.

2.7   Air Navigation Report Form (ANRF) will be implemented. ANRF is a management tool for planning, implementation and monitoring/reporting.

2.8   As part of monitoring/reporting phase, States shall establish the corresponding implementation indicators and benefits metrics for KPAs such as Access, Capacity, Efficiency, Environment and Safety.
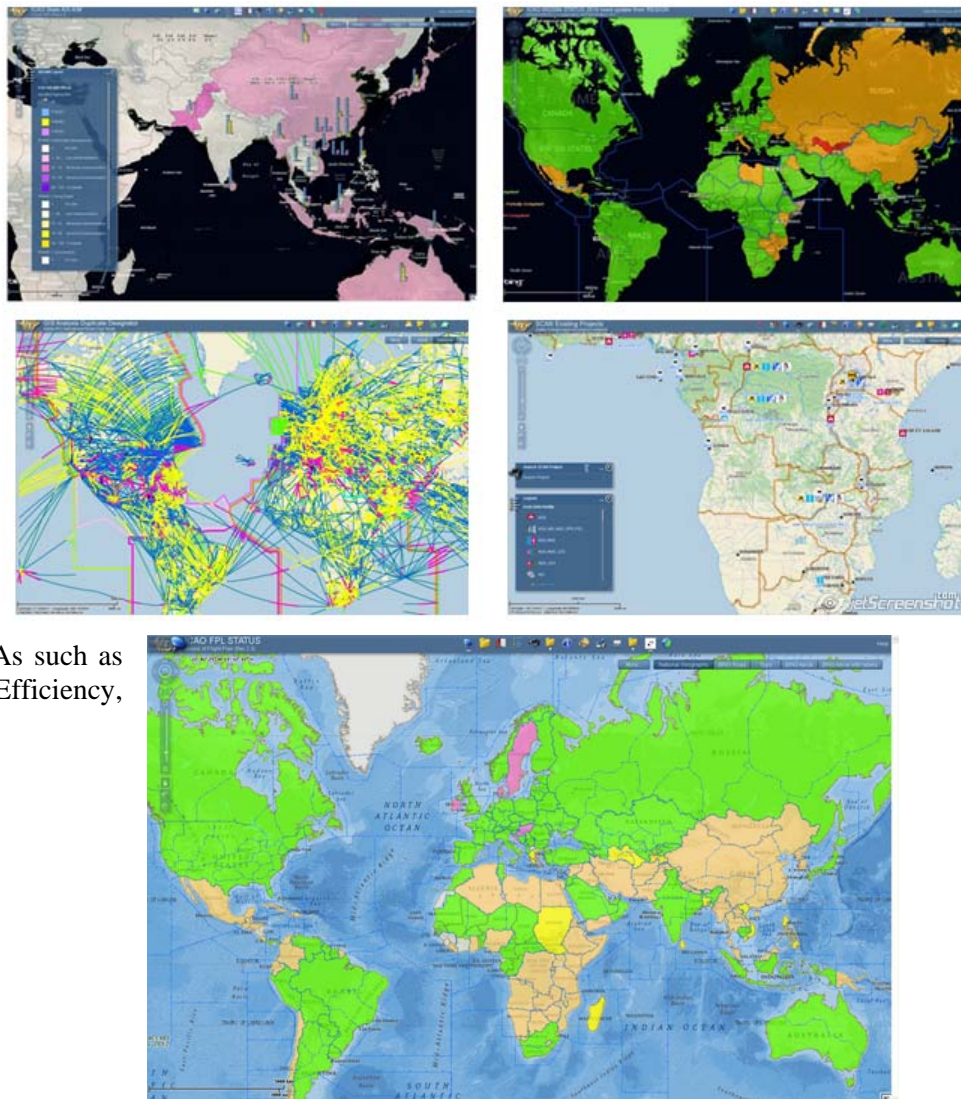
Regional Reporting ANRF and Dashboard

2.9   Together with the ANRF, a dashboard application will be implemented. The Dashboard will show targeted performance at the regional level and will, initially, contain graphics and maps with a planned expansion to include the Aviation System Block upgrades (ASBU) Block 0 Modules. This new interactive online system will be in place in January 2014 and will be updated at regular intervals.

2.10   Methodology for reporting States to send data to RO through Air Navigation Report Form (ANRF) or equivalent form/on ongoing basis RO will consolidate data from all States and publish through Regional Performance Dashboard /on ongoing basis. HQ will consolidate data from all ROs and publish Global Air Navigation Report/annually.

2.11   **Appendix C** presents more details on the development of the ANRP and the rollout plan of the dashboard application.

*Migration of Performance Framework Form (PFF) to ANRF*

2.11   The current Performance Framework Form (PFF) will be redesigned and aligned with ASBU framework, becoming the Air Navigation Report Form (ANRF). ANRF will be the basis for performance reporting of the ASBU implementation.

2.12   The ANRF templates for all the 18 Modules of ASBU Block 0 will be available in the upcoming Regional eANP.

2.13   During the upcoming ASBU framework workshop in July, the development of ANRF will be conducted as part of the on hands exercises.
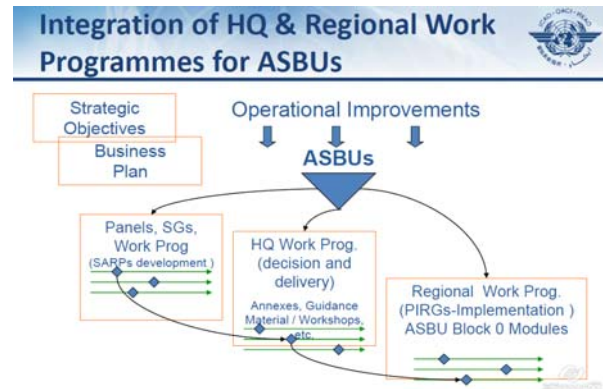
2.14   The first Annual AN Report is scheduled for 2014 as illustrated below:
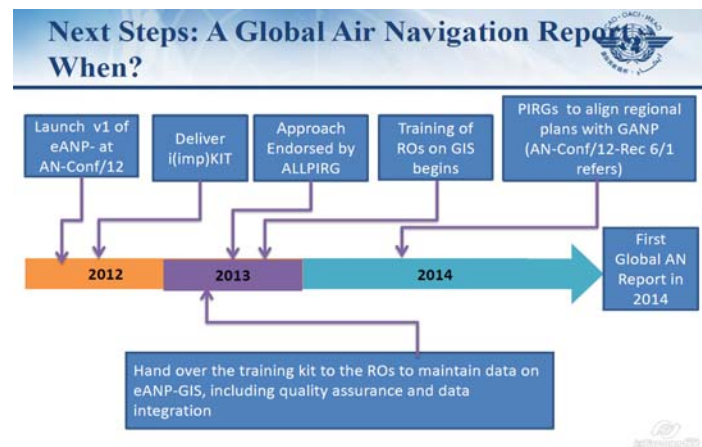
3.   Suggested Action

3.1   The Meeting is invited to:

a)   Take note of the ICAO planning on performance monitoring;

b)   Review and updates the benefits and achievements made based on the RPBANIP taking as reference the information contained in Appendix A; and

c)   Take any action deemed necessary.

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METRICS AND ACHIEVEMENTS: E/CAR SUB REGION - May 2011

Key Performance Area and Corresponding Metrics	FIR							
	PIARCO					SAN JUAN		
	OECS **	Barbados	Trinidad and Tobago	France (Guadalupe and Martinique)	UK (Montserrat)	Sint Maarten, St Eustatius and Saba	UK (Anguilla, British Virgin Islands - BVI)	United States (Puerto Rico and Virgin Islands)
• Percentage of instrument runway ends with an approach procedure with vertical guidance (APV), (BARO-VNAV and/or augmented GNSS) either as the primary approach or as a back-up for precision approaches; • PBN Routes implemented and published in en-route; • Number of terminal areas with SID/STAR implemented.	Dominica, Saint Kitts y Nevis, Santa Lucia: RNAV (GNSS) = 6	RNAV: 2 SIDs, 2 APPs (RNP) = **4**	RNAV GNSS: 4 APPs (RNP) = **4**	RNAV GNSS: 4 STARs, 2 APPs (RNP) = **6**		RNAV GNSS: 1 SIDs, 3 STARs, 1 APP (RNP) = **5**		RNAV (GPS): 8 SIDs, 10 STARs, 10 APPs (RNP) = **28**

**: OECS: Antigua and Barbuda, Dominica, Grenada Saint Kitts y Nevis, Saint Lucia, Saint Vincent and the Grenadines

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APPENDIX A

APPENDIX B

Performance Framework Briefing

General consideration

1. Based on the ICAO Global ATM Operational Concept: To achieve an interoperable global ATM System for all users during all phases of flight that:

    - ✓ meets agreed levels of safety
    - ✓ provides for optimum economic operations
    - ✓ is environmentally sustainable
    - ✓ meets national security requirements

Background on Performance Framework

a) Eleventh Air Navigation Conference, held in September 2003, urged ICAO to develop a performance framework for Air Navigation Systems

b) 35th Session of the ICAO Assembly, held in September 2004, adopted Resolution A35-15, App B and urged ICAO to ensure that the future global ATM system is performance based and that the performance objectives and targets for the future system are developed in a timely manner

Performance Framework Principles

- ✓ Focuses on results –through adoption of performance objectives and targets
- ✓ Encourages collaborative decision making
- ✓ Relies on facts and data for decisions
- ✓ Emphasizes on performance monitoring

Performance Framework Requirements

1. Once an organization, State or a region has adopted performance based planning, it must acknowledge the following :
    - ✓ Commitment (at the top)
    - ✓ Agreement on goals (desired results)
    - ✓ Responsibility (who is accountable)
    - ✓ Human resources and know-how (Culture & Skills)
    - ✓ Data collection, processing, storage and reporting
    - ✓ Collaboration and coordination (with other partners)
    - ✓ Cost implication (what does it cost)

Performance Framework Advantages

- ✓ Result oriented, transparent and promotes accountability
- ✓ Shift from prescribing solutions to specifying performance
- ✓ Employs quantitative and qualitative methods
- ✓ Avoids a technology driven approach
- ✓ Allows optimum resource allocation

Performance Framework Terminology

- ✓ Expectation or Key Performance Area
    - o 11 expectations are defined in the ATM Global Operation Concept
    - o Access/Equity, Capacity, Cost-effectiveness, Efficiency, Environment, Flexibility, Global, interoperability, Participation by the ATM community, Predictability, Safety and Security
- ✓ Focus Area
    - o Focus areas may be defined as areas where performance must be addressed in any given KPA.
    - o For example, in the safety KPA, focus may be in such areas as CFIT accidents, runway incursions. For capacity, focus area could be enroute airspace or terminal airspace.
- ✓ Performance Objective
    - o Each expectation should be reached through a set of specific, measurable, achievable, relevant and timely (SMART) performance objectives
    - o Performance Objectives is defined in a qualitative way - a desired trend from today's performance (e.g. improvement), within a well specified ATM planning environment. In other words it is a high level statement of outcome that satisfies ATM community expectations.
    - o Example : In ASBU approach the module itself becomes performance objective – ASBU B0-RSEQ: Improve traffic flow through runway sequencing
- ✓ Performance Target
    - o A set of agreed numerical values of related performance indicators, representing the minimum performance levels at which an objective is considered to be 'achieved'.
    - o Example: Ten percent increase in the capacity of terminal airspace.
- ✓ Performance Indicator
    - o Indicators are defined when there is a need to document current performance levels and progress in achieving an objective. It is a measure of progressive achievement of performance objective.
    - o Example: Three percent increase in the capacity of terminal airspace
- ✓ Performance Metric
    - o Metrics are quantitative measures of system performance – through data.
    - o Example: Number of movements per day per aerodrome; Kilograms of fuel saved per operation; Kilograms of CO_2 emissions reduced per operation.

Performance measurement (Success of global air navigation system implementation)

- o Based on outcomes
- o Meet 11 expectations of ATM Community
- o Each PIRG will choose measurable metrics related to KPAs

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Air Navigation Reporting Process

- PIRGs are progressing with planning and implementation of ASBUs

- The next step calls for an air navigation performance measurement, monitoring and reporting strategy.

- Methodology for reporting
  - States to send data to RO through Air Navigation Report Form (ANRF) or equivalent form/on ongoing basis
  - RO will consolidate data from all States and publish through Regional Performance Dashboard /on ongoing basis
  - HQ will consolidate data from all ROs and publish Global Air Navigation Report/annually

Air Navigation Reporting
What is ANRF?

- The current Performance Framework Form (PFF) has been redesigned and aligned   with ASBU framework and called the Air Navigation Report Form (ANRF)

- ANRF will be the basis for performance reporting of the ASBU implementation

- The ANRF templates for all the 18 Modules of ASBU Block 0 will be available in the upcoming Regional eANP.

PFF re-designated as ANRF

REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – B0-CDO: Improved Flexibility and Efficiency in Descent Profiles (CDO) Performance Improvement Area 4: Efficient Flight Path – Through Trajectory-based Operations				
ASBU B0-CDO: Impact on Main Key Performance Areas (KPA)				
	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	Y	Y

ASBUB0- CDO: Implementation Progress	
Elements	Implementation Status (Ground and Air)
1. CDO	
2. PBN STARs	

ASBU B0-CDO: Implementation Roadblocks/Issues				
Elements	Implementation Area			
	Ground Implementation	Air Implementation	Procedures Availability	Operational Approvals
1. CDO				
2. PBN STARs				

PFF re-designated as ANRF

ASBU B0-CDO: Performance Monitoring and Measurement (Benefits)	
Key Performance Areas	**Performance Metrics**
Access & Equity	Not applicable
Capacity	Not applicable
Efficiency	Kilograms of fuel saved per flight
Environment	Kilograms of CO_2 emissions reduced per flight (= KGs fuel saved per flight x 3.157)
Safety	Number of controlled flight into terrain (CFIT) incidents/accidents

ASBU B0-CDO: Performance Monitoring and Measurement (Implementation)	
Elements	**Implementation Indicators/Metrics**
1. CDO	Percentage of international aerodromes/TMAs with CDO implemented
2. PBN STARs	Percentage of international aerodromes/TMAs with PBN STARs implemented

Regional Reporting
Regional Performance Dashboard

- Transparency and sharing of information are fundamental to a safe and efficient global air transportation system.

- Consistent with this principle, the Organization is introducing "Regional 'Performance Dashboard' - the homepages for every public website of the ICAO Regional Offices.

- These dashboards will illustrate the regional implementation status relating to the strategic objectives on Safety, Air Navigation Capacity and Efficiency, and Environmental Protection.

Regional Performance Dashboard Definition

- The Dashboard will show targeted performance at the regional level and will, initially, contain graphics and maps with a planned expansion to include the Aviation System Block upgrades (ASBU) Block 0 Modules.

- This new interactive online system will be in place in January 2014 and will be updated at regular intervals.

- Dashboard will be user friendly and able to deliver the message at glance.

Regional Performance Dashboard
Proposed Format – Home page of ICAO RO website

GENERAL FORMAT

Regional Directors responsible for the **selected UN Region**

For Safety:
Effective Implementation
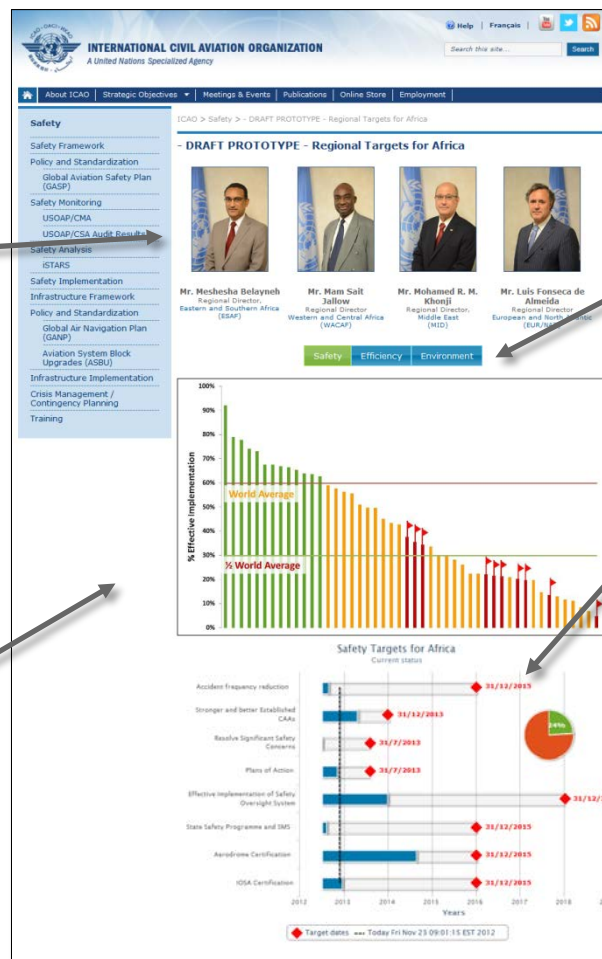(No State names)
For Efficiency:
Air Navigation Implementation
(by State)
For Environment:
Fuel savings and CO2 reduction
(by State)

Regional Performance by **Strategic Objective**

Regional Performance Indicators

Message:

Provide the status of **Safety**, **Efficiency**, *and* **Environment** *for the Region*

Regional Performance Dashboard Indicators/metrics for Safety

SAFETY

Metrics

1. **Safety Oversight**
   Effective Implementation by State

2. **Accidents and serious incidents**
   Number of accidents per million departures

3. **Runway Excursions and Incursions**
   Runway excursion and incursion accidents as a percentage of all accidents

4. **Aerodrome certification**
   Number of certified international aerodromes

5. **SSP/SMS Implementation**
   Implement Phase 1 of State Safety Programmes (SSP) and ensure that all Service Providers implement a Safety Management System (SMS)

Regional Performance Dashboard Indicators/metrics for Air Navigation

AIR NAVIGATION

Metrics

1. **PBN TERMINAL**
   % of international aerodromes with APV

2. **PBN ENROUTE**
   % of PBN routes/airspaces

3. **CDO**
   % of international aerodromes/TMAs with CDO

4. **CCO**
   % of international aerodromes/TMAs with CCO

5. **Estimated Fuel Savings/ C02 Emissions Reduction Based on IFSET**

6. **ATFM**
   % of ATS Units/international aerodromes providing ATFM service

7. **AIM**
   % of needed elements (from AIS to AIM Roadmap) facilitating the transition from AIS to AIM that have been implemented – PHASE I

Regional Performance Dashboard Roll-out plan

- **Step 1: identify a set of indicators for safety, efficiency and environment**

  - **Initial set of indicators was agreed by PIRG-RASG Chairs in a coordination meeting held in Montreal on 19 March 2013.**

- **Step 2: Seek endorsement from the 38th Session of ICAO Assembly in September 2013**

- **Launch initial version of the Dashboard in January 2014**