

# Online Reporting Cycle

## REPORTS

Attributs

ACTIVITY AIR, ANS, LEG, OPS, PEL

1) STATE Sample State

2) CITIES Sample City

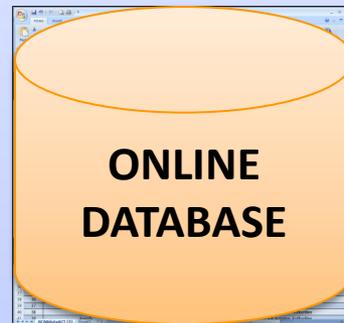
4) PROVIDER Sample Provider

5) FUNDING Sample Funding

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ONLINE

## DATA



ONLINE

## ANALYSIS



ONLINE

# Today - One Common Interface

## Tomorrow – on ICAO Website



Internet Browser

<http://gis.icao.int>



The screenshot shows the ICAO Public Maps website. The header includes the ICAO logo and the tagline "Uniting Aviation on Safety | Security | Environment". Navigation links for "Carousel", "Mobile", "Explain Mobile", and "ICAO MAP GALLERY" are present. The main content area is titled "ICAO Maps and Web Applications" and contains a search bar and a grid of map thumbnails. The thumbnails include "ICAO Language ...", "ICAO Flight Plan Status", "ICAO SCAN", "ICAO SUPPS 7030", "need Flash ICARD5LNC", and "ICAO ICARD5LNC". A right-hand sidebar lists "ICAO GIS Content" and "More ICAO" resources.

**Public Maps ICAO** Carousel Mobile Explain Mobile ICAO MAP GALLERY  
Uniting Aviation on Safety | Security | Environment

### ICAO Maps and Web Applications

The ICAO Public Map Gallery is a collection of web based maps for the Aeronautical World. Find out more about ICAO GIS by viewing the gallery below.

Search maps [Q] [Grid/Menu]

- ICAO Language ...
- ICAO Flight Plan Status
- ICAO SCAN
- ICAO SUPPS 7030
- need Flash ICARD5LNC
- ICAO ICARD5LNC

#### ICAO GIS Content

ICAO introduces a new ICAO MAP GALLERY: ICAO Server site  
<http://gis.icao.int/gallery/>  
a part of its electronic Global Air Navigation Planning (eGANP) initiative.

#### More ICAO

- ICAO ArcGIS.com Group
- ICAO Map services on ArcGIS Explorer Online
- Esri Airports GIS Package
- Buy ICAO FIR DATA
- ISTARS
- ICAO Online Store
- List of AIPs online
- Map ICAO LPR
- Map ICAO AISAIM

Map ICAO AISAIM

# A Gallery of Information



Public Maps

# ICAO

Uniting Aviation on  
Safety | Security | Environment

Carousel

Mobile

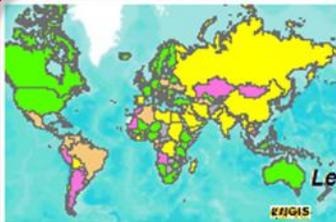
Explain Mobile

ICAO MAP GALLERY

## ICAO Maps and Web Applications

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LPR



ICAO Language ...



need Flash ICAO Language ...



## ICAO GIS Content

ICAO introduces a new ICAO MAP GALLERY: ICAO Server site  
<http://gis.icao.int/gallery/>  
a part of its electronic Global Air Navigation Planning (eGANP) initiative.

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- [ISTARS](#)
- [ICAO Online Store](#)
- [List of AIPs online](#)
- [Map ICAO LPR](#)
- [Map ICAO AISAIM](#)

# Near Real-Time Results



Public Maps

**ICAO** ICAO LPR ICAO AISAIM WGS-84  
Uniting Aviation on  
Safety | Security | Environment

## ICAO Flight Plan Status

ICAO Flight Plan must be implemented around 15 Nov 2010

Locate an address

Legend

About

### About this map

TRUE WEB SITE:

<http://gis.icao.int/FPL>

Accessible via desktop  
Mac or PC, laptop  
browser interfaces: IE  
7, IE 8, Mozilla, Google  
Chrome and other...

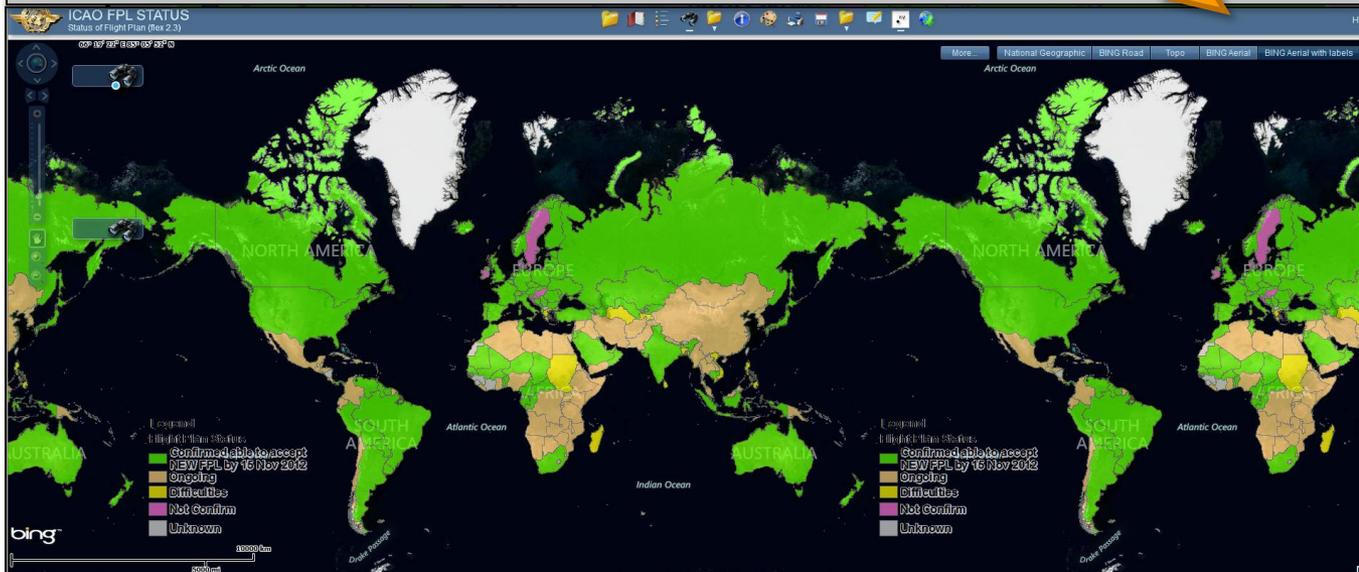
On IPAD **download**  
**apps ArcGIS** By ESRI  
(app for IPAD)  
<http://itunes.apple.com/ca/mt=8>

In the search MAP  
function Type "**ICAO**"  
Enter you find all the  
ICAO services

Select the ICAO MAP  
services you want, **click**  
**on more** to obtain  
other ICAO services

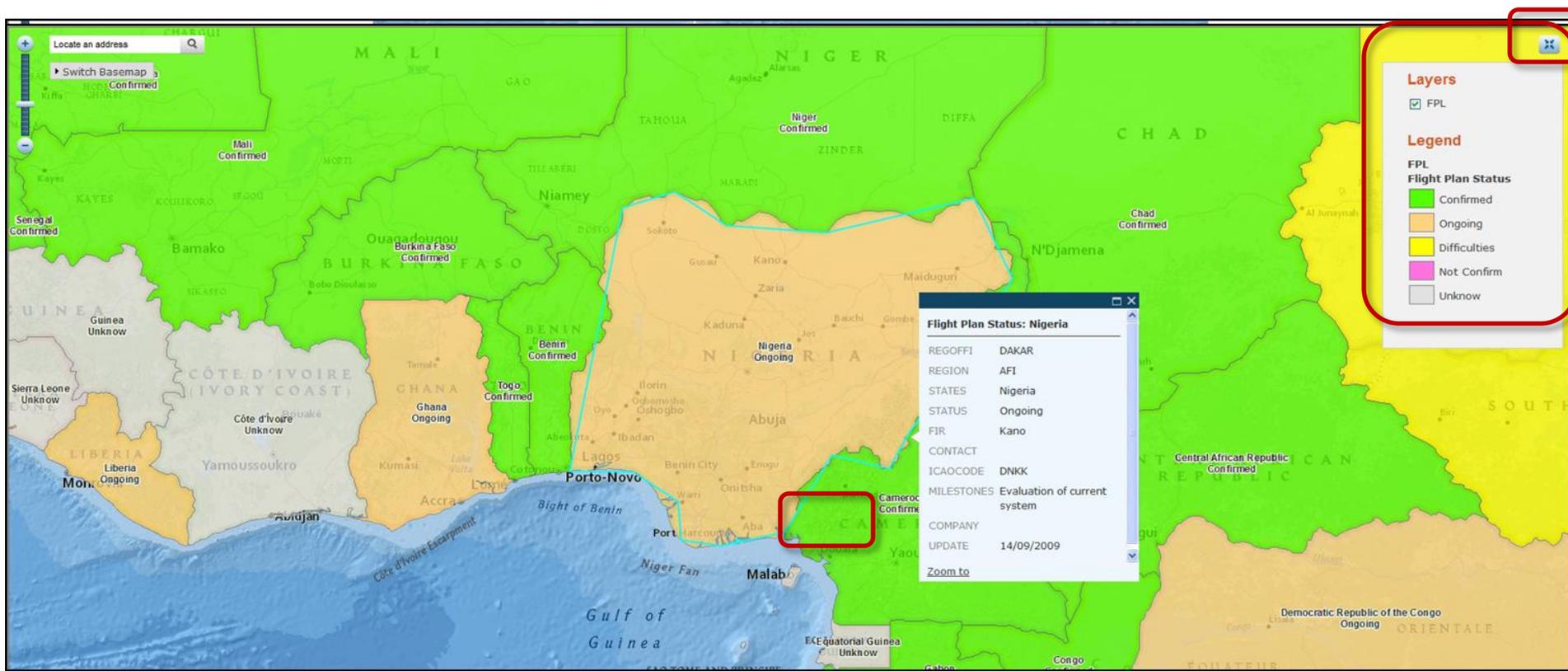
Or on IPAD and Android  
use **ArcGIS.com** Map  
Viewer the link below:

## Full Featured Map (Desktop)



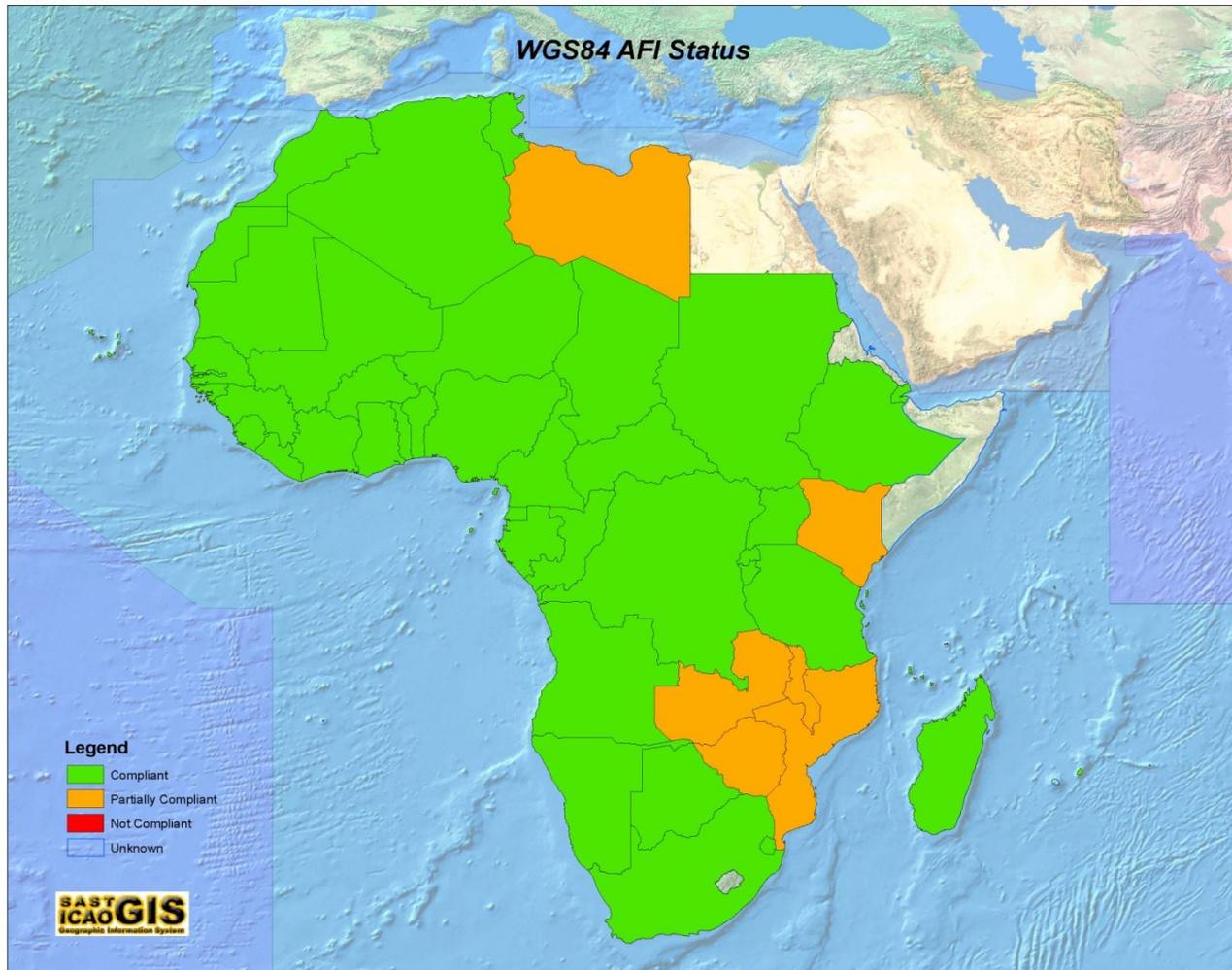
# Existing Tools

## ICAO Flight Plan Status



# Existing Tools

## WGS-84 Implementation status



# Existing Tools

## Language Proficiency

**NIGERIAN CIVIL AVIATION AUTHORITY**  
 AVIATION HOUSE  
 P.M.B. 21029, 21028, IKERJA LAGOS  
 Tel: 01-4930026  
 Fax: 01-4930029

NCAA/DOL/LPR/1/15  
 3<sup>RD</sup> March 2008

The Secretary General  
 International Civil Aviation Organisation  
 999 University Street  
 Montreal, Quebec  
 Canada H3C 5177

Your Ref: State Letter AN-12/44.6-07/68

**ICAO LANGUAGE PROFICIENCY REQUIREMENTS**

I have the honour to refer to your above State Letter concerning the Assembly Resolution A 36-11 on the subject of proficiency in the English Language used for radiotelephony.

Please find enclosed the implementation plan developed by Nigeria.

Accept, Sir, the assurances of our highest consideration.

*[Signature]*  
 Dr. H. O. Demuren  
 Director General

**Language LPR: Nigeria**

ICAOSYS	Nigeria
COMPLIANCE	Compliant
LINKPDF	<a href="#">More info</a>
REGOFF1	DAKAR
REGION	AFI

**Layers**  
 Language

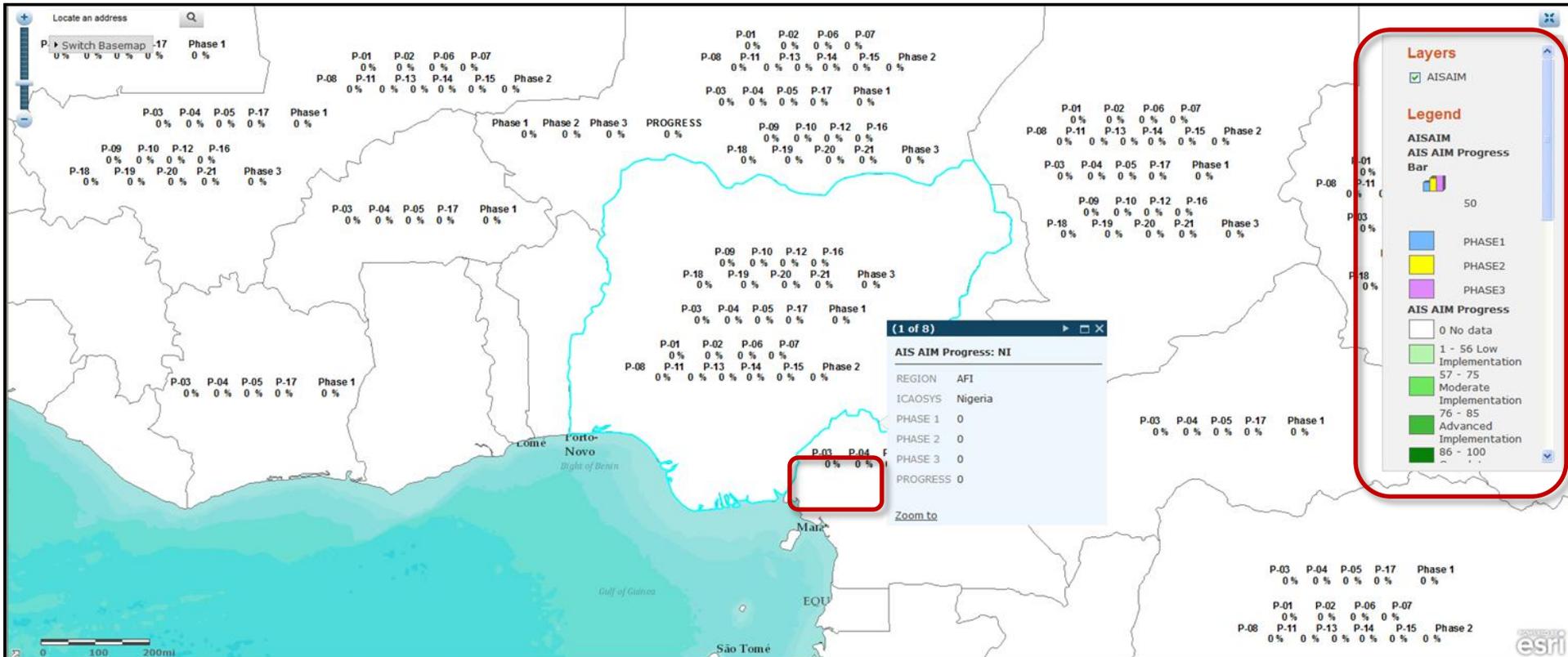
**Legend**  
**Language**  
**Language LPR**

- OTHER
- In Progress
- Compliant
- 2008-2010 Plan
- 2011 Plan
- Unknown

# Existing Tools



## AIS AIM



# Integrating Different Information



## Safety Collaborative Assistance Network

**ICAO** Uniting Aviation on Safety | Security | Efficiency

SCAN Existing Projects

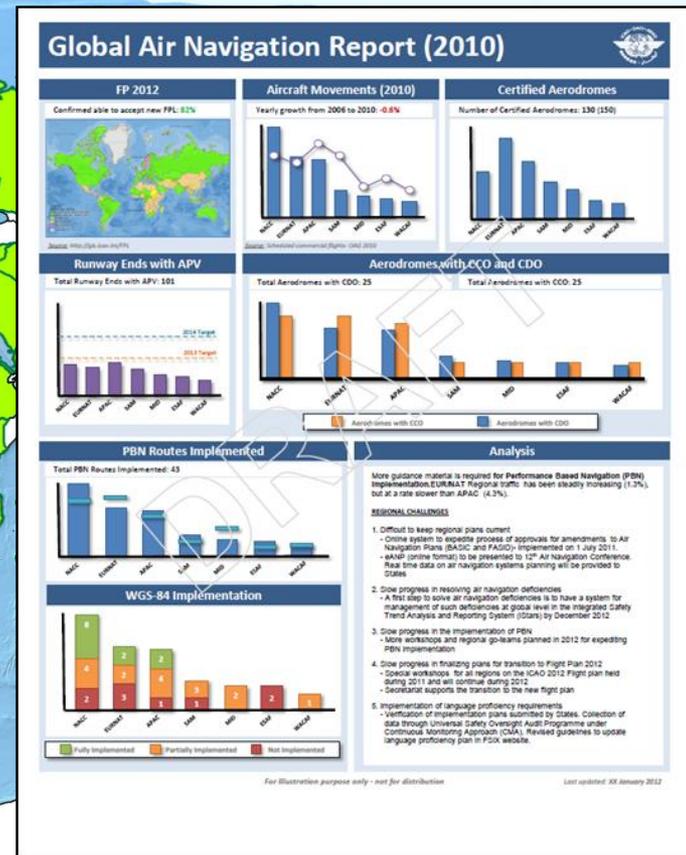
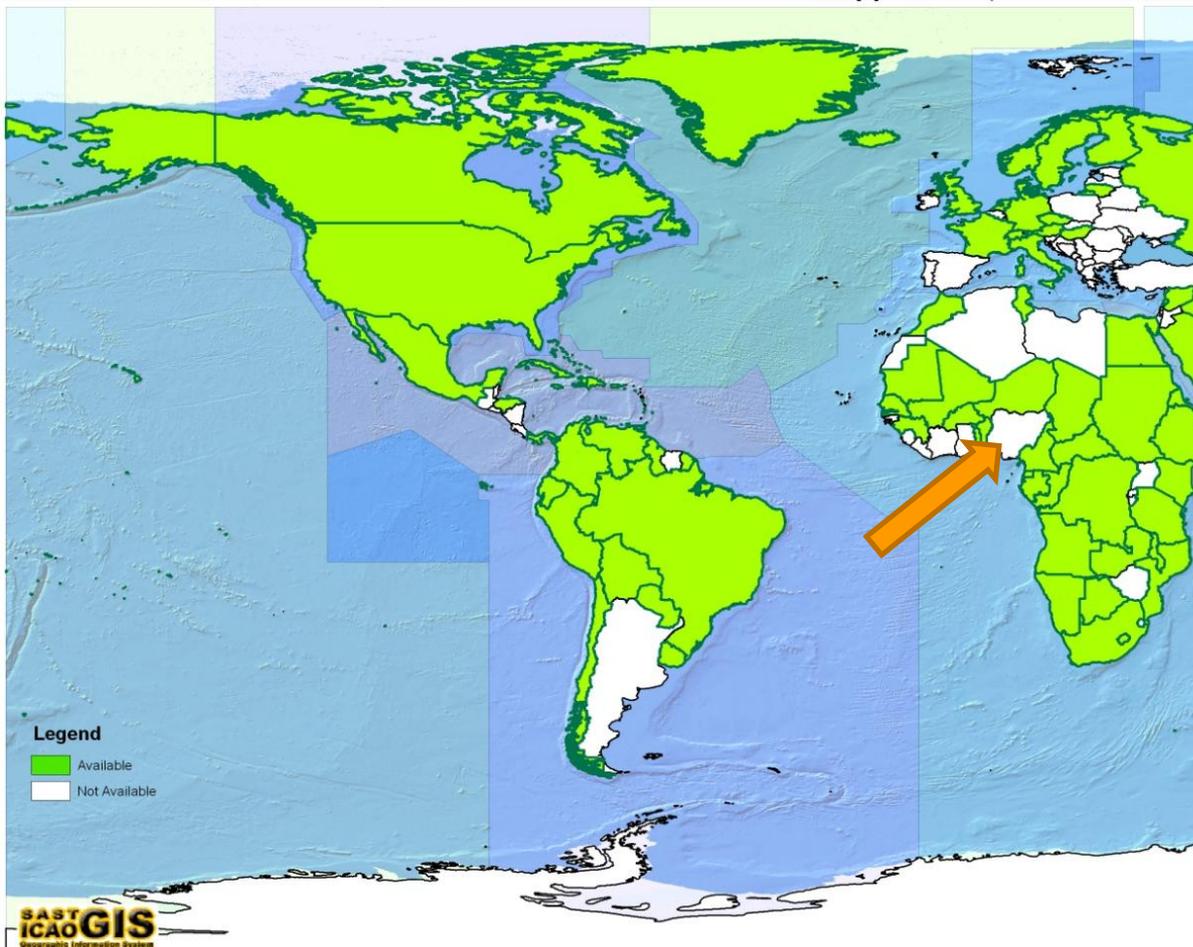
**Legend**

- AGA = verification and activities pertaining to aerodromes, heliports, airports.
- AIR = design, production and airworthiness of aircraft.
- ANS = activities in any of the areas of air navigation services.
- AIQ = assistance in the area of accident and incident investigation and prevention.
- PEL = the licensing of aviation personnel.
- LEG = assistance in the development of legislative and regulatory instruments.
- CPS = air operator certification and flight operations activities.
- MUL = Multiple areas.
- ORG = Organization.

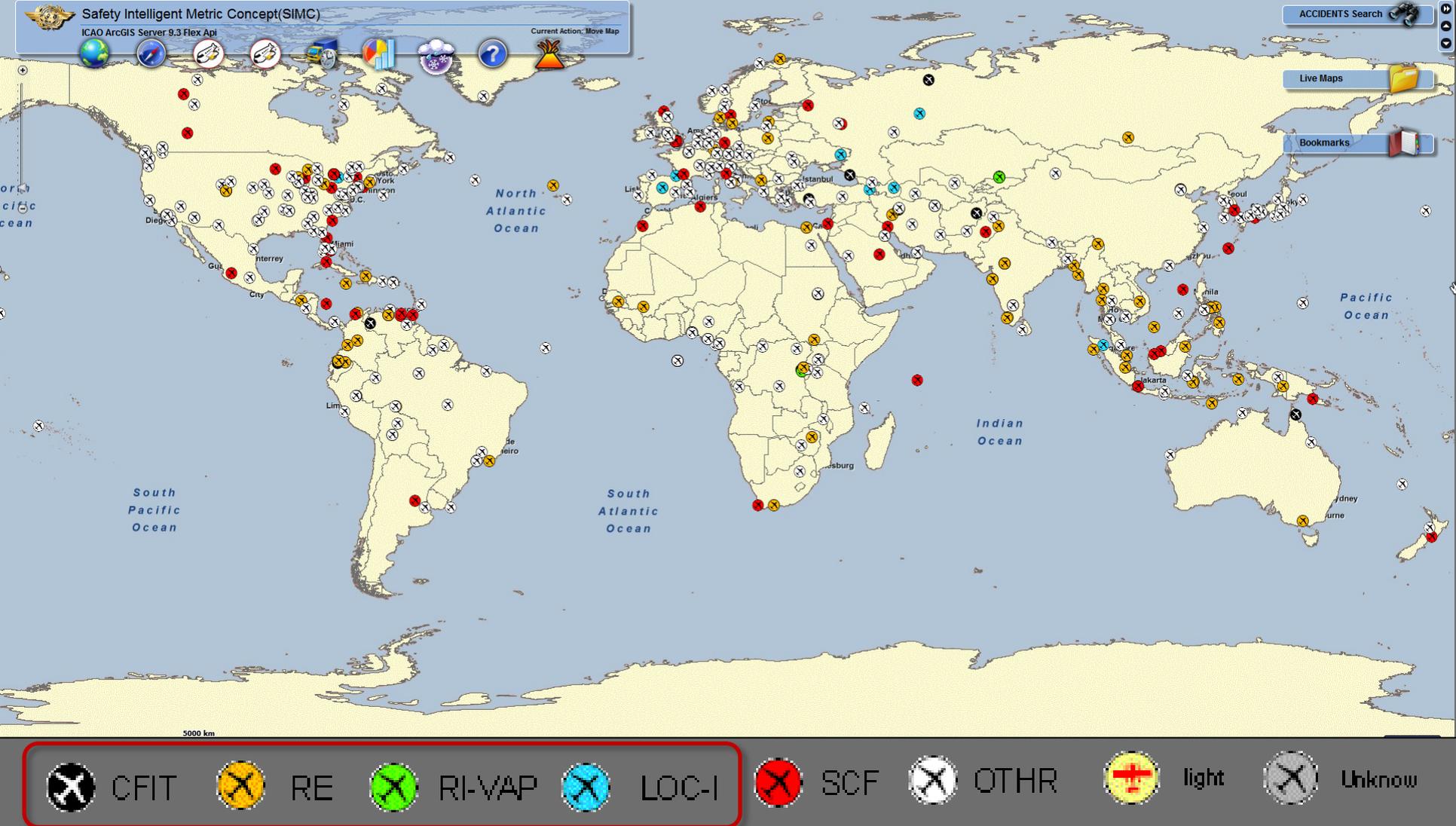
Recipient State	Recipient Entity within State	Provider	Funding Source	Area of Activity	Start & Completion Dates	Projected Outcome	Contact Name	System of Email	MAP
India	Airport Authority of India	United States	U.S. Trade & Development Agency (USTDA)	AGA	2011-07	A Ground Based Augmentation System (GBAS) at Chennai International Airport, by Homewell and the Airport Authority of India	USTDA	www.usda.gov	MAP
Senegal, Kenya & other African States	Civil Aviation Authorities	U.S. NTSB, ICAO	U.S. DOT Safe Skies For Africa Programme	AIQ	2011-08 / 2011-09	Dahmer Accident & Incident Investigation Seminars in Dakar, Senegal & Nairobi, Kenya	SIIM Inoex	smr@icao.int	MAP
Oman	Oman Airports Company Limited (OACL)	United States	U.S. Trade & Development Agency (USTDA)	AGA	2011-07	Rehabilitation of Khatima International Airport in Aden, with technical assistance provided by the LPA Group Incorporated	USTDA	www.usda.gov	MAP
Zambia	Department of Civil Aviation	SASA	EU/ETC	AIR, AIG, AIG, LEO, OPS, PEL	2010-01	Improved compliance with international standards in aviation safety, economic and security oversight	SASA	wick.fernandez@sasa.zambia.gov.zm	MAP
Viet Nam	Aviation Authority	United States	U.S. Trade & Development Agency (USTDA)	AGA	2011	Feasibility of Chu Si Airport becoming a regular cargo airport	USTDA	www.usda.gov	MAP
African States (AFI)	Civil Aviation Authorities	AFACAC, ICAO	AFACAC	AIR, AIG, AIG, OPS, PEL	2011	Establishment & implementation of AF1 Cooperative Scheme for the resolution of safety deficiencies	B Sipo	bb@icao.int	MAP
African States (AFI)	Civil Aviation Authorities	ICAO	SAFE Fund	AIR	2011	To determine status of aging aircraft in	H. Lamber	h@icao.int	MAP

# Future Tools: Integrated Reports

## States with at least 1 PBN Approach



# Future Tools: Safety Priorities



# ICAO Air Navigation Report

## Online Reporting and Toolkit



- Global Aviation Safety Plan (GANP) revision – 2012
  - First Safety **REPORT was issued in December 2011**; available on the web
- Global Air Navigation Plan (GANP) revision – 2012
  - Reporting will be primarily GIS based derived from regional information
  - Dec 2012 - Regional Offices will have Region Specific GIS Map System
  - May 2013 - First set of information will be aggregated
  - First Air Navigation **REPORT planned for 2014**
  - All States will have access

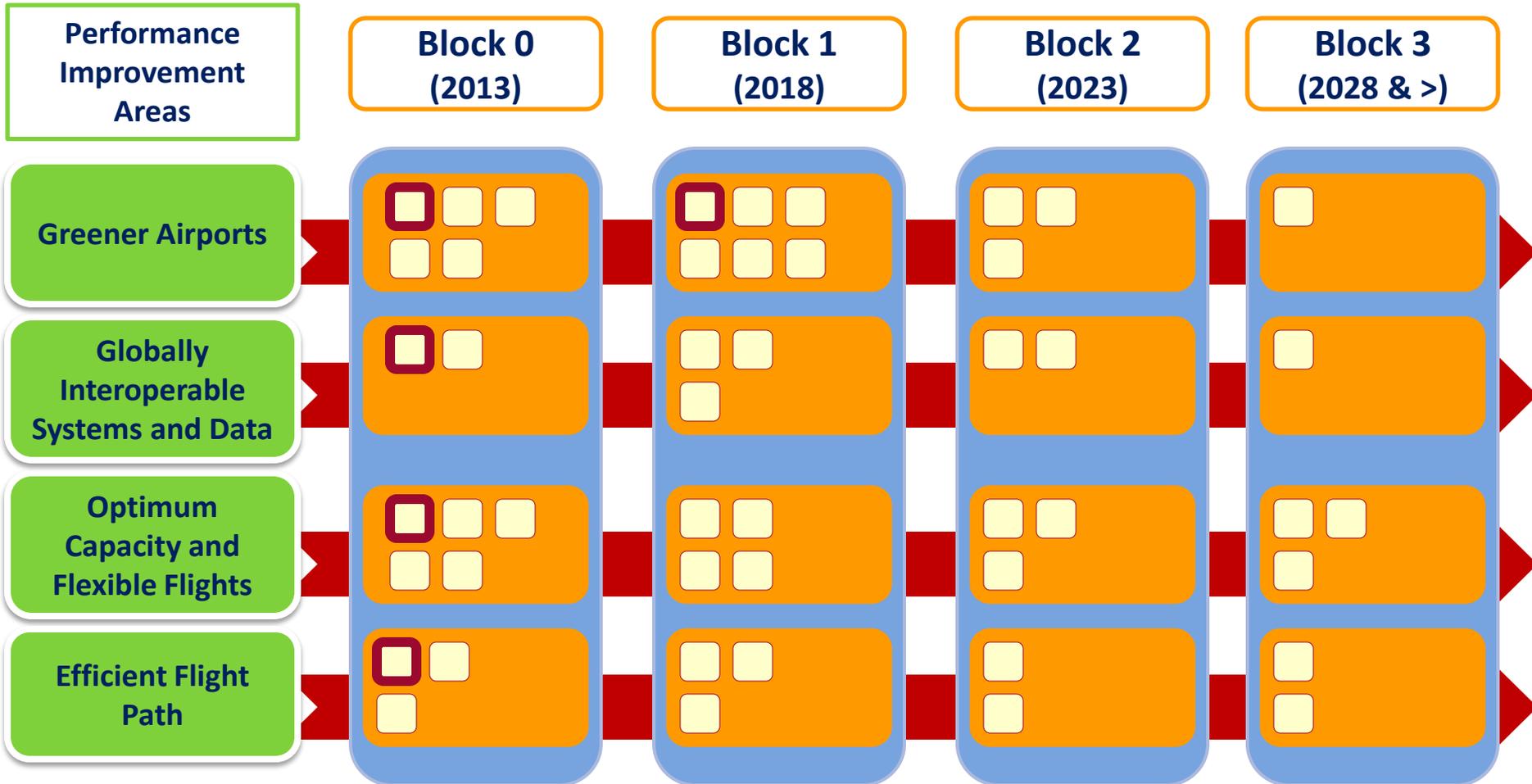


International Civil Aviation Organization

# **Aviation Systems for the Future Aviation Systems Block Upgrades (ASBU's)**

## **The 12th Air Navigation Conference**

# An Overview of Blocks & Modules



# Air Navigation Conference Deadlines



## Timeline to AN-Conf/12

Distribution of all Conference papers (including GANP) to States from ICAO	30 June
<b><i>Deadline for States' WPs (will be translated in all languages)</i></b>	<b><i>30 September</i></b>
<b><i>State's WPs will be accepted but <u>not</u> translated</i></b>	<b><i>30 Sept - 30 October</i></b>
<b><i>Deadline after which papers will <u>not</u> be accepted</i></b>	<b><i>After 30 October</i></b>
Twelfth Air Navigation Conference	19-30 November 2012

# Preparation for Africa



## ASBU Special Implementation Projects Workshops

Dakar

16-20 July

Nairobi

13-17 August

Cairo

30 September-04 October

# ICAO

Uniting Aviation on

Safety | Security | Environment



## 1 Module N° B0-65: OPTIMISATION OF APPROACH PROCEDURES INCLUDING VERTICAL GUIDANCE

<b>Summary</b>	This is the first step toward universal implementation of GNSS-based approaches. PBN and GLS procedures enhance the reliability and predictability of approaches to runways increasing safety, accessibility and efficiency. These can be achieved through the application of Basic GNSS, Baro VNAV, SBAS and GBAS. The flexibility inherent in PBN approach design can be exploited to increase runway capacity.	
<b>Main Performance Impact</b>	KPA-01 Access and Equity, KPA-04 Efficiency, KPA-05 Environment, KPA-10 Safety	
<b>Operating Environment/Phases of Flight</b>	Approach	
<b>Applicability Considerations</b>	This module is applicable to all instrument and precision instrument runway ends, and to a limited extent, non-instrument runway ends	
<b>Global Concept Component(s)</b>	AJO – Airspace User Operations AO – Aerodrome Operations	
<b>Global Plan Initiative(s) (GPI)</b>	GPI-5 RNAV and RNP (PBN) GPI-14 Runway Operations GPI-20 WGS84	
<b>Pre-Requisites</b>	NIL	
<b>Global Readiness Checklist</b>	Status (ready now or estimated date).	
	Standards Readiness	
	Avionics Availability	
	Ground System Availability	
	Procedures Available	
	Operations Approvals	

### 4 1. Narrative

#### 5 1.1 General

6 This module complements other airspace and procedures elements (CDO, PBN and Airspace Management) to increase efficiency, safety, access and predictability.

8 This module describes what is available and can be more widely used now.

#### 9 1.1.1 Baseline

10 In the global context, a limited number of GNSS-based PBN have been implemented compared with conventional procedures. Some States, however, have implemented large numbers of PBN procedures.

12 There are several GBAS demonstration procedures in place.

#### 13 1.1.2 Change brought by the module

14 Conventional navigation aids (e.g. ILS, VOR, NDB) have limitations in their ability to support the lowest minima to every runway. In the case of ILS, limitations include cost, the availability of suitable sites for ground infrastructure and an inability to support multiple descent paths. VOR and NDB procedures do not support vertical guidance and have relatively high minima that depend on siting considerations. PBN procedures require no ground-based Nav Aids and allow designers complete flexibility in determining the final approach lateral and vertical paths. PBN approach procedures can be seamlessly integrated with PBN

## 1 Module N° B1-65: Optimised Airport Accessibility

2

<b>Summary</b>	This is the further transition in the universal implementation of GNSS-based approaches. PBN and GLS (CAT II/III) procedures enhance the reliability and predictability of approaches to runways increasing safety, accessibility and efficiency. Key aspects included: <ul style="list-style-type: none"> <li>Increased availability and reliability through Multi-Frequency/Constellation use of GNSS</li> <li>GNSS-based CAT II/III approach capability</li> </ul> Curved/segmented approaches with RNP to XLS transition	
<b>Main Performance Impact</b>	KPA-04 Efficiency, KPA-05 Environment, KPA-10 Safety	
<b>Operating Environment/Phases of Flight</b>	Approach and landing	
<b>Applicability Considerations</b>	This module is applicable to all runway ends.	
<b>Global Concept Component(s)</b>	AUG – Airspace User Operations AO – Aerodrome Operations	
<b>Global Plan Initiatives (GPI)</b>	GPI-5 RNAV and RNP (PBN) GPI-14 Runway Operations GPI-20 WGS84	
<b>Pre-Requisites</b>	B0-65	
<b>Global Readiness Checklist</b>	<b>Standards Readiness</b>	Status (ready now or estimated date) Est. 2014
	<b>Avionics Availability</b>	Est. 2018
	<b>Ground System Availability</b>	√
	<b>Procedures Available</b>	√
	<b>Operations Approvals</b>	Est. 2018

### 3 1. Narrative

#### 4 1.1 General

5 This module complements other airspace and procedures elements (CDO, PBN and Airspace Management)  
6 to increase efficiency, safety, access and predictability.

7 This module proposes to take advantage of the lowest available minima through the extension of GNSS-  
8 based approaches from CAT-I capability to category CAT II/III capability at a limited number of airports. It  
9 also harnesses the potential integration of the PBN STARS directly to all approaches with vertical guidance.

10 This capability allows for both curved approaches and segmented approaches in an integrated system. The  
11 emergence of multi-frequency/constellation GNSS may start to be developed to enhance approach  
12 procedures.

13 This module describes what technology is expected to be available in 2018, and what operations are likely to  
14 be supported.

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1 **Module N° B0-25: Increased Interoperability, Efficiency and**  
 2 **Capacity through Ground-Ground Integration**  
 3

<b>Summary</b>	This module supports the coordination between Air Traffic Service Units (ATSU) based using ATS Interfacility Data Communication (AIDC) defined by ICAO Doc 9694 . It permits also the transfer of communication in data-link environment in particular for Oceanic ATSU. It is a first step in the ground-ground integration	
<b>Main Performance Impact</b>	KPA-02 Capacity, KPA-04 Efficiency, KPA-07 Global Interoperability, KPA-10 Safety	
<b>Operating Environment/Phases of Flight</b>	All flight phases and all type of ATS units	
<b>Applicability Considerations</b>	Applicable to at least 2 ACCs dealing with en-route and/or TMA airspace. A greater number of consecutive participating ACCs will increase the benefits.	
<b>Global Concept Component(s)</b>	CM - Conflict management IM - Information Management	
<b>Global Plan Initiatives (GPI)</b>	GPI-16 Decision Support Systems	
<b>Pre-Requlites</b>	Link with B0-40	
<b>Global Readiness Checklist</b>	<b>Status (ready now or estimated date)</b>	
	Standards Readiness	√
	Avionics Availability	No requirement
	Ground systems Availability	√
	Procedures Available	√
	Operations Approvals	√

4 **1. Narrative**

5 **1.1 General**

6 Flights which are being provided with an ATC service are transferred from one ATC unit to the next in a  
 7 manner designed to ensure complete safety. In order to accomplish this objective, it is a standard procedure  
 8 that the passage of each flight across the boundary of the areas of responsibility of the two units is co-  
 9 ordinated between them beforehand and that the control of the flight is transferred when it is at, or adjacent  
 10 to, the said boundary.

11 Where it is carried out by telephone, the passing of data on individual flights as part of the co-ordination  
 12 process is a major support task at ATC units, particularly at Area Control Centres (ACCs). The operational  
 13 use of connections between Flight Data Processing Systems (FDFGs) at ACCs replacing phone coordination  
 14 (On-Line Data Interchange (OLDI)) is already proven in Europe.

15 This is now fully integrated into the "ATS Interfacility Data Communications" (AIDC) messages in the PANG-  
 16 ATM, which describes the types of messages and their contents to be used for operational communications  
 17 between ATC unit computer systems. This type of data transfer (AIDC) will be the basis for migration of data  
 18 communications to the aeronautical telecommunication network (ATN).

19 The AIDC module is aimed at improving the flow of traffic by allowing neighbouring air traffic control units to  
 20 exchange flight data automatically in the form of coordination and transfer messages.

21 With the greater accuracy of messages based on the updated trajectory information contained in the system  
 22 and where possible updated by surveillance data, controllers have more reliable information on the

Appendix B

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Appendix B

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Appendix B

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## Module N° B0-10: Improved Operations through Enhanced En-Route Trajectories

<b>Summary</b>	Implementation of performance-based navigation (PBN concept) and flex tracking to avoid significant weather and to offer greater fuel efficiency, flexible use of airspace (FUA) through special activity airspace allocation, airspace planning and time-based metering, and collaborative decision-making (CDM) for en-route airspace with increased information exchange among ATM stakeholders.	
<b>Main Performance Impact</b>	KPA-01 Access & Equity; KPA-02 Capacity; KPA-04 Efficiency; KPA-05 Environment; KPA-06 Flexibility; KPA-09 Predictability	
<b>Operating Environment/Phases of Flight</b>	En-route, TMA	
<b>Applicability Considerations</b>	Applicable to en-route airspace. Benefits can start locally. The larger the size of the concerned airspace the greater the benefits, in particular for flextrack aspects. Benefits accrue to individual flights and flows. Application will naturally span over a long period as traffic develops. Its features can be introduced starting with the simplest ones.	
<b>Global Concept Component(s)</b>	AOM – Airspace Organisation & Management AJO – Airspace Users Operations DCB – Demand-Capacity Balancing	
<b>Global Plan Initiatives (GPI)</b>	GPI-1 Flexible use of airspace GPI-4 Align upper airspace classifications GPI-7 Dynamic and Flexible Airspace Route Management GPI-8 Collaborative airspace design and management	
<b>Pre-Requlites</b>		
<b>Global Readiness Checklist</b>		<b>Status (ready now or estimated date)</b>
	Standards Readiness	✓
	Avionics Availability	✓
	Ground Systems Availability	✓
	Procedures Available	✓
	Operations Approvals	✓

### 1. Narrative

#### 1.1 General

- In many areas, flight routings offered by air traffic control (ATC) services are static and are slow to keep pace with the rapid changes of users operational demands, especially for long-haul city-pairs. In certain parts of the world, legacy regional route structures have become outdated and are becoming constraining factors due to their inflexibility.
- The navigational capabilities of modern aircraft make a compelling argument to migrate away from the fixed route structure towards a more flexible alternative. Constantly changing upper winds have a direct influence on fuel burn and, proportionately, on the carbon footprint. Therein lies the benefit of daily flexible routings. Sophisticated flight planning systems in use at airlines now have the capability to predict and validate

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## 1 Module N° B0-05: Improved Flexibility and Efficiency in 2 Descent Profiles (CDOs)

<b>Summary</b>	Deployment of performance-based airspace and arrival procedures that allow the aircraft to fly their optimum aircraft profile taking account of airspace and traffic complexity with continuous descent operations (CDOs). Flight operations in many terminal areas precipitate the majority of current airspace delays in many states. Opportunities to optimize throughput, improve flexibility, enable fuel-efficient climb and descent profiles, and increase capacity at the most congested areas should be a high-priority initiative in the near-term.	
<b>Main Performance Impact</b>	KPA-03 – Cost-effectiveness; KPA-04 – Efficiency; KPA-09 – Predictability	
<b>Operating Environment/Phases of Flight</b>	Approach/Arrivals and En-Route	
<b>Applicability Considerations</b>	Regions, States or individual locations most in need of these improvements. For simplicity and implementation success, complexity can be divided into three tiers: 1. Least Complex – Regional/States/Locations with some foundational PBN operational experience that could capitalize on near term enhancements, which include integrating procedures and optimizing performance. 2. More Complex – Regional/States/Locations that may or may not possess PBN experience, but would benefit from introducing new or enhanced procedures. However, many of these locations may have environmental and operational challenges that will add to the complexities of procedure development and implementation. 3. Most Complex – Regional/States/Locations in this tier will be the most challenging and complex to introduce integrated and optimized PBN operations. Traffic volume and airspace constraints are added complexities that must be confronted. Operational changes to these areas can have a profound effect on the entire State, Region or location.	
<b>Global Concept Component(s)</b>	AOM – Airspace Organization and Management AO – Aerodrome Operations TS – Traffic Synchronisation, AOM	
<b>Global Plan Initiatives (GPI)</b>	GPI-10- Terminal Area Design and Management; GPI-11- RNP and RNAV Standard Instrument Departures (SIDs) and Standard Terminal Arrivals (STARs);	
<b>Pre-Requisites</b>	NIL	
<b>Global Readiness Checklist</b>		Status (ready now or estimated date)
	Standards Readiness	✓
	Avionics Availability	✓
	Ground System Availability	✓
	Procedures Available	✓
	Operations Approvals	✓

### 3 1. Narrative

#### 4 1.1 General

5 This module integrates with other airspace and procedures (CDO, PBN and Airspace Management) to  
6 increase efficiency, safety, access and predictability.

7 As traffic demand increases, the challenges in terminal areas centre around volume, convective weather,  
8 reduced-visibility conditions, adjacent airports and special activity airspace in close proximity whose  
9 procedures utilize the same airspace, and policies that limit capacity, throughput, and efficiency.

Appendix B

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lude the  
AV, e.g.

78

Appendix B

Appendix B

lines to  
ds to be

requirement  
NP 4.

**SUCCESS**

ed fuel burn  
ld otherwise

ate airspace

ths  
(CFIT)  
outing)

as a result of  
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TMA (KLAX)

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y area  
roval process  
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g with  
ng to install,  
Therefore,  
that will  
ding.

distance on the  
ary to enable

80

79

Appendix B

vertical  
approval

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cal level,

approach.  
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ent noise

air traffic

the PBN

cess is  
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level flight  
guidance

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vertical  
rol path,  
possible

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and ATM  
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such as

81

82