STATUS OF ASBU IMPLEMENTATION IN NIGERIA

OUTLINE:

1. Introduction to GANP,
2. Introduction to ASBU Methodology,
3. Objectives of ASBU,
4. ASBU Blocks,
5. ASBU Block 0 Modules,
6. Prioritization of ASBU Block 0 Modules,
7. ASBU Block 0 Implementation Status in Nigeria,
8. Conclusion,
9. References.

Introduction to GANP:

- First developed as globally coordinated plan for CNS/ATM Systems in 1992

- In 1998 the Global Plan for CNS/ATM systems was released.

- In 2006, the Global Plan for Air Navigation Systems was developed.

- In 2012, a revised GANP was presented during 12 ANC containing ASBU Methodology and ICAO IFSET Tool.

- The scope of the 4th GANP covers ATM, CNS, MET, AIM, AGA, Regulations and Airspace Users.

- The 4th Global Air Navigation Plan is electronic base and updatable via GIS map facility on ICAO Web.

Introduction to ASBU Methodology:

1. **ASBU Methodology simply refers to Aviation Systems Block Upgrade.**
2. **It is a framework which is divided into 4 blocks (Block 0, 1, 2, and 3).**
3. **Each block contains modules of performance enhancements targeted at 4 Performance Improvement Areas namely Airport Operations, Globally Interoperable Systems and Data, Optimum Capacity and Flexible Flight, as well as Efficient Flight Path.**
4. **ASBU Methodology spans from short, medium to long term rolling from 2013 to 2028 and beyond.**
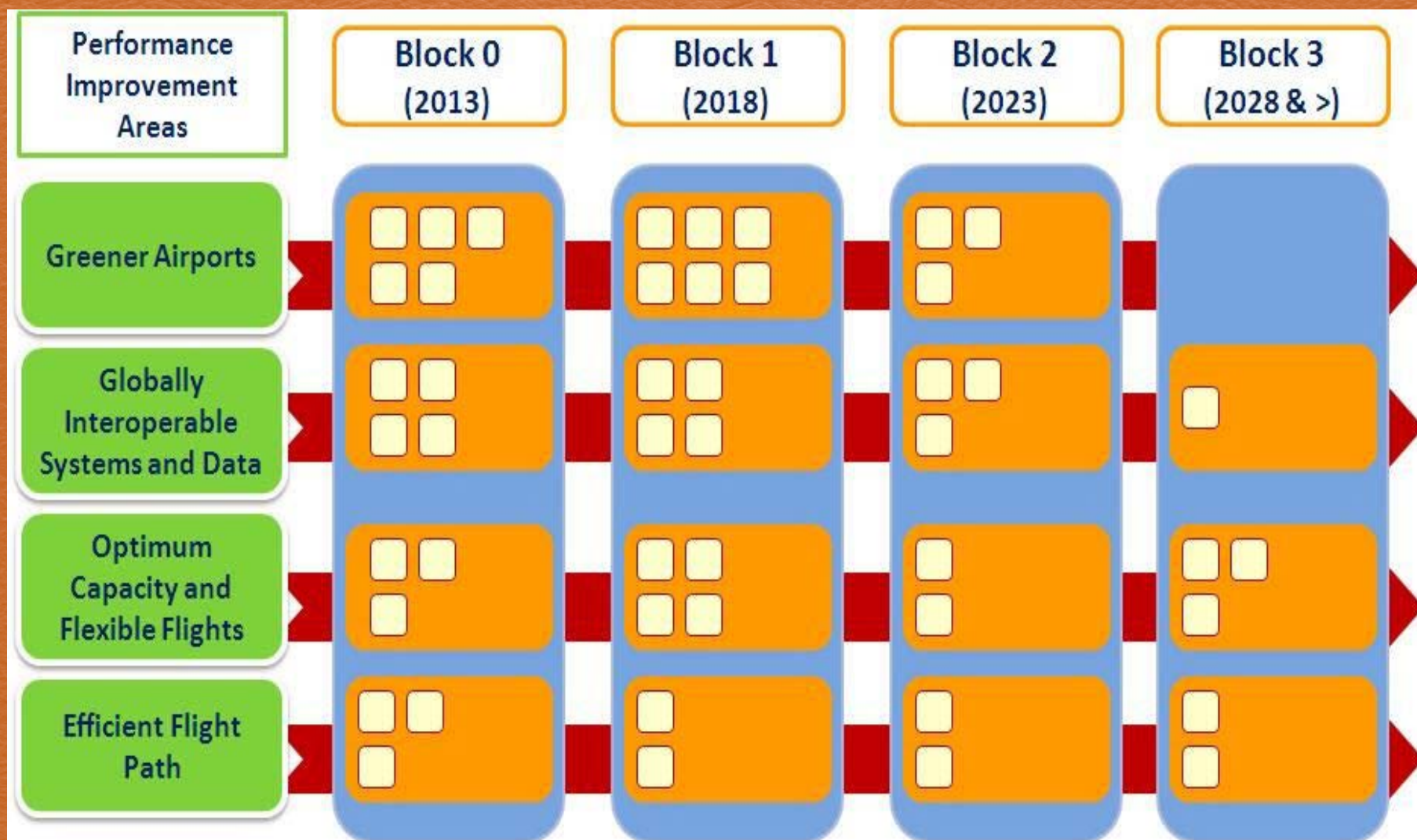
Objective of ASBU:

The primary objective of ASBU is to provide a framework for harmonized development of civil aviation globally, as well as ensure global interoperability of systems and data for the safety and efficiency of air navigation.

ASBU Blocks:

ASBU Performance Improvement Areas (PIAs):
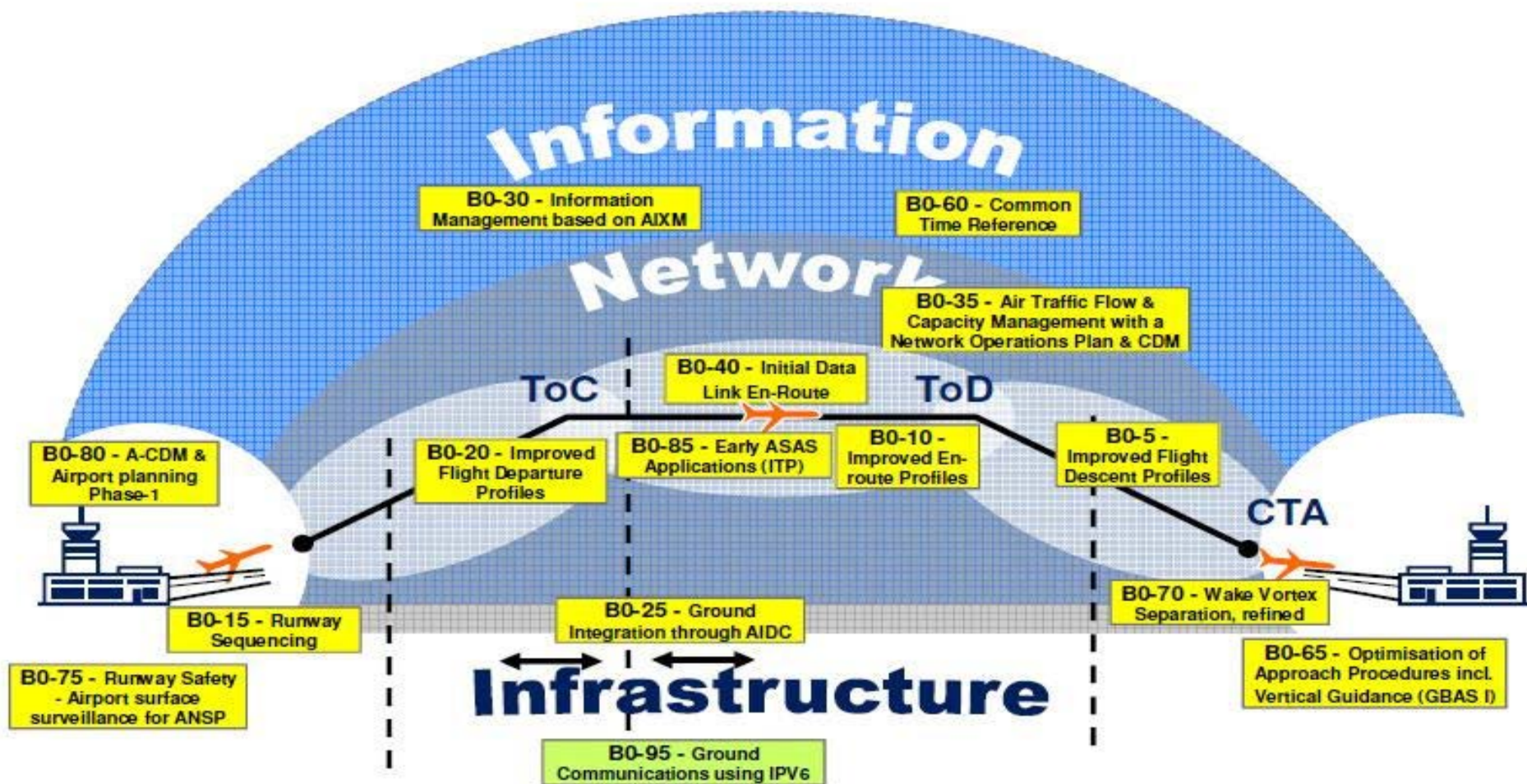
1	**Airport Operations**
2	**Globally Interoperable Systems and Data**
3	**Optimum Capacity and Flexible Flight**
4	**Efficient Flight Path**

ASBU Block 0 Modules:

ASBU Block 0 Modules Implementation in Nigeria:

Prior to the introduction of ASBU Methodology in 2013, Air Navigation Planning in Nigeria was based on a National CNS/ATM Plan which provided the required framework for the development of the Air Navigation system in Nigeria.

However, with the advent of a new planning methodology under ASBU (4th GANP), a comprehensive Gap Analysis was conducted, and new priorities established in line with the ASBU Block 0 Modules.

Below is the current implementation status of ASBU Block 0 Modules in Nigeria:

PIA	Airport Operations
Module Title:	B0-APTA: Optimization of Approach Procedures Including Vertical Guidance
Elements:	1. APV with Baro VNAV 2. APV with SBAS 3. APV with GBAS
Expected Benefits:	1. Increased Runway Capacity 2. Reduce fuel consumption 3. Reduce CO_2 emissions, etc.
Implementation Status in Nigeria:	1. 26 Airports with RNAV Approaches 2. 4 Airports with SIDs & STARs, 3. 5 Airports with Baro VNAV Approaches

PIA	Airport Operations
Module Title:	**B0-WAKE:** Increased Runway Throughput through optimized Wake Turbulence Separation
Elements:	1. Revision of current ICAO wake separation minima 2. Increasing Int. aerodrome Arrival Operational Capacity 3. Increasing International aerodrome Departure Operational Capacity
Expected Benefits:	1. Aerodrome capacity and departure/arrival rates will increase as the wake categories are increased from 3 to 6
Implementation Status in Nigeria:	1. NOT YET Implemented in Nigeria 2. Revision of ICAO Wake Separation in 2015, 3. Deployment of Wind sensors and automation support scheduled for 2016

PIA:	Airport Operations
Module Title:	**B0-SURF:** Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)
Elements:	1. Surveillance 2. Alerting systems 3. Visual aids for navigation and Wild life strike hazard reduction
Expected Benefits:	1. Reduced Runway incursions and excursions, 2. Increased aerodrome access and capacity 3. Reduced fuel consumption and emissions
Implementation Status in Nigeria:	1. Procedural Surface Movement and Ground Control services in place at Lagos and Abuja, 2. Surface Movement and Ground Control Radar system to be installed in Lagos and Abuja in 2016 3. Visual aids and wildlife hazard control available.

PIA:	Airport Operations
Module Title:	**B0-ACDM:** **Improved Airport Operations through Airport-CDM**
Elements:	1. Airport – CDM 2. Aerodrome certification, 3. Aerodrome emergency planning, 4. Airport planning and Heliport operations
Expected Benefits:	1. Enhances equity in the use of aerodrome facilities. 2. Enhances capacity in the use of Gates and stands, 3. Reduces taxi time, fuel consumption, emissions, etc.
Implementation Status in Nigeria:	1. ACDM implemented at Lagos and Abuja during the Ebola crises in Nigeria, 2. Airport Remodeling and Certification ongoing at Lagos, Abuja, Kano and Port Harcourt, 3. Aerodrome Emergency and Airport Planning in place, 4. Deployment of a new ATN through 26 VSAT Network, 5. ISO 9001 Certification of the Nigerian Meteorological

PIA$_1$:	Airport Operations
Module Title:	**B0-RSEQ:** Improve Traffic Flow Through Runway Sequencing (AMAN/DMAN)
Elements:	1. Arrival Manager (AMAN) 2. Departure Manager (DMAN)
Expected Benefits:	1. Optimized use of terminal airspace and runway capacity, 2. Increased runway throughput and arrival rates, 3. Reduced flight times, fuel burnt and emissions, 4. Reduced ATC and Pilot workload, etc.
Implementation Status in Nigeria:	1. AMAN and DMAN Not Yet Implemented in Nigeria, 2. Arrival and Departure Managers scheduled for implementation in Lagos and Abuja in 2016.

PIA$_2$:	**Globally Interoperable Systems and Data**
Module Title:	**B0-FICE:** **Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration**
Elements:	1. **AIDC (ATS Inter-facility Data Communication)** 2. **AMHS/IPS (ATS Message Handling System** 3. **FDPS (Flight Data Processing Systems)**
Expected Benefits:	1. **Enhanced safety and efficiency through increased accuracy and integrity of flight plan data,** 2. **Reduced separation and consequently increased ATM capacity through timely exchange of flight plan data,** 3. **Reduced flight times, fuel burnt and emissions,** 4. **Reduced ATC and Pilot workload, etc.**
Implementation Status in Nigeria:	1. **AMHS to be operational at 11 airports by Dec. 14,** 2. **Flight Data Processors operational at 9 Radar sites** 3. **Online Data Interchange facilities operational at Lagos, Abuja, Kano and Port Harcourt,** 4. **Nigeria transiting to AIDC in 2015.**

PIA$_2$:	**Globally Interoperable Systems and Data**
Module Title:	**B0-DAIM:** **Service Improvement through Digital Aeronautical Information Management**
Elements:	1. AIXM 2. e-AIP 3. Digital NOTAM 4. WGS-84; e-TOD; and QMS for AIM
Expected Benefits:	1. Enhanced safety and efficiency through increased accuracy and integrity, as well as timely exchange of aeronautical data, 2. Environmental friendly through reduced amount of paper for promulgation of AIP, AICs, NOTAMs, Fpl, 3. Enhanced interoperability of data, etc.
Implementation Status in Nigeria:	1. AIXM to be available under the ongoing Automation of the AIS system from December 2014, 2. E-AIP to be available under the ongoing automation project, 3. E-Flight Planning to be available at all airports in 2015, but currently available at 4 airports, through the Internet Protocol, 4. WGS 84 Survey completed at 26 airports nationwide.

PIA$_2$:	Globally Interoperable Systems and Data
Module Title:	B0-AMET: Meteorological information supporting enhanced operational efficiency and safety
Elements:	1. WAFS-IAVW-TCW 2. Aerodrome warning, wind shear warning and alerts 3. SIGMET information
Expected Benefits:	1. Optimized usage of airspace and aerodrome capacity due to MET support 2. Reduced arrival/departure holding time, thus reduced fuel burn due to MET support, 3. Reduced emissions due to reduced fuel burn due to MET support 4. Reduced incidents/accidents in flight and at aerodromes due to MET support.
Implementation Status in Nigeria	1. Wind Shear Alerting systems operational at 9 airports with alerting system installed the Tower, 2. SIGMET Information available on real time at Lagos, Abuja, Kano and Port Harcourt

PIA$_3$:	**Optimum Capacity and Flexible Flights**
Module Title:	**B0-FRTO:** **Improved Operations through Enhanced En-Route Trajectories**
Elements:	1. Airspace planning 2. Flexible Use of airspace 3. Flexible Routing
Expected Benefits:	1. Better access to airspace by a reduction of the permanently segregated volumes of airspace, 2. Enhanced capacity through FUA, SUA, Joint Use airspace, 3. Reduction in flight times, fuel burnt and CO_2 emissions
Implementation Status in Nigeria:	1. Flexible Use of Airspace, SUA, and Joint Use of Airspace operational in Nigeria between Civil and Military users, 2. Airspace Planning through the establishment of Uni-directional Routes to decongest and de-conflict the air routes, 3. IFLEX Routes established to enhance en-route trajectories.

PIA₃:	Optimum Capacity and Flexible Flights
Module Title:	B0-NOPS: Improved Flow Performance through Planning based on a Network-Wide view
Elements:	1. Air Traffic Flow Management
Expected Benefits:	1. Enhanced Access and equity in the use of airspace or aerodrome by avoiding disruption of air traffic, 2. Effective utilization of available capacity, ability to anticipate difficult situations and mitigate them in advance, 3. Reduced fuel burn due to better anticipation of flow issues; Reduced block times and times with engines on 4. Minimize possibilities of sector or unit overloads, etc.
Implementation Status in Nigeria:	1. Air Traffic Flow Management System NOT Yet established in Nigeria, 2. ATFM scheduled for implementation in Nigeria in 2016.

PIA$_3$:	Optimum Capacity and Flexible Flights
Module Title:	B0-ASUR: Initial capability for ground surveillance
Elements:	1. ADS-B 2. Multilateration
Expected Benefits:	1. Reduction of the number of major incidents. Support to search and rescue. 2. Increased capacity through reduced separation to 3nm and 5nm 3. Enhanced TMA surveillance through high accuracy, better velocity vector and improved coverage, 4. Cost effective.
Implementation Status in Nigeria:	1. 100% Radar Coverage using 9 MSSR systems with a minimum range of 250nm each, 2. Terminal Radar Coverage using PSR and SSR at Lagos, Abuja, Kano, and Port Harcourt with 65nm range each. 3. ADS/MLAT to be deployed in the coastal areas in 2015.

PIA₃:	**Optimum Capacity and Flexible Flights**
Module Title:	**B0-ASEP:** **Air Traffic Situational Awareness(ATSA)**
Elements:	1. **ATSA-AIRB** 2. **ATSA-VSA**
Expected Benefits:	1. **Improved situational awareness in identifying level change opportunities with current separation minima (AIRB) – Using ADS-B Out,** 2. **Improved Visual Acquisition (VSA) – Using ADS-B In,** 3. **Improved situational awareness and reduced likelihood of wake turbulence encounters and missed approaches.**
Implementation Status in Nigeria:	1. **About 60% of Nigerian registered aircraft are fitted with ADS-B Out and ADS-B In,** 2. **With the planned activation of Mode S in Nigerian airspace by 2015, the carriage of ADS-B In and Out would eventually be required for operations within Nigerian airspace.**

PIA$_3$:	Optimum Capacity and Flexible Flights
Module Title:	B0-OPFL: Improved KPA-Access/Equity to Optimum Flight Levels through Climb/Descent Procedures using ADS-B
Elements:	1. ITP using ADS-B
Expected Benefits:	1. Improvement in capacity on a given air route. 2. Increased efficiency on oceanic and potentially continental en- route 3. Reduced emissions.
Implementation Status in Nigeria:	1. Climb/Descent Procedures using ADS-B NOT Operational in Nigeria. 2. Current SSR Coverage adequate for effective climb and descent operations en-route. 3. Planned deployment of ADS-B/MLAT and CPDLC in 2015.

PIA₃:	Optimum Capacity and Flexible Flights
Module Title:	**B0-ACAS:** **ACAS Improvements**
Elements:	1. ACAS II (TCAS version 7.1)
Expected Benefits:	1. ACAS improvement will reduce unnecessary resolution advisory (RA) and then reduce trajectory deviations. 2. ACAS increases safety in the case of breakdown of separation.
Implementation Status in Nigeria:	1. Carriage of TCAS is a requirement for IFR operations within the terminal areas of Lagos, Abuja, Kano and Port Harcourt, especially when Radar is inoperative. 2. Current Radar Coverage adequate for safe and effective operations at both terminal and en-route. 3. NCAA to ensure compliance with TCAS V7.1 in 2015.

PIA₃:	Optimum Capacity and Flexible Flights
Module Title:	**B0-SNET:** **Increased Effectiveness of Ground-Based Safety Nets**
Elements:	1. Short Term Conflict Alert (STCA) 2. Area Proximity Warning (APW) 3. Minimum Safe Altitude Warning (MSAW)
Expected Benefits:	1. Significant reduction of the number of major incidents. 2. Reduction in incidents of CFIT.
Implementation Status in Nigeria:	The following Safety Nets are operational in Nigerian airspace: 1. Short Term Conflict Alerts (STCA). 2. Medium Term Conflict Detection (MTCD). 3. Minimum Safe Altitude Warning (MSAW). 4. Danger Area Infringement Warning (DAIN). 5. Route Adherence Monitoring (RAM). 6. Cleared Level Adherence Monitoring (CLAM). 7. RVSM Adherence (RA).

PIA$_4$:	**Efficient Flight Path**
Module Title:	**B0-CDO:** **Improved Flexibility and Efficiency in Descent Profiles (CDO)**
Elements:	**1. CDO** **2. PBN STARs**
Expected Benefits:	1. Cost savings through reduced flight times & fuel burn. 2. Reduction in ATC and Pilot workloads through reduced radio communication. 3. Reduced emissions as a result of reduced fuel burn 4. More consistent flight paths and stabilized approach paths. Reduction in the incidence of controlled flight into terrain.
Implementation Status in Nigeria:	1. Continuous Descent Operations operational at Lagos, Abuja, Kano, and Port Harcourt. 2. Standard Arrival Routes operational on all Runways at Lagos, Abuja, Kano, Port Harcourt. 3. STARs published for both Runways at Benin airport but not yet operational due to lack of an approved Domestic Operator into the aerodrome.

PIA_4:	Efficient Flight Path
Module Title:	**B0-TBO:** Improved Safety and Efficiency through the initial application of Data Link En-Route
Elements:	1. ADS-C over oceanic and remote areas 2. Continental CPDLC
Expected Benefits:	1. A better localization of traffic and reduced separation allow increased capacity. 2. Enhanced capacity through reduced ATC and Pilot workload. 3. Enhanced efficiency through preferred flight trajectories. 4. Reduced emissions as a result of reduced fuel burn 5. ADS-C supports Safety Nets such as MSAW, CLAM, DAIW, RAM, and reduces risk of miscommunication using voice.
Implementation Status in Nigeria:	1. Nigeria has signed an MOU with SITA for the deployment of ADS-C/MLAT and CPDLC within the Nigerian airspace to become operational in 2015. 2. The VDL Mode 2/Continental CPDLC facility will also be deployed to remote coastal areas in support of Low level Helicopter operations in the Gulf of Guinea. 3. Mode S also scheduled for activation in Nigeria by Dec. 2015

PIA$_4$:	**Efficient Flight Path**
Module Title:	**B0-CCO:** **Improved Flexibility and Efficiency in Departure Profiles (CCO)**
Elements:	1. CCO 2. PBN SIDs
Expected Benefits:	1. Cost savings through reduced fuel burn and efficient aircraft operating profiles. 2. Lower pilot and air traffic control workload. 3. Environmental benefits through reduced emissions. 4. Authorization of operations where noise limitations would otherwise result in operations being restricted.
Implementation Status in Nigeria:	1. Continuous Climb Operations operational at Lagos, Abuja, Kano, and Port Harcourt. 2. Standard Departure Routes operational on all Runways at Lagos, Abuja, Kano, Port Harcourt. 3. SIDs published for both Runways at Benin airport but not yet operational due to lack of an approved Domestic Operator into the aerodrome.

Conclusion:

From the foregoing submission, Nigeria in line with the ASBU Implementation Priorities, has placed emphases on the implementation of PBN, Continuous Climb and Continuous Descent Operations within her airspace with the aim of enhancing safety, and efficient flight operations. While considerable effort has been made, we would however not rest on our oars until PBN becomes fully operational at all our 30 aerodromes.

Our focus within the Block0 period would also be to complete our AIS Automation in order to achieve interoperability within and across our FIRs.

References:

1. Global Air Navigation Plan (Doc 9750, 4th Edition)
2. ICAO Presentation on Approach to ASBU Implementation,
3. ICOA Global ATM Operational Concept,
4. CANSO ASBU Implementation Guide, etc.

END

THANK YOU VERY MUCH!

PRESENTATION BY NIGERIAN DELEGATION TO ASBU WORKSHOP/SEMINAR IN ADDIS ABABA, ETHIOPIA
17TH – 21ST NOVEMBER, 2014