ICAO UNITING AVIATION

Air Navigation Global Update

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Air Navigation Bureau, ICAO

MIDANPIRG/15, Bahrain

8 – 11 June 2015

Regional Implementation – *Air Navigation*

Next GANP *2016*

GANP

PIRGS

Establish Regional Priorities, ASBU Modules & Targets
Regional workshops and meetings

Revise Regional Air Navigation Implementation Plans

Revise Regional Air Navigation Plans

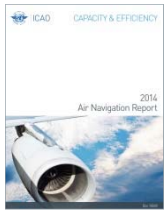
In progress

Revised PIRG Work Programme

PIRG Meeting Reports

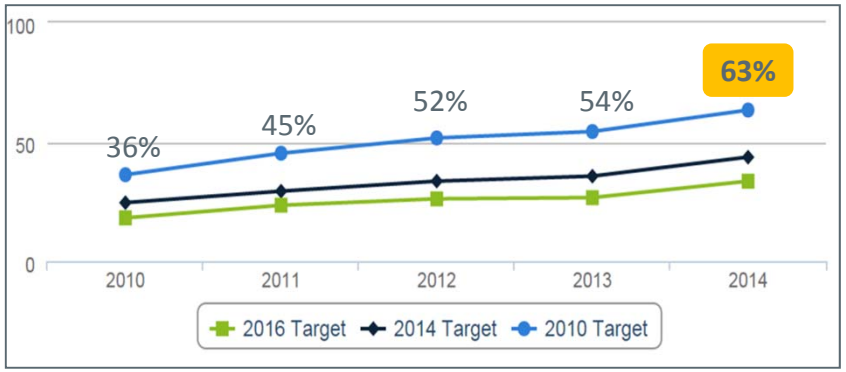
Annual ANC/Council Review

Regional Dashboards

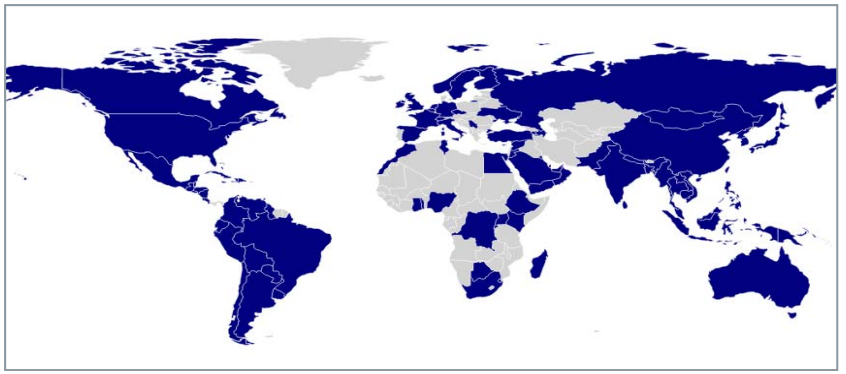


Annual Global Air Navigation Report

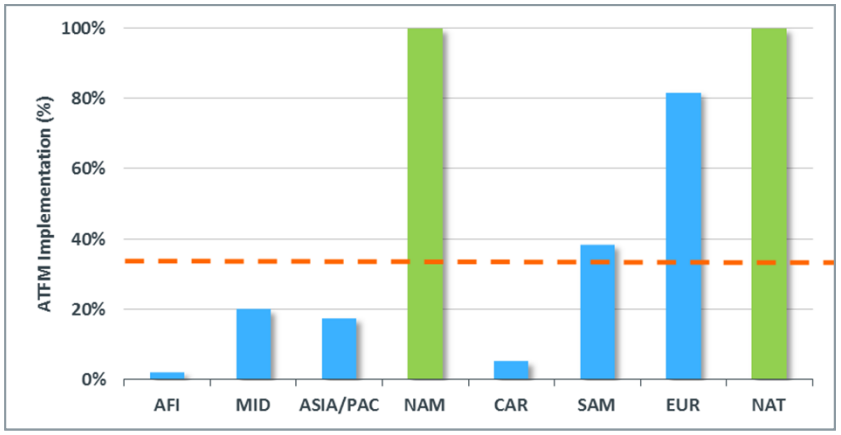
Preliminary Figures for the State of Global AIR NAVIGATION



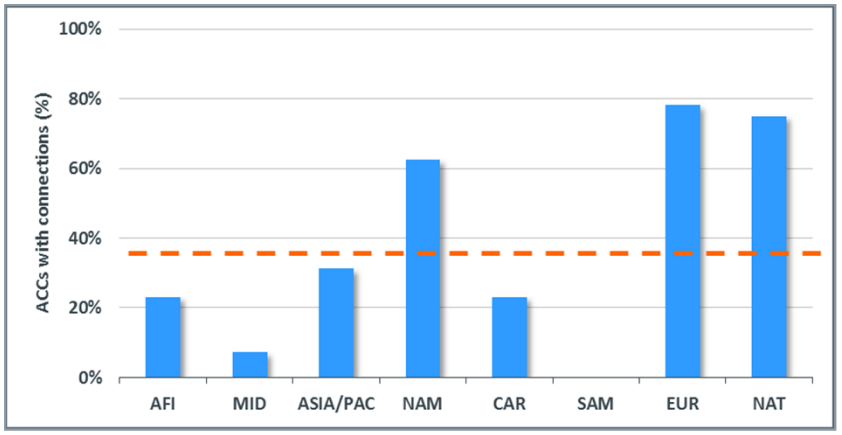
PROGRESS HAS BEEN MADE TOWARDS PBN RESOLUTION TARGETS



ONLY 55% OF STATES HAVE A PBN IMPLEMENTATION PLAN

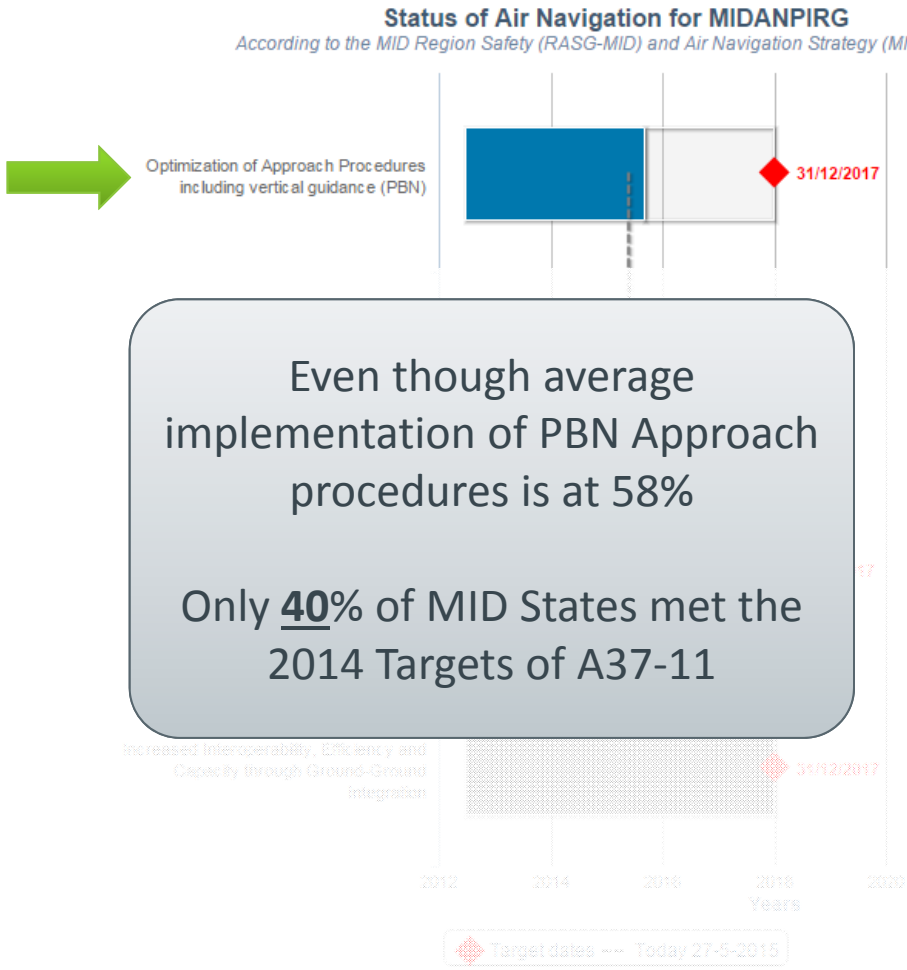


ATFM IS CURRENTLY BEING USED IN AREAS OF TRAFFIC CONGESTION



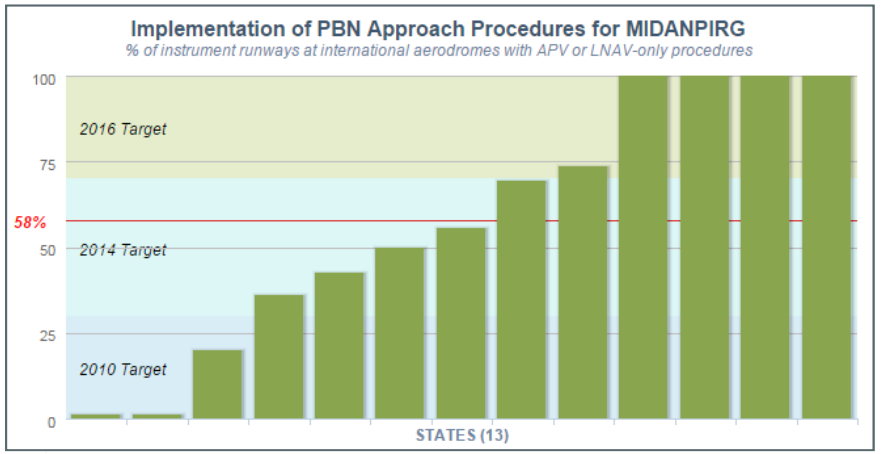
AIDC/OLDI GLOBAL IMPLEMENTATION IS AT 35.7%

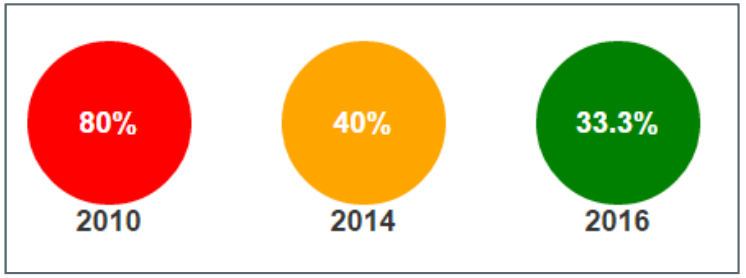
Regional Progress Against MID Region Air Navigation Strategy



Even though average implementation of PBN Approach procedures is at 58%

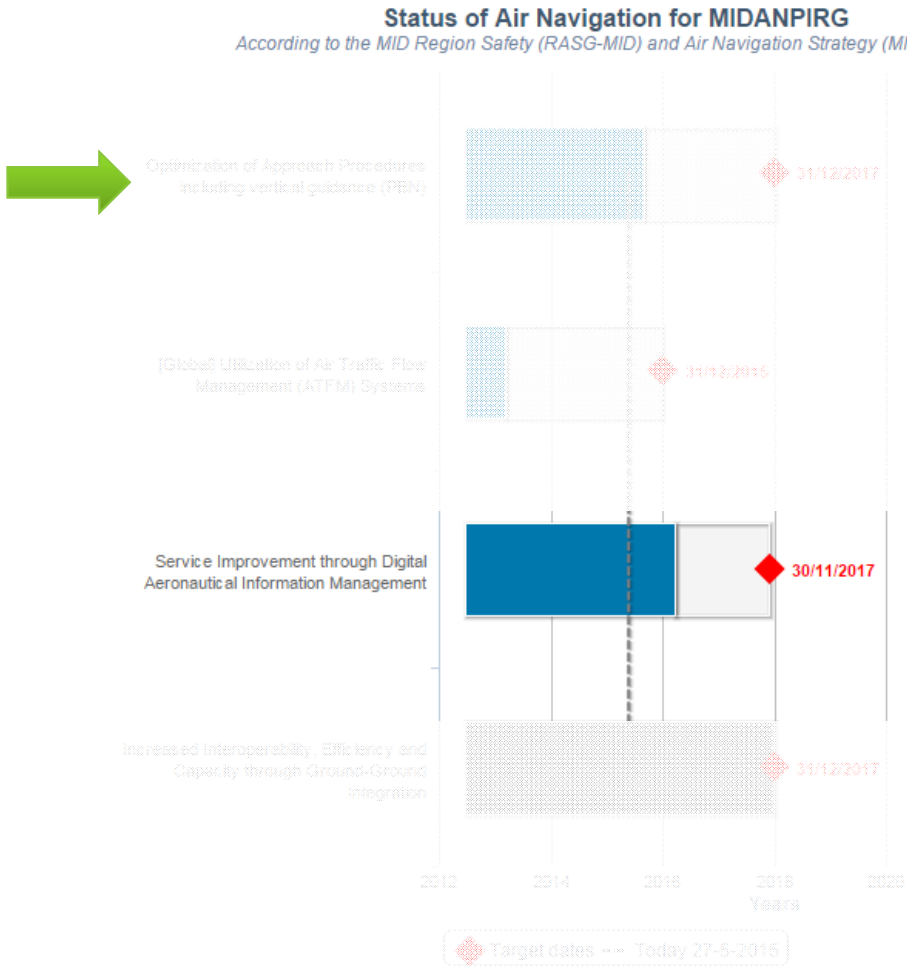
Only **40**% of MID States met the 2014 Targets of A37-11

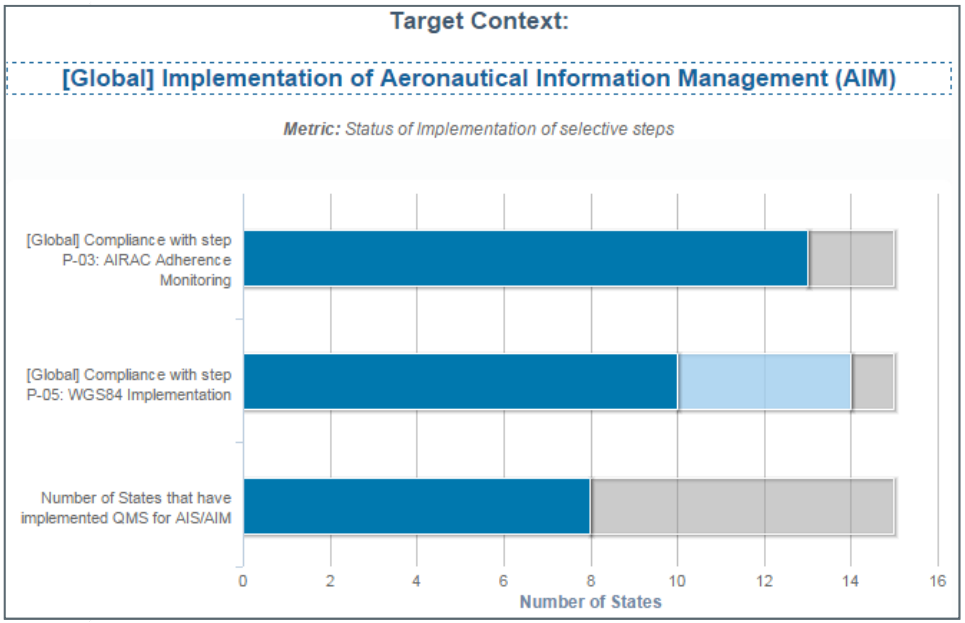




*Source: **Regional Dashboards** (www.icao.int/safety/pages/regional-targets.aspx)*

Regional Progress Against MID Region Air Navigation Strategy

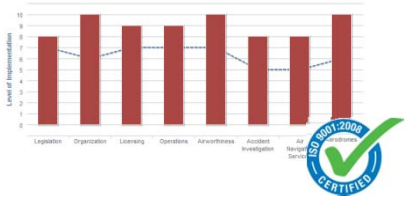




Source: ***Regional Dashboards*** *(www.icao.int/safety/pages/regional-targets.aspx)*

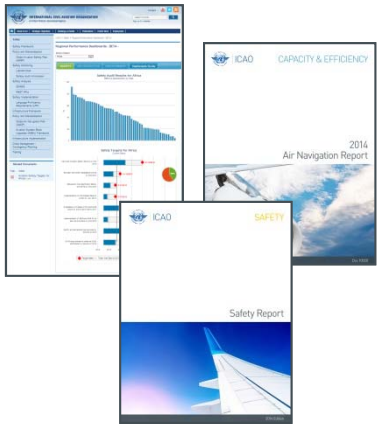
Needs Analysis & Validation

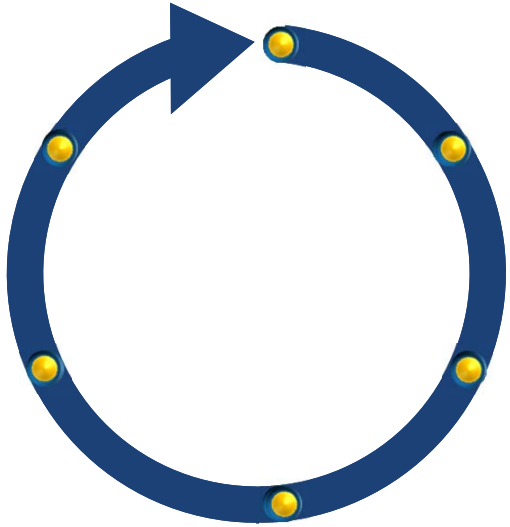
Compliance & Verification



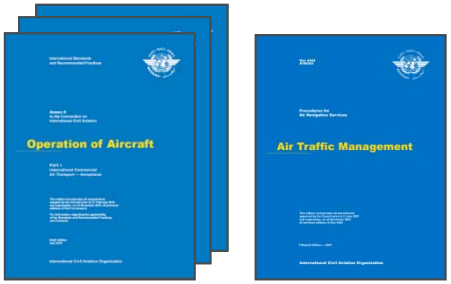
Global Plans

Measure, Monitor & Report





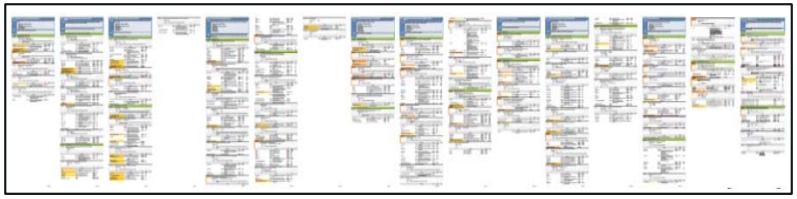
SARPs & PANS



Implementation Planning & Support

Training, Guidance and Tools

Current Initiatives for Implementation Enhancement



Safety and Air Navigation *INTEGRATED* Work Programme

Runway Safety Programme

PBN Implementation

APAC Regional Sub-Office (Asia)

Flight Procedures Programme (Africa)

Implementation Kits (iKITs)

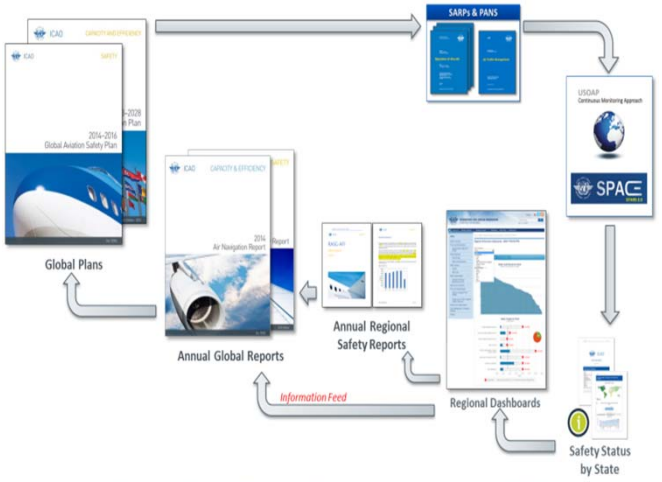
ICAO

GLOBAL AVIATION TRAINING

Training Packages for Planned SARPs

Computer-based Training

Impact Assessments



Global Feedback Mechanism for SARPs

Dashboards Next Steps

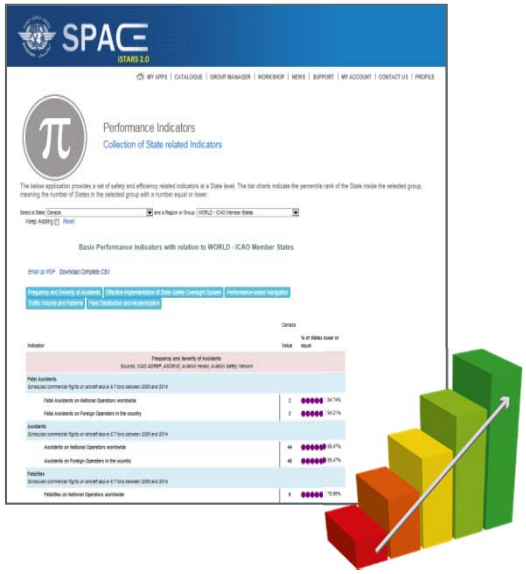
- **Completion of initial metrics (~2nd half of 2015)**
  - Region-specific targets
  - FIR-based metrics (ATFM, ground-ground)
  - ASBU Environmental Benefits
- **Hand-over of the Dashboards to ROs (~late 2015 to early 2016)**
  - Creation of management interface for agreements and metrics
    - Testing and feedback (2 months)
  - ICT migration plan and training
  - Regional office training plan
    - Maintenance of the dashboards system
    - Metric selection and data collection
  - Continued ANB and ICT support

Planned Initiatives for Implementation Enhancement

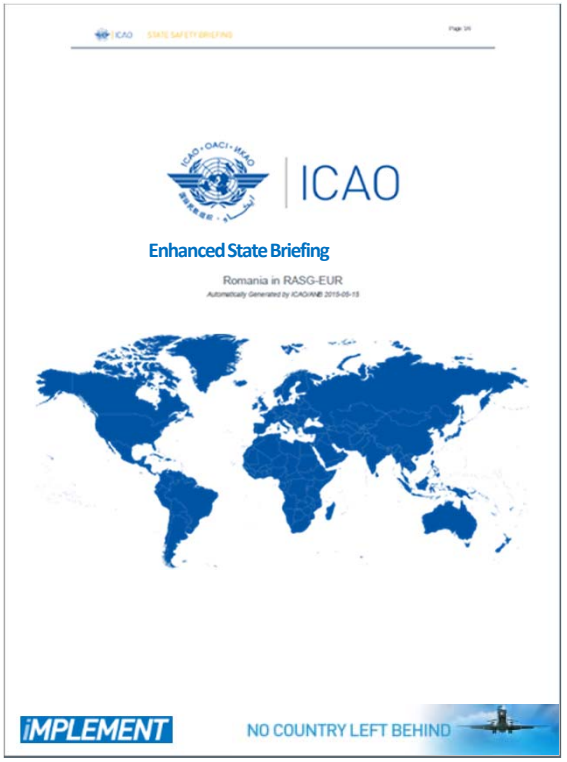
ICAO

GLOBAL AVIATION TRAINING

Customized Training Packages and iKITs



Basic Performance Indicators



Enhanced State Briefings

Implementation Kits (I-Kits)

- consolidated packages of technical guidance and tools to assist implementation of provisions
- for State Civil Aviation Authorities, service providers, implementing agencies and their personnel
- identify ICAO provisions, guidance and other awareness and learning materials and tools
- include similar products available from other International Organizations and examples from States
- periodically updated and continuously maintained
- available through the ICAO public web site

http://www.icao.int/safety/Implementation/Pages/IKits.aspx

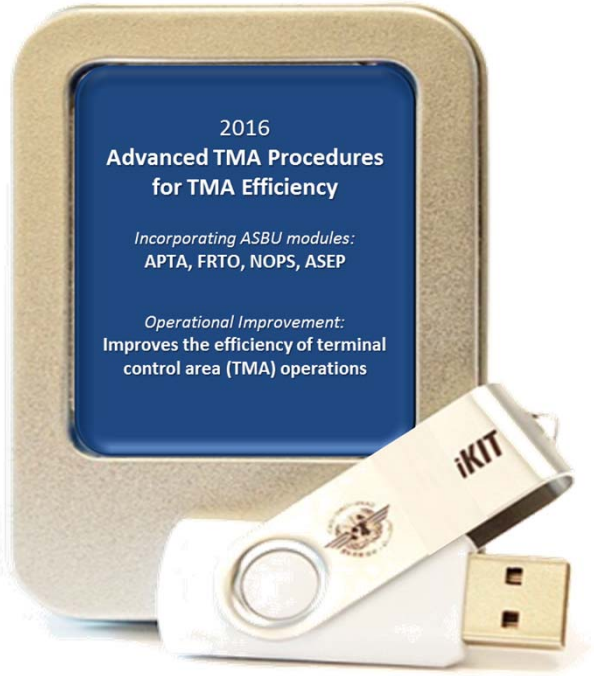
Existing Implementation Kits (I-Kits)

- **2012**
  - Aviation System Block Upgrades (ASBU) Block 0
  - Performance-based Navigation (PBN)
- **2013**
  - Aircraft Operator Certificate (AOC)
  - Safety Management
- **2014**
  - Runway Safety
- **2015**
  - Remotely Piloted Aircraft Systems (RPAS)
  - Performance-based Navigation (PBN) – *Updated Version*

http://www.icao.int/safety/Implementation/Pages/IKits.aspx

Implementation Kits (I-Kits) for 2016

- Initial steps to improve demand/capacity balancing
- Facilitate recognition through the harmonization of airworthiness regulatory approvals
- Improved Efficiency of Surface Operations
- Enhancing Safety at Aerodromes
- Improved Throughput at Aerodromes
- Early steps towards user-preferred routing
- Optimized aerodrome departure/arrival rates under all meteorological conditions
- Advanced ATM Procedures for TMA Efficiency (updated and expanded PBN iKit)
- In-Flight Accident Reduction Tool



2nd PIRG-RASG Global Coordination Meeting

- Held in Montréal on 5 Feb 2015
- Attended by PRES, Directeur de Cabinet OSG, D/ANB, RDs, Chairs of PIRGs and RASGs
- Agreed on the following:
  - Each region to establish a mechanism for **PIRG-RASG coordination** and include it in procedural handbooks/manuals by **December 2015**
  - Focus on **implementation of I-Kits** and regional training
  - Regions need to measure against implementation and performance indicators and targets. **Ten performance indicators** for safety and air navigation will be chosen to start collecting the data
  - Next PIRG-RASG Global Coordination Meeting is suggested to be held during the **39th Session of the Assembly**

Measuring Global Air Navigation

Proposed Core Key Performance Indicators

Capacity throughput KPIs

- Peak Arrival Capacity
- Peak Arrival Throughput

Customer-focused KPIs : On-Time Punctuality / Schedule Delay

- Actual off-block time against scheduled departure time
- Actual on-block time against scheduled arrival time

Flight efficiency KPIs

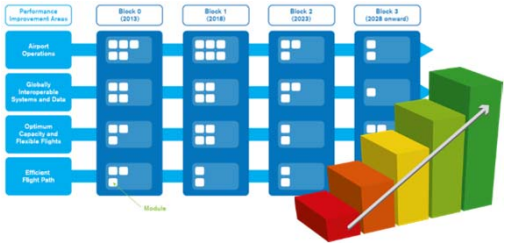
- Taxi-Out Additional Time
- Taxi-In Additional Time

Delay KPIs (if ATFM exists)

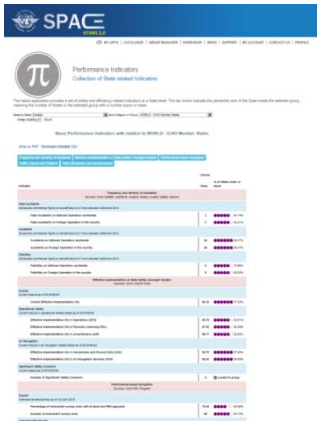
- En-Route ATFM Delay
- Airport/Terminal ATFM Delay

Future Developments

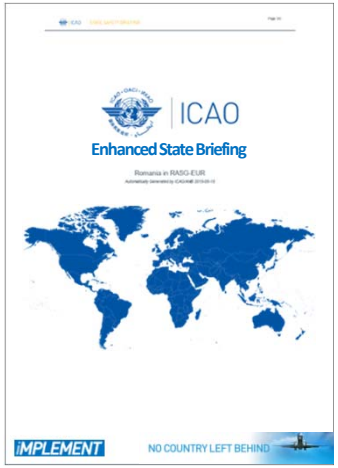
- Continue identification and development of key performance indicators



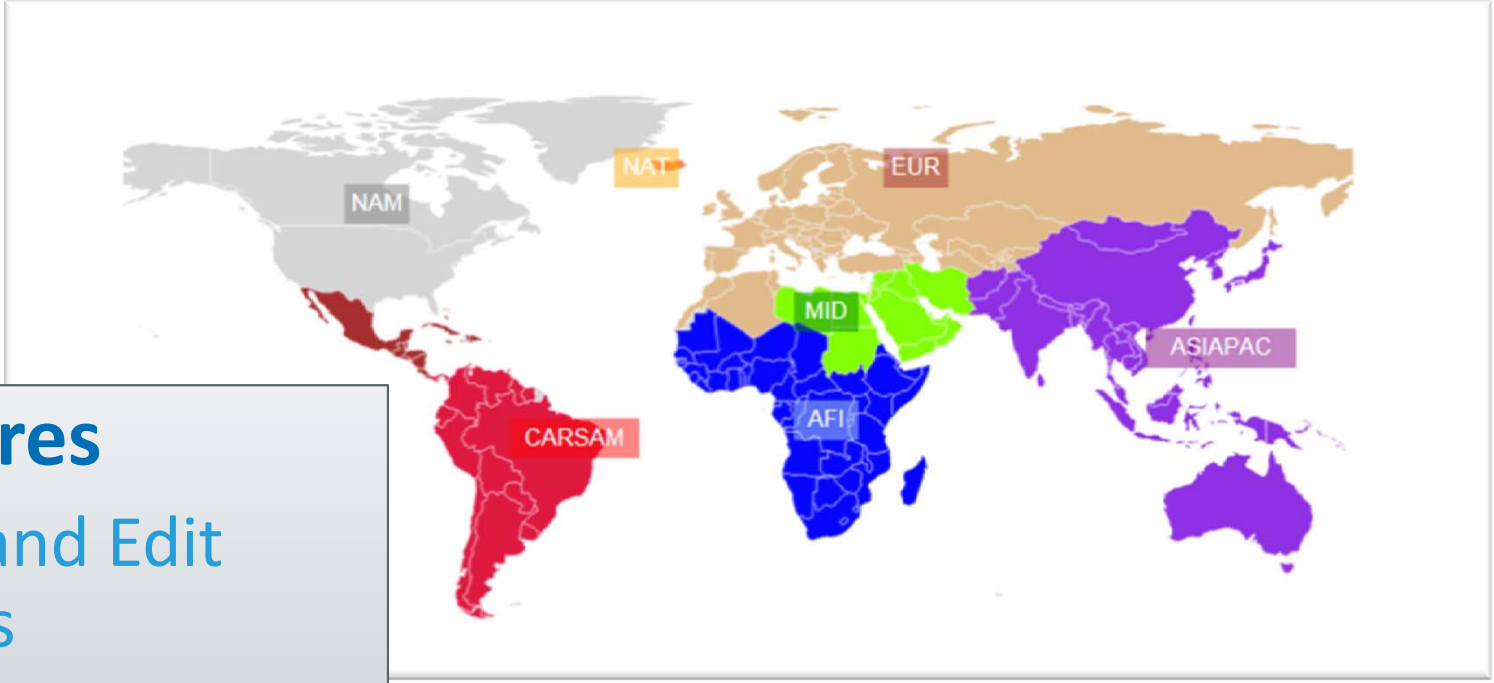
- Centralize into one interface for regional customization – ‘Metrics Catalogue’



- Integrate into high-level State briefings with context of regional targets and indicators



New eANP



Key Features

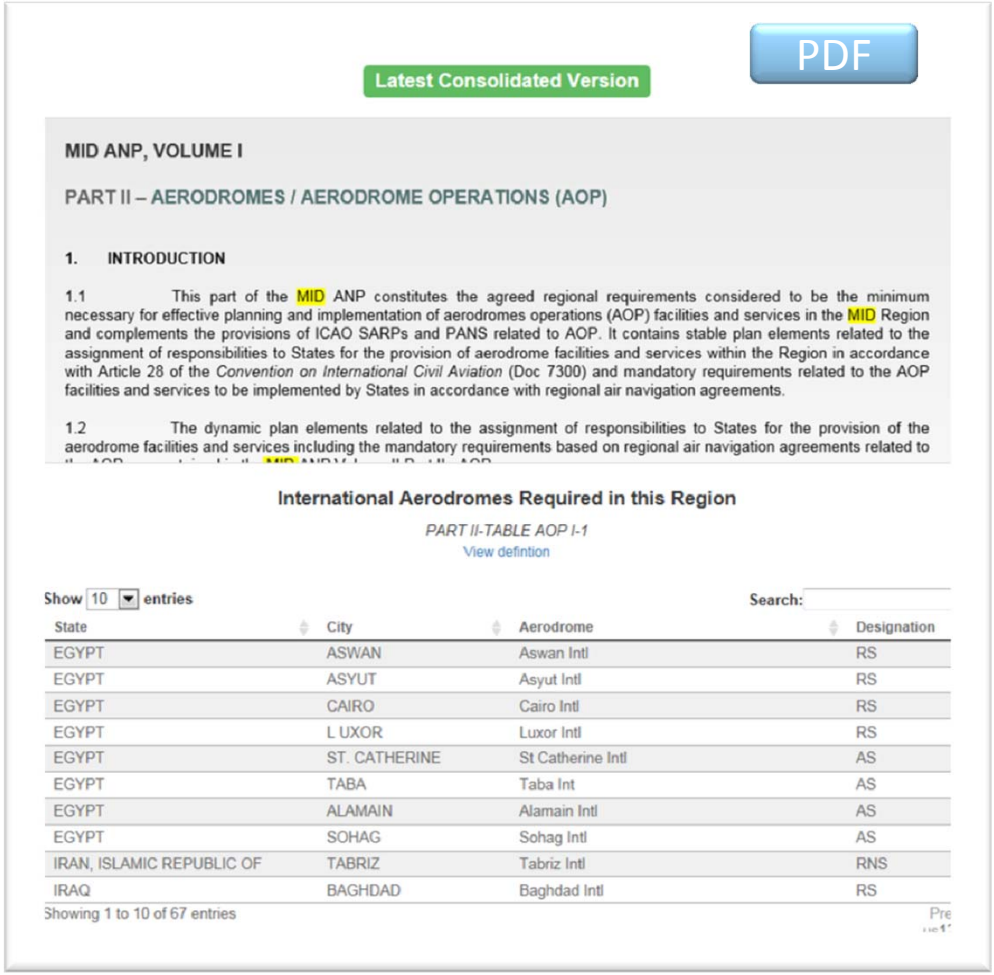
- Read and Edit Modes
- Table Search
- PDF Generation

Volumes and Sections

Easy selection of regional plans through interactive map

Integrated View

Text and Searchable tables printable to PDF



PDF

Latest Consolidated Version

MID ANP, VOLUME I

PART II – AERODROMES / AERODROME OPERATIONS (AOP)

1. INTRODUCTION

1.1 This part of the MID ANP constitutes the agreed regional requirements considered to be the minimum necessary for effective planning and implementation of aerodromes operations (AOP) facilities and services in the MID Region and complements the provisions of ICAO SARPs and PANS related to AOP. It contains stable plan elements related to the assignment of responsibilities to States for the provision of aerodrome facilities and services within the Region in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300) and mandatory requirements related to the AOP facilities and services to be implemented by States in accordance with regional air navigation agreements.

1.2 The dynamic plan elements related to the assignment of responsibilities to States for the provision of the aerodrome facilities and services including the mandatory requirements based on regional air navigation agreements related to

International Aerodromes Required in this Region

PART II-TABLE AOP I-1

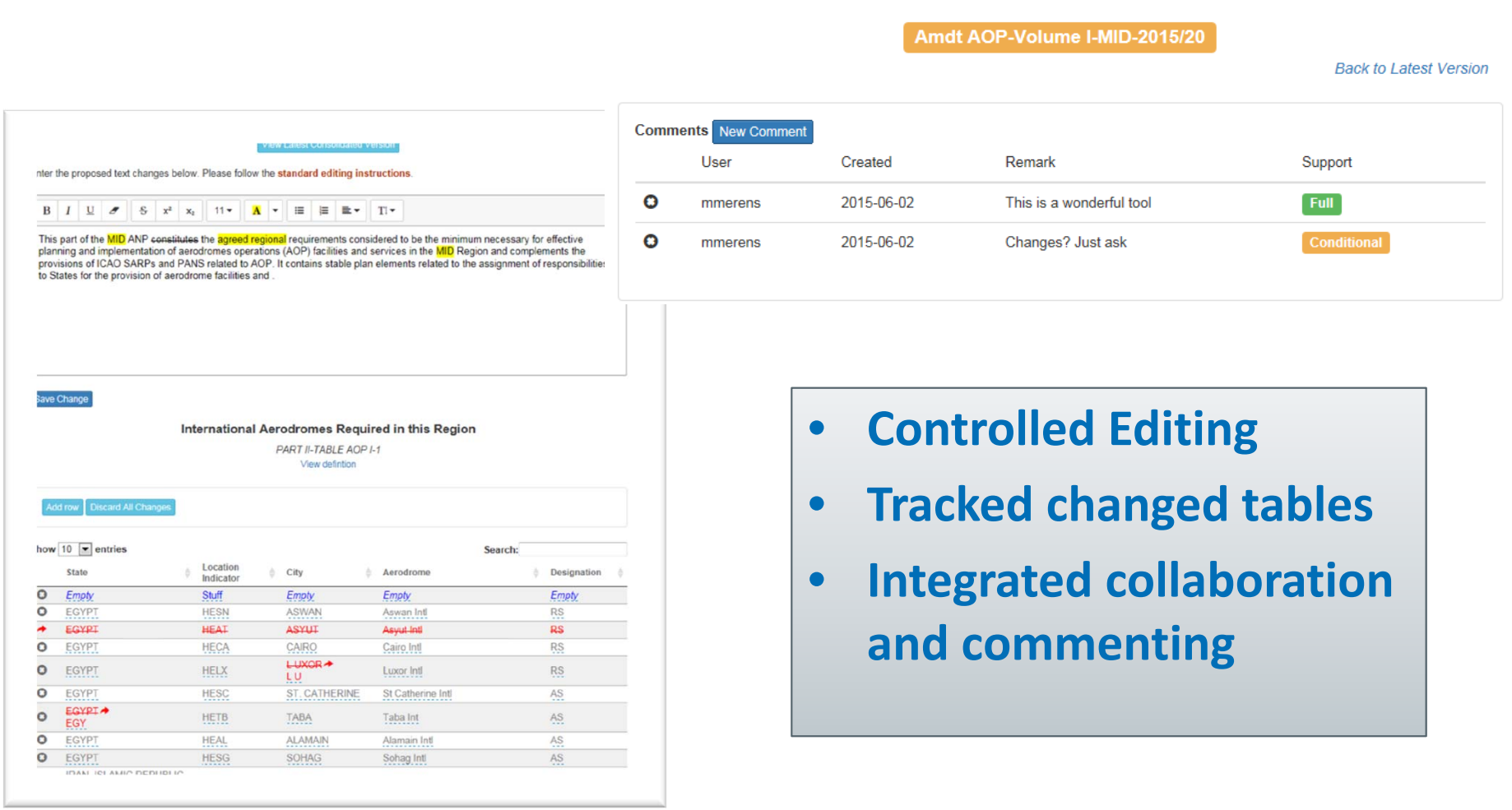
View defintion

Show 10 entries Search:

State	City	Aerodrome	Designation
EGYPT	ASWAN	Aswan Intl	RS
EGYPT	ASYUT	Asyut Intl	RS
EGYPT	CAIRO	Cairo Intl	RS
EGYPT	L UXOR	Luxor Intl	RS
EGYPT	ST. CATHERINE	St Catherine Intl	AS
EGYPT	TABA	Taba Int	AS
EGYPT	ALAMAIN	Alamain Intl	AS
EGYPT	SOHAG	Sohag Intl	AS
IRAN, ISLAMIC REPUBLIC OF	TABRIZ	Tabriz Intl	RNS
IRAQ	BAGHDAD	Baghdad Intl	RS

Showing 1 to 10 of 67 entries

Proposal for Amendments Included



- Controlled Editing
- Tracked changed tables
- Integrated collaboration and commenting

NGAP


70
CELEBRATING 70 YEARS
of the Chicago Convention
Celebrate the Past,
Prepare for the Future
2nd Next Generation of Aviation Professionals (NGAP) Symposium

ICAO UNITING AVIATION

Procedures for Air Navigation Services (PANS) -Training

Provisions for Competency-based training (CBT) and Assessment for Air Traffic Controllers and Air Traffic Safety Electronics Personnel

Benefits of Competency Based Training

- In a complex safety environment, the benefits of implementing a competency-based training approach reach far beyond the development of sound training programmes. A focus on competence allows organizations to tailor the training to its goals and values. A focus on competence drives training to ensure ATCO's not only have the knowledge, skills and attitude to perform the tasks but can perform these tasks at a proficient level and in an integrated manner.

Proposed PANS-Training structure

Part Number	Part Title
1	General Procedures
2	Training and Assessment for Aircraft Operational Personnel
3	Training and Assessment for Aircraft Maintenance Personnel
4	**Training and Assessment for Air Traffic Management Personnel**
5*	*Training and Assessment for Aerodrome Personnel*
6*	*Training and Assessment for Other Aviation Personnel*

* = Potential Future Work

Part 4 – Training and Assessment for Air Traffic Management (ATM)Personnel

- General provisions for ATM Personnel
- Competency-based training and assessment for ATCOs
- Competency-based training and assessment for ATSEPs

General Provisions – Key points

- Implementation shall comply with PANS-training provisions
- Competency frameworks provide a generic model to be adapted to specific local and organizational environments
- Instructional Systems Design methodology essential to implementation
- Continuous evaluation

Implementation of CBT for ATCOs and ATSEPs – Guidelines for Authorities

- Programme shall demonstrate achievement of training objectives
- Provisional approval to first CBT programme
- Application of Doc 9841 guidance concerning approval of training programmes
- Continuous evaluation
- Mechanism for regular feedback between ATO/ANSP and Authority
- Close coordination with all stakeholders

CBT for ATCOs

- **Compliance with Annex 1 and General Provisions**
- **Training to be completed within defined time frame**
- **Transition to CBT should be progressive**
- **In addition:**
  - To be conducted by Approved Training Organizations
  - Authorities develop and/or approve assessment process
  - OJT requirement

ATCO Competency Framework

- Consists of Competency Unit, Competency element and performance criteria
- Competencies are not listed according to a predefined priority
- Performance criteria may serve one or more competency units and elements
- Criteria used to judge level of performance to be established by ANSP and/or ATO
- Principles of threat and error management to be integrated

ATCO Competency Framework

- Situational Awareness
- Traffic and Capacity Management
- Separation and Conflict Resolution
- Communication
- Coordination
- Management of non-routine situations
- Problem-solving and decision-making
- Self-management and continuous development
- Workload management
- Teamwork

CBT for ATSEPs

- ATSEP is the recognized ICAO terminology for personnel proven to be competent in the installation, operation and/or maintenance of a CNS/ATM system
- ANSP are responsible for defining the scope of ATSEP activities.
- Appropriate Authority should approve this definition
- Authorities may choose to validate ATSEP training and assessment
- Training integrates theoretical and practical instruction
- ANSPs and/or Authorities to continuously evaluate effectiveness of CBT

ATSEP Competency Framework

- Consists of Competency Unit, Competency element and performance criteria
- Competencies are not listed according to a predefined priority
- Performance criteria may serve one or more competency units and elements
- Criteria used to judge level of performance to be established by ANSP and/or ATO

ATSEP Competency Framework

- Engineering
- Situational Awareness
- Service Provision
- Coordination
- Management of non-routine situations
- Problem-solving and decision-making
- Self-management and continuous learning
- Workload management
- Teamwork
- Communication

Implementation Support Plan for ATM Competency-based approach to Training and Assessment

- **amendment to PANS-TRG – applicable on 10 November 2016**
- **ICAO is finalising the new manuals which are expected to be published in early 2016**
- **NGAP Implementation working group is developing material for ICAO regional workshops based on the new provisions and manuals**
- **Workshops objectives are to:**
  - Promote the use of competency-based provisions
  - Promote the implementation of CBT for ATCOs and ATSEPs
  - Assist ANSPs in implementing CBT to meet their organizational and operational specificity
- **Workshops to be conducted in each ICAO region in 2016 - 2017**
- **First workshop to be delivered at ICAO headquarters in early 2016**
- **MID workshop planned for October 2016**
- **Implementation Kit on web site in 2016 (content will include: ATCO kit, ATSEP kit, PANS-TRG, training manuals; workshop material, internship toolkit, NGAP Index, etc.)**

RPAS Symposium

23 – 25 March 2015

- **Comprehensive Picture:**
  - RPAS and UAS are **everywhere**
  - RPAS **must fit** into the aerospace system
  - Existing frameworks provide **foundation**
  - States need guidance for **national regulations**
  - Harmonization of national regulations to support **international operations**
  - **Regulations** are ahead of SARPs

- **Conclusions**
  - Government / Industry **collaboration** (civil and military)
  - **Terms and Definitions** (RPAS Manual, Annex 2 and Annex 7)
  - **Operational procedures** (civil and military)
  - **Spectrum** utilization
  - **Safety oversight** methodology
  - **Safety management** at all levels (Feedback loops)

Commonalities

- Time critical: global guidance for national operations
- Global regulatory framework
- Common terminology, understanding
- Education is key
- Priorities and roadmaps
- Convergence on technology, procedures and processes

Comprehensive picture

- RPAS and UAS are everywhere
- RPAS must fit into the aerospace system
- Existing frameworks provide foundation
- States need guidance for national regulations
- Harmonization of national regulations to support international operations
- Regulations are ahead of SARPs

Industry level

- Collaborative approach facilitating harmonized RPAS operations
  - Build strong relationship with authorities to share goals, exchange information and establish common expectations

- RPAS industry without traditional aviation background should connect with aviation partners to learn processes and requirements

National level

- Collaborative approach facilitating harmonized RPAS provisions
  - Work with existing entities: e.g. military, JARUS, industry associations, ICAO
- Take a safety management, risk-based approach to addressing regulations
- Collect and analyze data from operators, manufacturers, service providers, users

Regional level

- Collaborative approach to facilitating harmonized RPAS provisions
  - Agreements amongst States on common expectations and solutions, for both civil and military
  - Inter-Regional collaboration and coordination during implementation

Global level

- Collaborative approach facilitating globally harmonized RPAS provisions

ICAO timeline

- Existing Standards in Annexes 2 and 7;
  - Annex 2 / Initial Standards for operating rules, certificates and licensing and Special Authorization
  - Annex 7 / Standards on nationality and registration marks and identification plates
- new Manual on Remotely Piloted Aircraft Systems (RPAS) (Doc 10019) - contains guidance for States, operators, service providers and other stakeholders
- RPAS I-Kit http://cfapp.icao.int/tools/ikit/rpasikit/story.html
- > 50 tasks in the RPAS Panel work programme

ICAO 2018 Standards

- Annex 1, licencing for remote pilots
- Annex 6, RPA integration into non-segregated airspace, RPAS operator certificate (ROC), safety management
- Annex 8, initial airworthiness (phase 1), process to support the C2 link
- Annex 19, safety management on RPAS operators and operations

ICAO 2018 Procedures for Air Navigation Services (PANS) and RPAS Manual

- PANS-TRG (Doc 9868), training provisions for Remote Pilots
- Manual on Remotely Piloted Aircraft Systems (RPAS) (Doc 10019), updated and expanded guidance on airworthiness, operations, licensing, command and control, detect and avoid, ATM, flight recorders and aerodromes

ICAO 2020 Standards

- Annexes 2, 3, 6, 8, 10, 11, 14 and 19, initial mitigation means applicable to RPAS which are missing from the Annexes
- Few identified examples:
  - Airworthiness, operations and spectrum requirements for C2 link Required Communication Performance (RCP)
  - Security requirements of the C2 link, oversight of C2 link service providers, ATM contingency procedures for loss of C2 link
  - Requirements for handovers between Remote Pilot Stations (RPS)
  - Initial requirements for IFR RPAS operations in controlled airspace / aerodromes

Conclusions

- Government / industry collaboration (civil and military)
- Definitions
- Operational procedures (civil and military)
- Spectrum utilization
- Safety oversight methodology
- Safety management at all levels
  - Feedback loops

GLOBAL EVENTS

ICAO / UNOOSA Aerospace Symposium (18 – 20 March 2015)

- **Symposium Outcomes:**
  - General consensus that commercial space transportation **will happen**
    - Initially from remote locations with segregated traffic, evolving to full integration
  - For the moment, **no international regulation** is required
  - **Strategy**: Preparation and education of all stakeholders
  - **How to engage on the subject with ICAO / UNOOSA**
    - **Be at the table** - join the ICAO / UNOOSA Space Learning Group at **www.icao.int/aeroSPACE**
    - **Share** your experience and concerns related to integration of airspace
    - Commitment is not resource intensive – high value for low cost
  - **Second ICAO / UNOOSA Aerospace Symposium** is scheduled for next year in 2016, hosted by the United Arab Emirates

- Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA)
- CAPSCA **achievements** and **lessons** learned
- considered public health preparedness planning and response in the aviation sector - How to prepare for an outbreak; latest guidance and plans, Ebola Virus Disease outbreak; etc.
- Future for CAPSCA and multi-sector collaboration

www.icao.int/Meetings/CAPSCA2015

- **Theme:** ***No Country Left Behind***
- **Objectives:**
  - Promote ICAO's shift from a purely standards-making organization to one that is focused more on implementation
  - Identify the socio-economic benefits and contributions of civil aviation in the context of UN Sustainable Development Goals
  - Provide awareness of ICAO's work programme in the context of NCLB initiatives
  - Provide greater focus on coordinated implementation assistance to States
- **Tentative Programme Topics:**
  - How ICAO facilitates the development of civil aviation and provide socio-economic benefits for each State
  - UN Sustainable Development Goals and the socio-economic benefits of civil aviation
  - Current status of aviation in States, including forecasted growth, implementation gaps and assistance needed
  - Collaborative implementation assistance approach, tools and methods to achieve global, national and regional objectives

ICAO UNITING AVIATION

NEW ANB STRUCTURE

ACTING CHIEF:
M. Merens

Integrated Aviation Analysis (IAA) [VACANT]

Air Navigation Bureau
[D/ANB – S. P. Creamer]

Programme Manager – Multidisciplinary Priorities (PM-MP) [Y. Fattah]

Monitoring & Oversight
[DD/MO – H. Gourdji]

Aviation Safety
[DD/SAF – C. Radu]

Air Navigation Capacity and Efficiency
[DD/AN – R. Macfarlane]

Safety & AN Oversight Audit (OAS) [N. Rallo]

Oversight Support Unit (OSU) [T. Mistos]

Accident Investigation (AIG) [M. Costa]

Aviation Medicine (MED) [A. Evans]

Operational Safety (OPS) [J. Illson]

Cargo Safety (CSS) [K. Rooney]

Prog. Manager – Remotely Piloted Aircraft Systems (PM-RPAS) [L. Cary]

Safety Imp. Planning & Support (IMP-SAF) [M. Vreedenburgh]

Integrated Planning (IPS) [G. Brock]

Airport Operations & Interoperability (AOI) [Y. Wang]

Airspace Management & Optimization (AMO) [C. Dalton]

Programme Manager - Performance based Navigation (PM-PBN) [E. Lassooij]

Air Navigation Imp. Planning & Support (IMP-AN) [S. Da Silva]

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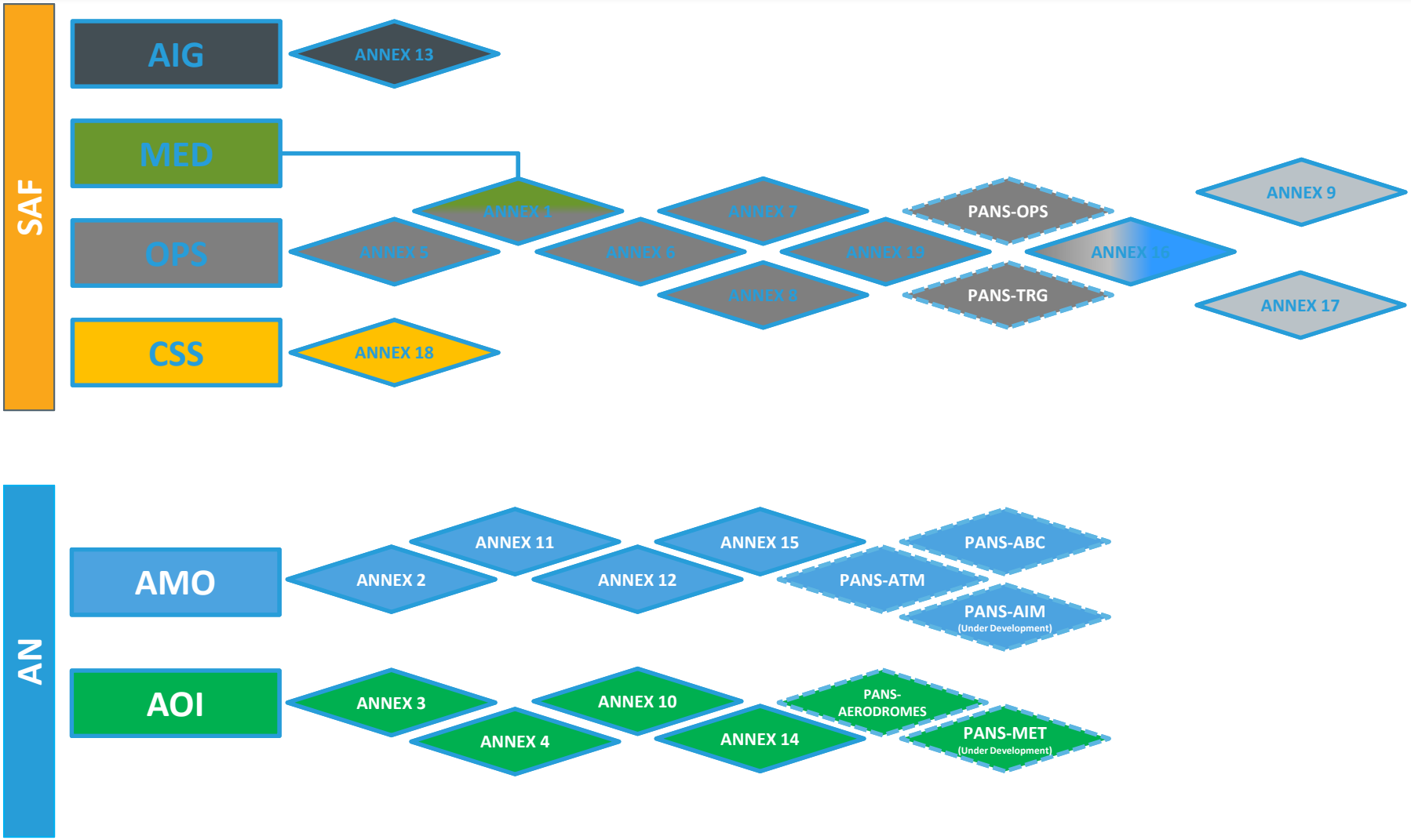
AIR NAVIGATION BUREAU

AIR TRANSPORT BUREAU



Note 1: Annex 1 is shared between OPS and MED
Note 2: Annex 16 is shared between ATB and ANB (OPS)

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