International Civil Aviation Organization

Seminar/Workshop on the Implementation of the Performance Based Air Navigation Plan for the SAM Region (SAM-ANIP-PB)

Meteorological Service for International Air Navigation (MET)
Nohora Arias F. (RO/MET/SAM)
Lima - Peru, 9 to13 May 2011

SEMINAR/WORKSHOP ON ANIP-PB FOR THE SAM REGION

INTERNATIONAL CIVIL AVIATION ORGANIZATION
SOUTH AMERICAN REGIONAL OFFICE

IMPLEMENTATION OF THE PERFORMANCE BASED AIR NAVIGATION PLAN FOR THE SAM REGION

Version 1.0

October 2010

SEMINAR/WORKSHOP ON ANIP-PB FOR THE SAM REGION

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Chapter 6: Meteorology

Introduction

6.1.1 The global ATM operational concept represents **the vision** of ICAO for a globally integrated, harmonised and interoperational ATM system. The purpose of the ATM operational concept is **to achieve a globally interoperational ATM system for all users during all flight phases that meets the agreed levels of safety, provides cost-effective operations, is environmentally sustainable, and meets national security requirements.** The development of new technologies for both ATS and airborne systems will significantly expedite the improvement and expansion of the ATS currently provided to aircraft operators. **This process will undoubtedly require additional meteorological support for ATS and will affect coordination between ATS and meteorological authorities and their respective operational units.**

THE OPERATIONAL CONCEPT AND THE ATM SYSTEM

WHAT IS THE OPERATIONAL CONCEPT?

A statement of **"what" is envisaged.** It asks and answers the question of what outcomes are required in the case of the ATM system of the future**. It is a vision statement.** It is not a technical manual or blueprint nor does it detail "how" things will be enables; that lies in a lower document in the hierarchy, which may include concepts of operation or use, technical standards and strategic plans (1.2.1).

WHAT IS THE ATM SYSTEM?

A system that provides ATM **through the collaborative integration of humans, information, technology, facilities and services**, supported by air, ground and/or space-based communications, navigation and surveillance (1.2.2).

ÁMBITO DEL CONCEPTO

This operational concept describes the manner in which the ATM system will deliver services and benefits to airspace users by 2025. It also details **how ATM will act directly on the flight trajectory of a manned or unmanned vehicle during all phases of flight, and the interaction of that flight trajectory with any hazard.**

OPERATIONAL CONCEPT OF THE GLOBAL ATM

GUIDING PRINCIPLES

The ATM system is based on the provision of services. This service-based framework considers all resources, *inter alia,* airspace, aerodromes, aircraft and humans, to be part of the ATM system. The primary functions of the ATM system will enable flight from/to an aerodrome into airspace, safely separated from hazards, within capacity limits, making optimum use of all system resources. The description of the concept components is based on realistic expectations of human capabilities and the ATM infrastructure at any particular time in the evolution to the ATM system described by this operational concept and is independent of reference to any specific technology. Based on these considerations the elements are predicated on the guiding principles that follow.

MET SUPPORT TO ATM PERSPECTIVE

FAA/EUROCONTROL TECHNICAL INTERCHANGE MEETING 10-02
18-19 November 2010, *EUROCONTROL, Brussels'*

ICAO identified the need to:

- review Annex 3 and supporting documents to reflect better the provisions required from a MET Support to ATM perspective;
- develop a roadmap for the introduction of **Information Management** principles by the ICAO Aerodrome Meteorological Observation and Forecast Study Group (AMOFSG);
- provisions with respect to future services.

The first main deliverable will be to develop this roadmap, including the identification of threats and opportunities that can be submitted to the Air Navigation Conference in 2012 and as a follow-up the ICAO Assembly of 2013.

The Assembly will be asked to support the overall change with respect to MET Support to ATM and it will be recommended that it requests ICAO to establish a task force (in 2012) to assist the ICAO ANB to prepare the changes to the technical material such as Annex 3.

MET SUPPORT TO ATM PERSPECTIVE

FAA/EUROCONTROL TECHNICAL INTERCHANGE MEETING 10-02
18-19 November 2010, *EUROCONTROL, Brussels'*

Objective for change

- Develop enablers /requirements for MET/ATM in support of regional ATM modernization Programmes such as NextGen/SESAR;
- Elevate overall MET service provision for aviation (including unspoken purpose of improved safety);
- Reallocate guidance material to ICAO documents (Annex 3, PANS, Regional Plans, Basic/FASID and guides) in a manner that facilitates more responsiveness to changes in technology, i.e., move as much technical material from Annex 3 to easier-to-change manuals or lower guidance documents, which will allow more change governance by expert teams rather than by votes of all ICAO States.

MET SUPPORT TO ATM PERSPECTIVE

FAA/EUROCONTROL TECHNICAL INTERCHANGE MEETING 10-02
18-19 November 2010, *EUROCONTROL, Brussels'*

Drivers for change

- Better MET support to ATM i high density airspace;
- transition from text to data for improved accessibility, display and interoperability with decision support tools;
- allow for more flexibility:
  - service provision regulation (rule vs acceptable means of compliance), not prescriptive to all, only to high density airspace;
  - Allow more flexible governance processes by moving provisions out of Annex.

MET SUPPORT TO ATM PERSPECTIVE

FAA/EUROCONTROL TECHNICAL INTERCHANGE MEETING 10-02
18-19 November 2010, *EUROCONTROL, Brussels'*

Challenges to change

Challenge 1

Overcome resistance of States/METSP (MET Service providers) to accept the changes that stem from:

- concern about cost of required change to procedures, equipage and training;
- concern about ability to acquire or master technology to implement changes;
- Perceived loss of prestige if unable to meet new requirements;
- disagreement about technical appropriateness for the changes; and
- weariness of Annex changes since last major revision was effective within the last 5 years or so

MET SUPPORT TO ATM PERSPECTIVE

FAA/EUROCONTROL TECHNICAL INTERCHANGE MEETING 10-02
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Challenges for change

Challenge 2

- Airlines concerns that changes would be blank check for METPS to drive over-flight charges;
- changes could drive airline equipage and training.

Challenge 3

- How to demonstrate whether or not AMOFSG is up to the task; and
- if not, how to gain acceptance for more radical change process of having the ANC direct the establishment of a task group with terms of reference to produce staged changes to the entire ICAO portfolio of MET documentation with first changes ready for the Divisional Meeting in 2014.

OPERATIONAL CONCEPT OF THE GLOBAL ATM

GUIDING PRINCIPLES

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WHAT TYPE OF APPROACH ARE WE MENTIONING?

For an organization to function effectively, it has to determine and manage numerous linked activities. An activity or set of activities using resources, and managed in order to enable the transformation of inputs into outputs, can be considered a process. Often the output from one process directly forms the input to the next.

PROCESS APPROACH

The adoption of a process approach develops, implements and improves the effectiveness of a quality management system, to enhance customer satisfaction by meeting customer requirements.

TO SHARE A "COMMON VIEW"

MISSION

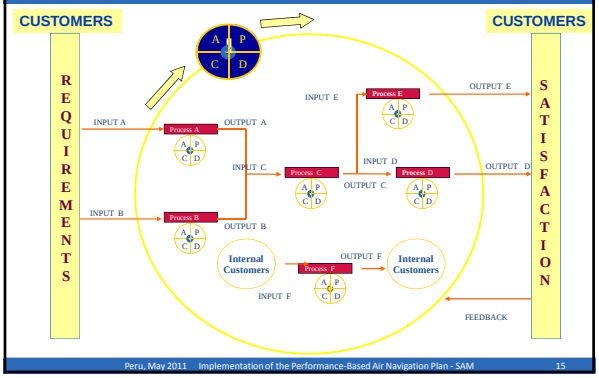
VISION

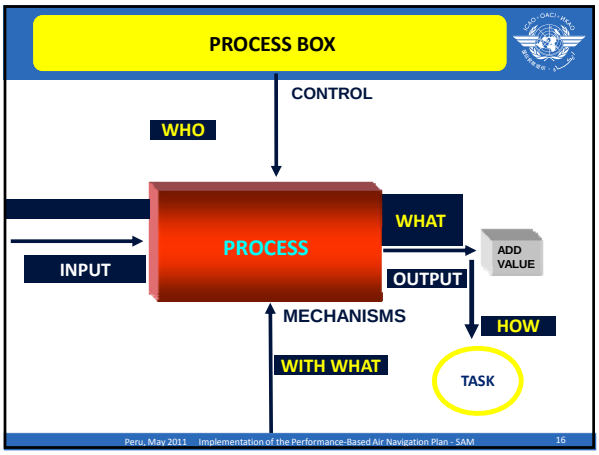
STRATEGY AND POLICY

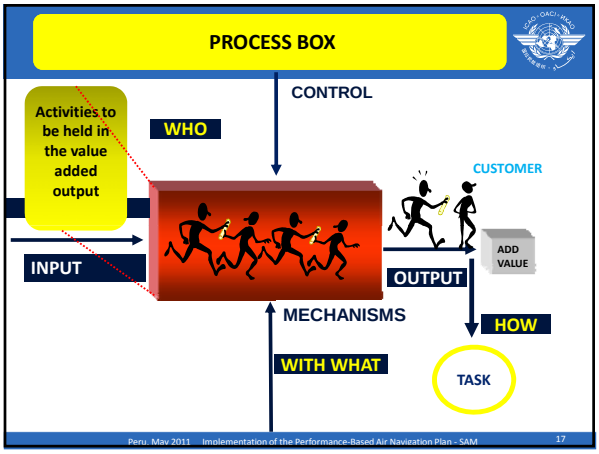
COMMITMENTS

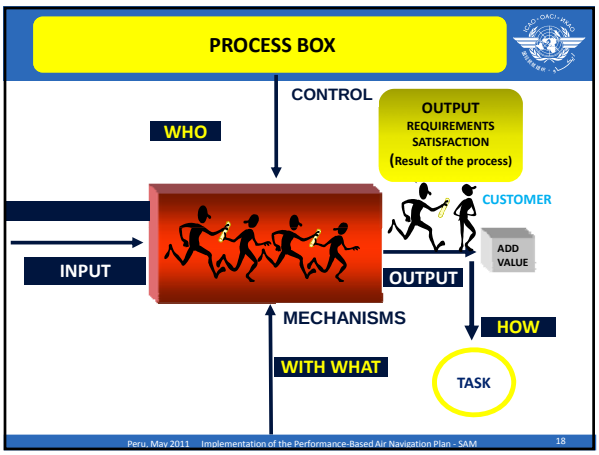
With our Stakeholders: financial responsibility and operational service standards
With our Customers: quality and timeliness of MET information
Internally: operational standards
Technology and infrastructure: Innovation, reliability, organization support
Risk management: risk mitigation in MET processes
Personnel: attract personnel of the highest level, promote growth.

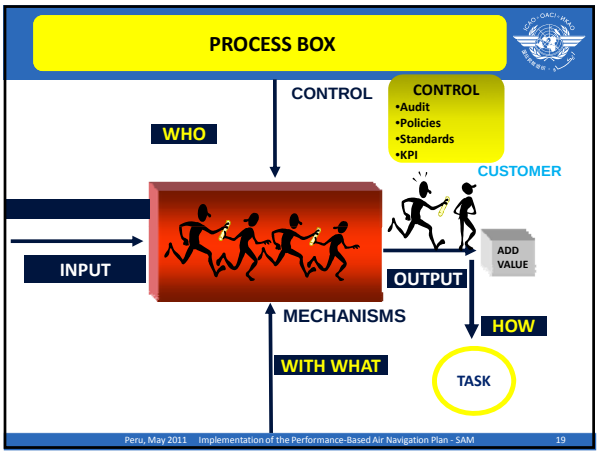
PROCESS APPROACH

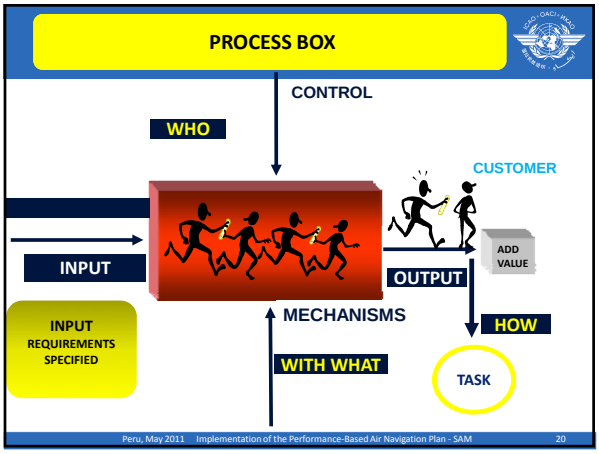


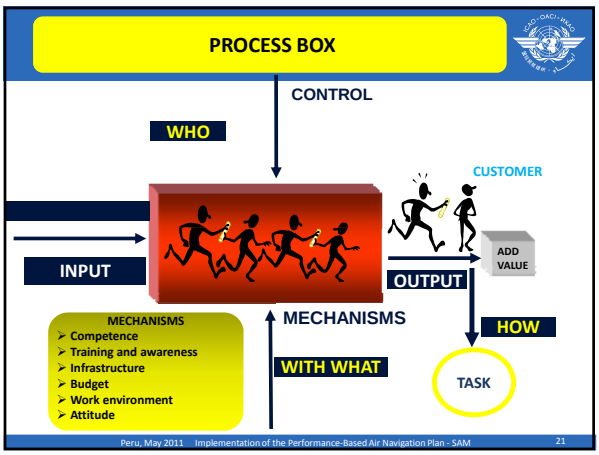

PROCESS BOX
CONTROL
WHO
PROCESS
WHAT
INPUT
OUTPUT
ADD VALUE
MECHANISMS
HOW
WITH WHAT
TASK
Peru, May 2011 Implementation of the Performance-Based Air Navigation Plan - SAM
16


PROCESS BOX
CONTROL
Activities to be held in the value added output
WHO
CUSTOMER
INPUT
OUTPUT
ADD VALUE
MECHANISMS
HOW
WITH WHAT
TASK
Peru, May 2011 Implementation of the Performance-Based Air Navigation Plan - SAM
17

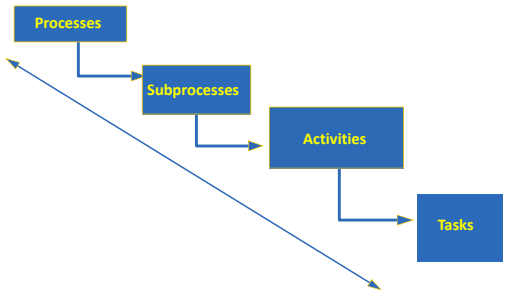

PROCESS BOX
CONTROL
OUTPUT
REQUIREMENTS
SATISFACTION
(Result of the process)
WHO
CUSTOMER
INPUT
OUTPUT
ADD VALUE
MECHANISMS
HOW
WITH WHAT
TASK
Peru, May 2011 Implementation of the Performance-Based Air Navigation Plan - SAM
18


PROCESS BOX
CONTROL
CONTROL
•Audit
•Policies
•Standards
•KPI
WHO
CUSTOMER
INPUT
ADD VALUE
OUTPUT
MECHANISMS
HOW
WITH WHAT
TASK
Peru, May 2011 Implementation of the Performance-Based Air Navigation Plan - SAM 19

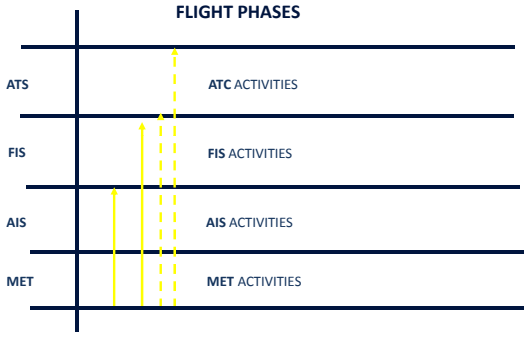

PROCESS BOX
CONTROL
WHO
CUSTOMER
INPUT
ADD VALUE
OUTPUT
INPUT
REQUIREMENTS
SPECIFIED
MECHANISMS
HOW
WITH WHAT
TASK
Peru, May 2011 Implementation of the Performance-Based Air Navigation Plan - SAM 20


PROCESS BOX
CONTROL
WHO
CUSTOMER
INPUT
ADD VALUE
OUTPUT
MECHANISMS
Competence
Training and awareness
Infrastructure
Budget
Work environment
Attitude
MECHANISMS
HOW
WITH WHAT
TASK
Peru, May 2011 Implementation of the Performance-Based Air Navigation Plan - SAM 21

PROCESS APPROACH
Processes Structure

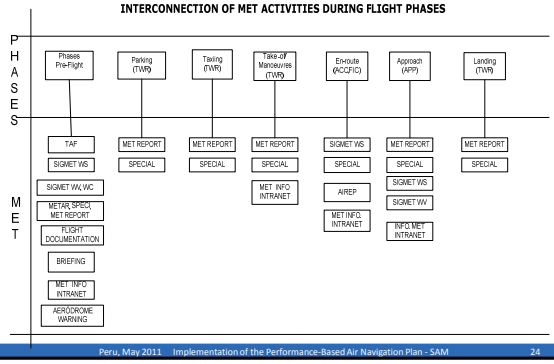


INTERACTION OF ACTIVITIES

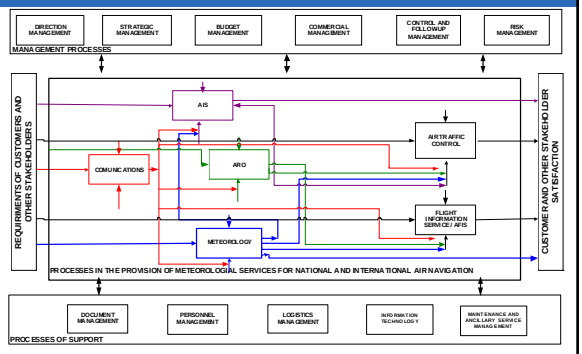


INTERCONNECTION OF MET ACTIVITIES DURING FLIGHT PHASES

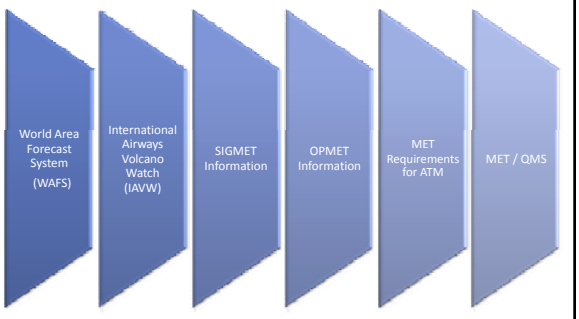
http://aviationsafetywiki.org/index.php?category:Weather



INTERACTION OF THE MET PROCESS IN THE AIR NAVIGATION SYSTEM



MET Programmes



RPO 12: IMPLEMENTATION OF MET/QMS (2011 – 2018)

Safety	➢ Ensure the quality of meteorological data and products provided to all the users of the ATM community ➢ Improve the trust of the user with respect to meteorological data used for flight planning and re-planning			
Metrics	Number of States with implemented MET/QMS			
COMPONENT	TASKS	START-END	RESPONSIBLE	STATUS
AOM AO AUO ATMSDM DCB	**1.** Validate the MET/QMS guide	2012	States	In progress
	2. Establish a programme for the implementation of a MET/QMS	12/13	RLA/States	Valid
	3. Execute the programme for the implementation of a MET/QMS	12/13	States	Valid
	4. Develop the LAR-MET	12/15	RLA/States	Valid
	5. Certification of the MET/QMS	13/15	RLA/States	Valid
	6. Monitor the process of implementation of the MET/QMS	12/18	GREPECAS	Valid
Relationship with GPIs	GPI/18: Aeronautical information and GPI/19: Meteorological systems.			

RPO 13: IMPROVEMENTS IN MET FACILITIES (2011 – 2018)

Safety	➢ Provide more reliable products to all the ATM ➢ Assistance in decision-making for the planning of new air routes. ➢ Assurance of timely access by user to meteorological data and products ➢ Contribute to situational awareness of aeronautical users for all weather operations (AWO)
Metrics	➢ Number of aerodromes with operative AWOS / Number of MWOs with the required equipment and systems ➢ Number of States with revised and updated weather tables

COMPONENT	TASKS	START-END	RESPONSIBLE	STATUS
AOM DCB AO AUO ATMSDM CM	**1.** Establish a regional plan for the automation of MET data	2012	States	Válida
	2. Establish a regional plan to strengthen MWOs with the equipment	2012	Estados	Válida
	3. Implement regional plans for the automation of MET data and strengthening of MWOs	12-13	States	Válida
	4. Establish programmes for periodic inspection and calibration of MET instruments and EMA(s)	12-14	Estados	Válida
	5. Develop a programme for reviewing and updating aerodrome meteorological tables	2012	States	Válida
	6. Implement the programme for revising and updating aerodrome meteorological tables.	12-13	States	Válida
	7. Monitor implementation programmes	13-17	States/GREPECAS	Válida
Relationship with GPIs	GPI/9: Situational awareness, GPI/14: Runway operations, GPI/18: Aeronautical information and GPI/19: Meteorological systems.			

RPO 14: IMPROVEMENTS IN IAVW IMPLEMENTATION, RADIOACTIVE CLOUDS AND SIGMET (2011 – 2018)

Safety	➢ Increased flight safety
Metrics	➢ Number of States with IAVW and their implemented evolutions. ➢ Regional contingency plan for volcanic ash and accidental release of radioactive material, developed

COMPONENT	TASKS	START-END	RESPONSIBLE	STATUS
AOM AO AUO ATMSDM DCB CM	**1.** Develop a plan for the implementation of improvements in IAVW and the accidental release radioactive material into the atmosphere.	2012	RLA	Valid
	2. Develop a Guide for IAVW implementation in the Region, based on ICAO Document 9766.	2013	RO/Lima	In process
	3. Update the letters of agreement between CAAs/MET/State vulcanologic bodies.	12-13	States	Valid
	4. Where applicable, develop written agreements with national meteorological services (NMS) in case of accidental release of radioactive material.	12-14	States	Valid
	5. Update the letters of operational agreement between ATS/MET units, and sign agreements with AIS and AGA (include the cases of volcanic ash deposition and accidental release of radioactive material in aerodrome emergency plans)	12-13	States	Valid
	6. Implement the VONA form for the transfer of information on volcanic or precursor activity by vulcanologic bodies.	12-13	States	Valid

RPO 14: IMPROVEMENTS IN IAVW IMPLEMENTATION, RADIOACTIVE CLOUDS AND SIGMET (2011 – 2018)

Safety	➢ Increased flight safety
Metrics	➢ Number of States with IAVW and their implemented evolutions. ➢ Regional contingency plan for volcanic ash and accidental release of radioactive material, developed

COMPONENT	TASKS	START-END	RESPONSIBLE	STATUS
	7. Review and update the national emergency plan for cases of volcanic activity and accidental release of radioactive material.	12-13	States	Valid
	8. Develop a regional contingency plan for cases of volcanic activity and/or accidental release of radioactive material.	12-13	RLA	Valid
	9. Update the procedures in MWOs and VAACs according to the evolution of IAVW	13-17	States	Valid
Relationship with GPIs	GPI/9: Situational awareness, GPI/14: Runway operations, GPI/16: Decision support and alerting systems, GPI/18: Aeronautical information and GPI/19: Meteorological systems.			

OPR 15: IMPROVEMENTS IN OPMET DATA EXCHANGE AND WAFS IMPLEMENTATION (2011 – 2018)

Safety	➢ Provide OPMET information with quality standards required by Standard ISO 9001, 2008 ➢ Expand the regional application of MET forecasts
Environmental protection and development of air transport: Increased efficiency of operations and reduced carbon emissions	
Metrics	➢ Increased availability of OPMET data (in percentage) ➢ Number of States that have implemented WAFS

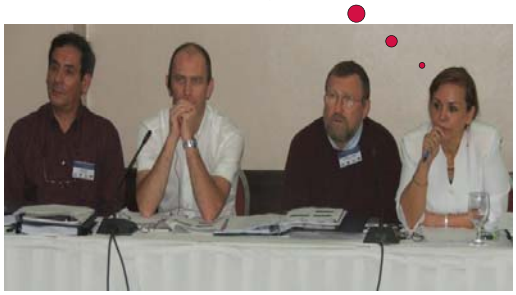
COMPONENT	TASKS	START-END	RESPONSIBLE	STATUS
AOM DCB AO AUO ATMSDM CM	**1.** Establish a regional procedure to ensure timely availability of duly coded OPMET meteorological data	2018	States, Brasilia BIDB	Valid
	2. Develop contingency procedures for the dissemination of OPMET data through the Internet in case of communication system failure	2013	States	In progress
	3. Implement the new WAFS forecasts	12-13	States	Valid
	4. Develop a transition plan for OPMET data coding in XML code	13-18	States	Valid

OPR 15: IMPROVEMENTS IN OPMET DATA EXCHANGE AND WAFS IMPLEMENTATION (2011 – 2018)

Seguridad Operacional	➢ Provide OPMET information with quality standards required by Standard ISO 9001, 2008 ➢ Expand the regional application of MET forecasts
Environmental protection and development of air transport: Increased efficiency of operations and reduced carbon emissions	
Metrics	➢ Increased availability of OPMET data (in percentage) ➢ Number of States that have implemented WAFS

COMPONENT	TASKS	START-END	RESPONSIBLE	STATUS
AOM DCB AO AUO ATMSDM CM	**5.** Implement a plan for the transition of OPMET data to the XML format	2018	States, BIDO de Brasilia	Valid
	6. Establish plans for the migration to ISCS G3 and implementation of WIFS	2013	States	In progress
	8. Develop, (MET and COM), a migration plan that permits WAFS products to be compatible with the future NextGEN/SESAR environment	12-13	States	Valid
	9. Develop and implement regional procedures in support of ATM	13-18	States	Valid
Relationship with GPIs	GPI/9: Situational awareness, GPI/14: Runway operations, GPI/18: Aeronautical information and GPI/19: Meteorological systems.			

QUESTIONS?




ICAO • OACI • ИКАО
国际民航组织
THANK YOU
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