AFI REGIONAL DATA LINK MONITORING AGENCY (DL/CMRA)

APIRG Infrastructure and Information Management Sub-Group (IIM/SG)
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Nairobi

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AGENDA

↗ **Introduction**

↗ **Automatic Transfer - Illustration**

↗ **State, ANSP and Operator Responsibilities in the PBCS**

↗ **Local PBCS implementation programmes**

↗ **Regional PBCS implementation Programme – CMRA/DL**

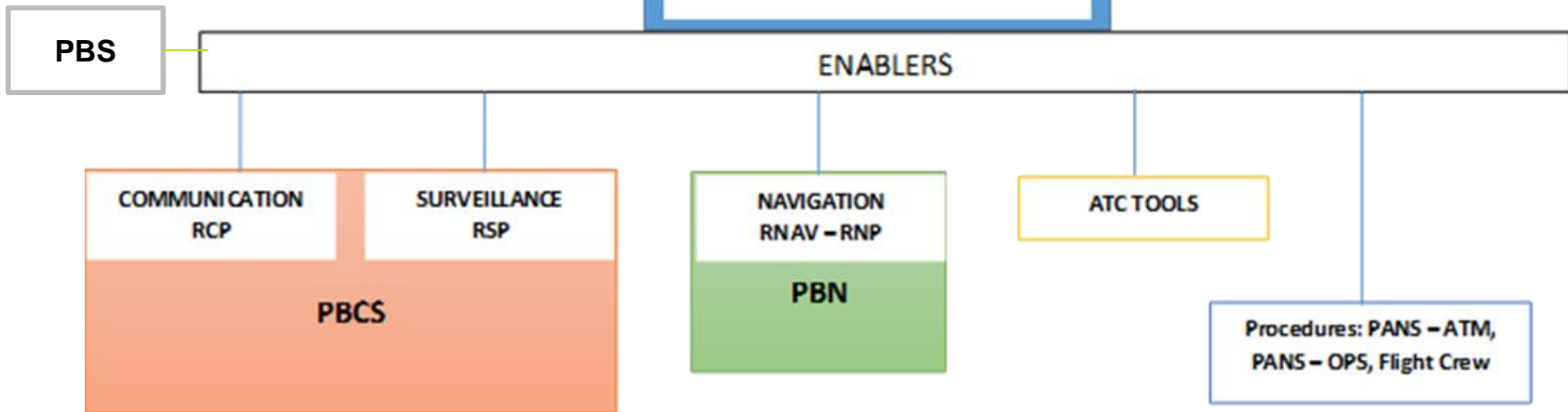↗ **Recommendations for CRMA/DL implementation**

Objectives

↗ Continuous Efforts to address persistent Challenges

↗ Comply with the Implementation Process and involving users at early stage

↗ Set up Post-Implementation programmes

↗ Implementation of APIRG Conclusion on the Establishment of a Project Team for the implementation of a data link central monitoring and reporting agency (DL/CMRA)

Introduction
Performance-based CNS/ATM model
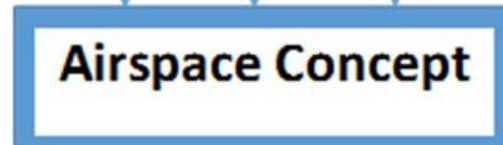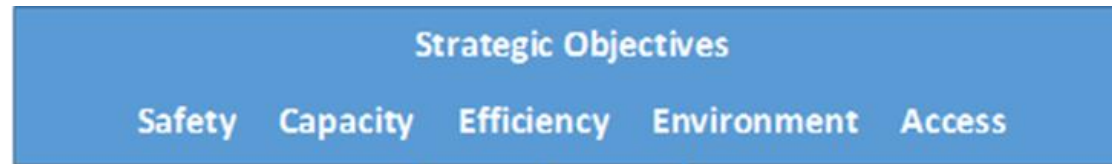
No "enabler" can be developed in isolation, i.e. communications, ATS surveillance and navigation enablers should form a cohesive whole.

Strategic Objectives

Safety   Capacity   Efficiency   Environment   Access

Airspace Concept

PBS

ENABLERS

COMMUNICATION RCP   SURVEILLANCE RSP   NAVIGATION RNAV – RNP   ATC TOOLS

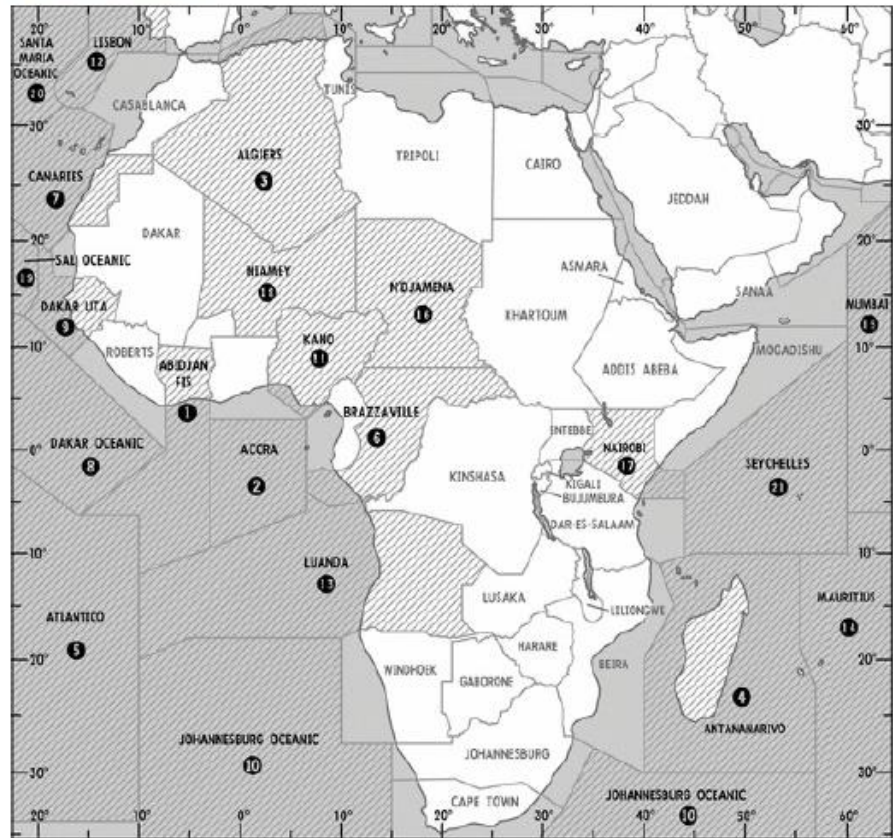PBCS   PBN   Procedures: PANS – ATM, PANS – OPS, Flight Crew

Introduction

Support CPDLC as the primary means of communication in oceanic and remote airspace where the quality of voice communications is often poor.
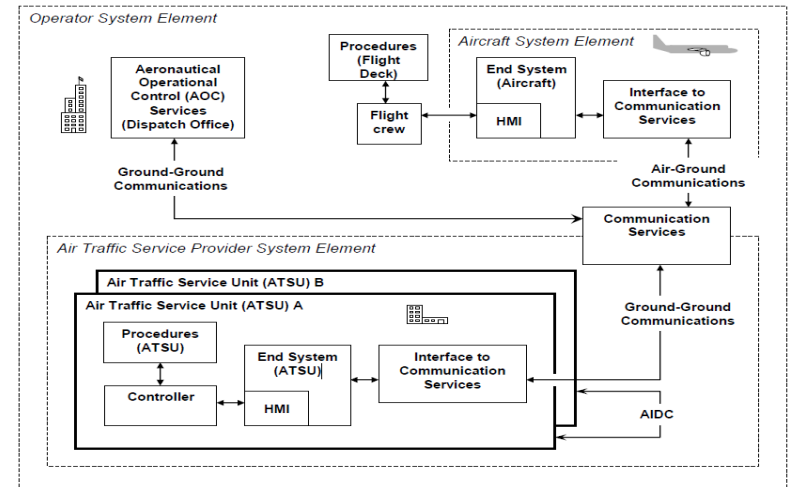
CPDLC Coverage - Africa

CPDLC OVERVIEW

Automatic Transfer Illustration

Data link services include:

- Data link initiation capability (DLIC),
- Connection establishment (CE),
- Connection termination (CT),
- Transfer of communication (TC),
- Clearance request and delivery (CRD),
- Information exchange and reporting (IER);
- Position reporting (PR),

DLIC provides the capability for the aircraft to indicate to the ground that it is available for data communication, and provide information to allow the ground ATS systems to compare the aircraft against filed flight plans to validate that communication is being established with the correct information..

Implementation Process

The CDA sends a message to the aircraft containing the ICAO code for the NDA.

CDA

The CDA sends a message to the next ATSU via Address Forwarding or AIDC.

Aircraft

NDA

Aircraft

The NDA sends a CPDLC connect request message to the aircraft.

The aircraft system checks to see if the received message ICAO code matches the previously announced NDA address.

Automatic Transfer Illustration

AIDC Messages	

• **Notification (01)**
• **Coordination (07)**
• **Transfer (08)**
    • **Messages Transfer Initiate**
    • **Messages Transfer Control**
    • **Messages Transfer Control Assume**
    • **….**
	• **General (02)**
	• **Free Text (02)**
	• **Application(02)**

The requirements with regard to the selection of AIDC messages and the associated procedures should be established on the basis of regional air navigation agreements in order to facilitate the harmonization of ATS in adjacent airspaces.

State/ANSP/Operator Responsibilities

Conclusion 20/24:   **Establishment of a Project Team for the implementation of a data link central monitoring and reporting agency (DL/CMRA)**

That:

a) A Project Team comprised of Cabo Verde (as Team Leader), Ghana, ASECNA, South Africa, Seychelles, AFRAA and IATA be established to identify and propose the main functions of an AFI DL/CMRA, the appropriate organizational framework and a suitable cost effective funding mechanism; and

b) The Project Team Leader should provide a report of the activities of the project, which are to be mainly done through electronic conferences to the Secretariat for submission to the APCC and the outcome should subsequently be submitted to APIRG/21.

The following horizontal separation minima require PBCS and CPDLC RCP240 and ADS-C RSP180, in accordance with ICAO PANS-ATM (Doc 4444)

Separation minima	RNP type	Maximum ADS-C periodic reporting interval
93 km (50 NM)	10	27 minutes
	4	32 minutes
55.5 km (30 NM)	4	14 minutes

Mínimas de separación	RNP	RCP	RSP	Máximo intervalo de notificación periódica de ADS-C
93 km (50 NM)	10	240	180	27 minutos
	4	240	180	32 minutos
55,5 km (30 NM)	2 o 4	240	180	12 minutos
5 minutos	2 o 4 o 10	240	180	14 minutos

State/ANSP/Operator Responsibilities

↗ Current specifications – RCP240, RCP400, RSP180, RSP400

In accordance with the ICAO PBCS Provision, State	In accordance with State policies	
	ANSP	**Operator**
• Establishes PBCS policies for ANSP, operator, airworthiness, etc. • Prescribes RCP/RSP specifications in the applicable airspace for the relevant operations • Publishes PBCS requirements in aeronautical information publication (AIP)	• Provides RCP/RSP-compliant air traffic services* • Recognizes RCP/RSP capabilities in air traffic control (ATC) automation • Establishes PBCS monitoring program	• Prepares to file RCP/RSP capabilities in flight plan • Participates in ANSP PBCS monitoring programs

RCP/RSP specifications include allocated criteria to the communication service provider (CSP).These criteria are applied to the CSP through service agreements with the ANSP and/or operator

State/ANSP/Operator Responsibilities

In accordance with its Safety oversight policies, State has to ensure that	In accordance with State policies	
	ANSP	**Operator**
• ANSP has established local PBCS Monitoring Programme • ANSP notifies the Operator and the State of its registration when the performance of the operator's fleet does not comply with RCP/RSP • ANSP notifies and mitigates Failure condition within its ATM system and CSP • Operator complies with RCP/RSP specification prescribed	• Establishes contractual arrangements stipulating the RCP/RSP allocations, including any monitoring or recording requirements. • Ensures training off its ATCOs and aeronautical station operators in accordance with ICAO SARPs. • Notifies requirements for aircraft system and capability and flight plan filing requirements in the AIP of PBCS operations, as a minimum.	• Ensures that RCP/RSP filing capabilities will comply with regulations, policies and procedures in control areas for the flight, as published by the applicable States in AIP.

Inclusion of PBCS capability in the filed FPL means that the relevant a/c is approved and serviceable, and that the operator is eligible (e.g. flight crew training and qualification) for PBCS operations. If these conditions are not met then PBCS capability should not be included in the flight plan.
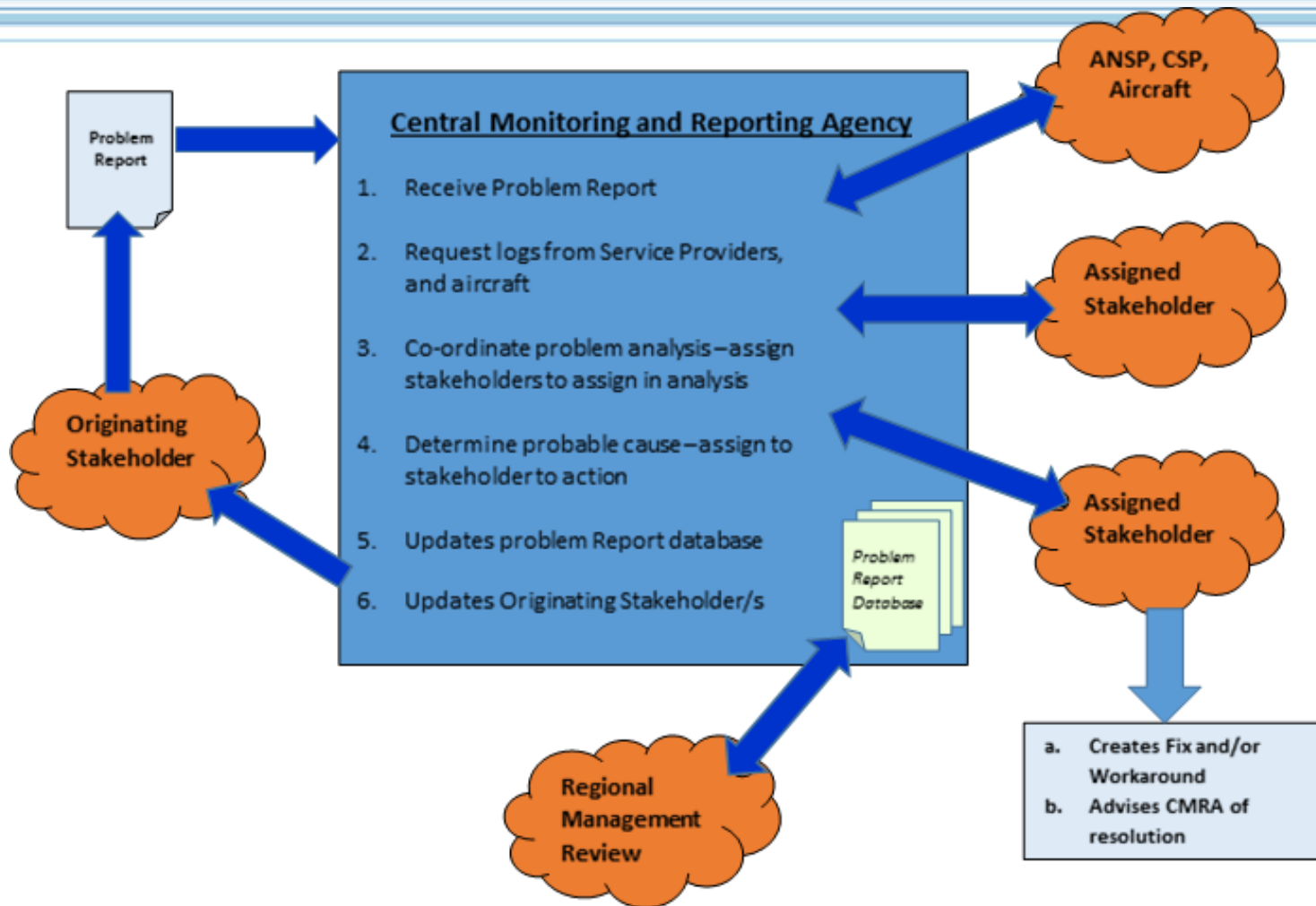
Local PBCS Monitoring Programme

↗ Monitor communications transactions and surveillance data delivery

↗ Define formats and intervals of monitored data and reports to be delivered

↗ Develop and establish means of collecting and maintain operational performance data in the standardized format defined/agreed.

↗ Perform local analysis for identifying problems and taking corrective action.

↗ Report to RPMP any problem that may have regional or global impact.

Regional PBCS Monitoring – Programme/ CMRA/DL

↗ Ensures centralized support to accommodate specific local, regional and global needs.

↗ Manages resources and any contracts, fund and recover costs and secure access to the services and information.

↗ Validates submitted data before importing it into a secure centralized database;

↗ Maintains relational data, such as related to the ANSP, CSP, aircraft type and aircraft operator,

↗ Supports participating ANSPs in the analysis and reporting of the operational data, including ACP, ASP and availability data, at the regional level.

↗ coordinate, as necessary, with other regional monitoring programmes such as those established for monitoring RVSM (e.g. ARMA & SATMA);

↗ provide means to receive , track, manage problem reports (e.g. web-based service);

↗ provide a diagnosis of the problem and recommend resolutions; and

↗ Notify appropriate parties when the operational system does not meet the RCP/RSP specification;

Monthly Report of Datalink Performance by <ANSP Name> for <FIR Name> for <month> <year>					
Section 1: Availability					
CSP Notification	**CSP Name**	**Outage Type**	**Start**	**End**	**Duration (mins)**
No Notified	N/A	SATCOM	200907212233	200907212255	22
200907281515	SITA	SATCOM	200907281510	200907281525	15

Section 2: CPDLC					
ALL RGS			**SATCOM**		
ACTP RCP 240	120 sec	98.20%	ACTP RCP 240	120 sec	
ACTP RCP 240	150 sec	100%	ACTP RCP 240	150 sec	
ACP RCP 240	180 sec	98%	ACP RCP 240	180 sec	
ACP RCP 240	210 sec	97.70%	ACP RCP 240	210 sec	
PORT	60 sec	98%			
ACTP RCP 400	260 sec		ACTP RCP 400	260 sec	
ACTP RCP 400	310 sec		ACTP RCP 400	310 sec	
ACP RCP 400	320 sec		ACP RCP 400	320 sec	
ACP RCP 400	370 sec		ACP RCP 400	370 sec	
VDL			**HFDL**		
ACTP RCP 240	120 sec		ACTP RCP 240	120 sec	
ACTP RCP 240	150 sec		ACTP RCP 240	150 sec	
ACP RCP 240	180 sec		ACP RCP 240	180 sec	
ACP RCP 240	210 sec		ACP RCP 240	210 sec	
ACTP RCP 400	260 sec		ACTP RCP 400	260 sec	
ACTP RCP 400	310 sec		ACTP RCP 400	310 sec	
ACP RCP 400	320 sec		ACP RCP 400	320 sec	
ACP RCP 400	370 sec		ACP RCP 400	370 sec	
SATCOM + HFDL					
ACTP RCP 240	120 sec				
ACTP RCP 240	150 sec				
ACP RCP 240	180 sec				
ACP RCP 240	210 sec				

Recommendations for CRMA/DL

↗ **ANSPs should establish local PBCS Monitoring Programmes (LPMP) to manage local problems for those who have already implemented CPDLC/ADS-C;**

↗ **DL/CMRA Project Team should develop the Terms of Reference defining the main functions of the AFI DL/CMRA including information technology, supporting tools and security policies;**

↗ **DL/CMRA Project Team should study and identify regional funding solutions for the implementation of the DL/CMRA;**

↗ **The ICAO Regional Director, WACAF and ESAF, circulate by e-mail correspondence the outcome of the DL/CMRA Project Team for next APIRG/21 for approval.**

Thank you

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