

AMC - SP/1

ATS Messaging Management

ATS Messaging Management Centre (AMC)

AMC Users Training

ICAO ASIA-PAC Regions

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Jean-Marc Vacher, EUROCONTROL

jmvacher@on-x.com

1. Introduction

Chapter 1

Introduction

1.1 Course Objective

1. Explain how the AMHS address management procedures promulgated by ICAO State Letter 09-34 can be performed using AMC
2. Provide a general view of the AMC application to enable participants to become efficient AMC users and take benefit of AMC functions
3. Pre-requisite: provide background AMHS information for proper understanding of AMC functions

1.2 Contents

1. Introduction
2. Background AMHS information
3. Overall framework for ATS Messaging Management
4. Technical and practical overview
5. Data organization and user interface
6. Overview of operational functions and procedures (AMF-O)
7. Network inventory
8. Address management (including relation to ICAO HQ)
9. Routing management
10. Miscellaneous functions
11. Overview of implementation support functions (AMF-I)
12. Questions and answers

1.4 AMC concept - History

- Dec 2001: Start of CIDIN Management Centre (CMC) operation
- Dec 2003: ICAO EANPG Conclusion 45/10:
“that Eurocontrol be invited to consider extending the CIDIN Management Service to provide ATSMHS off-line network management”
- Sept 2004-May 2005: Study of AMHS Off-line Management
 - ➔ ATS Messaging Management Manual (approved by AFSG/8 – ICAO Paris)
- Sept 2005: Eurocontrol DG decision to implement ATS Messaging Management Centre (AMC)
- Oct 2005-Nov 2006: Implementation of the AMC
- 19th Jan 2007: Start of AMC operational service
- April 2007: Adoption of ATS Messaging Management Manual Version 3.0 as EUR ICAO DOC 021

1.5 AMC concept – ICAO State Letter

- EANPG Conclusions:
 - Conclusion 49/23 – AMHS Address Coordination
“That ICAO be invited to utilize the European AMC facility at the earliest opportunity [...]”
 - Conclusion 49/24 – AMHS Messaging Management Centre Users
“That ICAO be invited to address States outside the ICAO EUR Region to register with the AMC] as external COM centre operators, as soon as possible.”
- ICAO State Letter 09-34 (dated 14th April 2009, “a response to the EANPG conclusions above”):
 - In the short- to medium-term, ICAO will utilize the European ATS Messaging Management Centre (AMC), provided by EUROCONTROL, to coordinate the allocation and management of AMHS addresses.
 - All States are therefore invited to designate representatives to register as AMC users [...].
 - All States and/or ANSPs, operating international COM Centres, with the intention of implementing AMHS in the foreseeable future, should engage themselves into the AMHS address coordination process without delay.

1.6 AMC concept - Scope and Objectives

- Deliver Off-Line Network Management Services in support of the “ATS Messaging part” of the AFS:
the integrated AFTN / CIDIN / AMHS network
- Support to States with AMHS in operation
 - AMHS Management Functions – Operational Support (AMF-O)
- Support to States on their way to implement AMHS
 - AMHS Management Functions – Implementation Support (AMF-I)
- Provide the service in a single focal point for AFTN, CIDIN, AMHS
 - For EUR/NAT Regions
 - Also provide service to other Regions, with a priority on address management
- Service provided on a co-operative basis (not chargeable)

2. Background AMHS Information

Chapter 2

Background AMHS Information

2.1 AMHS Definition and scope

Section 2.1:

- What is AMHS ?
- What is its purpose ?

2.1.1 What is AMHS ?

- An aeronautical messaging application for operational Air Traffic Services (ATS) purposes
- Standardised by ICAO as part of the Aeronautical Telecommunications Network (ATN) as the replacement of AFTN and CIDIN
- Integrated in the Aeronautical Fixed Service (AFS)
- Based on standard MHS/X.400 protocols
- Using either an ATN/IPS (IP) network infrastructure or an ATN/OSI (CLNP) network infrastructure

2.1.2 The requirements met by AMHS

- Offer a modern end-to-end ATS messaging service over ATN/IPS and ATN/OSI
- Offer a service functionally close to that of AFTN:
 - ➔ The Basic ATS Message Handling Service (Basic Service)
- Offer an enhanced service with additional functionalities:
 - ➔ The Extended ATS Message Handling Service (Extended Service)
- Enable transition from AFTN and CIDIN to ATN world:
 - ➔ The AFTN/AMHS Gateway

2.1.3 The messages transferred by AMHS

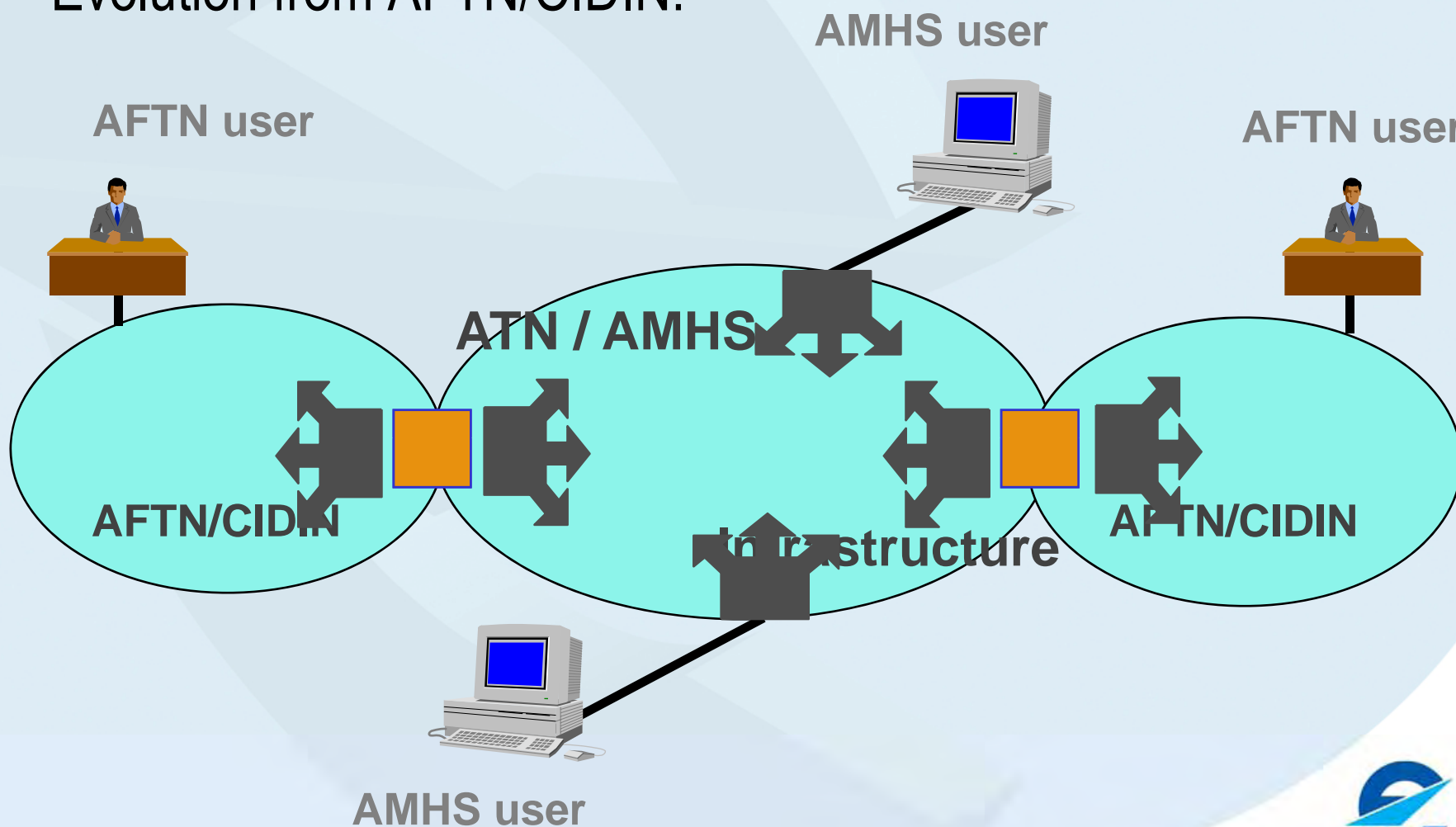
- Those specified in Annex 10 and ICAO Document 4444:
 - Distress messages;
 - Urgency messages;
 - Flight safety messages, e.g. movement and control messages, messages originated by an aircraft operating agency concerning an aircraft in flight or about to depart, specific meteorological messages (e.g. SIGMET, AIRMET, etc.);
 - Meteorological messages concerning forecasts and observations (such as TAF, METAR, SPECI);
 - Flight regularity messages, including those exchanged for ATFM purposes;

2.1.4 The messages transferred by AMHS

- Those specified in Annex 10 and ICAO Document 4444 (cont'd):
 - Aeronautical information service (AIS) messages, e.g. NOTAMs and SNOWTAMs;
 - Aeronautical administrative messages; and
 - Service messages.
- The most frequent categories:
 - ➔ Flight plans
 - ➔ AIS
 - ➔ MET

2.1.5 AMHS connectivity requirements

Evolution from AFTN/CIDIN:



2.1.6 The functionalities offered by AMHS

- Offer a service functionally close to that of AFTN:
 - ➔ The Basic ATS Message Handling Service (Basic Service)
This additionally includes:
 - ➔ No limit on the number of message destinations
 - ➔ Capability to transfer messages larger than AFTN (no theoretical size limit)
 - ➔ More flexibility on addressing
- Offer an enhanced service with additional functionalities:
 - ➔ The Extended ATS Message Handling Service (Extended Service)
This may include:
 - ➔ Capability to transfer messages containing binary data
 - ➔ Security by means of digital signatures

2.2 AMHS Technical Overview

Section 2.2:

- AMHS components
- AMHS protocols
- AMHS messages

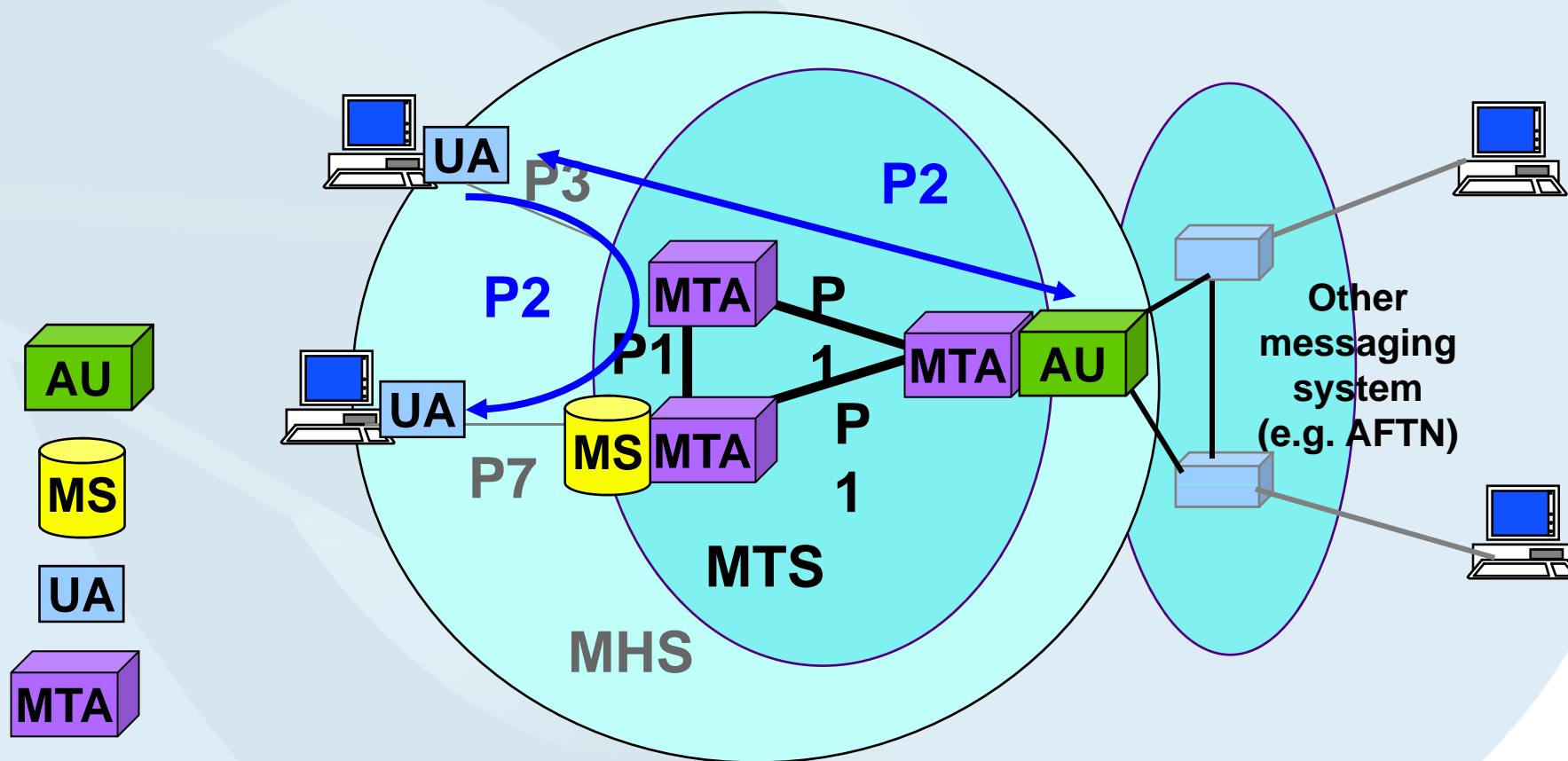
2.2.1 AMHS components

- **MTA = Message Transfer Agent**
 - Message switch
- **UA = User Agent**
 - User access to the MTA
 - Only protocols are standardized, not the HMI
- **MS = Message Store**
 - Intermediate storage between MTA and UA upon reception (“message database”)
 - Generally co-located with MTA
- **AU = Access Unit**
 - Conversion towards other messaging systems

2.2.2 AMHS component “mapping”

AFTN	MHS/X.400	AMHS
AFTN Centre	MTA	ATS Message Server
AFTN Station	UA	ATS Message User Agent
	AU (+ MTA)	AFTN/AMHS Gateway

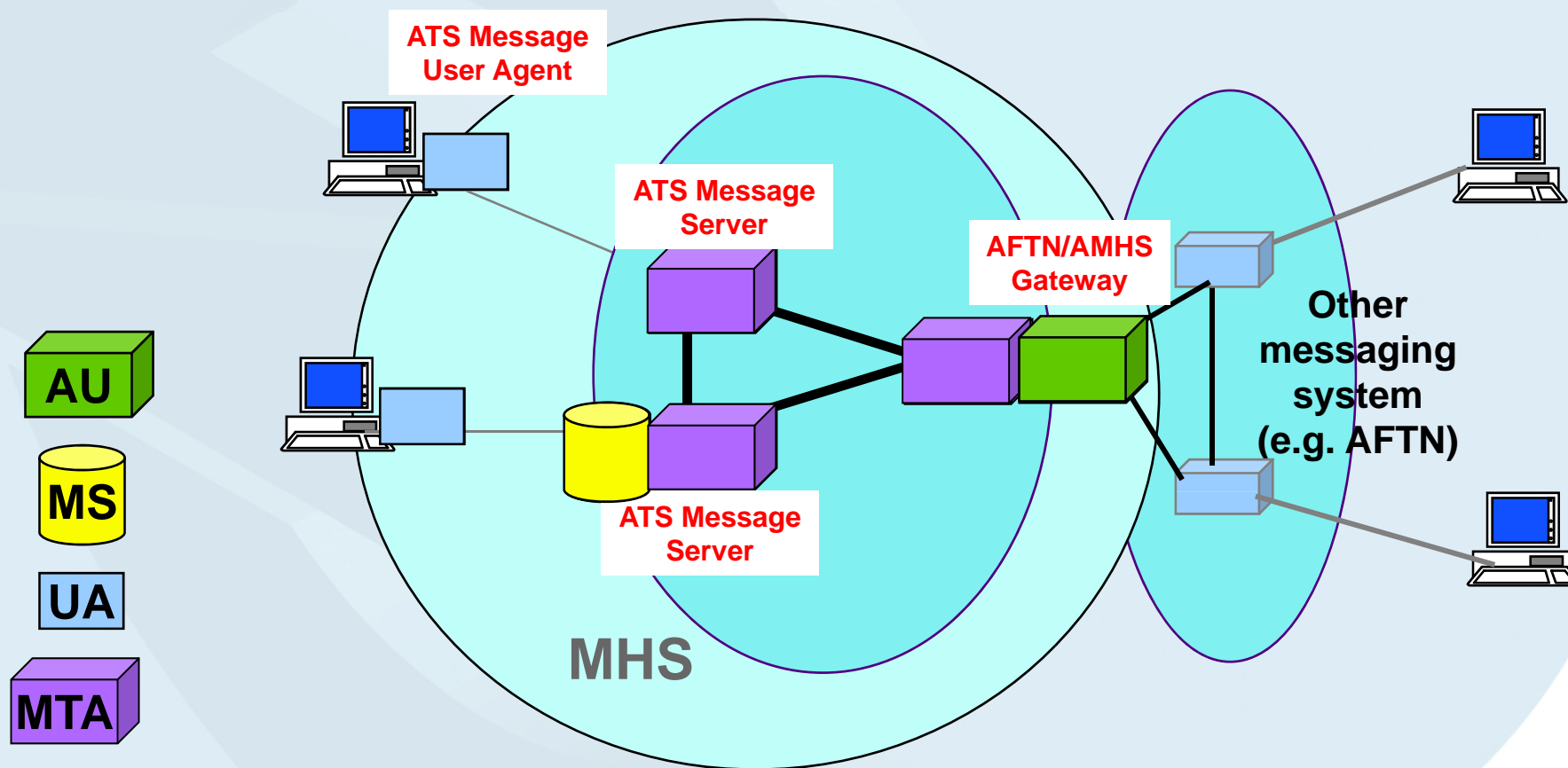
2.2.3 MHS systems and components



MTS = Message Transfer System

MHS = Message Handling System

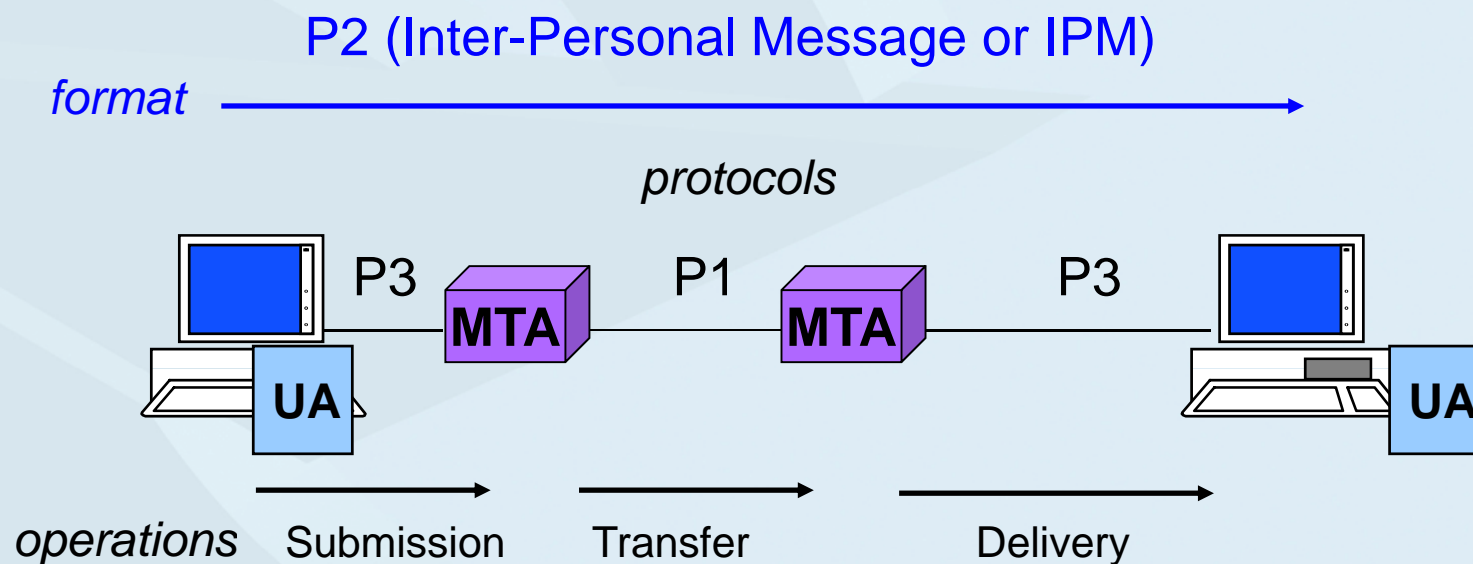
2.2.4 AMHS systems and components



AMHS = ATS Message Handling System

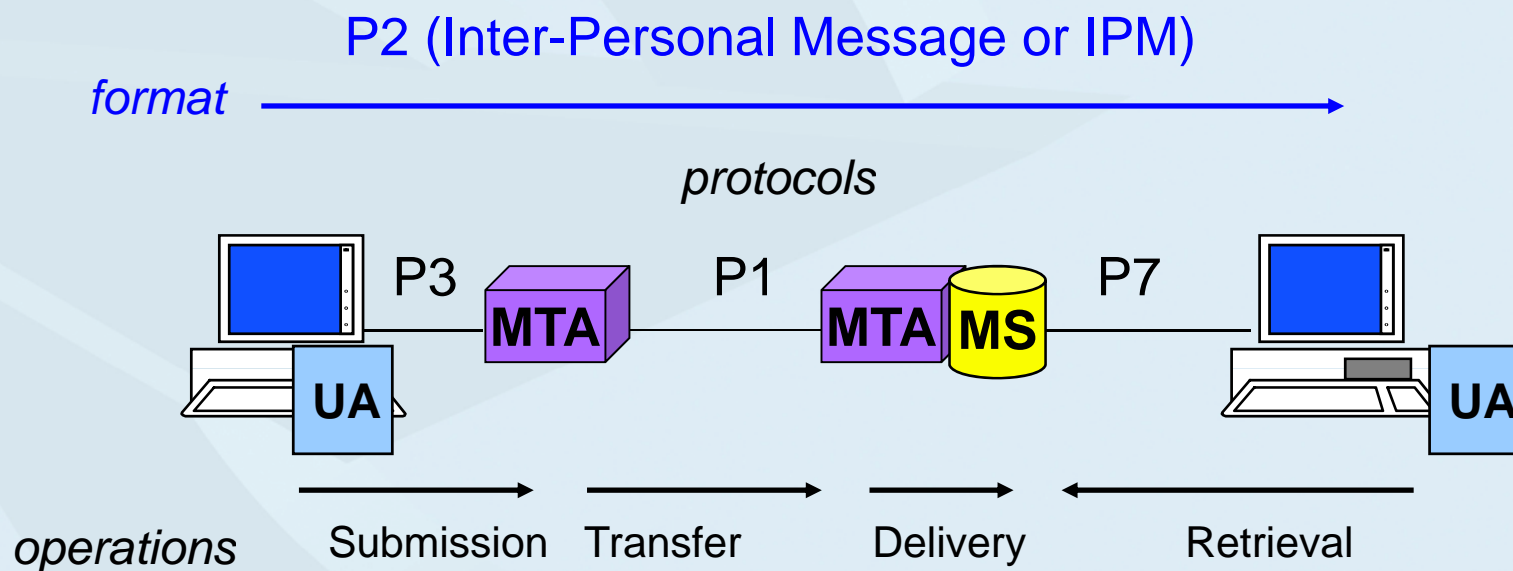
2.2.5 AMHS protocols (1)

Operation without MS (Message Store)



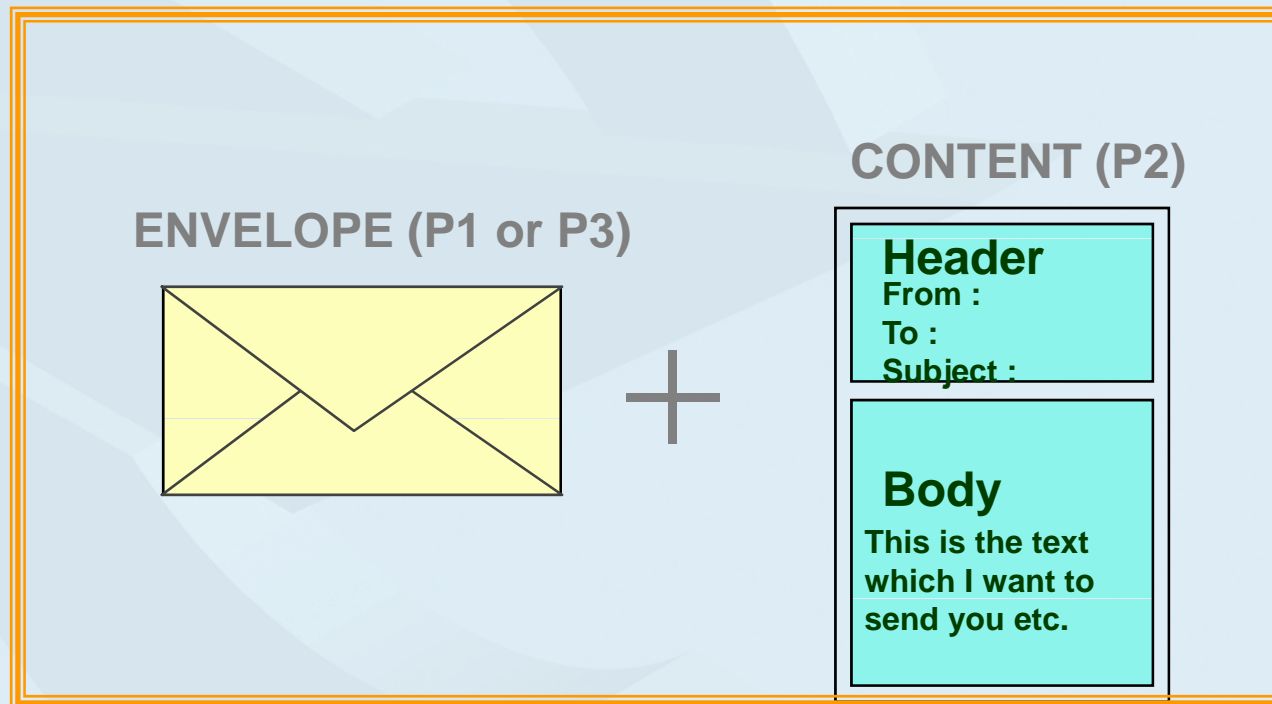
2.2.6 AMHS protocols (2)

Operation with MS (Message Store)



2.2.7 AMHS messages

MESSAGE



2.2.8 AMHS messages, probes and reports

P1 Information Objects :

- Message = Message with envelope and contents

Contents = P2 Information Object :

- **IPM** = Inter-Personal Message (a “true” message)
- **IPN** = Inter-Personal Notification - To inform the message originator about the message reception (“reading”) :
 - Receipt Notification (**RN** – in case of “reading”)
 - Non-Receipt Notification (**NRN** – in case of message not “read”)
- Probe = Message without contents (envelope only)
- Report = To inform the message originator about the outcome of the communication :
 - Delivery Report
 - Non-Delivery Report

2.3 AMHS Organisation and addressing

Section 2.3:

- AMHS organisation
- AMHS addressing
- AMHS routing

2.3.1 X.400 Management Domains

Notions defined in the base standards:

- **Management Domain:**

An organisational entity which manages at least one MTA (or several), and which is responsible for the users connected to its MTA(s)

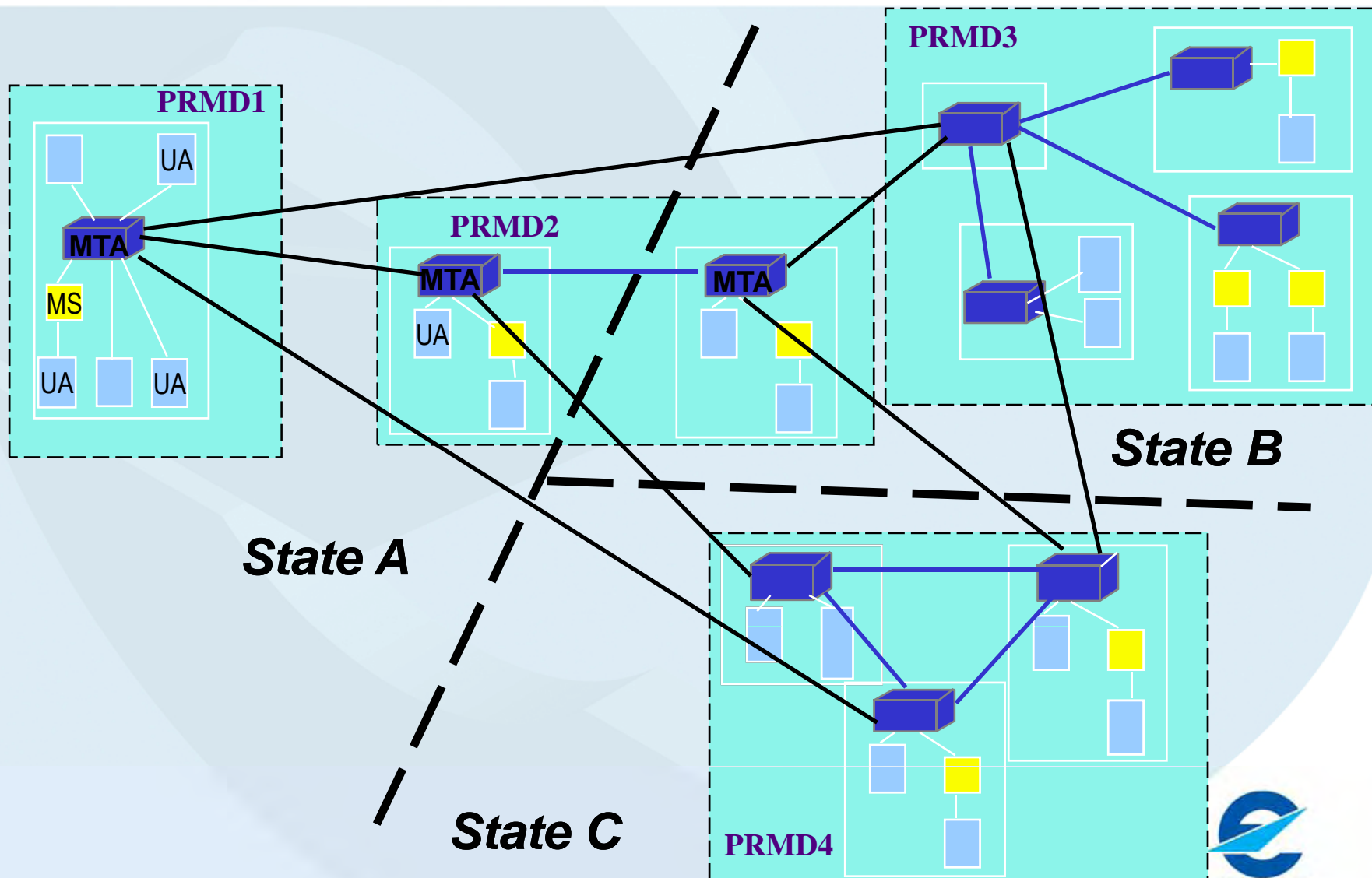
- **A Management Domain can be :**

- an ADMD (Administrative Management Domain), usually managed by a public telecom operator or an international organisation.
- a PRMD (Private Management Domain), usually managed by a company or governmental body. PRMDs are operated “under” or “within” an ADMD

2.3.2 AMHS Management Domains

- ICAO is considered as an Administrative Management Domain (ADMD)
However this ADMD is “virtual” and does not manage any MTA, it is defined for organisational reasons only.
- ICAO Member States and recognised Organisations operate as PRMDs under the ICAO ADMD
 - There is usually one AMHS MD per State/ANSP.
 - For organisational and technical reasons, PRMDs are defined for all ICAO Member States worldwide. However a State PRMD becomes “real” when AMHS is implemented in that State.
 - State PRMDs are directly interconnected between themselves

2.3.3 AMHS network organisation



2.3.4 AMHS addressing for MDs

- X.400 and AMHS addressing is hierarchical. An address is an ordered combination of **attributes** which all have a specified syntax
- An address is usually represented (but not encoded) by a sequence such as:
attribute1 initials = value1 / attribute2 initials = value2 / etc.
- Each Management Domain is uniquely identified at a global level by 3 standard attributes (together known also as “GDI”):
 - Country-name (C) for AMHS: C=XX (International Organisation)
 - ADMD-name (A) for AMHS: A=ICAO
 - PRMD-name (P)
 - Example for AMHS: C=XX/ A=ICAO/ P=SAUDI ARABIA

2.3.5 AMHS addressing for users

- Each user (UA) is identified within the MD by a full “O/R Address” including additional attributes among the following:
 - organisation-name (O)
 - organisational-units-name (4 values) (OU1 to OU4)
 - personal-name (surname, given-name, initial) (S, G, I)
 - common-name (CN)
 - domain-defined attributes (4 values) (DDA1 to DDA4)
- This gives a lot of flexibility and possibilities
 - ➔ Such flexibility needs to be controlled (select/specify the used attributes)
 - ➔ AMHS Addressing Schemes are defined for this purpose:
 - CAAS (Common AMHS Addressing Scheme)
 - XF (Translated form)

2.3.6 AMHS Addressing Schemes

Attribute	Name of attribute	CAAS Addressing Scheme				XF Addressing Scheme
		Assigned by	Registered by	Value	Comment	Value
<i>High level address attributes:</i>						
C	Country-name	ITU-T	ITU-T	'XX'	According to ITU-T Recommendation X.666	'XX'
A	ADMD-name	ICAO	ITU-T	'ICAO'	As agreed by ICAO and ITU-T	'ICAO'
P	PRMD-name	ANSP	ICAO	To be defined by each ANSP		To be defined by each ANSP
<i>Low level address attributes</i>						
O	Organisation name	ANSP	ICAO	e.g. a "region" within a country, to be defined by each ANSP	Representing local/national geographical information	'AFTN'
OU1	Organisational unit name 1	ANSP	ICAO	4-character ICAO location indicator	As specified in ICAO Doc 7910	8-character AFTN address
CN	Common name	ANSP		8-character AFTN address		<i>not used</i>

“Other” addressing schemes are possible (but discouraged), using additional attributes: OUn, S, G, DDAn etc.

If implemented they need to be known and registered.

2.3.7 AMHS Addressing Attributes

PRMD-name (16 characters max.) and Organisation-name (64 characters max.) must use the following character set and should be as short as possible.

Technically authorised character set

Name	Graphics
Capital letters	A, B, ... Z
Small letters	a, b, ... z
Digits	0, 1, ... 9
Space	(space)
Apostrophe	'
Left Parenthesis	(
Right Parenthesis)
Plus sign	+
Comma	,
Hyphen	-
Full stop	.
Solidus	/
Colon	:
Equal sign	=
Question mark	?

Suggested preferred character set

Name	Graphics
Capital letters	A, B, ... Z
Digits (if needed)	0, 1, ... 9
Hyphen	-

2.3.8 AMHS Addressing Examples

- Example of CAAS Addresses: Spain, multiple MTAs, multiple O values

C=XX / A=ICAO / P=AENA / O=LECB / OU1 = LEVC / CN = LEVCZPZX
(Aeronautical Reporting Office in Valencia Airport)

C=XX / A=ICAO / P=AENA / O=GCCC / OU1 = GCRR / CN=GCCRZTZX
(Tower in Lanzarote Island Airport)

- Example of CAAS Address: Switzerland, one MTA, single O value

C=XX / A=ICAO / P=SUISSE / O=LS / OU1 = LSAG / CN = LSAGZTZX
(Tower in Geneva Airport)

- Example of XF Address: United Kingdom

C=XX / A=ICAO / P=EG / O=AFTN / OU1 = EGGGYFYX
(U.K. COM Centre)

2.3.9 AMHS Routing

- AMHS (or X.400) routing is performed in MTAs
- It is based on address attributes:
 - For a given combination of attribute values, a route to a “next hop” MTA is associated. Each message including that combination will be routed accordingly.
 - The following address attributes are used:
 - C, A, P and sometimes O for routing to another domain (inter-domain routing)
 - Other address attributes within the domain (intra-domain routing)
 - Routing uses “best match” algorithms according to the number of matching attributes
 - Routing does not use match based on partial character combinations (only whole attribute values, unlike AFTN)

2.3.10 Example of AMHS Routing Table

N°	Country	ADMD	PRMD	O	MTA
1	XX	ICAO	CFMU	CFMUH	CFMU-HAREN
2	XX	ICAO	CFMU	CFMUB	CFMU-BRETIGNY
3	XX	ICAO	France	LFFF	MTA-Athis
4	XX	ICAO	France	LFEE	MTA-Reims
5	XX	ICAO	France	LFBB	MTA-Bordeaux
6	XX	ICAO	France	LFMM	MTA-Marseille
7	XX	ICAO	France	LFRR	MTA-Brest
8	XX	ICAO	Germany		MTA-DFS
9	XX	ICAO	LI		MTA-ENAV
10	XX	ICAO	DT		MTA-ENAV
11	XX	ICAO	LA		MTA-ENAV
12	XX	ICAO	LM		MTA-ENAV
13	XX	ICAO	LT		MTA-ENAV
14	XX	ICAO	*(1)		Gateway ⁽²⁾

(national) intra-domain routing (rows 1-7)

(international) inter-domain routing (rows 8-14)

2.4 AMHS Systems and Network

Section 2.4:

- ATS Message Server
- ATS Message User Agent
- AFTN/AMHS Gateway
- AMHS and lower layer networks

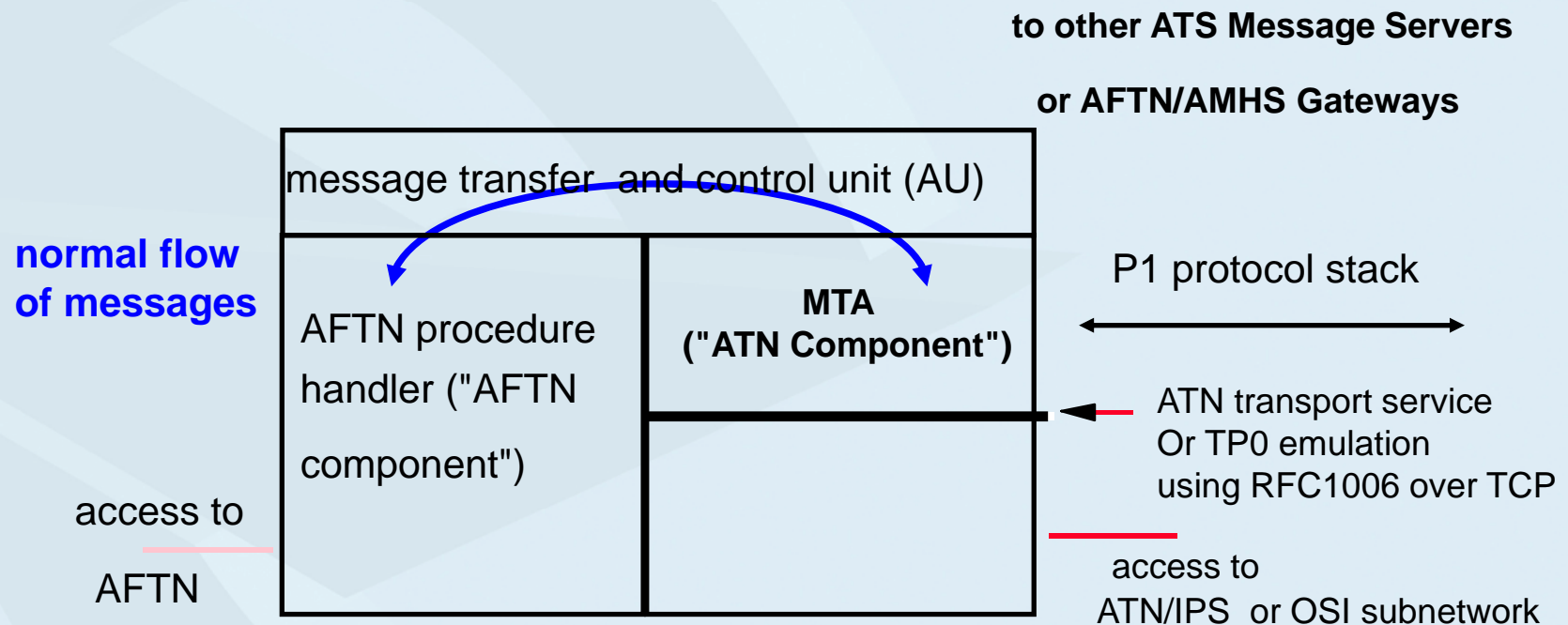
2.4.1 ATS Message Server

- The main functions of an ATS Message Server (MTA) are:
 - Message routing
 - Intermediate storage before message forwarding
 - Reliable transfer towards other ATS Message Servers
 - Management of local users connections, submissions and deliveries
 - Report generation (DR and NDR)
 - Management of local distribution lists
 - Traffic logging
- This is done by:
 - Encoding and decoding envelopes to determine actions to be performed
 - Managing upper layer protocols (and primarily P1, P3 for local users)

2.4.2 ATS Message User Agent

- The main functions of an ATS Message User Agent (UA) are:
 - Analyse contents and envelopes of received messages to “give” them to the user HMI
 - Submit messages entered by the user through the HMI
 - Manage the connection to the MTA
 - In P7 mode, create and send queries enabling to use the MS services
 - Generate and send RN when necessary
- This is done by:
 - Managing P3 and P7 protocols in order to :
 - Submit, receive and retrieve messages
 - Query and manage the MS
 - Encoding and decoding of P3 and P7 operations and message envelopes
 - Encoding and decoding of P2 contents

2.4.3 AFTN/AMHS Gateway Overview



2.4.4 AFTN/AMHS Gateway Functions

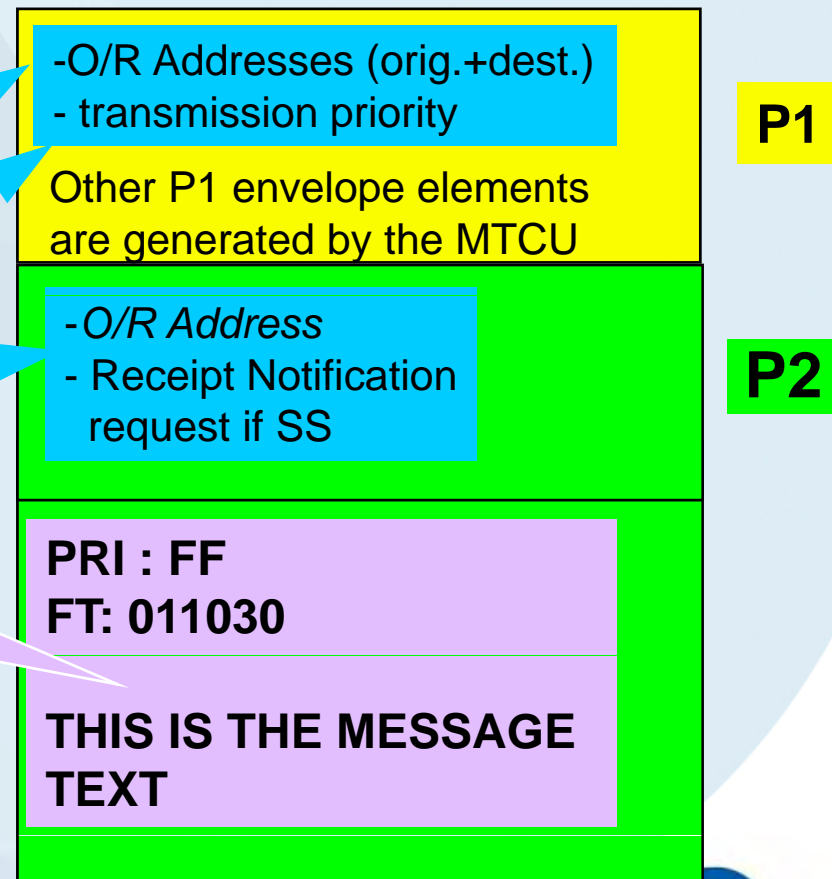
- management of AFTN procedure
- AFTN ITA-2 to/from IA-5 conversion
- if needed traffic logging
- conversion of AFTN messages (and of certain service messages) to/from AMHS messages and reports
- rejection of AMHS messages which cannot be conveyed over the AFTN
- address mapping : conversion of AFTN addressee indicators to/from AMHS O/R addresses
- full MHS/X.400 support by ATN Component
- The Gateway combines UA and MTA functionalities

2.4.5 AFTN/AMHS Gateway Message Conversion

MESSAGE COMING FROM AFTN

ZCZC BAC002
FF LFPOYIYA
011030 LFPSYHYX
THIS IS THE MESSAGE
TEXT
NNNN

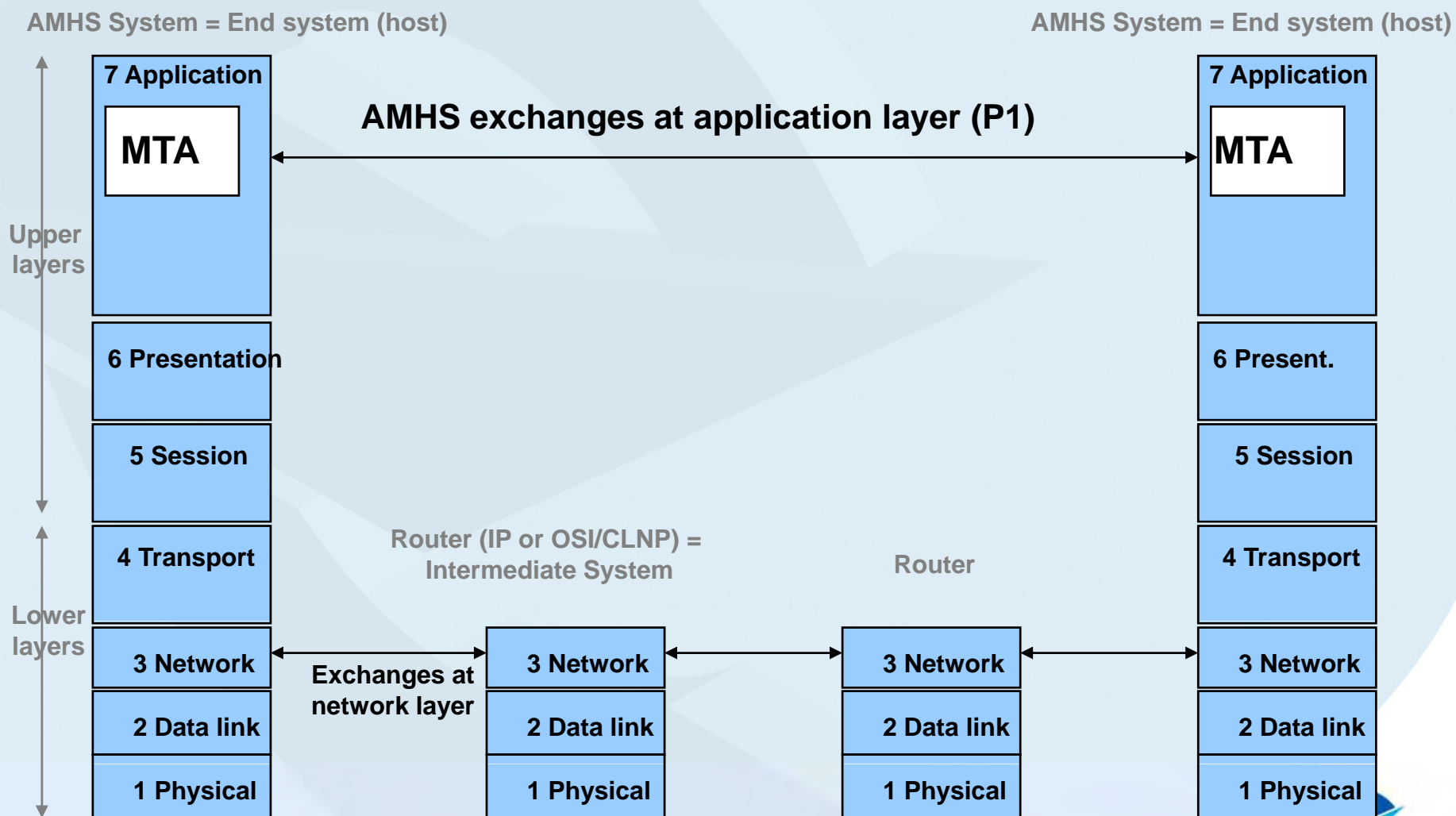
MESSAGE CONVERTED IN THE AMHS



2.4.6 AMHS and Underlying Network Options

- Two options : ATN/IPS (TCP/IP) and ATN/OSI
- The choice is related to layers 3 and 4 only
- Both options may co-exist globally while preserving end-to-end AMHS interworking
- A single choice for each ICAO Region should be preferred
- At present, all Regions, except Asia/Pacific, are targeting an ATN/IPS lower layer network infrastructure

2.4.7 AMHS and Lower Layers

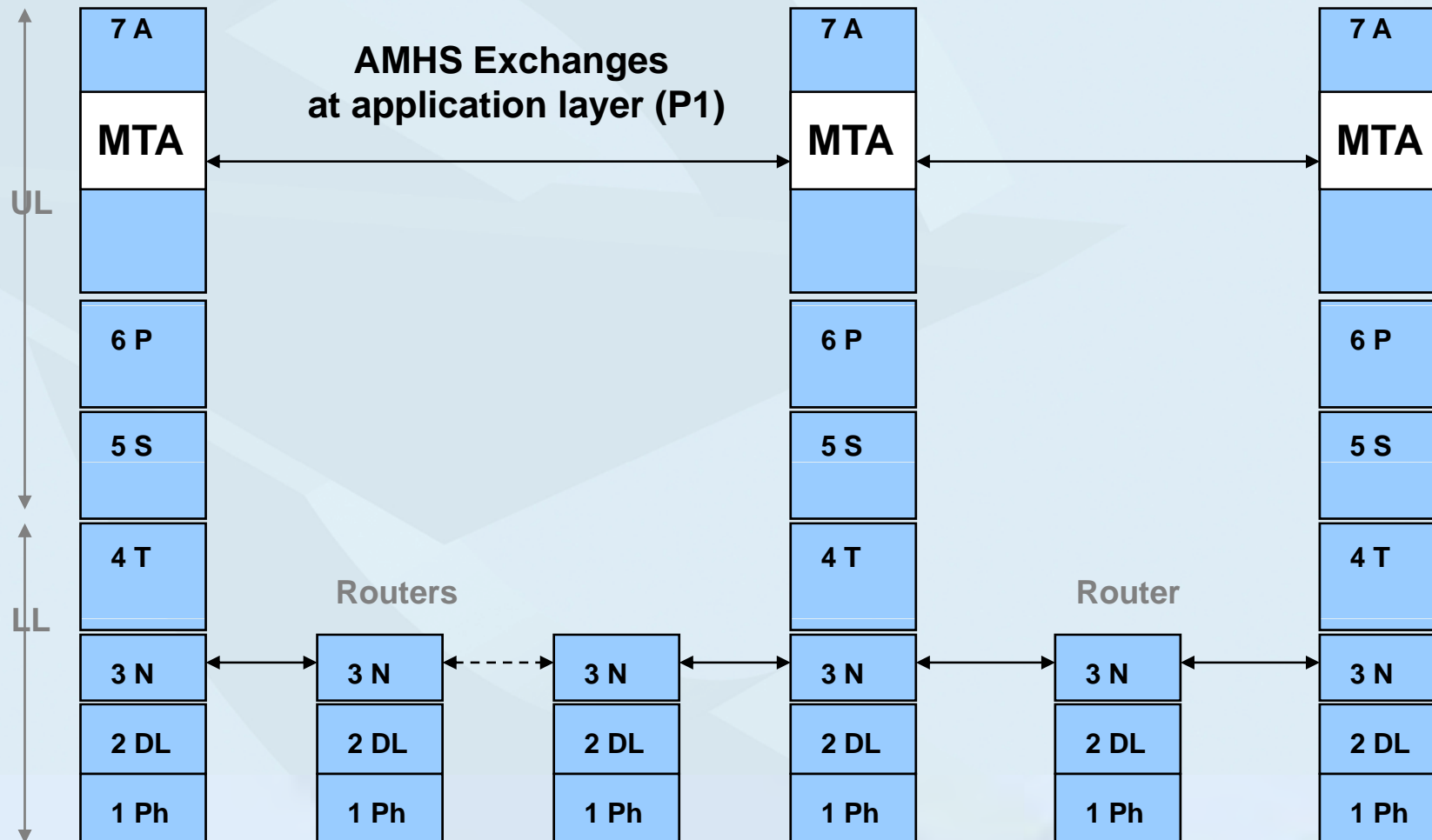


2.4.8 AMHS and Lower Layers

Store-and-forward AMHS operation

AMHS System = End system (host)

AMHS System = End system (host)

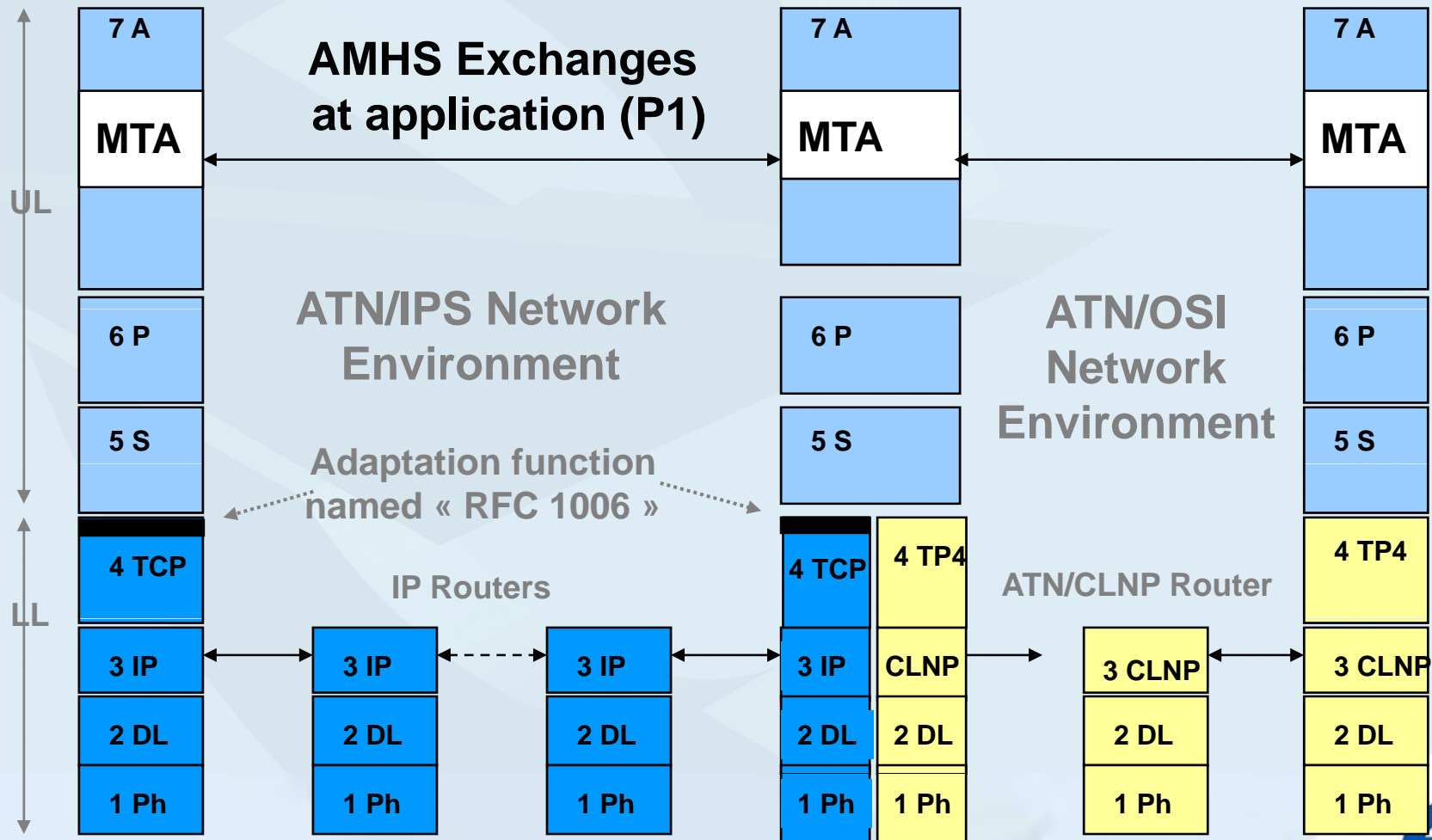


2.4.9 AMHS and Lower Layers

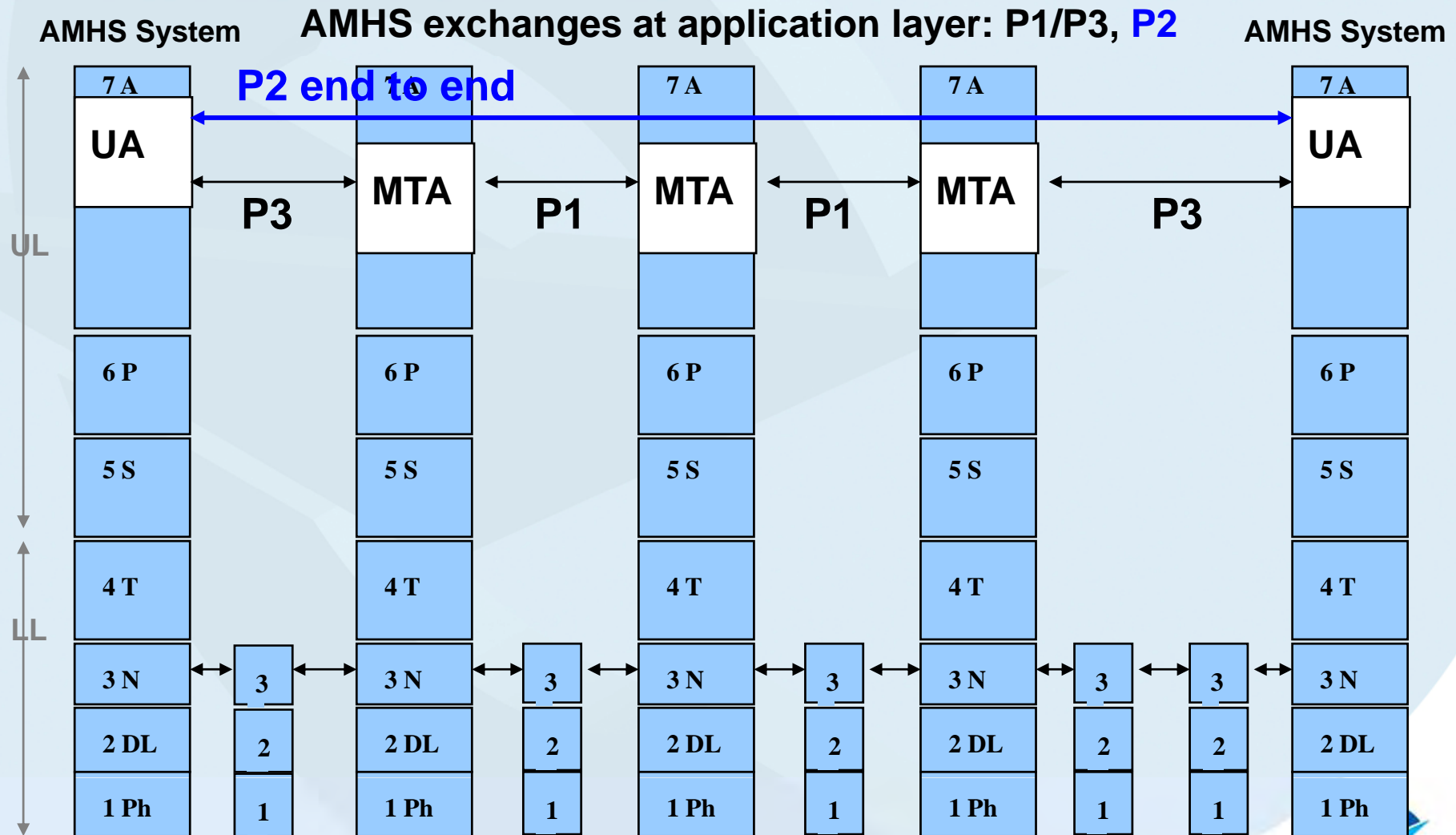
“multiple stack” operation

AMHS System = End system

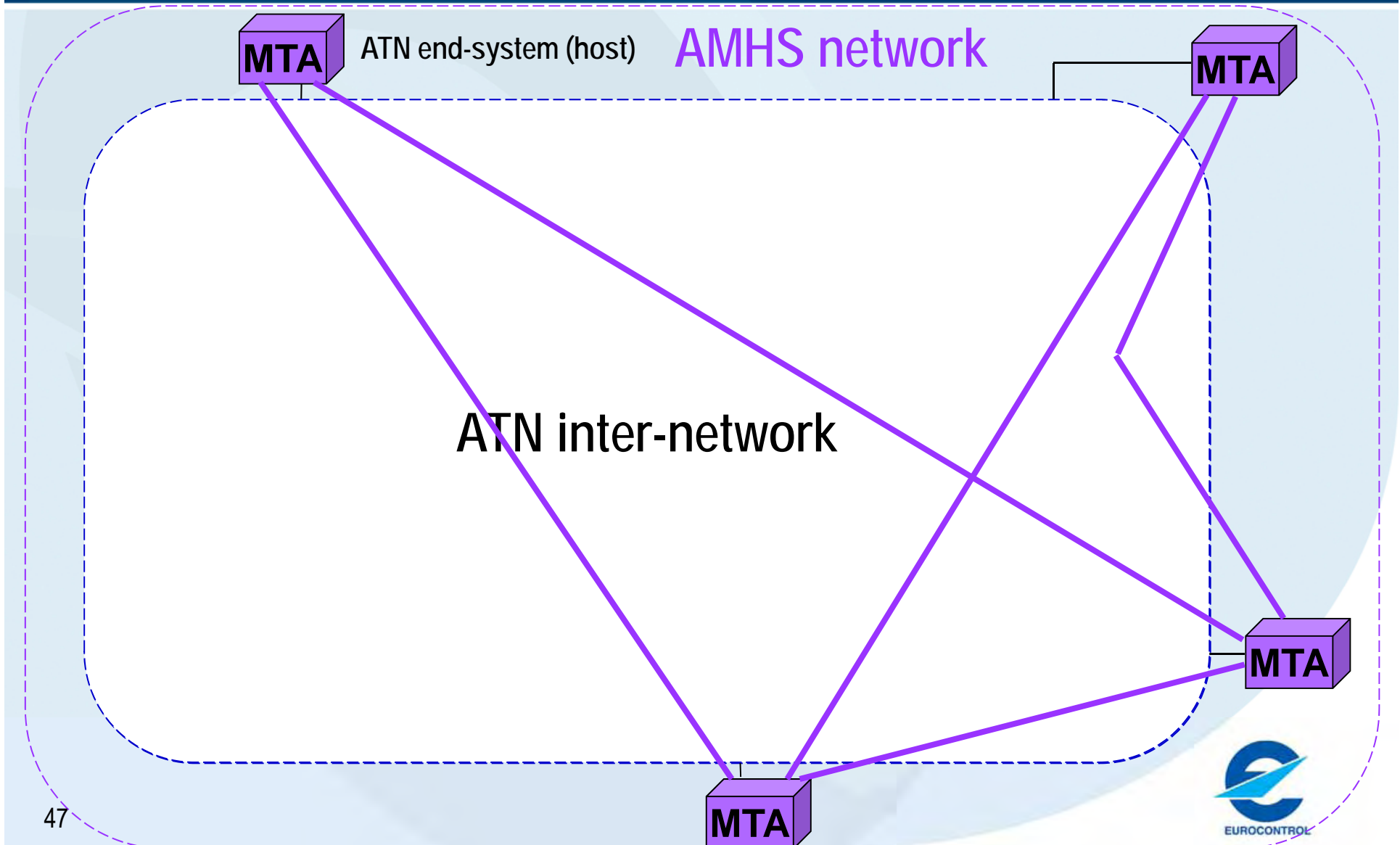
AMHS System = End system



2.4.9 AMHS and Lower Layers end-to-end operation



2.4.10 AMHS and Lower Layers AMHS network vs. ATN internetwork



3. ATS Messaging Management

Chapter 3

Overall Framework for ATS Messaging Management

3.1.1 Nature of Network Management

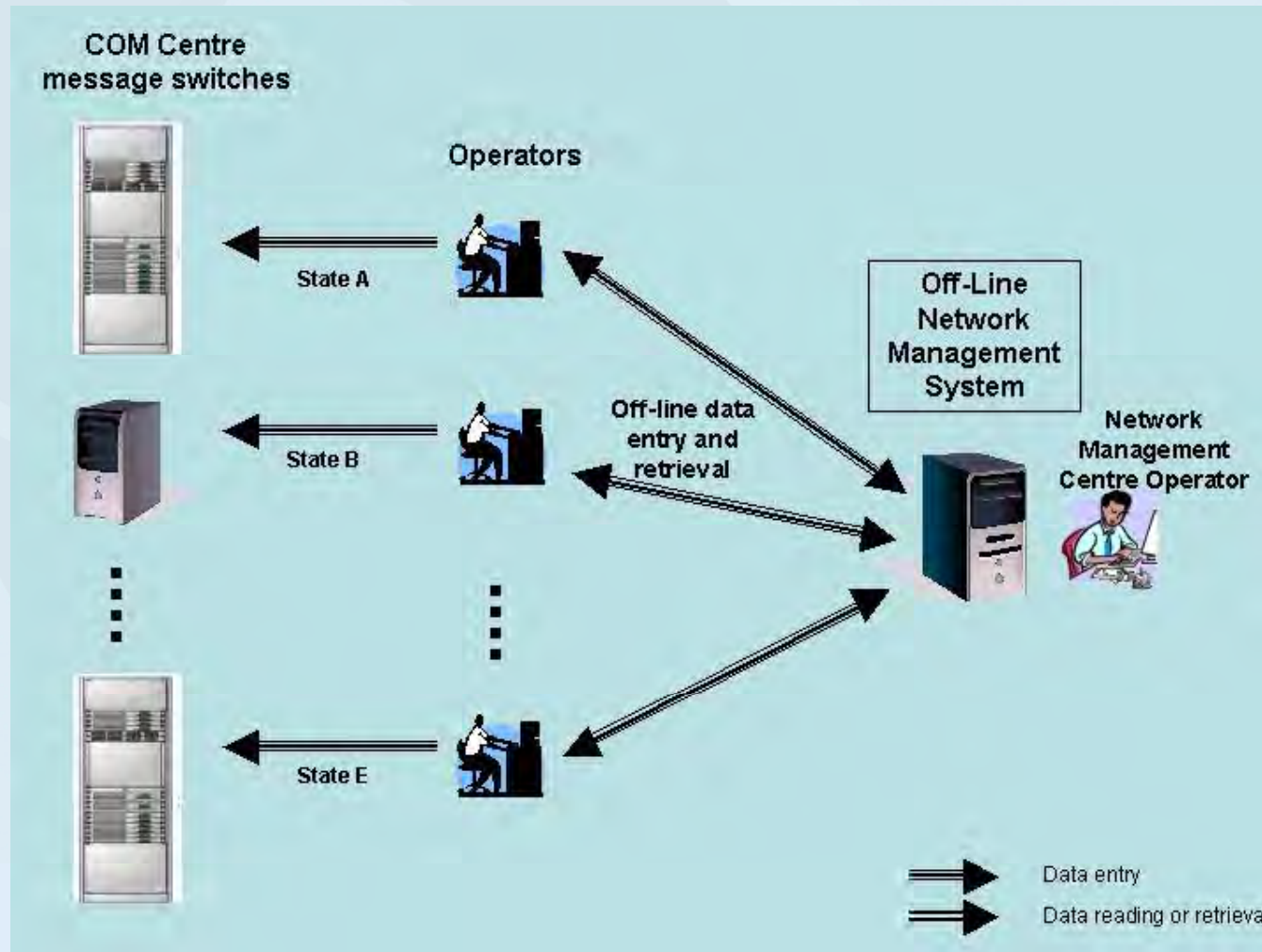
- Technical scope:
In our context “ATS Messaging Management” covers:
AFTN, CIDIN, AMHS
- Functional scope:
 - “FCAPS” model:
fault, configuration, accounting, performance, security
 - Other models:
inventory, change control, help desk, etc.
- Real-time / Short-term / Long-term
- Centralised / Local:
In our context each COM Centre is managed nationally, i.e.
“locally”

3.1.2 Need for coordination

“Local” management does not mean independent one from each other. Coordination is required, e.g. for:

- Sharing of common network-related data
- Synchronisation of changes in the network

3.1.3 Off-line Network Management



3.2.1 AMC Participants

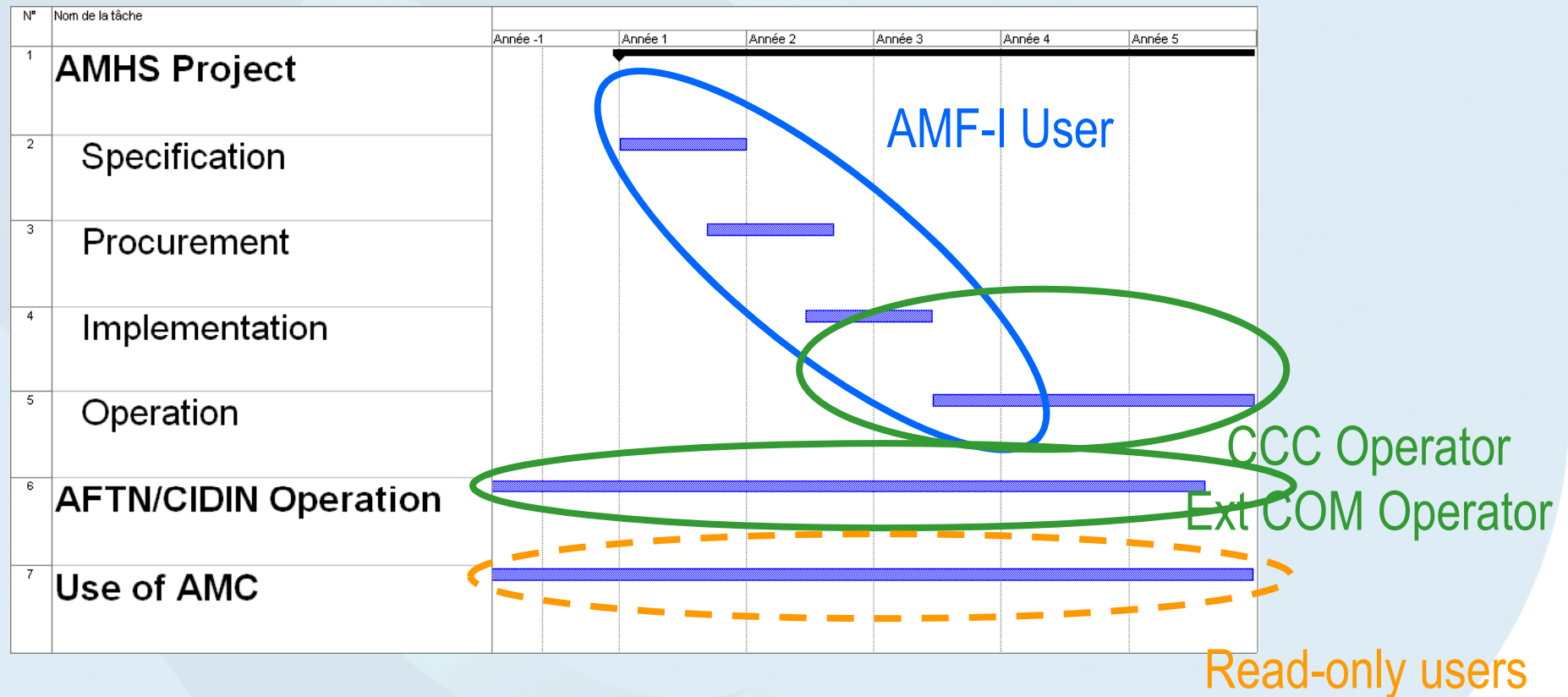
- AMC Operator
- CCC (Co-operating COM Centre) Operators
- External COM Centre Operators
- AMF-I Users
- Read-Only Users
 - Operators without formal responsibility
 - People overseeing activity
- Participating COM Centres

AMC Users

How to be in one of these categories ?

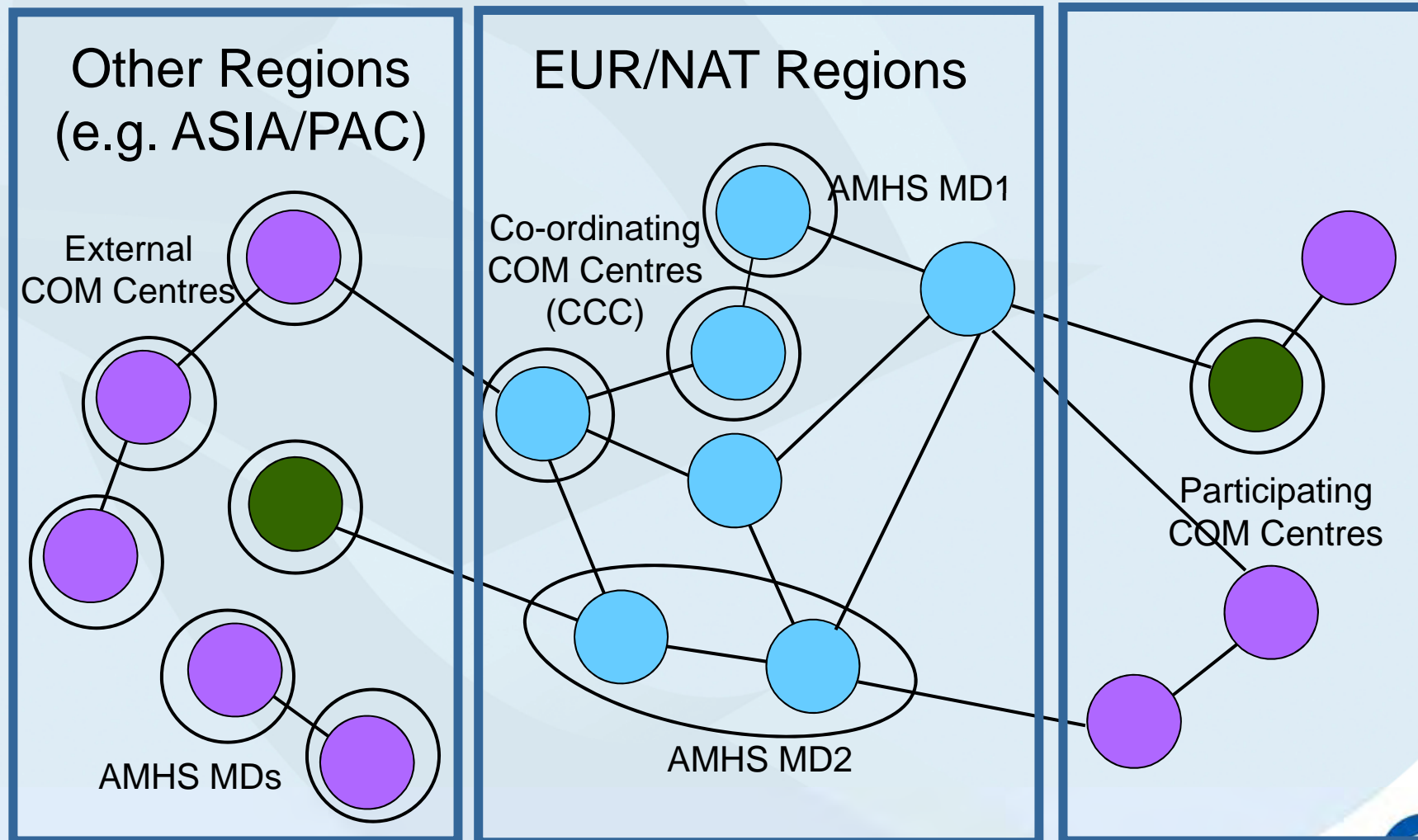
Use accreditation procedures in the Manual

3.2.2 Main focus for AMC Participants in an AMHS Project

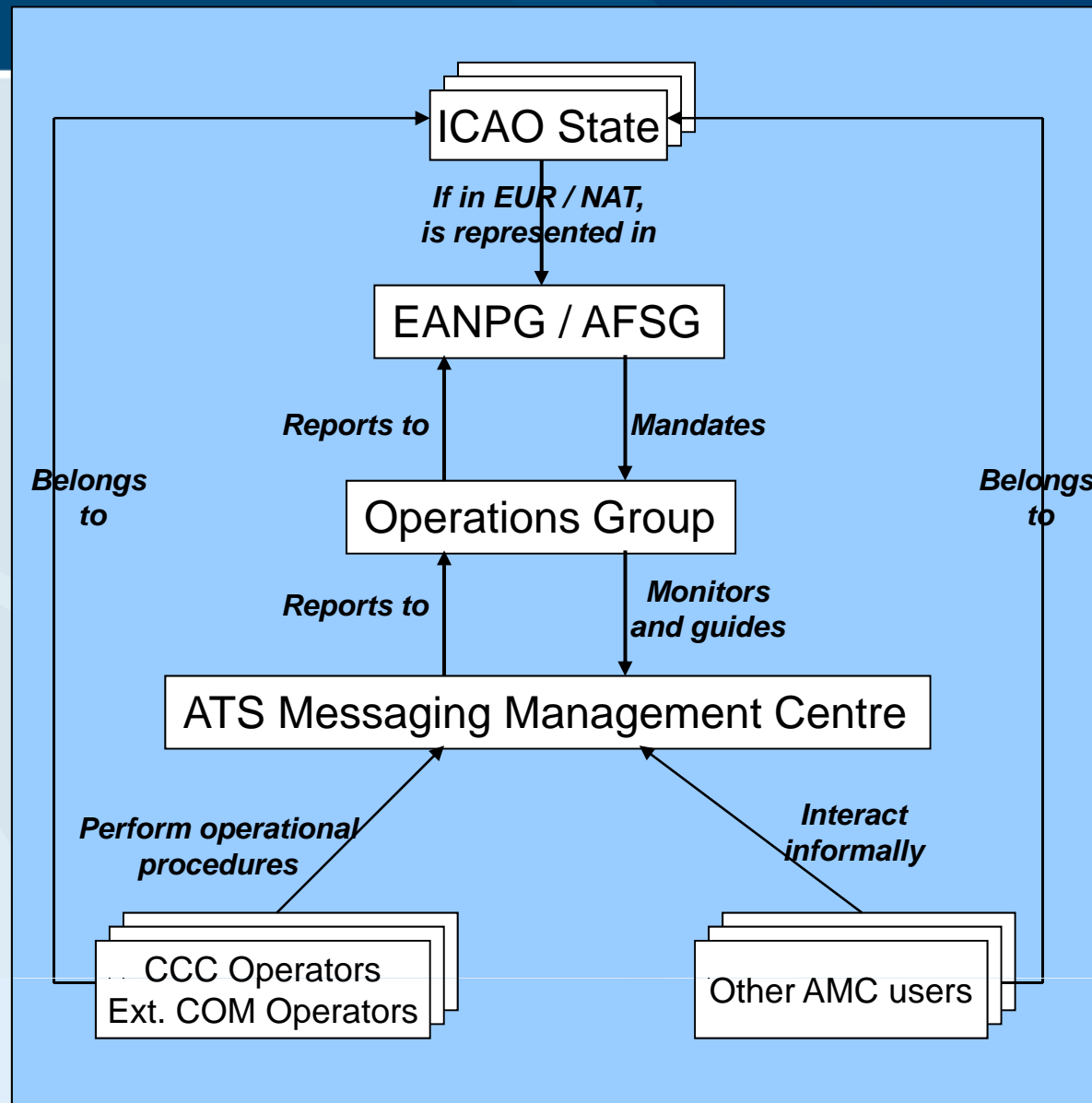


- AMF-I Users, CCC Operators and Ext. COM Operators are officially representing their COM Centre and/or ANSP
- Read-only users have no formal responsibility and may be not directly involved in an AMHS project

3.2.3 ATS Messaging Management Area



3.2.4 Organisation



3.2.5 Organisation: AMC Participants and access to functions

Participant categories	AMC functions	AMF-I functions	AMF-O functions	AMC Operator functions
	AMF-I users		yes	some
CCC operators		yes	yes	
External COM operators		yes	All but routing and statistics	
Read/only users		some	some	
AMC Operators		yes	yes	yes

AMC users

A task performed by a group of ANSP/COM Centre representatives under contract by Eurocontrol

**+ AMC Support Group:
(Eurocontrol)**

**AMC Project Leader
system infrastructure operators**

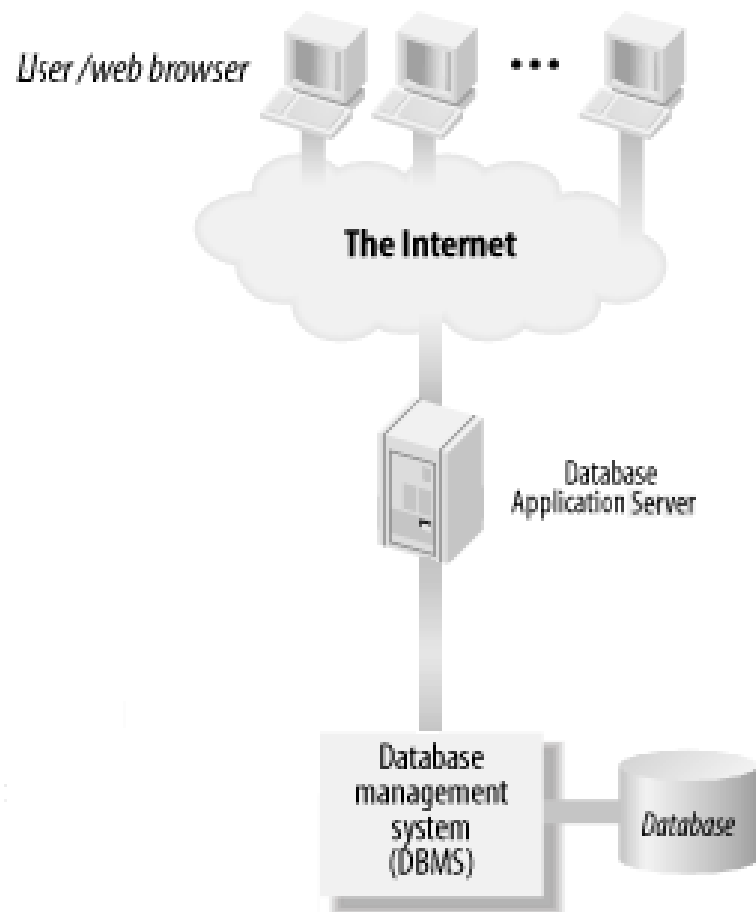
4. ATS Messaging Management

Chapter 4

Technical and Practical Overview

4.1.1 A Database Application

AMC Users

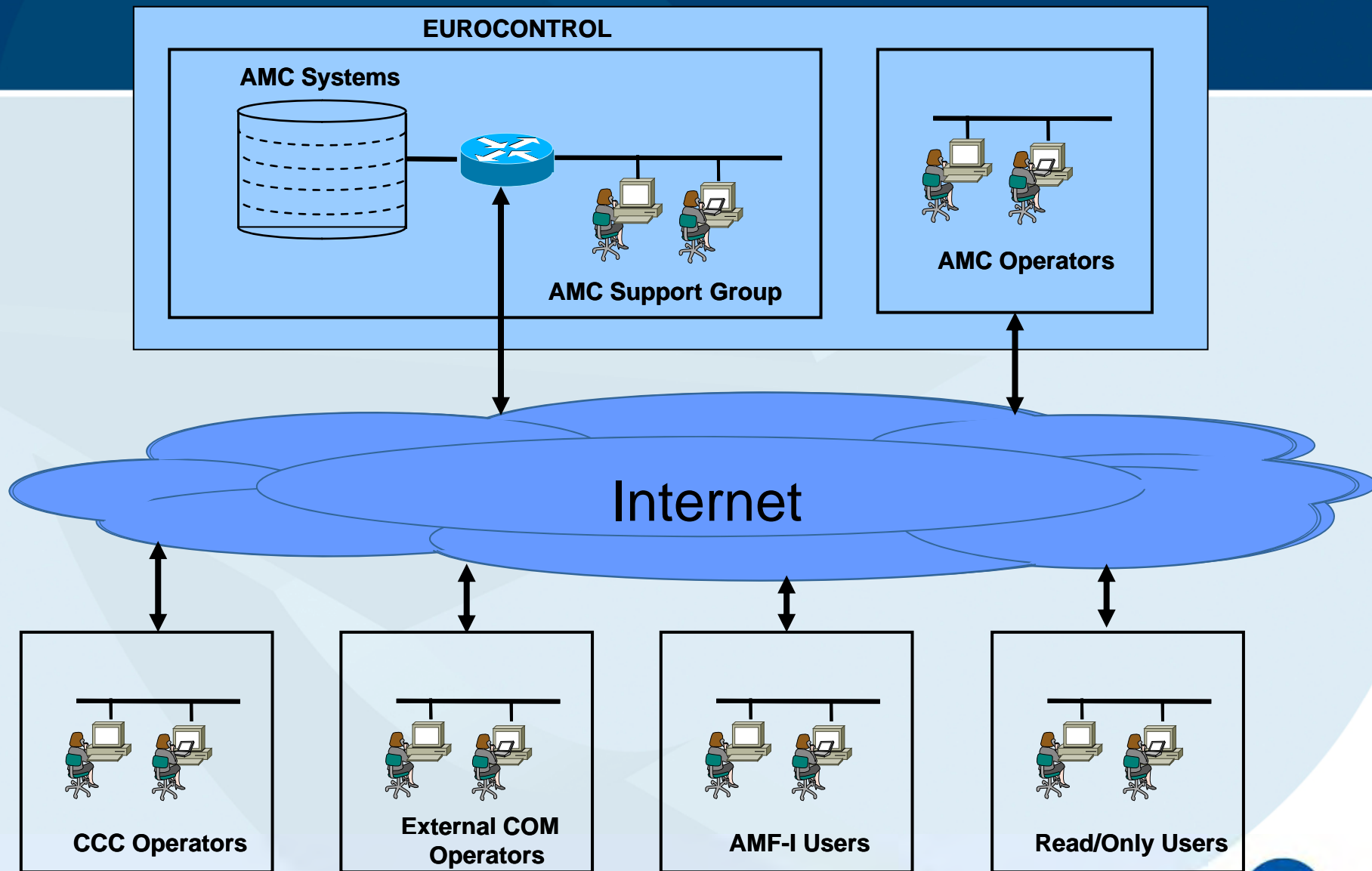


AMC Systems

User interfaces
Data processing

Database objects

4.1.2 AMC Participants and systems



4.2.1 How to become an AMC User ?

- Use procedure described in ATTACHMENT B to ICAO State letter AN 7/49.1-09/34 :
 - Fill in the electronic form provided at:
https://extranet.eurocontrol.int/http:/chow.mis.eurocontrol.be:8095/elsh_live/elsh/registerNewUserForApplication.do?eurocontrolresourceid=amc_users
 - The accreditation procedure is then started (see ATS Messaging Management Manual section 2.5.2)
 - Follow AMC training

4.2.2 How to enter the AMC application ?

- Various entry points:
 - www.eurocontrol.int/amc/
 - www.paris.icao.int

4.2.3 How to enter the AMC application ? (directly to Eurocontrol)

EUROCONTROL - ATS Messaging Management Centre (AMC) - Microsoft Internet Explorer

Fichier Edition Affichage Favoris Outils ?

Précédente Rechercher Favoris

Adresse http://www.eurocontrol.int/amc/public/subsite_homepage/homepage.html

Press Room | About Us | Stakeholders | Inside EUROCONTROL | OneSky Online | Home | Contacts | Sitemap | Help

Safety Single European Sky ATM Performance Air Traffic Control Air Navigation Charges Training Airports

Security Civil / Military Research & Development Managing the Traffic Society & Economics Capacity Traffic & Delay Environment

EUROCONTROL > EATM AMC > AMC Home

AMC Home

AMC and Aeronautical Fixed Service

AMC Overview

Enter AMC

Registration

Contact us

ATS Messaging Management Centre (AMC)

The AMC started its operational service in January 2007. It is implemented by EUROCONTROL to provide off-line network management services in support of the ground ATS Messaging network of Air Navigation Service Providers (ANSPs) in Europe.

This network integrates the Aeronautical Fixed Telecommunications Network (AFTN), the Common ICAO Data Interchange Network (CIDIN) and the ATS Message Handling System (AMHS) to transparently deliver operational ATS Messages such as flight plans, between users and hosts in ANSPs, airlines, etc. on a global basis.

Networks organised under the auspices of ICAO are classified into the Aeronautical Fixed and the Aeronautical Mobile services.

More information about the Aeronautical Fixed Service

The AMC was developed upon a request from the ICAO European Air Navigation Planning Group (EANPG). To achieve this goal, EUROCONTROL worked in close co-operation with the ICAO Aeronautical Fixed Service Group (AFSG), a working group of the EANPG, to develop the ATS Messaging Management Manual (ICAO EUR Doc 21) that defines the AMC concept, and functions and procedures for centralised management of the ATS messaging network. EUROCONTROL completed development and implementation in November 2006.

démarrer 5 Internet Explorer 3 Microsoft Office P... Sans titre - Paint Internet 20:03

Select "Enter AMC"

4.2.4 How to enter the AMC application ?

Enter login and password

4.2.5 How to enter the AMC application ? (via ICAO)

2. Select “Continue to AMC”

The image displays two screenshots of the ICAO website. The first screenshot shows the 'AMC' link in the left sidebar circled in blue. The second screenshot shows the 'Continue to AMC...' link at the bottom of the page circled in blue, with a blue arrow pointing from the first screenshot to it.

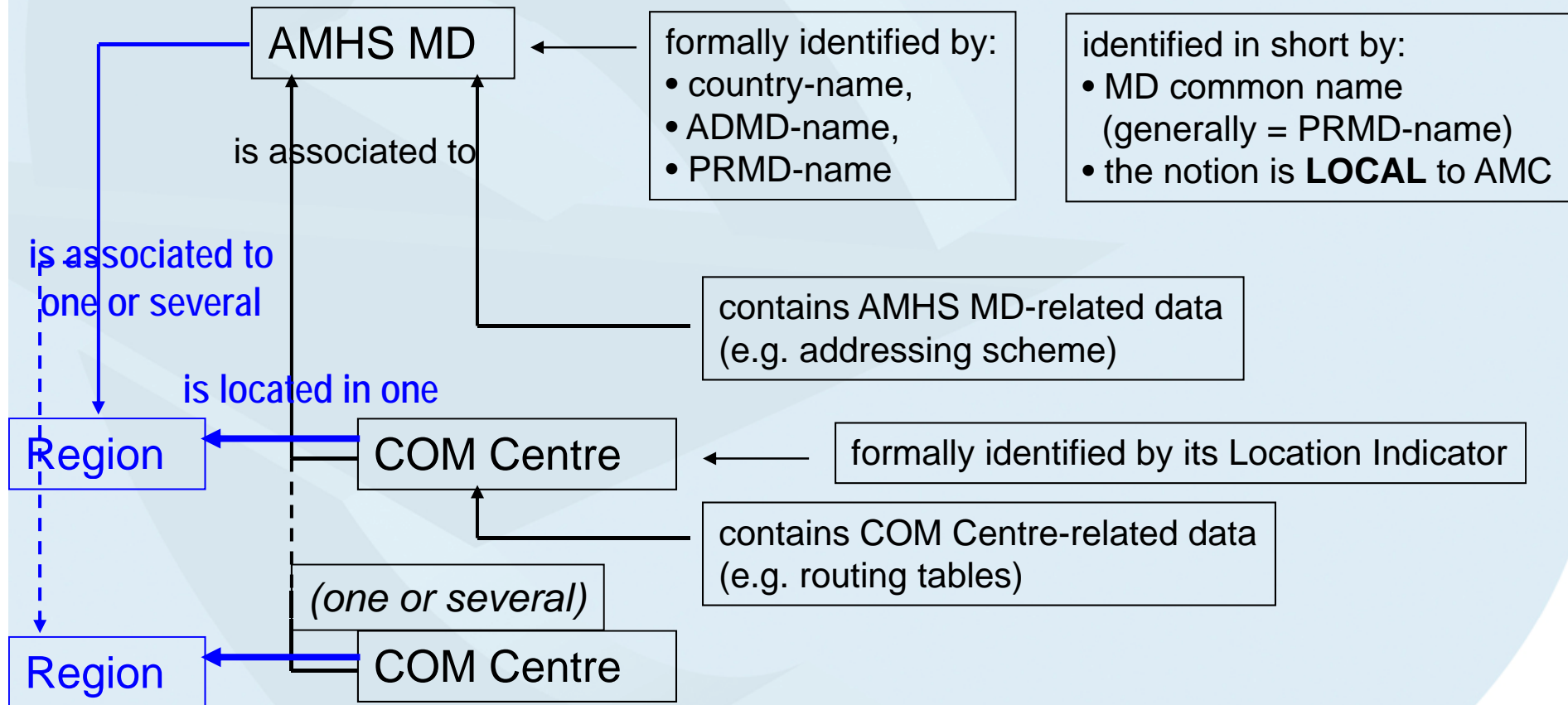
1. Select “AMC”

5. ATS Messaging Management

Chapter 5

Data Organization and User Interface

5.1.1 AMHS Management Domains and COM Centres in AMC



5.1.2 Relation to ICAO Regions

- A common data structure for the description of:
 - All AMHS MDs world wide
 - All COM Centres world wide
- The functions (routing and statistics) which are not opened to External COM Centres (and other COM Centres outside EUR/NAT) include no data for these Centres
- Regions are taken into account in two different ways:
 - Using the single COM Centre / Region association in the Search criteria
 - To graphically represent the geographical network organisation, using Regional COM Charts

5.2.1 Menu and Window Structure

The screenshot shows the 'Network Inventory - Persons & Contacts - Operational' interface. The left sidebar contains a menu of functions, and the main window displays a search form and a table of personnel data.

Menu (functions)

- View Operational Data
 - Network Inventory
 - Routing Directory
 - Address Management
 - User Capabilities Management
 - Statistics
 - Static Report
 - COM Charts
 - View Pre-Operational Data
 - Network Inventory
 - Routing Directory and ACK
 - Address Management
 - User Capabilities Management
 - Statistics
 - Static Report (updated data)
 - Enter Background Data
 - Network Inventory
 - Address Management
 - User Capabilities Management
 - Statistics
 - Miscellaneous Functions
 - Support Functions
 - View Bulletin Board
 - View AIRAC Cycle
 - AMC Operator Details
 - Documentation Part of ENRD
 - Path Function
 - View ANP Locations
 - Regions
 - Send E-Mail to User Groups

Main window

ATS Messaging Management
Network Inventory
Operational Area [HELP]

Persons & Contacts | Com Centres | AFTN / CIDIN Capabilities | AMHS Capabilities | VCG's | Connections

Region: EURNAT | COM Centre: EDDD | Location: FRANKFURT/MAIN INTL C | Country: Germany

MD Common Name: GERMANY | Country-Name: XX | ADMD-Name: ICAO | PRMD-Name: GERMANY

Personal Role	Firstname	Surname	Phone	E-Mail
Operator	Operator	24 H	+49 6103 707 7922	nkz@dfs.de
Technical / Oper. Supervisor	Supervisor	24 H	+496103 707 7920	nkz@dfs.de
Management	Carsten	Jabs	+496103 707 6300	carsten.jabs@dfs.de
System Administrator	Elmar	Jochem	+49 6103 707 7170	elmar.jochem@dfs.de
Operations Manager	Uwe	Kunz	+49 6103 707 7174	uwe.kunz@dfs.de
AMC Operator	Uwe	Kunz	+49 6103 707 7174	amc-operator@aim.dfs.de
AMC Operator	Stefan	Will	+496103 707 7920	amc-operator@aim.dfs.de

Sub-functions (tabs)

5.2.2 Interface Conventions

- Common lay-out
- Help
- Input fields
- Disabled buttons
- List boxes
- Scroll bars
- Waiting after an operation
- Maintaining context
- Association mechanism
- Sorting of columns in RESULTS tables
- Record history information

5.2.3 Main Window and Pop-up Structure

The screenshot displays the 'Network Inventory' application interface. The main window shows a list of records with columns for Personal Role, Firstname, Surname, Phone, and E-Mail. A record for 'Operations Manager Uwe Kunz' is highlighted. A blue dashed box and arrow indicate that clicking on this record opens a pop-up window titled 'Persons & Contacts - Source COM Centre - EDD0 - Microsoft Internet Explorer'. This pop-up window provides detailed information for the selected record, including Personal Roles, Phones, Fax, E-mail, Telex, AFTN, CDM/AFN, CDM/OPME1, SITA, Remarks, and metadata like Created by, Created on, Last Modified by, and Last Modified on.

Personal Role	Firstname	Surname	Phone	E-Mail
Operator	Operator	24 H	+49 6103 707 7922	nkz@dtz.de
Technical / Oper. Supervisor	Supervisor	24 H	+496103 707 7900	nkz@dtz.de
Management	Carsten	Jabe	+496103 707 6300	carsten.jabe@dtz.de
System Administrator	Elke	Kunz	+49 61 202 2110	elke.kunz@dtz.de
Operations Manager	Uwe	Kunz	+49 6103 707 7174	uwe.kunz@dtz.de
AMC Operator	Uwe	Kunz	+49 6103 707 7174	amc-operator@sw.dtz.de
AMC Operator	Stefan	Hilb	+9103 707 7905	amc-operator@sw.dtz.de

Personal Roles	Firstname	Surname	Local Telex
Operations Manager	Uwe	Kunz	

Phones	Fax	E-mail	Telex
+49 6103 707 7174	+49 6103 707 7925	uwe.kunz@dtz.de	

AFTN	CDM/AFN	CDM/OPME1	SITA
EDDDTYX			FRAZYYF

Created by: AMC, Created on: 06/01/2007 13:20, Last Modified by: kunzr, Last Modified on: 06/12/2007 15:18

detailed information about selected record

5.2.4 Screen areas of main window

The screenshot displays the 'Network Inventory' application window. The interface is divided into several functional areas:

- SEARCH area:** Located at the top of the main content area, it includes a search bar with dropdown menus for 'Region' (set to EURNAT) and 'COM Centre' (set to EDCC), and a 'SEARCH' button.
- RESULTS area:** A table listing network inventory items. The table has columns for 'Personnel role', 'First name', 'Surname', 'Phone', and 'E-mail'. The data includes roles like Operator, Technician / Oper. Supervisor, Management, System Administrator, Operations Manager, and AMC Operator.
- DETAILS area:** A form view for a selected entry (Operations Manager, Uwe Kunz). It contains fields for 'Personal Roles', 'Phone', 'Fax', 'E-mail', 'Local Title', 'User Id', 'AFTH', 'CDIRAFTH', 'CDIRCPMT', and 'SITA'. It also includes a 'Remarks' section and a metadata section with 'Created by', 'Created on', 'Last Modified by', and 'Last Modified on'.
- ACTIONS area:** A set of buttons at the bottom of the details form, including 'CREATE', 'REPORT', 'MODIFY', and 'DELETE'.

Blue dashed boxes and arrows highlight these four areas. The 'ACTIONS area' label also points to the 'CREATE' and 'REPORT' buttons in the left sidebar.

5.2.5 Management of Access Rights

- at menu level:
 - not the same groups of functions are visible for each category
- at window level:
 - sub-functions can be hidden depending on user category
 - buttons are enabled / disabled
 - data are enabled / disabled

5.3.1 Example: Regions function

- A function for the description of ICAO Regions and Regional Offices:
 - Details: Regional Office
 - Results:
 - Regional Persons and Contacts
 - Associated COM Centres
- Data modification by AMC Operator only
- Other users have “read” access
- All users have:
 - a standard REPORT button
 - A specific VIEW COM CHART button

5.3.2 Example: Regions function

Demonstration

6. Overview of AMF-O Functions and Procedures

Chapter 6

Overview of Operational Functions (AMF-O) and Procedures

6.1.1 List of AMF-O Functions

- Network Inventory
- Routing Directory
- Address Management
- User Capabilities Management
- Statistics

- Static Report
- COM Charts

6.2.1 Common Aspects of AMF-O Functions

- Information is structured in three data areas:
 - the Operational Data Area
 - the Pre-Operational Data Area
 - the Background Data Area
- Specific functions (different menu items) enable to access each area with a given purpose

6.2.2 Background Data Area

purpose	working area (CCC, External COM Centre and AMC Operators)
access	restricted to own COM Centre (except for AMC Operator)
AMC Operator actions	validating Inventory, work on Routing Tables
functions	data entry and validation

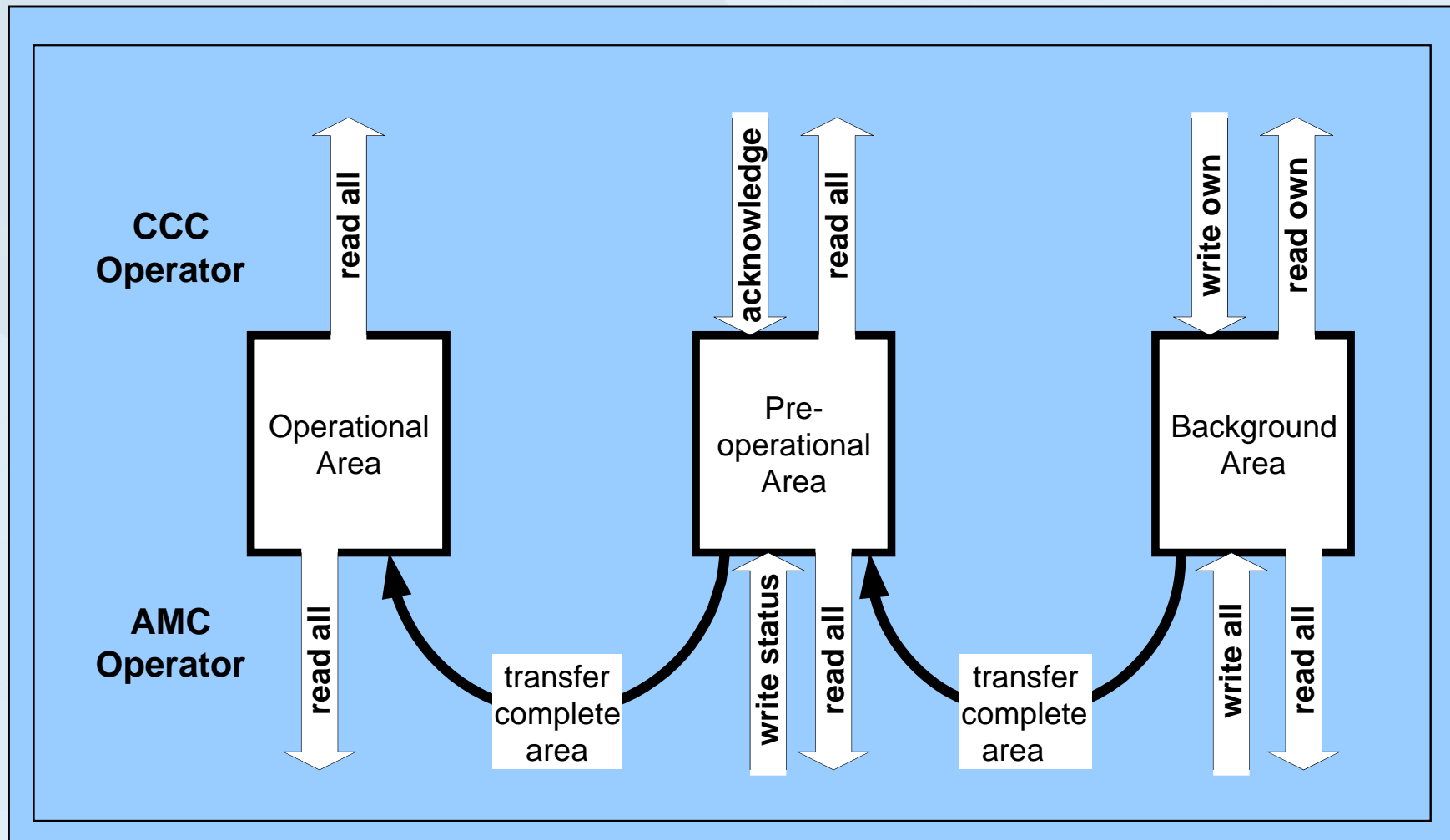
6.2.3 Pre-operational Data Area

purpose	represent planned operational state
access	read (all), routing acknowledgement (restricted)
AMC Operator actions	transfers COM centre information, propose Routing Tables
functions	retrieval, all functions, routing acknowledgement

6.2.4 Operational Data Area

purpose	represent operational state
access	read (all)
AMC Operator actions	copied as whole from Pre-operational
functions	retrieval, all functions

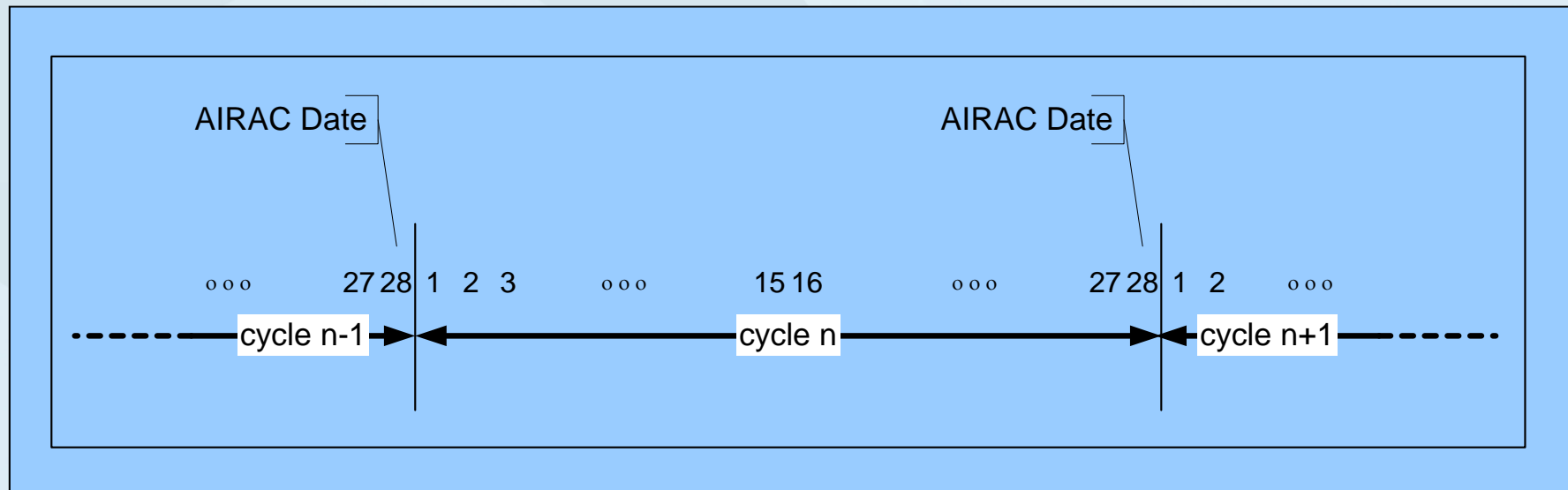
6.2.5 Relation between Areas



6.3.1 General View of Procedures

- AMF-O functions are governed by procedures
- Although formulated a bit differently, they are aligned on formerly existing CIDIN Management (CMC) procedures to gain from the experience accumulated in that area






6.3.2 The AIRAC Cycle



6.3.3 The Procedure Cycle

General View

Day in Cycle	Data Entry	Data Validation and Processing	ACK Phase	ACK Processing	Data Retrieval and Implementation (by CCC)
	by CCC / Ext COM / AMC	by AMC	by CCC	by AMC	Data Publication (by AMC)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

LEGEND		AMC Operator locks COM Centres		AMC Operator releases the routing matrix
		AMC Operator transfers to pre-operational area		AMC Operator moves data to operational area, unlocks COM Centres and makes official publications; CCC Operators use new data for operational service
		Weekends		

6.3.4 Relation between Data Areas and Procedures

	Use of Background Data Area	Use of Pre-operational Data Area	Use of Operational Data Area
initial data entry phase	data entry	investigate validated data	access current operational data
creation of new Routing Matrix phase		investigate and acknowledge Routing Matrices	access current operational data
implementation of new Routing Matrix phase			access current operational data

6.3.5 View AIRAC Cycles in AMC

- A miscellaneous function:
 - View AIRAC Cycle
 - View AIRAC Dates

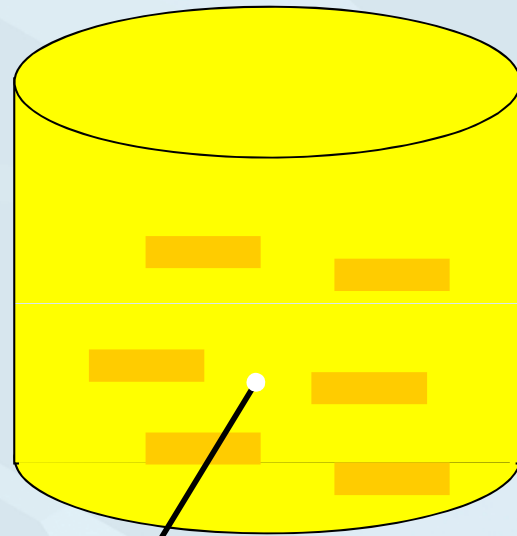
Demonstration

7. Network Inventory

Chapter 7

Network Inventory

7.1.1 Network Inventory Purpose



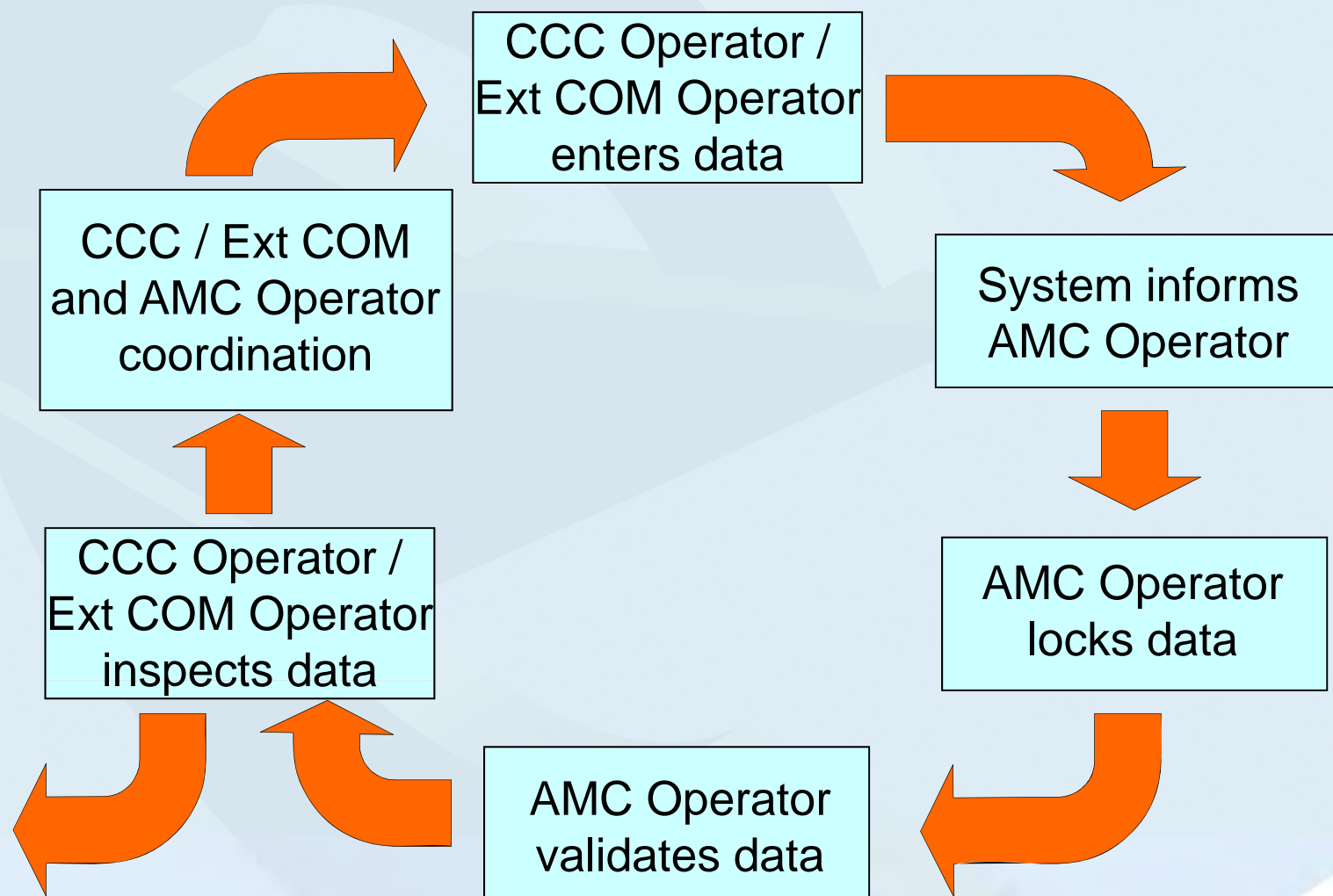
Persons and Contacts
COM Centre Info and Capabilities
Connections
(CIDIN VCGs)

retrieval of Network
Configuration etc.

support of Routing
Update

etc.

7.1.2 Inventory Update Interactions



7.1.3 The Sub-functions of Network Inventory

- Persons and Contacts
- COM Centres
- AFTN/CIDIN Capabilities
- AMHS Capabilities
- VCGs
- Connections

Routing Directory
Address Management
User Capabilities Management
Statistics
Static Report
COM Charts
New Pre-Operational Data
Network Inventory
Routing Directory and ACK
Address Management
User Capabilities Management

Network Inventory Background Area [HELP]

Persons & Contacts Com Centres AFTN / CIDIN Capabilities AMHS Capabilities VCG's Connections

Region: EURMAT COM Centre: EDOD Location: FRANKFURT/MAIN INTL CI Country: Germany SEARCH

MD Common Name: GERMANY Country-Name: XX ADMD-Name: ICAO PRMD-Name: GERMANY

Personal Role	Firstname	Surname	Phone	E-Mail
Operator	Operator	24 H	+49 6103 707 7922	nikz@dfs.de
Technical / Oper. Supervisor	Supervisor	24 H	+496103 707 7920	nikz@dfs.de

7.1.4 Network Inventory: objectives

- Persons and Contacts:
operational contact points in COM Centres
- COM Centres:
general information (address)
applications (AFTN, CIDIN, AMHS, others)
- AFTN/CIDIN Capabilities:
details of AFTN and CIDIN configuration and capabilities
- AMHS Capabilities:
details of AMHS configuration and capabilities
- VCGs:
list of CIDIN VCGs with adjacent COM Centres
- Connections:
list of all connections of all types with other COM Centres
(network topology)

7.2.1 AMHS Capabilities Data Fields

Field	Comments	Values
<i>ATS Message Server frame</i>		
ATS Message Server	Derived from "applications" selected in the COM Centres function (not modifiable) If unticked the whole frame is disabled.	a checkbox: ticked = present and active unticked = not present or not active
MTA-name	The X.400 MTA-name used to declare an association, to use in trace-information, etc.	recommendation in EUR AMHS Manual : 'MTA-' followed with LI (4 letters) followed by "-" " and a sequence number
Maximum Content Length	Maximum length (in bytes) of messages that the MTA is capable to accept, transfer and deliver	recommendation in EUR AMHS Manual : should be at least 2 Mbytes
Message Lifetime	Duration during which the MTA will try to transfer before assuming transfer failure and generating NDR	to be coordinated regionally. Under discussion within AFSG subgroups
Extended Encoded Information Types (EITs) in support of...	Message Encodings that the MTA is capable to transfer to accept, transfer and deliver	one checkbox (ticked = yes, unticked = no) for each body part / encoding combination specified in Doc 9705
<i>AFTN/AMHS Gateway frame</i>		
AFTN/AMHS Gateway	Derived from "applications" selected in the COM Centres function (not modifiable) If unticked the whole frame is disabled.	a checkbox: ticked = present and active unticked = not present or not active
Currently Authorized Content Length	Maximum length (in bytes) of messages that the gateway will accept to convert to AFTN	recommendation in EUR AMHS Manual : should be at least 2 Mbytes
Maximum Number of Recipients	The maximum number of recipients O/R addresses allowed in a message converted by the gateway. Messages with more recipients are rejected.	Doc 9705 requirement is 512 recipients
Converted General-Text Body Parts	General-text body parts that the gateway is capable to convert to AFTN	one checkbox (ticked = yes, unticked = no) for each body part character set specified in Doc 9705 (ISO 646 or ISO 8859-1)
Operational Status	Coming from the AMHS MD Register function (not modifiable)	'op', 'non-op', 'unknown'

7.2.2 Protocol Capabilities

- The table shows the protocol stacks available for international AMHS connectivity
- Each stack includes application layer (P1 between MTAs), presentation, session and lower layers
- Several instances of the same stack can be present
- The table is managed as **one** parameter of the Com Centre:
 - enabled for modification or creation only when MODIFY is clicked
 - after entering data, UPDATE in pop-up **and** SUBMIT in main window

Protocol	P-SEL	S-SEL	T-SEL	Network Address (NSAP or IP)	Active
AMHS/TP0-X.25			WAN	20601234567890	<input checked="" type="checkbox"/>
AMHS/TCP-IP			TCP	192.168.0.4	<input checked="" type="checkbox"/>

7.2.3 Protocol Capabilities Data Fields

Data fields = the parameters which a remote MTA needs to correctly configure an association:

Field	Comments	Values
Protocol	Supported AMHS protocols for COM Centre to COM Centre communication. There can be various protocol stacks	'AMHS/TCP-IP' 'AMHS/ATN-TP4' 'AMHS/TP0-X.25'
P-SEL	Presentation selector for OSI Upper Layer stack. A characteristic of the MTA-to-MTA	assigned by COM Centre 4 characters maximum
S-SEL	Session selector for OSI Upper Layer stack	assigned by COM Centre 16 characters maximum
T-SEL	Transport selector for OSI Upper Layer stack	assigned by COM Centre 32 characters maximum
Network Address (NSAP or IP)	The IP address or ATN NSAP allocated to the considered protocol stack in the MTA.	assigned by COM Centre
Active	indicates the current operational status of the protocol stack	a checkbox: ticked = active unticked = present but not yet active

7.2.4 Connections

- need to represent the network topology at “messaging level”
- in summary three main connection categories:
 - AFTN circuits (conventional or X.25)
 - CIDIN (PVC or SVC)
 - AMHS connections
- an AMHS connection = a X.400 P1 association between two MTAs over a lower layer network infrastructure
- two tables:
 - Existing connections
 - Planned Connections – includes Events (creation, modification, etc.)
- existing connections form the basis for:
 - routing tables
 - COM Charts
 - ANP FASID Report produced by EANPG/AFSG for ICAO

7.2.5 Connections Data Fields

Field	Comments	Values
Remote COM	The "other end" of the connection	a COM Centre location indicator described in the AMC (4 letters)
Protocol	protocol used over the connection	can be an AMHS protocol stack, 'CIDIN PVC' or 'CIDIN SVC', 'Conv. AFTN' or 'AFTN/X.25', etc.
Network Address	The network address of the REMOTE Com Centre used for the connection	entered using the remote Centre's inventory information
Link Type	an indication of the physical connectivity used for the connection	free text, can be the name of the operational lower layers network (e.g. REDAN+RAPNET, CFMU, etc.)
Capacity	the capacity of the link or circuit (if fixed end-to-end) or of the network access	value in kbits/s
Circuit type (in pop-up window only)	the type of circuit supporting the connection, based on a standard ICAO classification	'L' (Landline), 'M' (Multiplexer), 'N' (Network), 'R' (Radio), 'S' (Satellite)
Supplier	an indication of the supplier of physical connectivity used for the connection	free text, can be a generic name such as 'telco', or specific 'SITA', 'PENS', etc.
Active	indicates the current operational status of the connection	a checkbox: ticked = active unticked = present but not yet active (should not happen in "existing connections")

7.2.6 Network Inventory

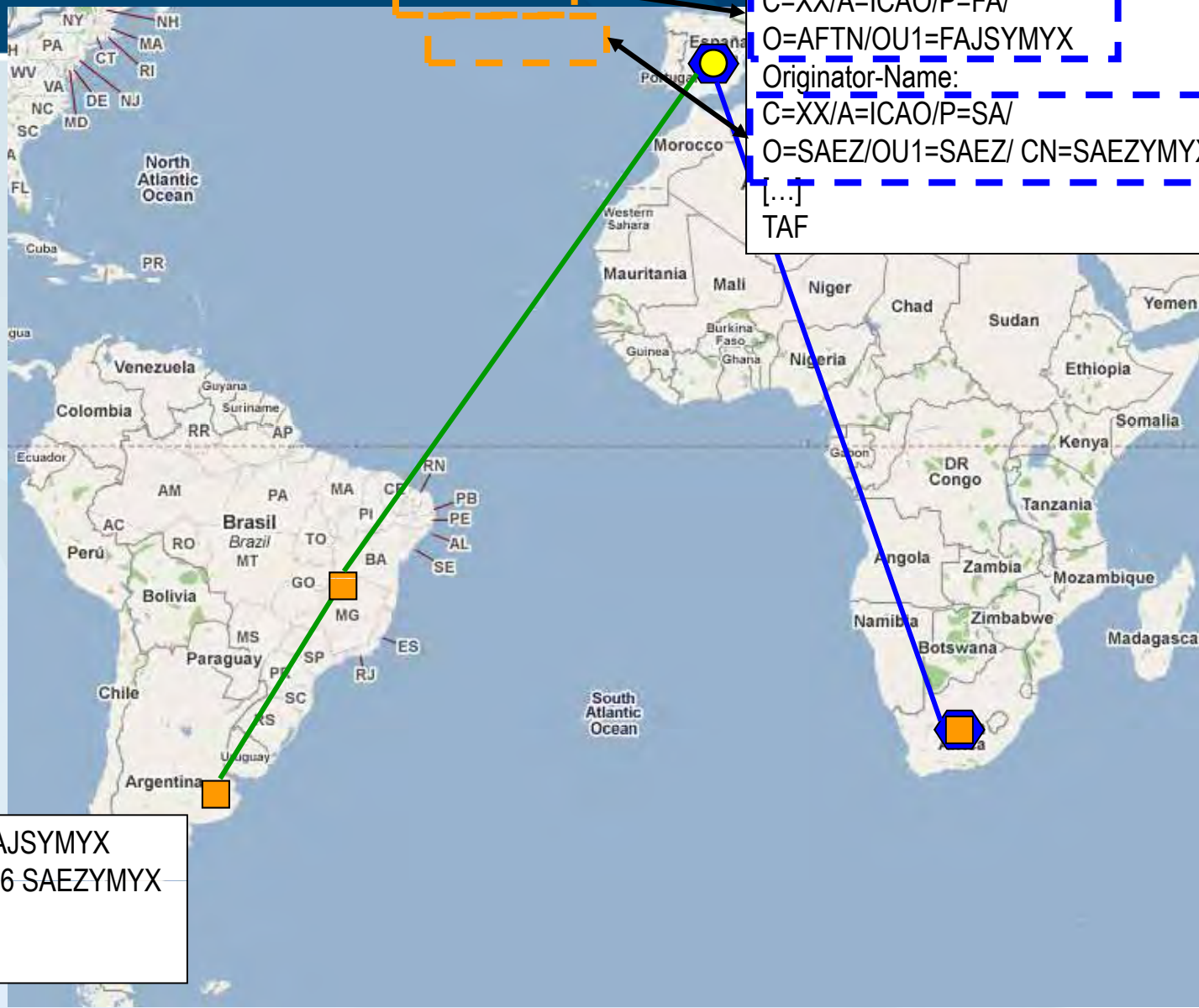
Demonstration

8. Address Management

Chapter 8

Address Management

8.1.1 The Need for Address Management (1)



Recipient-Name:
C=XX/A=ICAO/P=FA/
O=AFTN/OU1=FAJSYMYX
Originator-Name:
C=XX/A=ICAO/P=SA/
O=SAEZ/OU1=SAEZ/ CN=SAEZYMYX
[...]
TAF

GG FAJSYMYX
180516 SAEZYMYX
[...]
TAF



8.1.2 The Need for Address Management (2)



8.1.3 The Need for Address Management (3)

AMHS Address Management is required because:

- in any network, the knowledge of originator and recipient addresses is mandatory to enable the exchange of information
- at present there is not yet an official source for AMHS addressing information:
 - the global ICAO Register of AMHS MDs and addressing information is being implemented by ICAO Headquarters
 - it is not the role of ICAO HQ to maintain an operational Register subject to the (potentially) frequent changes of a dynamic network under deployment
 - The ICAO Register is intended to be used for institutional purposes, not for operational purposes
- There is a need for an **operational** source of information regarding AMHS addressing

8.1.4 The Need for Address Management (4)

- All addresses are converted at the boundary between CIDIN/AFTN and AMHS. This means that **ANY** AFTN address in an AFTN message reaching an AFTN/AMHS gateway is converted to an AMHS address:
 - even if the address is in another Region
 - Address management handles information for AMHS world wide
 - even if the considered State has not migrated to AMHS
 - Address management is not affected by new implementations (in principle)
- The use of wrong AMHS addresses may cause mis-routings and non-deliveries.
- Lack of synchronisation in changes introduces wrong addresses.
- AFTN and CIDIN addresses are well-known and rather static. At least during the deployment phase, AMHS addresses are expected to be modified more dynamically.

8.2.1 Two Aspects in Address Management

		CAAS	XF
Attribute	Name of attribute	Value	Value
<i>High level address attributes:</i>			
C	Country-name	'XX'	
A	ADMD-name	'ICAO'	
P	PRMD-name	To be defined by each ANSP	
<i>Addressing scheme:</i>		CAAS	XF
<i>Low level address attributes</i>			
O	Organisation name	e.g. a "region" within a country, to be defined by each ANSP	'AFTN'
OU1	Organisational unit name 1	4-character ICAO location indicator	8-character AFTN address
CN	Common name	8-character AFTN address	<i>not used</i>

AMHS MD Register

Intra-MD Addressing

8.2.2 Use of AMHS address information

AMHS address information is used for two different aspects:

- Routing
 - In every AMHS MTA
 - Between AMHS Management Domains (MDs):
 - Using high-level attributes (C, A, P)
 - In some cases using the Organisation-name attribute (towards MDs with multiple COM Centres)
 - Internally to the destination AMHS MD:
 - Using low-level attributes (O, OU1, CN)
- Addressing conversion
 - In AFTN/AMHS Gateways
 - Upon entry and exit of AMHS:
 - Using the full address (all attributes of a CAAS or XF address)
 - Using Nationality Letters (or Designator) associated with the AMHS MD

8.2.3 Use of AMHS address information

example 1: address conversion in AFTN/AMHS gateway

State	AMHS Address Specification					ATN Directory naming-context	Comments
	Nationality Letters or Designator	Country-name attribute	ADMD-name attribute	PRMD-name attribute	Addressing scheme		
Solomon Islands	AG	XX	ICAO	AG	XF		
...							
Côte d'Ivoire	DI	XX	ICAO	DI	XF		
Nigeria	DN	XX	ICAO	DN	XF		
Niger	DR	XX	ICAO	DR	XF		
Tunisia	DT	XX	ICAO	DT	XF		
Togo	DX	XX	ICAO	DX	XF		
Belgium	EB	XX	ICAO	BELGIUM	CAAS		see Table Belgium
Eurocontrol	EBBD	XX	ICAO	CFMU	CAAS		see Table Eurocontrol-CFMU
Germany	ED	XX	ICAO	GERMANY	CAAS		see Table Germany
Estonia	EE	XX	ICAO	EE	XF		
Finland	EF	XX	ICAO	EF	XF		
United Kingdom	EG	XX	ICAO	EG	XF		
Netherlands	EH	XX	ICAO	EH	CAAS		see Table EH

Convert EFHKZTZX :

- 1) Extract EF, EFHK, EF—ZTZ, EFHKZTZ
- 2) Look for best match in Nationality Letters column: EF
- 3) Retrieve MD-name: C=XX, A=ICAO, P=EF
- 4) Retrieve addressing scheme: XF
- 5) Construct XF-address: C=XX, A=ICAO, P=EF, O=AFTN, OU=EFHKZTZX

8.2.4 Use of AMHS address information example 2: address conversion (CAAS)

State	AMHS Address Specification					ATN Directory naming-context	Comments
	Nationality Letters or Designator	Country-name attribute	ADMD-name attribute	PRMD-name attribute	Addressing scheme		
Name							
United Kingdom	EG	XX	ICAO	EG	XF		
Netherlands	EH	XX	ICAO	EH	CAAS		see Table EH
...							
Dem. Republic of the Congo	FZ	XX	ICAO	FZ	XF		
Mali	GA	XX	ICAO	GA	XF		
Gambia	GB	XX	ICAO	GB	XF		
Canary Islands (Spain)	GC	XX	ICAO	AENA	CAAS		see Table Aena
Spain	GE	XX	ICAO	AENA	CAAS		see Table Aena
Sierra Leone	GF	XX	ICAO	GF	XF		
Guinee-Bissau	GG	XX	ICAO	GG	XF		

Location Indicator/ Organisation Unit	Region/ Organisation
OU1	O
...	
GCLB	GCCC
GCLP	GCCC
GCMP	GCCC
GCRR	GCCC
GCTS	GCCC
GCXO	GCCC
LEAB	LECB
LEAL	LECB
LEAP	LECB
LEAT	LECB
LEBL	LECB
LEBN	LECB

Convert GCRRZPZX (Lanzarote) :

- 1) Extract GC, GCRR, GC—ZPZ, GCRRZPZ
- 2) Look for best match in Nationality Letters column: GC
- 3) Retrieve MD-name: C=XX, A=ICAO, P=AENA
- 4) Retrieve addressing scheme: CAAS
- 5) Extract location indicator (GCRR) and look for a match in detailed table Aena
- 6) Retrieve Organisation-name from column "Organisation": GCCC
- 7) Construct CAAS address:
C=XX, A=ICAO, P=AENA, O=GCCC, OU=GCRR, CN=GCRRZPZX

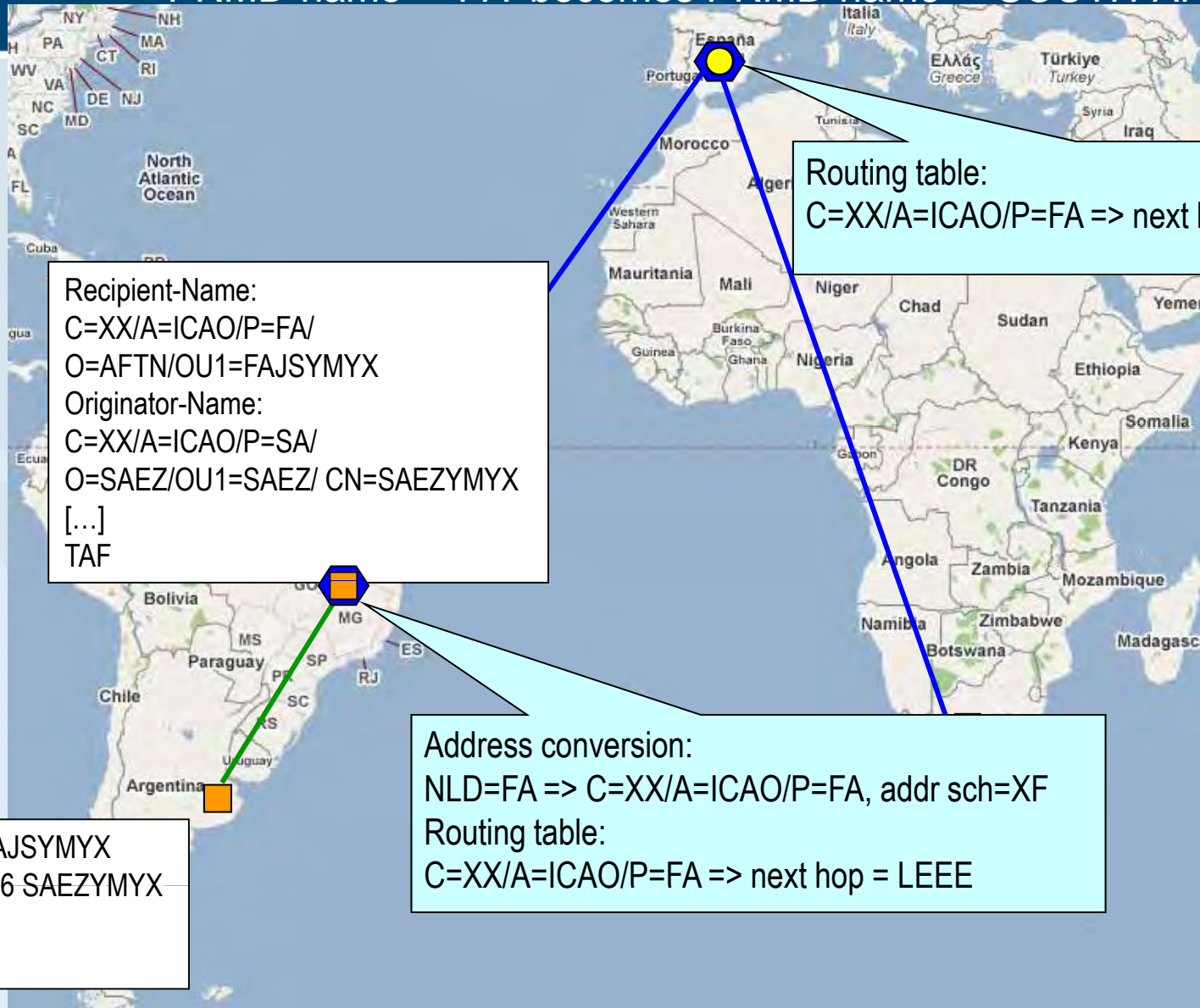
8.3.1 Two categories of address changes

Two categories of address changes are identified:

- Major changes:
 - They include:
 - Addition or deletion of PRMDs
 - Modification of PRMD-name
 - Change of addressing scheme (from XF to CAAS or vice-versa)
 - They have an institutional impact or a major operational impact
 - They are expected to be infrequent
- Minor changes:
 - They consist in modifications in a CAAS table
 - They have an operational impact which can be more limited
 - They can be more frequent

8.4.1 Example of major address change

PRMD-name = 'FA' becomes PRMD-name = 'SOUTH-AFRICA'



Routing table:
C=XX/A=ICAO/P=FA => next hop = FAJS

Recipient-Name:
C=XX/A=ICAO/P=FA/
O=AFTN/OU1=FAJSYMYX
Originator-Name:
C=XX/A=ICAO/P=SA/
O=SAEZ/OU1=SAEZ/ CN=SAEZYMYX
[...]
TAF

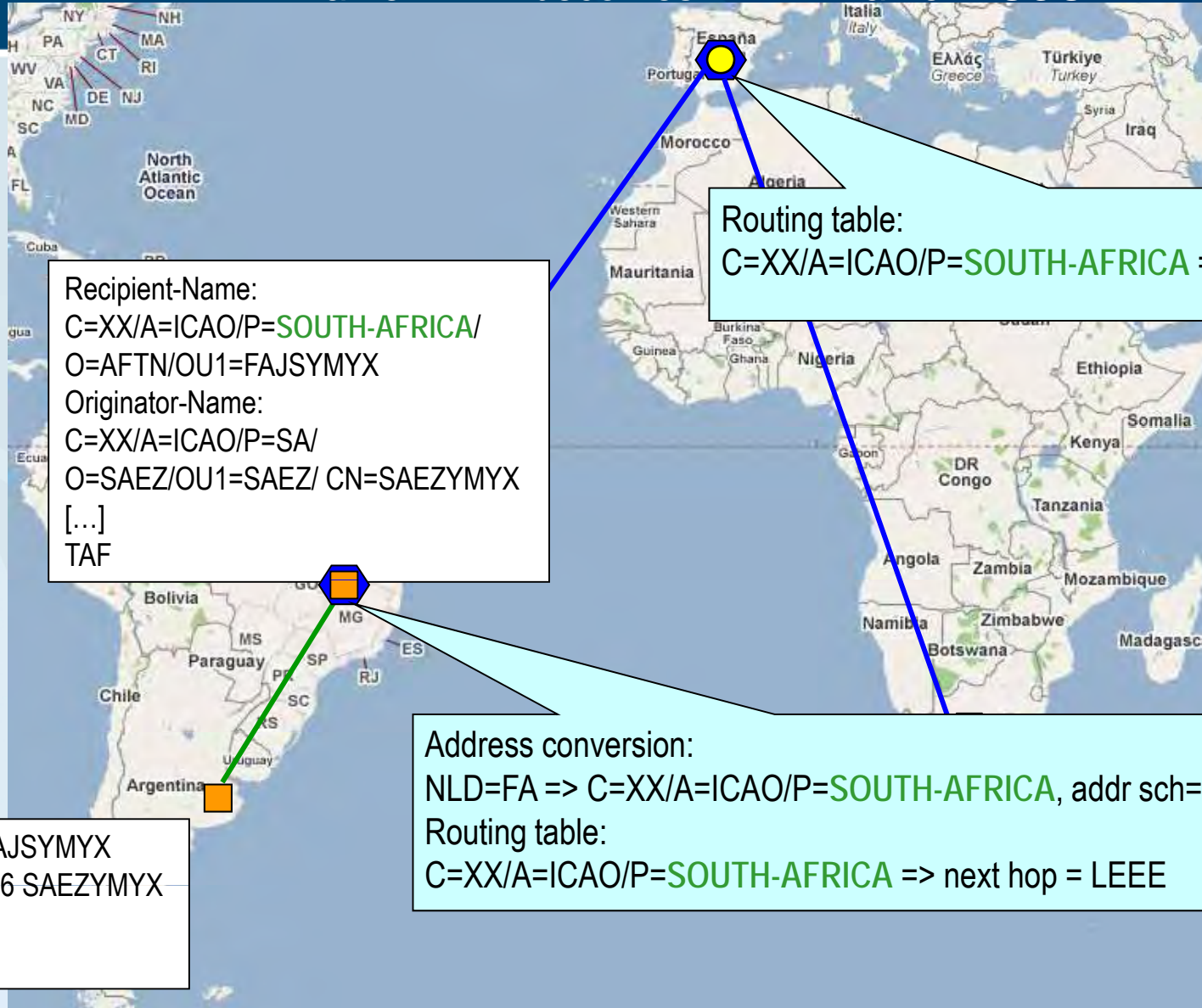
Address conversion:
NLD=FA => C=XX/A=ICAO/P=FA, addr sch=XF
Routing table:
C=XX/A=ICAO/P=FA => next hop = LEEE

GG FAJSYMYX
180516 SAEZYMYX
[...]
TAF

Before the
change

8.4.2 Example of major address change

PRMD-name = 'FA' becomes PRMD-name = 'SOUTH-AFRICA'



Recipient-Name:
C=XX/A=ICAO/P=**SOUTH-AFRICA**/
O=AFTN/OU1=FAJSYMYX
Originator-Name:
C=XX/A=ICAO/P=SA/
O=SAEZ/OU1=SAEZ/ CN=SAEZYMYX
[...]
TAF

Routing table:
C=XX/A=ICAO/P=**SOUTH-AFRICA** => next hop = FAJS

Address conversion:
NLD=FA => C=XX/A=ICAO/P=**SOUTH-AFRICA**, addr sch=XF
Routing table:
C=XX/A=ICAO/P=**SOUTH-AFRICA** => next hop = LEEE

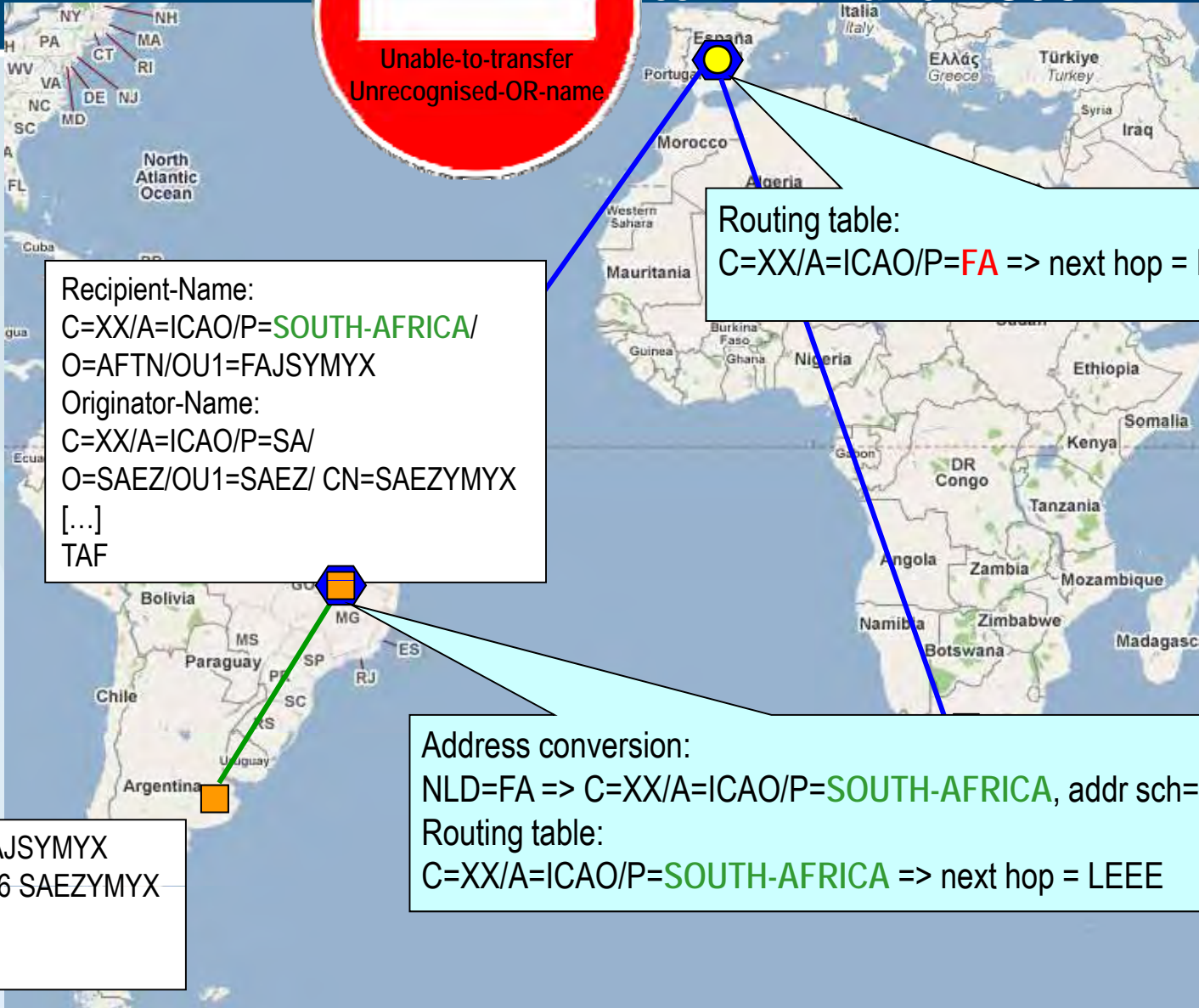
GG FAJSYMYX
180516 SAEZYMYX
[...]
TAF

After the change



8.4.3 Example of major address change

PRMD-name = 'SOUTH-AFRICA' PRMD-name = 'SOUTH-AFRICA'



Recipient-Name:
C=XX/A=ICAO/P=**SOUTH-AFRICA**/
O=AFTN/OU1=FAJSYMYX
Originator-Name:
C=XX/A=ICAO/P=SA/
O=SAEZ/OU1=SAEZ/ CN=SAEZYMYX
[...]
TAF

Routing table:
C=XX/A=ICAO/P=**FA** => next hop = FAJS

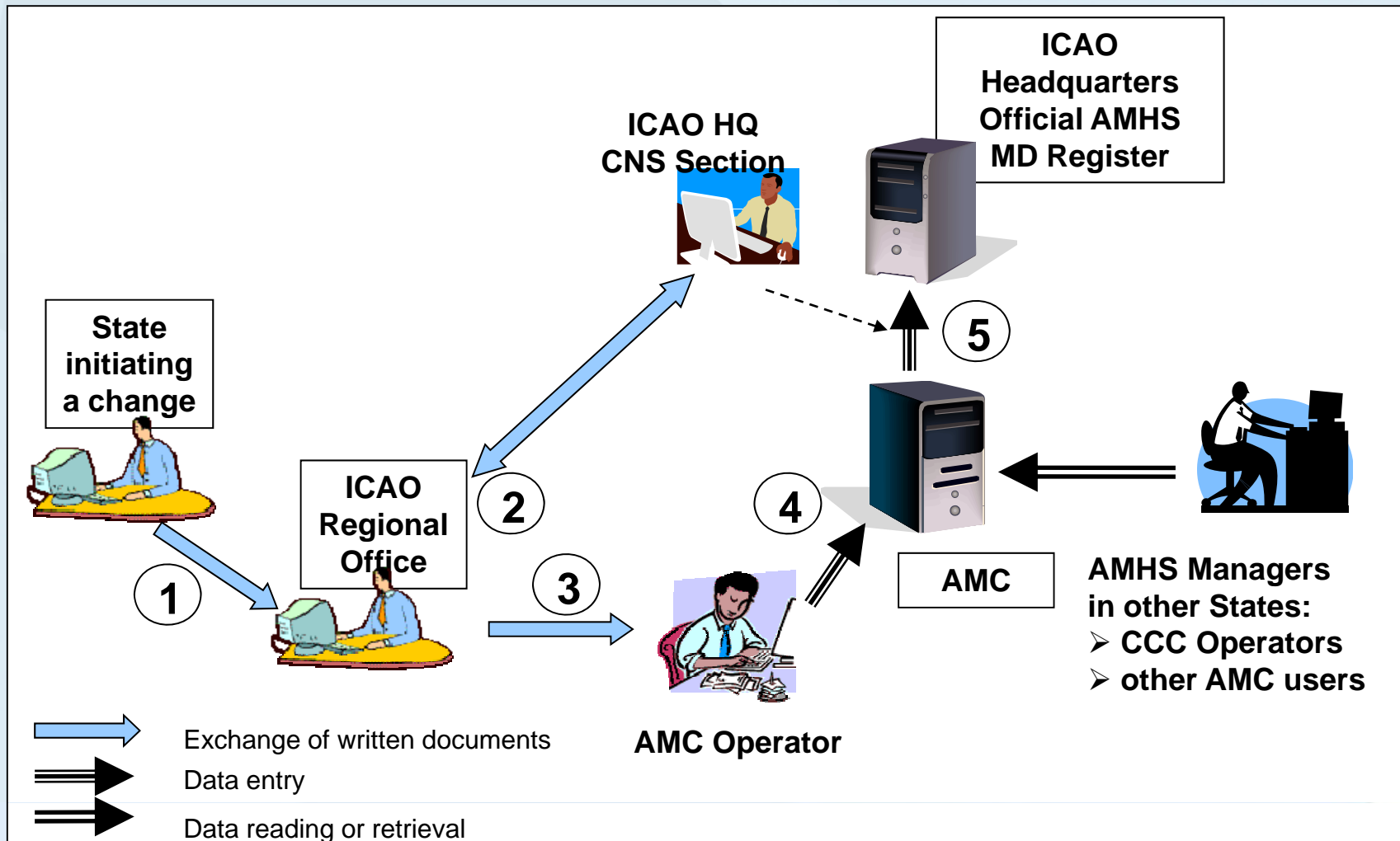
Address conversion:
NLD=FA => C=XX/A=ICAO/P=**SOUTH-AFRICA**, addr sch=XF
Routing table:
C=XX/A=ICAO/P=**SOUTH-AFRICA** => next hop = LEEE

In case of error

GG FAJSYMYX
180516 SAEZYMYX
[...]
TAF



8.4.4 Procedure for major changes



8.4.5 Procedure for major changes as proposed by EANPG/49 and endorsed by ICAO HQ

1. An accredited person in the considered State declares the change to ICAO, using a standard written pro forma – “ICAO” means here the Regional Office for the ICAO Region where the State is located. The pro forma includes the applicability date of the change (an AIRAC date);
2. the CNS Officer in the Regional Office, in coordination with ICAO Headquarters as appropriate, validates the acceptability of the declared change from an official and institutional viewpoint;
3. after validation, the CNS Officer forwards the declaration of change to the AMC Operator, using appropriate means such as fax, e-mail, etc. (different from data entry in AMC); **[at the latest 21 days before the applicability date]**
4. the AMC Operator enters data in the AMC based on the input received from the Regional Office, at the appropriate time considering the applicability date of the change and using the AMC operational procedures;
5. at the date of applicability, i.e. at each AIRAC cycle date, the ICAO HQ CNS Section retrieves an AMHS address management export file from the AMC and uploads it in the ICAO Official AMHS MD Register.

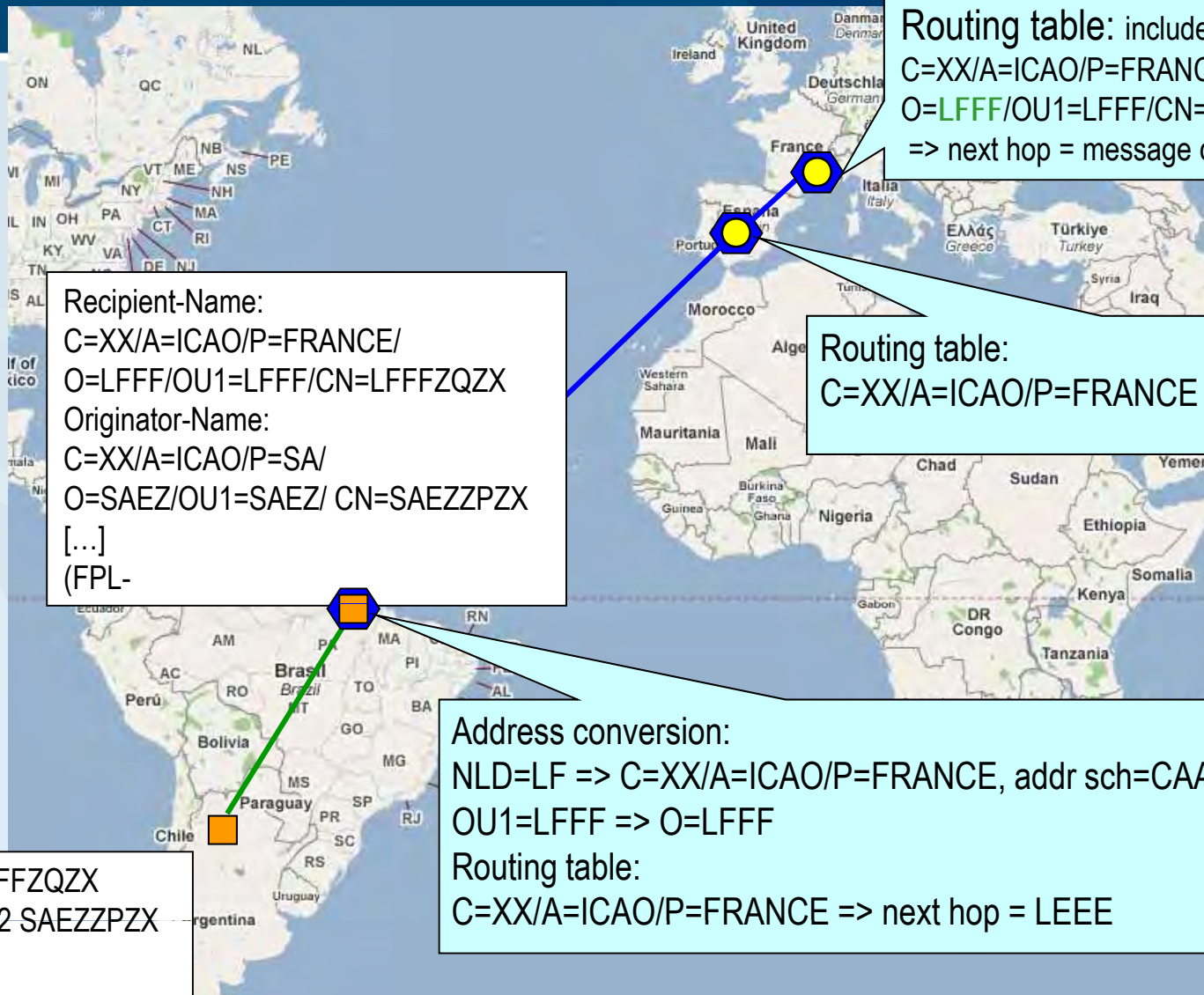
8.4.6 Procedure for major changes

Role of ICAO Regional Office and Headquarters

1. RO: Receive and process the declaration;
2. Validate the acceptability of the declared change from an official and institutional viewpoint:
 - RO: Verify that the PRMD-name has a valid syntax (see 8.1.2) and correctly identifies the declaring State or Organisation, e.g. not 'CAA');
 - RO + HQ: Verify that the PRMD-name is unique world wide (including declarations being processed);
 - RO: Coordinate with declaring State or Organisation if the two criteria above are not met;
 - RO: If new or modified, verify that the Nationality Letters or Designator are not ambiguous;
 - RO: If ambiguous, coordinate with AMC Operator and with declaring State or Organisation to select appropriate Nationality Letters or Designator
3. RO: after validation, forward the declaration of change to the AMC Operator;
[at the latest 21 days before the applicability date]
4. No ICAO action;
5. HQ: At each AIRAC cycle date, update Official Register with AMC data.

8.5.1 Example of minor address change

For OU1 = 'LFFF', O = 'LFFF' becomes O = 'LFBB'



Routing table: includes
C=XX/A=ICAO/P=FRANCE/
O=LFFF/OU1=LFFF/CN=LFFFZQZX
=> next hop = message delivered (direct user)

Recipient-Name:
C=XX/A=ICAO/P=FRANCE/
O=LFFF/OU1=LFFF/CN=LFFFZQZX
Originator-Name:
C=XX/A=ICAO/P=SA/
O=SAEZ/OU1=SAEZ/ CN=SAEZZPZX
[...]
(FPL-

Routing table:
C=XX/A=ICAO/P=FRANCE => next hop = LFLF

Address conversion:
NLD=LF => C=XX/A=ICAO/P=FRANCE, addr sch=CAAS,
OU1=LFFF => O=LFFF
Routing table:
C=XX/A=ICAO/P=FRANCE => next hop = LEEE

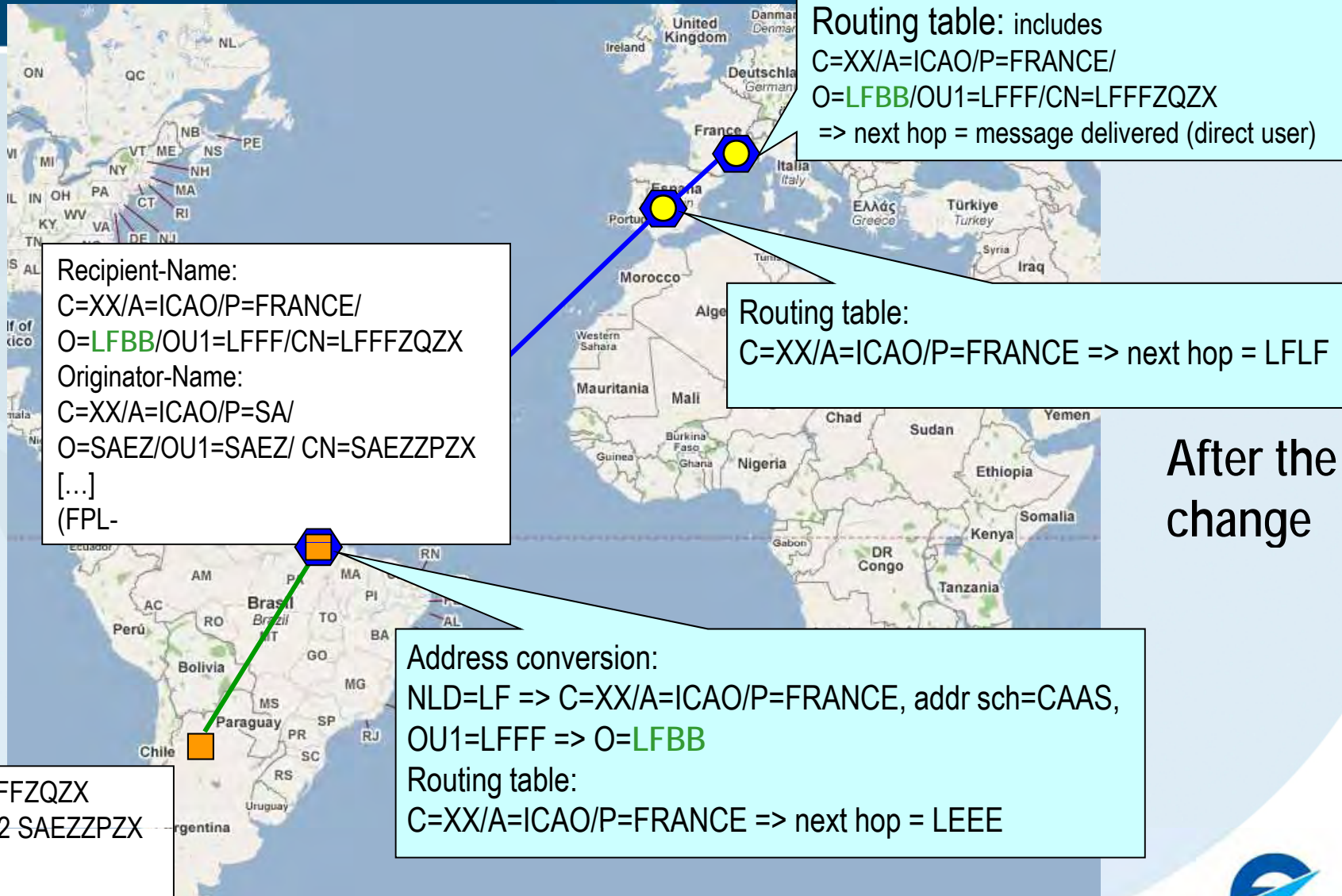
FF LFFFZQZX
181512 SAEZZPZX
[...]
(FPL-

Before the change



8.5.2 Example of minor address change

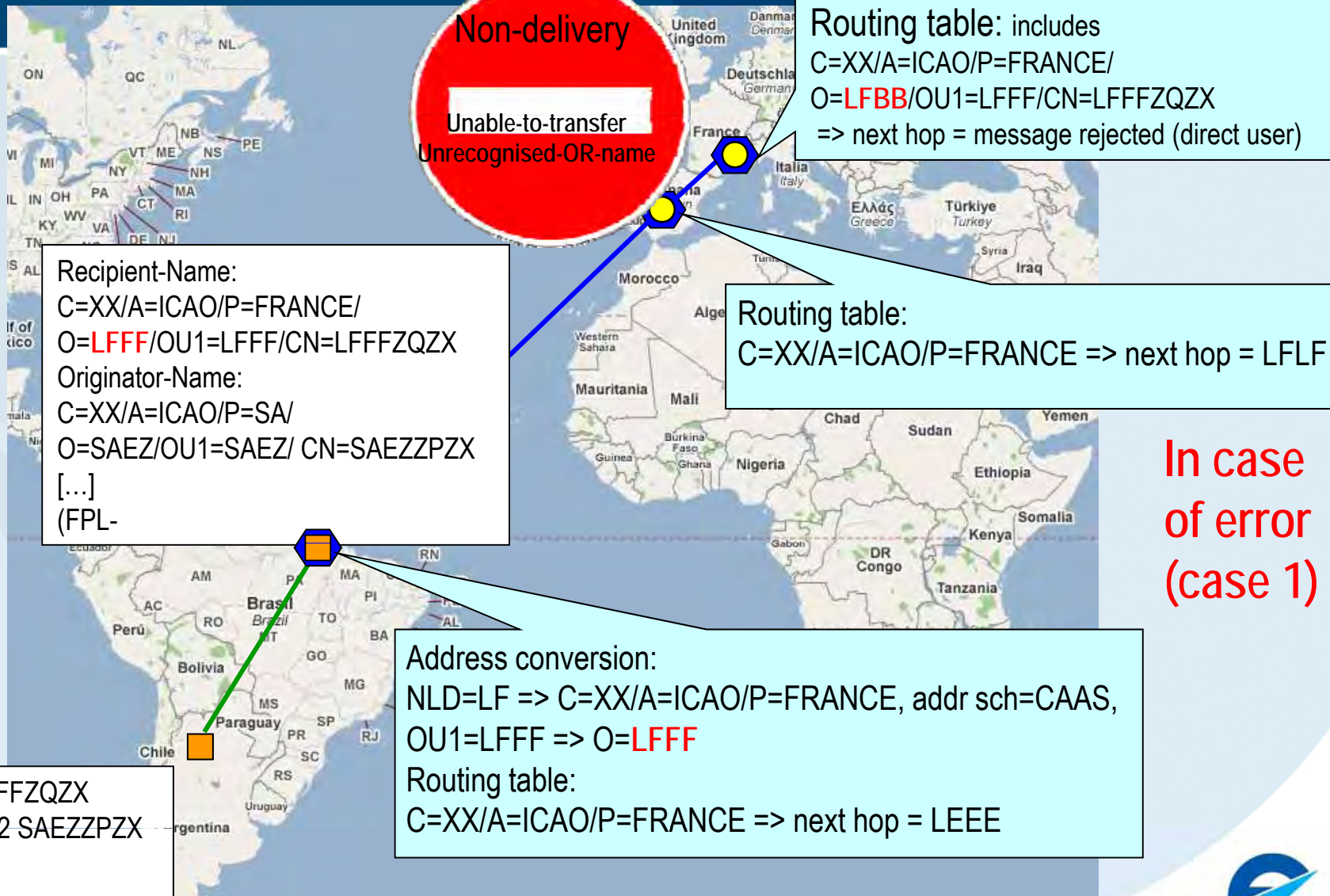
For OU1 = 'LFFF', O = 'LFFF' becomes O = 'LFBB'



After the change

8.5.3 Example of minor address change

For OU1 = 'LFFF', O = 'LFFF' becomes O = 'LFBB'



8.5.4 Example of minor address change

For OU1 = 'LFFF', O = 'LFFF' becomes O = 'LFBB'



Routing table: includes default route to gateway
C=XX/A=ICAO/P=France => next hop = MTCU
=> message converted (considered as indirect user)
but with failure of reverse conversion

Recipient-Name:
C=XX/A=ICAO/P=FRANCE/
O=LFFF/OU1=LFFF/CN=LFFFZQZX
Originator-Name:
C=XX/A=ICAO/P=SA/
O=SAEZ/OU1=SAEZ/ CN=SAEZZPZX
[...]
(FPL-

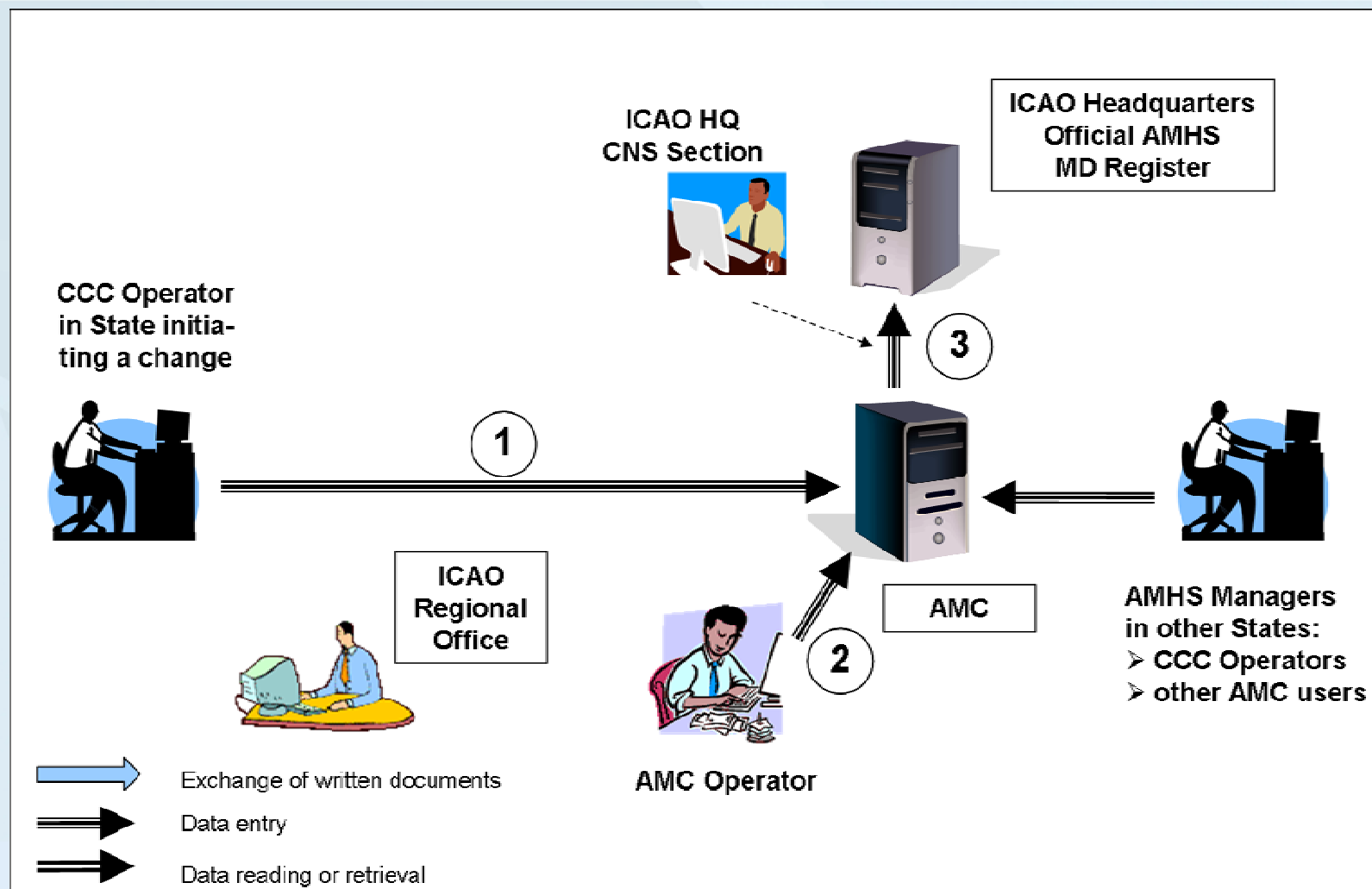
Routing table:
C=XX/A=ICAO/P=FRANCE => next hop = LFLF

In case of error (case 2)

Address conversion:
NLD=LF => C=XX/A=ICAO/P=FRANCE, addr sch=CAAS,
OU1=LFFF => O=LFFF
Routing table:
C=XX/A=ICAO/P=FRANCE => next hop = LEEE

FF LFFFZQZX
181512 SAEZZPZX
[...]
(FPL-

8.5.5 Procedure for minor changes



8.5.6 Procedure for minor changes as proposed by EANPG/49 and endorsed by ICAO HQ

1. The CCC Operator [or External COM Operator] in the considered State enters data corresponding to the intended change in the AMC, using the standard AMC operational procedures, taking into account the applicability date of the change (an AIRAC date);
2. the AMC Operator performs the standard AMC operational procedures, such that the status of changed data is passed to “operational” at the applicability date;
3. at the date of applicability, i.e. at each AIRAC cycle date, the ICAO HQ CNS Section retrieves an AMHS address management export file from the AMC and uploads it in the ICAO Official AMHS MD Register (this is identical to stage 5 in the procedures for major changes).

8.6.1 Address Management AMC implementation

structured by different information flows

- AMHS MD Register information:
 - from State/ANSP to ICAO – Regional (and HQ) - for validation
 - from ICAO (Regional and HQ) to AMC for data entry and operational publication
 - from AMC to ICAO HQ for official Registration and Publication
- Intra-MD Addressing information:
 - from State/ANSP to AMC for operational publication (direct data entry)
 - from AMC to ICAO HQ for official Registration and Publication

Potential Institutional Implications ?

Yes

No

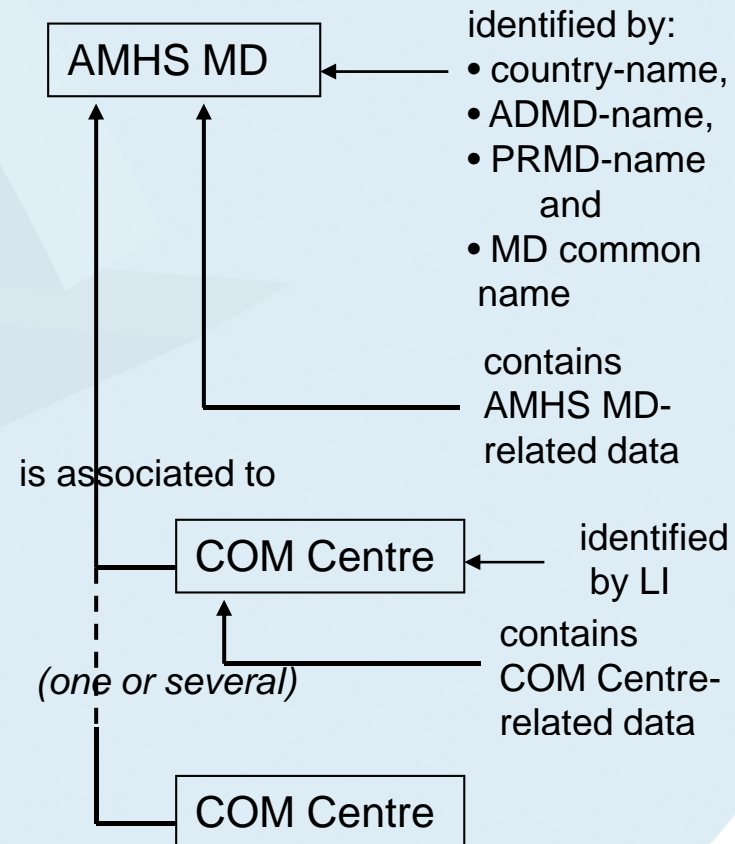
These flows are integrated in AMC functions and procedures

8.6.2 AMHS MD – State/Org Relationship

- managed in AMHS MD Register
- already registered for each State world wide (declared or default)
- each State/Organisation is associated to one or many “Nationality Letters/ Designator” (NLD)
- each NLD is unique
- generally a one-to-one MD-to- “State/Organisation” relationship
- occasionally a one-to-many MD-to- “State/Organisation” relationship
- potentially a many-to-one is possible (does not exist at present “as such”) :
 - multiple AMHS MDs in one State
 - Nationality Letters / Designator (NLD) **must** be different
- the references are:
 - ICAO Doc 7910 ⇔ Eurocontrol database of ANP locations (**consistency issue**)
 - **unofficial** ANP locations and territories, created by AMC Operator when needed
- impacts:
 - **address conversion (high level attributes)**
 - **routing**

8.6.3 AMHS MD – COM Centre Relationship

- managed in AMHS MD Register Function
- not formally registered / published (apart from Doc 7910)
“well-known” at AFSG/regional group level
- each COM Centre is associated to a unique location indicator
- generally a one-to-one MD-to-COM Centre relationship
- occasionally a one-to-many relationship
- the references are:
 - ICAO Doc 7910 ⇔ Eurocontrol database of ANP locations (+ “unofficial” if needed)
- **impacts routing**



8.6.4 overall AMHS MD Register Update Procedure

- States inform ICAO Regional Offices about their intended changes and apply for their registration (as part of the procedure for major changes)
- ICAO Regional Offices and HQ validate the request, and coordinate with AMC about the need for an update to the Register (as part of the procedure for major changes)
- The AMC Operator takes into account the ICAO validate changes and enters them in the AMC (as part of the procedure for major changes)
- The AMC Operator transfers to Pre-Operational area
- CCC and Ext COM Operators monitor changes and prepare implementation:
 - processing individually each modification, or
 - using the EXPORT action to retrieve the whole Register from AMC
- On the AIRAC date, the AMC Operator transfers to Operational area
- On AIRAC date at 11:00UTC, CCC and Ext COM Operators set the new data to become live
- In parallel (at the AIRAC date), with no impact on AMHS network operation, ICAO HQ updates the official Register for institutional purposes, using AMC data

8.6.5 AMHS MD Register Data Fields

Field	Comments	Values
MD Common Name	unique ID local to AMC	usually PRMD-name
Global Domain Identifier (C, A, P)	official identification of AMHS MD	as declared by ANSP and listed in ICAO HQ Register
Addressing Scheme		'XF', 'CAAS', 'other', as declared in Register
ATN Directory naming-context	provision for future implementation of Directory	
Administrative Status	relation to AMC	'internal', 'external', 'participating', 'non-participating'
Operational Status		'op', 'non-op', 'unknown'
State/Organization	from Doc 7910 = ANP locations (+unofficial)	strictly equal to Doc 7910 (typing included) or unofficial territory
Nationality Letters / Designator (NLD)	from Doc 7910 and list of unofficial ICAO locations	2, 4, 5 or 7 letters: 'A*', 'AB', 'ABC*', 'ABCD', 'AB***XYZ', 'ABCDXYZ'
Doc 7910 status	indicates if complies with Doc 7910 (as reflected in ANP locations), or not (not yet)	'official', 'unofficial'
Offic. Register status	indicates if complies with ICAO HQ Register, or not (not yet)	'registered' 'not-registered'
COM Centre	internationally "visible" COM Centre(s)	Location Indicator
Location	from Doc 7910 = ANP locations (+unofficial)	imported from list of ANP locations (+ unofficial)
Relation to Doc 7910	AMHS MD summary of "Doc 7910 status"	'consistent' 'inconsistent'
Relation to Official Register	AMHS MD summary of "Offic. Register status"	'registered' 'not-registered'

8.6.6 AMHS MD Register

Demonstration

8.7.1 Intra-MD Addressing: two Parts

- CAAS Table:
 - contains “O-OU1” relationship
 - enabled depending on addressing scheme selection
 - User Address Table:
 - contains full user O/R address
 - always enabled, not often used during transition from CIDIN/AFTN
- AMHS MDs having selected XF do not need to enter data

8.7.2 Intra-MD Addressing Update Procedure

- the CCC or Ext COM Operator updates data (data entry phase) in the AMC:
 - entering individually each modification, or
 - using an IMPORT action to upload his CAAS Table or User Address Table into AMC
- the AMC Operator enters data from ICAO HQ and/or from Regional Offices (if received)
- the AMC Operator checks and validates updated data,
- he co-ordinates with CCC Operators and External COM Operators, if needed
- the AMC Operator transfers to Pre-Operational area
- CCC and Ext COM Operators monitor changes and prepare implementation:
 - processing individually each modification, or
 - using the EXPORT action to retrieve the whole CAAS Tables from AMC
- the AMC Operator transfers to Operational area
- CCC and Ext COM Operators set the new data to become live

8.7.3 Intra-MD Addressing Data Fields

Field	Comments	Values
<i>CAAS Table (enabled only if the CAAS Addressing Scheme is selected)</i>		
Organization	identifies a geographical unit (e.g. a region within a State) in conformance with CAAS addressing scheme	assigned by ANSP
Organizational Unit		ALL Doc 7910 location indicators for the considered AMHS MD
Doc 7910 status	indicates if complies with Doc 7910 (as reflected in ANP locations), or not (not yet)	'official', 'unofficial'
Offic. Register status	indicates if complies with ICAO HQ Register, or not (not yet)	'registered' 'not-registered'
<i>User Address Table</i>		
AFTN Addr Indicator	individual AFTN addressee indicator to be mapped individually to an AMHS O/R address	8-letter indicator
O/R Address	the corresponding O/R address in conventional format, built using the O/R address attribute values	derived from fields in pop-up window
User Short Name (in pop-up window)	a unique identifier of the user to whom the O/R address is allocated. Can be used to correlate with data in User Capabilities	assigned by ANSP
"High-level" address attributes (in pop-up window)	country-name, ADMD-name, PRMD-name	coming from the AMHS MD register function (not modifiable)
"Low-level" address attributes (in pop-up window)	OU1 to OU4 (do not leave empty levels) S, G, I, Q Domain-defined attributes (DDA) type/value 1 to 4 (do not leave empty levels)	assigned by ANSP

8.7.4 Intra-MD Addressing

Demonstration

8.7.5 Intra-MD Addressing IMPORT File Format

CAAS Table IMPORT: text CSV file using semi-colons (;) as separator

one identification line (must be present, but not taken into account upon IMPORT)

one header line

```
1.0;CAASTable;;;BACKGROUND;;25.05.2009-11:00:00
country-name;ADMD-name;PRMD-name;organization-name;organizational-unit-name
XX;ICAO;AENA;GCCC;GCCCF
XX;ICAO;AENA;GCCC;GCFV
XX;ICAO;AENA;GCCC;GCGAF
XX;ICAO;AENA;GCCC;GCGCF
XX;ICAO;AENA;GCCC;GCGMF
[...]
XX;ICAO;AENA;LECB;LEAB
XX;ICAO;AENA;LECB;LEAL
XX;ICAO;AENA;LECB;LEAP
XX;ICAO;AENA;LECB;LEAT
XX;ICAO;AENA;LECB;LEBC
XX;ICAO;AENA;LECB;LEBL
XX;ICAO;AENA;LECB;LEBN
XX;ICAO;AENA;LECB;LEBP
XX;ICAO;AENA;LECB;LEBT
XX;ICAO;AENA;LECB;LECB
XX;ICAO;AENA;LECB;LECD
[...]
```

one line
for every LI
in AMHS MD

User Address Table IMPORT. will use same principle,
will be implemented in the future

8.7.6 Intra-MD Addressing IMPORT

Demonstration

9. Routing Management

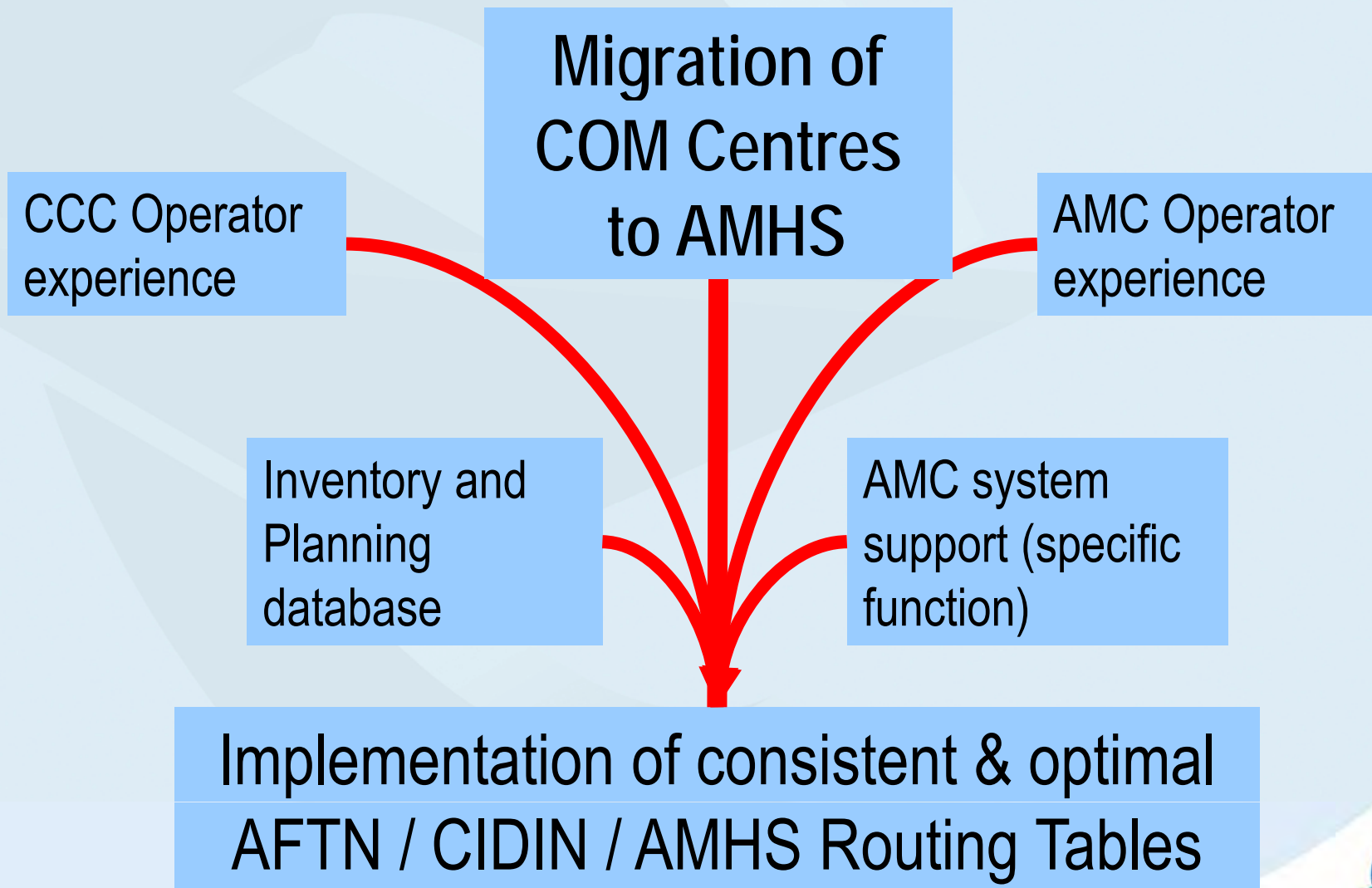
Chapter 9

Routing Management

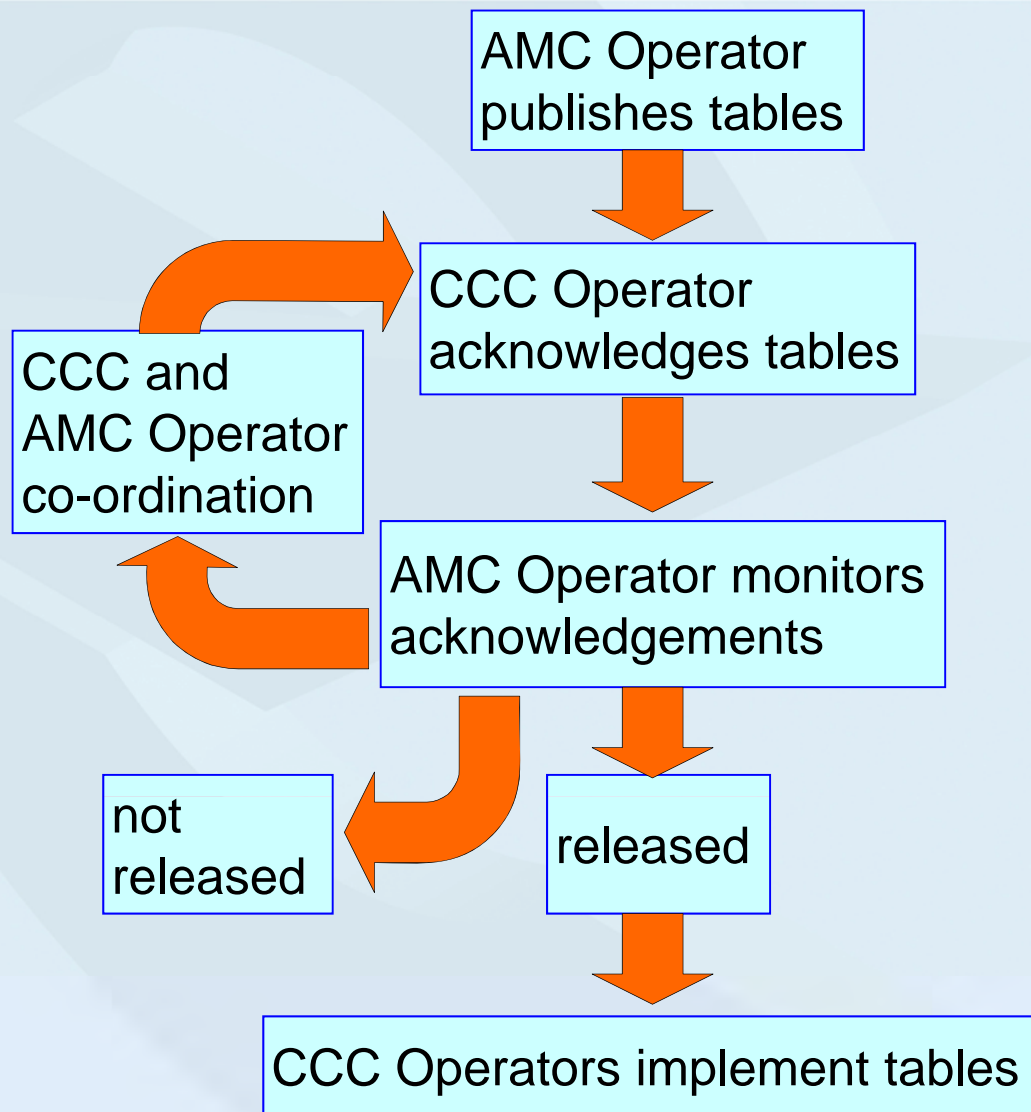
9.1.1 Routing Management: Objective

- Need to integrate AMHS routing with AFTN and CIDIN routing
- Provide **consistent** routing tables
- Support progressive migration of traffic flows to AMHS
- Provide optimal routing tables

9.1.2 Routing Management Process



9.1.3 Routing Update Interactions



9.1.4 Routing Update Results

- “Consistent” means:
 - correctly manage routing from AFTN to AMHS via MTCU, and vice-versa
 - timely support of phased integration of flows,
 - set exit addresses at appropriate places (borders of AMHS island)
- “Optimal” means (could mean)
 - minimum number of hops,
 - robust in the case of failures / overload,
 - symmetry of routes,
 - good distribution of traffic,
 - simple relationships with other Regions,
 - etc.

9.2.1 Routing Management: Integrated AFTN / CIDIN / AMHS Routing

The screenshot shows the 'Routing Directory' web application. At the top, there are three tabs: 'AFTN Routing Table', 'CIDIN Routing Table', and 'AMHS Routing Table'. Below these are search filters for 'COM Centre' (EDDD), 'Location' (FRANKFURT/MAIN INTL C), 'Country' (Germany), and 'AFTN Matrix' (OPER.48). There are also fields for 'MD Common Name' (GERMANY), 'Country-Name' (XX), 'ADMD-Name' (ICAO), and 'PRMD-Name' (GERMANY). A 'SEARCH' button is present.

The main part of the interface is a table with the following columns: Destination, Existing Main, MTCU, Existing Altn, MTCU, Planned Main, MTCU, Planned Altn, and MTCU. The table contains several rows of data, including destinations like A, BG, BI, BKPR, C, D*, DT, EB*, EBBDZ, EDZO, and EE. Blue dashed circles are drawn around the MTCU columns in the table, indicating their inter-related nature for routing.

Destination	Existing Main	MTCU	Existing Altn	MTCU	Planned Main	MTCU	Planned Altn	MTCU
A	EGGGA	<input type="checkbox"/>	LIIIA	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
BG	BICCA	<input type="checkbox"/>	(EGGGA)	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
BI	BICCA	<input type="checkbox"/>	(EGGGA)	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
BKPR	BICCA	<input type="checkbox"/>	(EGGGA)	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
C	EGGGA	<input type="checkbox"/>	(BICCA)	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
D*	LFLFA	<input type="checkbox"/>	LEEEA	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
DT	LIIIA	<input type="checkbox"/>	LFLFA	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
EB*	EBBBA	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
EBBDZ	EBBDA	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
EDZO	EDZOA	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
EE	EKCHA	<input type="checkbox"/>	UUUUA	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

3 Routing Tables

Inter-related via
MTCU columns
for routing



9.2.2 AFTN Routing: Specific Aspects

- in AFTN, message routing is performed using character sequences extracted from the message addressee indicator
- in an AFTN routing table:
 - a destination = 1 to 8 characters
 - Examples:
 - Another Region: in general 1 character
 - Another COM Centre in the same Region: in general 2 characters (Nationality Letters)
 - There are exceptions: EBBD, LFPY etc.
 - a route (existing main, etc.) = a COM Centre Location Indicator
- All defined and valid ICAO addressee indicators must be routable
- In general an international AFTN routing table includes 60 entries (in Europe)

9.2.3 AMHS Routing: Specific Aspects

- in AMHS, routing is performed using address attributes:
 - From AMHS MD to AMHS MD, using « high-level » attributes
 - Within an AMHS MD, using « low-level » attributes
- in the AMHS routing table for one COM Centre (in the MTA):
 - A destination = a GDI (C, A, P) + O if needed
 - A route (existing main, etc.) = a COM Centre implementing AMHS
 - Routes must be defined for all AMHS MDs world wide: approx. 300 entries
- specific case: AMHS MD with multiple international COM Centres:
 - Different routes to several of the international COM Centres can be defined in one table only if O is used (CAAS addressing)
 - No value of Organisation-name specified:
use one single « default route » to AMHS MD from the considered COM Centre

9.2.4 AMHS Routing: Use of O attribute (Organisation-Name)

- The O (Organisation-name) is available in AMHS routing table:
 - As part of a destination
 - If the destination AMHS MD has selected CAAS
 - All O values specified in the CAAS table can be selected
 - A default route (without O) to the same AMHS MD is always possible
 - Routes must be defined for all O values of the destination AMHS MD unless a default route (based on C, A, P) is specified
 - Some routes with a specified O value can be combined with a default route
- To be used in the following cases:
 - For destination AMHS MDs with multiple international COM Centres
- Possible impact on message rejection:
 - If all O values are specified (and no default) for a destination AMHS MD in a routing table, incoming messages with destination addresses including incorrect O values will trigger NDRs (unable to transfer / unrecognised O/R name)

9.2.5 From AFTN to AMHS in a Gateway

- At the border of AMHS islands, Routing Tables must specify which message flows (which destinations) have to be converted
- « M » (for « MTCU ») parameter:
 - In the AFTN Routing Table: the destination is passed (internally routed) to the MTCU (to be routed in AMHS)
 - In the AMHS Routing Table: the destination is passed to the MTCU (to be routed in AFTN)
- In the AMHS Routing Table, any unspecified route is assumed to be passed to the MTCU

9.2.6 AFTN Routing Table

Demonstration

9.2.7 CIDIN Routing Table

Demonstration

9.2.8 AMHS Routing Table

Demonstration

9.3.1 Routing Acknowledgement

- in Pre-Operational Area
- essential step in the Routing Update procedure
- when the AMC Operator sets the Routing Matrix status to 'proposed'

9.4.1 Export / Import of Routing Tables

- All routing tables can be exported from all data areas
- The AMC Operator can import a routing table in the background area
- Export/Import files are CSV files (editable in MS-Excel) and following the same format
- File format (specified in ATS Messaging Management Manual Appendix D):
 - One identification line
 - One header line
 - Existing route record lines
 - Planned route record lines

9.4.2 Use of Export / Import Routing Tables

- Operational use of Export files:
 - Current operational cycle: use files exported from Operational Area
 - Prepare next operational cycle: use files exported from Pre-Operational Area, with status RELEASED
- Potential use of Export/Import in Background area (AMC Operator only):
 - For off-line preparation work using MS-Excel
 - For “initial load” of the routing table of a COM Centre starting AMHS operation
 - Import can be done only in an existing routing matrix / routing table (which can either be empty or already contain data)
 - Note: deletion of routes is not possible via import (to avoid loss of data): A route missing in an imported file will not be erased from the pre-existing data.

9.4.3 Example of Exported Routing Table

Identification line
Header line

```
1.0;AMHSRoutingTable;OPER.74;07.05.2009 10:23:58;OPERATIONAL;;25.05.2009 11:00:00
COM:Centre;Matrix:Version;Destination:C;Destination:ADMD;Destination:PRMD;Destination:O;Current:Or:Planned;Main;Main
MTCU;Alternate;Alternate:MTCU;Coordination:For:Alternate;Comments;Event:Type;Planned:Date;Description
EDDD;AMHS74.23;XX;ICAO;AENA;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FA;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FB;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FC;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FD;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FE;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FG;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FI;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FK;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FL;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FM;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FME;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FO;;C;LEEE;N;;Y;N;
EDDD;AMHS74.23;XX;ICAO;FS;;C;LEEE;N;;Y;N;
[...]
```

The screenshot shows a Microsoft Excel spreadsheet with the following data:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	1.0	AMHSRoutingTable	OPER.74	07.05.2009 10:23:58	OPERATIONAL			25.05.2009 11:00:00							
2	COM:Centre	Matrix:Version	Destination:C	Destination:ADMD	Destination:PRMD	Destination:O	Current:Or	Planned	Main	Main	MTCU	Alternate	Alternate:MTCU	Coordination:For	Alternate
3	EDDD	AMHS74.23	XX	ICAO	AENA		C	LEEE	N		Y	N			
4	EDDD	AMHS74.23	XX	ICAO	FA		C	LEEE	N		Y	N			
5	EDDD	AMHS74.23	XX	ICAO	FB		C	LEEE	N		Y	N			
6	EDDD	AMHS74.23	XX	ICAO	FC		C	LEEE	N		Y	N			
7	EDDD	AMHS74.23	XX	ICAO	FD		C	LEEE	N		Y	N			
8	EDDD	AMHS74.23	XX	ICAO	FE		C	LEEE	N		Y	N			
9	EDDD	AMHS74.23	XX	ICAO	FG		C	LEEE	N		Y	N			
10	EDDD	AMHS74.23	XX	ICAO	FI		C	LEEE	N		Y	N			
11	EDDD	AMHS74.23	XX	ICAO	FK		C	LEEE	N		Y	N			
12	EDDD	AMHS74.23	XX	ICAO	FL		C	LEEE	N		Y	N			
13	EDDD	AMHS74.23	XX	ICAO	FM		C	LEEE	N		Y	N			
14	EDDD	AMHS74.23	XX	ICAO	FME		C	LEEE	N		Y	N			
15	EDDD	AMHS74.23	XX	ICAO	FO		C	LEEE	N		Y	N			
16	EDDD	AMHS74.23	XX	ICAO	FS		C	LEEE	N		Y	N			
17	EDDD	AMHS74.23	XX	ICAO	FT		C	LEEE	N		Y	N			
18	EDDD	AMHS74.23	XX	ICAO	FV		C	LEEE	N		Y	N			
19	EDDD	AMHS74.23	XX	ICAO	FX		C	LEEE	N		Y	N			
20	EDDD	AMHS74.23	XX	ICAO	FY		C	LEEE	N		Y	N			
21	EDDD	AMHS74.23	XX	ICAO	FZ		C	LEEE	N		Y	N			
22	EDDD	AMHS74.23	XX	ICAO	GA		C	LEEE	N		Y	N			
23	EDDD	AMHS74.23	XX	ICAO	GB		C	LEEE	N		Y	N			
24	EDDD	AMHS74.23	XX	ICAO	GF		C	LEEE	N		Y	N			
25	EDDD	AMHS74.23	XX	ICAO	GG		C	LEEE	N		Y	N			

Identification line
Header line

Demonstration

10. Miscellaneous Functions

Chapter 9

Miscellaneous Functions

10.1 View ANP Locations

Demonstration

10.2 Static Report

- a printable structured version of the database contents
- split into 4 parts in PDF format, or complete in XLS
 - network inventory
 - routing management
 - address management
 - user capabilities
- exists in Operational Area:
 - provides operational data
- exists in Pre-Operational Area: Static Report (updated data)
 - shows modification since last cycle (in red characters)
 - only complete report to avoid « missing » changes

Demonstration

10.3 COM Charts

Demonstration

10.4 AMC Operator Details

Demonstration

10.5 Path Function

Demonstration

11. Overview of AMF-I Functions

Chapter 12

Overview of Implementation Support Functions (AMF-I)

11.1 The Overall Goal of AMF-I Functions

- Support AMHS planning, implementation and test activities in the EUR/NAT Regions
- Provide information to AMHS implementers in ICAO member States about:
 - AMHS implementation matters
 - AMHS implementation projects in other States
- Be the EUR/NAT focal point for structured storage and exchange of such information

11.2 Overview of AMF-I Functions

- AMHS MD Contacts
- AMHS Implementation Planning
- Interworking Test Support
 - Download test documentation
 - Test activities database
 - Test environment data
 - Test planning
- Monitoring of AMHS Documentation Maintenance
 - PDRs and APs
 - AMHS Documentation Maintenance Procedures
- Helpdesk Functions
 - Download support information
 - Implementers' forum
 - FAQs

11.3 AMHS MD Contacts

- Objective:
 - Who is involved in AMHS implementation in ANSP ABC, State XYZ ?
 - Potential contacts:
 - the AMF-I Users (2): Key contact persons
 - design engineers, project engineers, technical specialist, head of project/unit, etc.
 - personnel involved in AMHS testing
 - (operational staff preparing AMHS deployment)
- an AMHS MD-oriented function
- Reciprocal interaction with no AMC Operation intervention:
 - Each AMF-I User enters contacts in his/her own AMHS MD
 - He/she can view and retrieve same data from other AMHS MDs

11.4 AMHS Implementation Planning

- Objective:
 - When does ANSP ABC, State XYZ, intend to implement AMHS ?
 - High-level information:
 - main stages planned (procure, test, operate)
 - which system category (AFTN/AMHS gateway, ATS message server, UAs)
 - for each COM Centre associated to the AMHS MD
- a primarily AMHS MD-oriented function
- reciprocal interaction with no AMC Operation intervention:
 - Each AMF-I User enters contacts in his/her own AMHS MD
 - He/she can view and retrieve same data from other AMHS MDs

11.5 Inter-working Test Support

Objective: “How can I organise tests for the AMHS implementation project which I am involved in ?”

- Find methods, tools, test scenarios, etc. ?
 - Download test documentation: makes available test documents approved by AFSG/PG
- Take benefit from testing experience in other States ?
 - Test activities database: summary of international test activities (past, present, planned)
- Do international tests... with whom ?
 - Test environment data: shows test systems available in each AMHS MD
- ... and when ?
 - Test planning: a shared diary between AMHS MDs

11.6 Helpdesk Functions

- An interactive community website:
 - Support Information to be downloaded
 - implementers' forum
 - Frequently Asked Questions (FAQs)
- Dedicated to AMHS Implementation
(avoid confusion with AMF-O Support functions)
- Files for download are subject to procedures

Demonstration

11.7 AMF-I Procedures

- a usage context different from operational functions:
 - no strict relation to time, nor to AIRAC cycle: information is valid for use as soon as it is posted
 - AMHS MD-related information is generally only relevant to one State/ANSP, published under its responsibility
 - a requirement for validation of common documents and information :
 - final documents (in general no “work in progress”, unless specifically agreed)
 - produced by an ICAO body, ICAO Member State or recognised Organisation (“no commercial”)
 - not subject to copyright
 - no internal contradiction
- File / document validation by AFSG subgroups
- File management (upload etc.) by AMC Operator

11.8 AMF-I Functions

Summary demonstration

12. ATS Messaging Management

Chapter 12

Closing considerations

12.1 Conclusions: Observed/Expected User Benefits

- Only focal point in the EUR/NAT Regions with complete visibility of the entire AFTN/CIDIN/AMHS network.
- Essential implementation support needed during transition from AFTN/CIDIN to AMHS.
- Coordination of integration of a new COM centre, and upgrade to AMHS, in the network.
- Generation and distribution of routing tables for each COM centre in the EUR/NAT Regions on AIRAC cycle basis.
- Helpdesk support for off-line network management during office hours.
- Tools used by the coordinating COM centres to facilitate network operation.
- Interaction with the COM centres and Regional Offices in the other ICAO regions as a focal point of EUR/NAT Regions.

12.2 Conclusions: Summary

- The AMC comprises
 - a management organization and framework
 - AMC systems
 - functions and procedures
 - support and operator resources
- To provide off-line network management services in support of AFTN/CIDIN/AMHS operation and AMHS deployment in
 - EUR/NAT ICAO Regions and
 - external COM Centres, potentially world wide
- The AMC currently is the only system in operation with such capability

12.3 Questions and Answers

Any pending question ?

Don't hesitate

The floor is to you...

12.4 Feedback Channels

During your participation in AMC activities, you will most likely wish to provide feedback on your experiences concerning, for example:

- ◆ procedures,
- ◆ AMC Systems, or
- ◆ organisational matters.

Please send your feedback to

- Eurocontrol (yuksel.eyuboglu@eurocontrol.int), and
- to the AMC Operator

12.5 Closing

It has been a great pleasure giving this course and we wish you all great success in using the ATS Messaging Management application!