Day 1 – Session 1

Introduction

ATS Messaging Management Centre (AMC)

ATS Messaging Management Centre

- EUROCONTROL's air traffic services (ATS) messaging management centre (AMC) provides **off-line** network management services to support European air navigation service providers' (ANSPs) ground ATS messaging network and coordinates with communication and management centres in other ICAO Regions.

ATS Messaging Management Centre

- The ATS Messaging Management Manual (EUR Doc 021) describes the framework in which the off-line network management services of the ATS Messaging Management Centre (AMC) are provided to States/ANSPs in the ICAO EUR Region, and, in a more limited manner, to States/ANSPs in other Regions.

ATS Messaging Management Centre

- ATS Messaging refers to the integrated, heterogeneous messaging environment made of AFTN, CIDIN and AMHS.

The goal of the ATS Messaging Management Centre

- facilitates the transition from CIDIN/AFTN to AMHS;
- provides new tools in support of AMHS operation, address management and user capabilities management, that will serve during transition and in the target AMHS network.

The goal of the ATS Messaging Management Centre

- When States in the ICAO Region implement AMHS, transition is complex to manage and proper coordination between COM Centres is an essential requirement to ensure the overall ATS Messaging quality of service. It is therefore recommended that every State implementing AMHS should participate in AMC activities.

Off-line management functions provided by AMC

- **Operations functions (AMF-O)**
  Support to States with AMHS in operation

- **Implementation support functions (AMF-I)**
  Support to States on their way to implement AMHS

ICAO State Letter & EANPG Conclusion

EANPG 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.

Establishment of the MIDAMC

- Initially AMC provide external COM user access to some operational functions (ex. address management). Other operational functions like Routing Management was only limited to EUR users. Therefore, ICAO MID Region established MIDAMC Platform to provide all necessary functions to the MID Users.

- The MIDAMC platform was launched on 12/12/2012, hosted and managed by the MIDAMC Team in Jordan.

- All MID states have signed MoUs with Jordan to participate in this project.

- The MIDAMC team has provided Technical support to MID Region AFS Network.

- The MIDAMC Project has been managed by the MIDAMC Study Group (MIDAMC STG) under the CNS SG.

MIDANPIRG/18 meeting (15-22 February 2021)

- **The meeting was informed that the EUR AMC decided to provide External COM users similar access like EUR users. Thus, the routing management function can be used by all AMC users globally.**
- **The meeting agreed that there is no need to keep using the MIDAMC Web Application and that the EUR AMC should be used by all MID users.**
- **The MIDAMC team will continue carrying out coordination and operation support roles.**

MIDANPIRG CONCLUSION 18/34: MIDAMC OPERATION EFFICIENCY

That, in order to enhance the MIDAMC operation efficiency, States are encouraged to:

a) update their MIDAMC focal point(s);

b) register MIDAMC users on the EUR AMC as external AMC operator, in coordination with the MIDAMC Team by 1 March 2021;

c) note that the MIDAMC web application will be withdrawn by 1 April 2021; and

d) nominate SMEs to join the MIDAMC Team. A training on MIDAMC operation will be arranged for new MIDAMC members.

MIDANPIRG/18 meeting (15-22 February 2021)

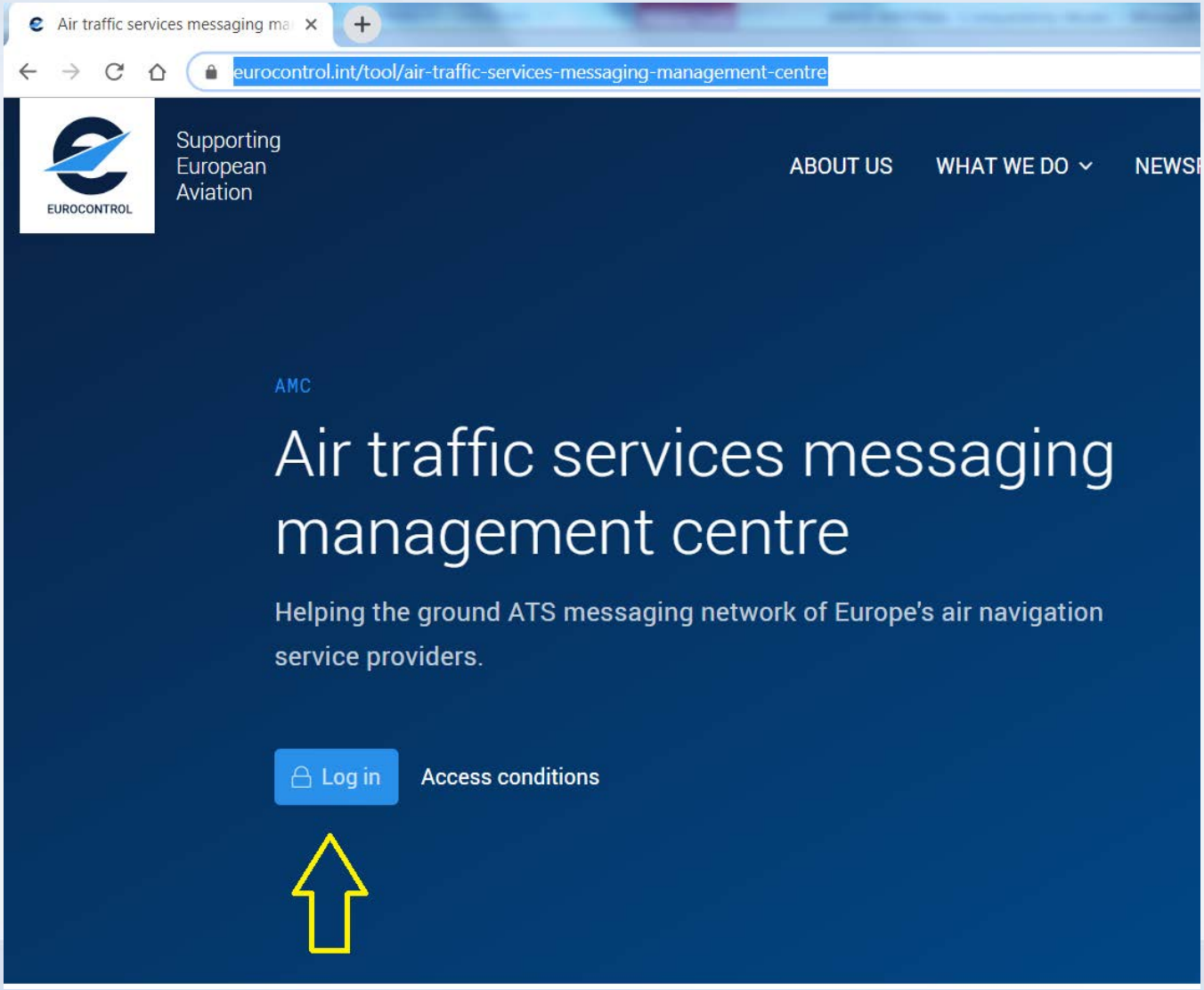
The MIDANPIRG/18 meeting agreed on the need to organize a refresher training on the use of the AMC functions, inter-alia, using the routing management function and developing routing directory.

MIDANPIRG CONCLUSION 18/35: AMC OPERATION WEBINAR

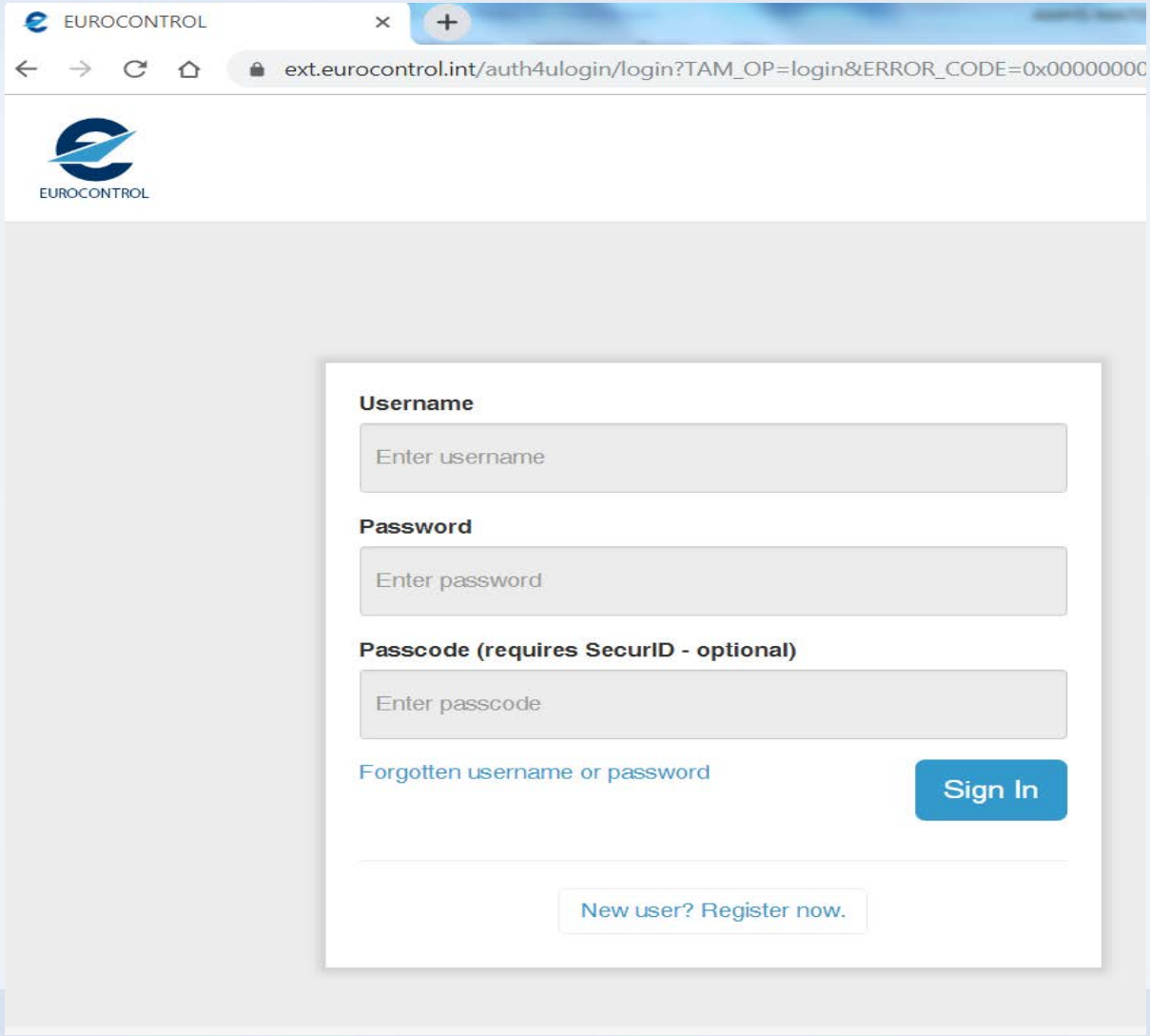
That, in order to provide the MIDAMC users with the required knowledge on the use of the AMC functions and tools, a Webinar on AMC operation be organized in March 2021, by the ICAO MID Office and the MIDAMC Team.

ATS Messaging Management Centre

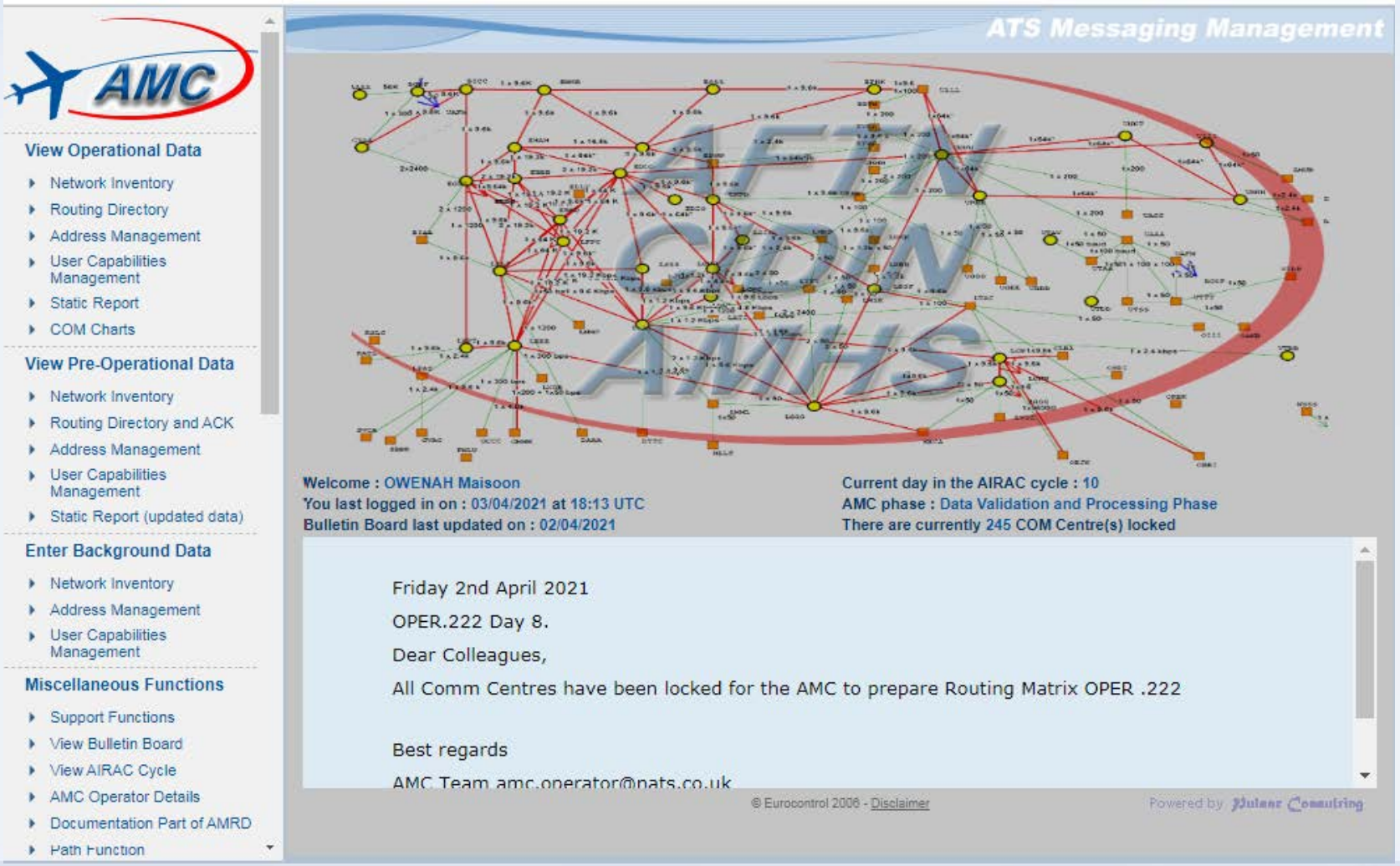
Logging to AMC



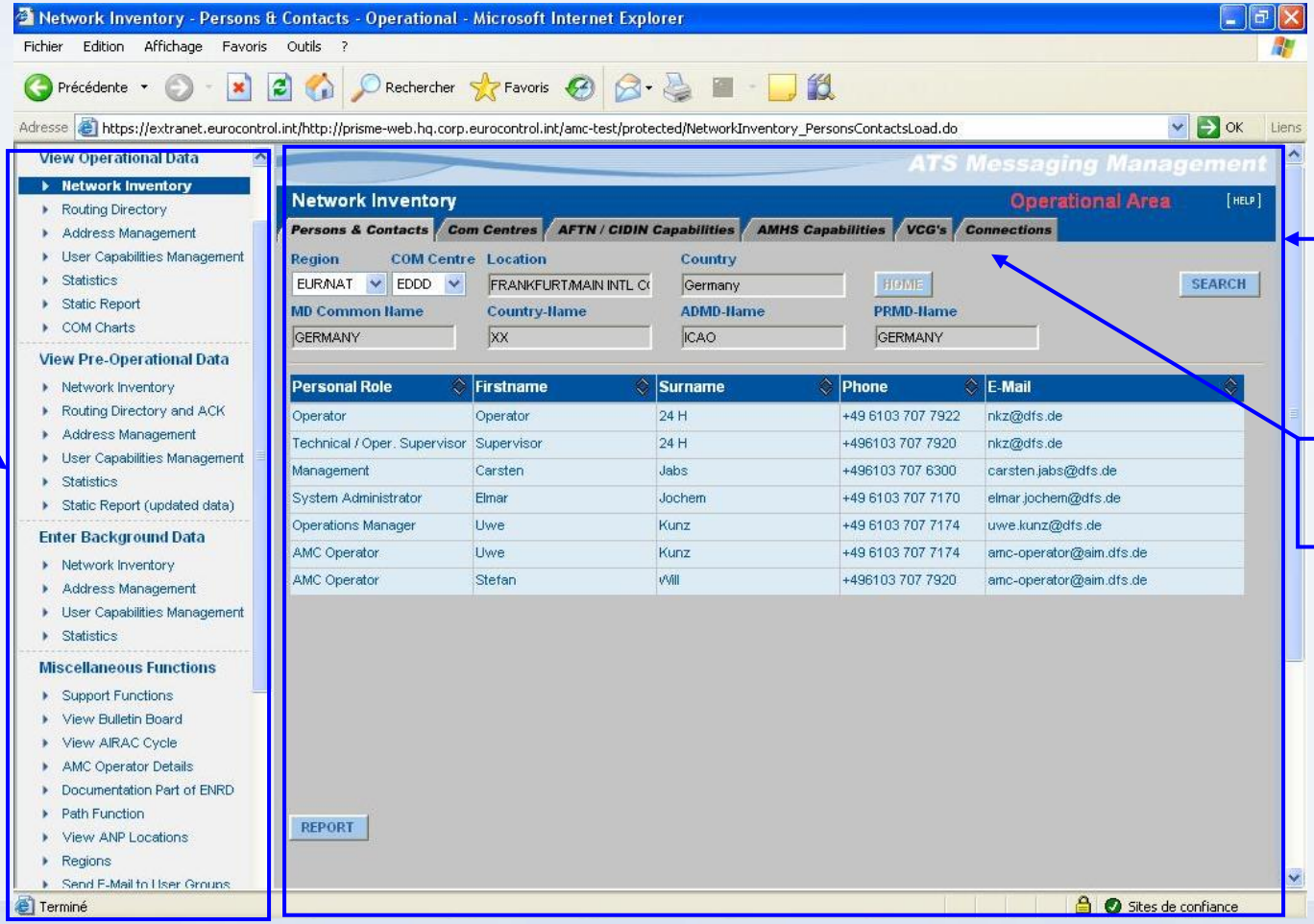
Logging to AMC



AMC Home page



Menu and Window Structure

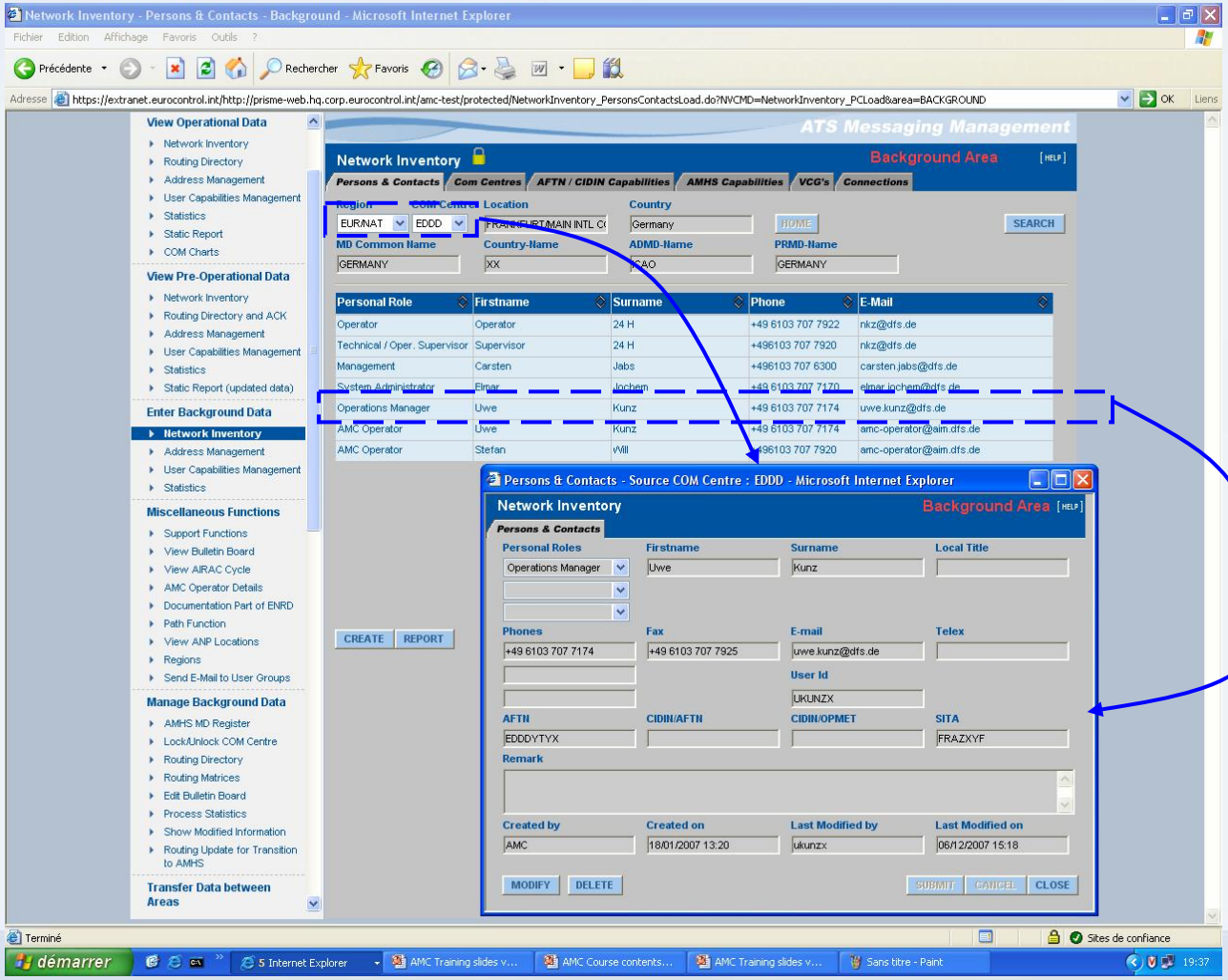


Menu (functions)

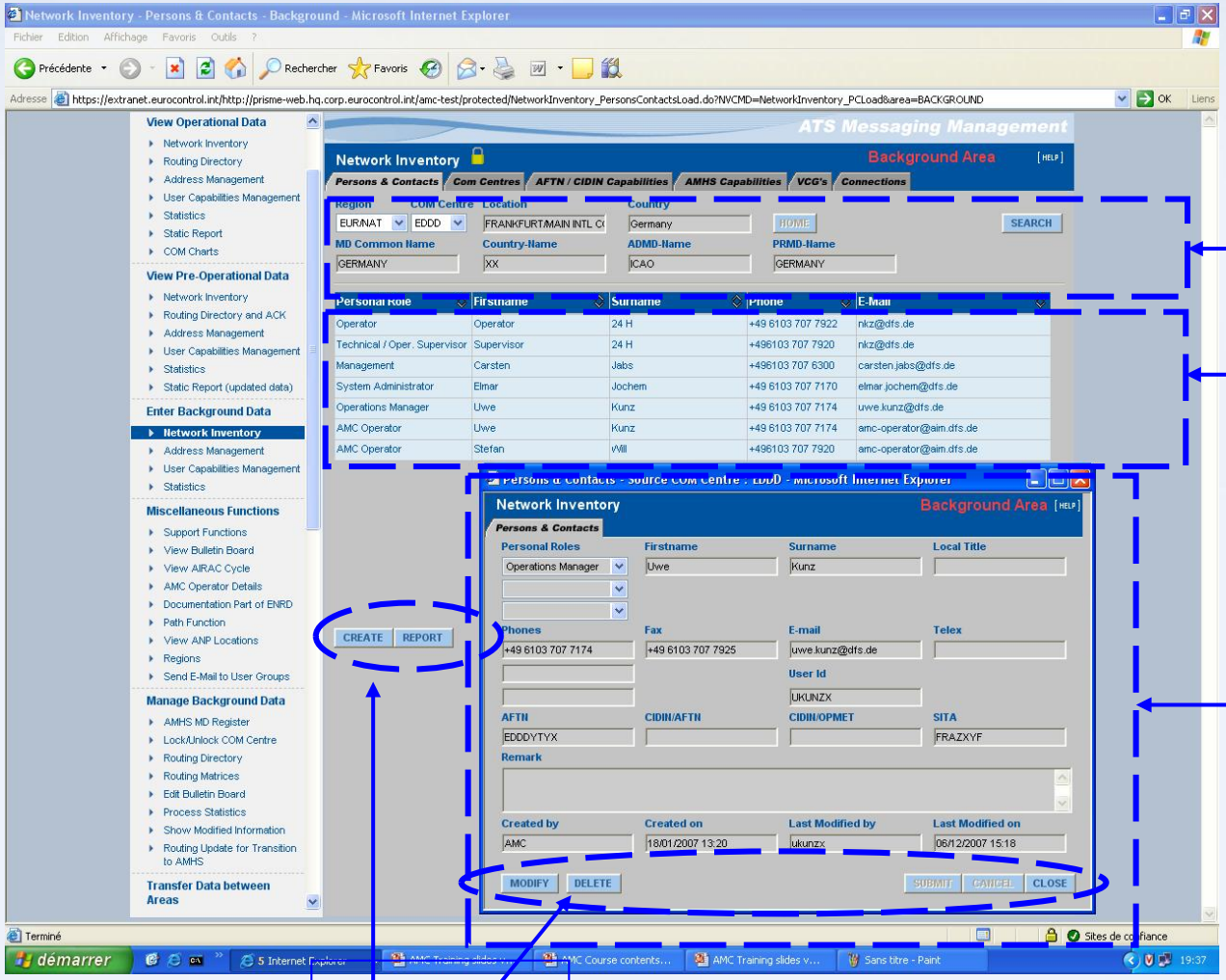
Main window

Sub-functions (tabs)

Main Window and Pop-up Structure



Screen areas of main window



ATS Messaging Management Centre

Basic AMHS

Why AMHS

AFTN is famed for its low throughput, low capacity, limited message length and unsuitability for more demanding bit-oriented applications such as the transfer of binary information

ATS Messaging Management Centre

- AMHS uses open standards, X.400
- There is no message loss in AMHS network
- enhanced security capabilities
- Cost - AFTN is more expensive because of the obsolescence of its standards
- AFTN technology is based on the Telex protocols (text only,7 or 5 bits)

ATS Messaging Management Centre

Air traffic communications service essentially involves the processing, storage and exchange of a wide variety of aeronautical and other messages, including:

- Aeronautical information service (AIS) information such as Notices to Airmen (NOTAMs);
- Meteorological messages; " distress and urgent messages;
- Flight safety messages (flight plans, etc);
- Aeronautical administrative messages; and
- Service messages.

ICAO DOC for AMHS

1. ICAO Annex 10, Vol. III
   Digital communication systems
2. ICAO Doc 9880:
   Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols

3. ICAO Doc 9896:
   Manual on the Aeronautical Telecommunication Network (ATN) using Internet Protocol suite (IPS) Standards and Protocols.

4. ICAO EUR Doc 020

ATS Service Levels

1- Basic ATS Service

Compared to the service of the AFTN, the Basic ATS Message Handling Service offers some significant improvements such as:

1. Practically unlimited message length
2. Virtually no limit on the number of addressees of a message
3. Provision of non-delivery reports
4. Indication of the subject of a message

Extended Service Levels

1) Transfer Body Part (FTBP)
The extended ATS message service supports conveyance of binary data.
2) IPM Heading Extensions (IHE)
3) Security
4) Directory Service: The ATN Directory is an Electronic Directory to support Air Traffic Communications systems. It is based on the ITU-T X.500 Series Recommendations, and has been extended to support the Aeronautical Telecommunications Network, its users and applications.

AMHS Models

AMHS Models

Informational Model

-Messages
- Probe
- Report

Functional Model

- Message Transfer Agent
- User Agent
- Message Store
- Access Unit
- DUA

Security Model

- Message Origin Authentication
- Content Integrity
- Message Sequence Integrity

Informational Model

1. Message (IPM, IPN)

1.1 Interpersonal Message (IPM):

IPM conveys user data to the intended user(s), the IPM consists of two parts:

1) The Heading.
2) The body.

Informational Model

1. Message (IPM, IPN)

1.2 Interpersonal Notification (IPN):

Interpersonal Notification (IPN) is sent to the message originator, when the originator requires an IPN (RN or NRN).

RN: Receipt Notification
NRN: Non Receipt Notification

Informational Model

2. Report

Two types of Report are used in AMHS, Delivery Report (DR) and non delivery report (NDR).

The AMHS reports shall be delivered only to direct AMHS users.

Informational Model

3. Probe

- Probe is initiated at a UA to find out whether an intended recipient is **reachable** by the MTS and would **accept** a user message of specified characteristics.

- The MTA serving the intended recipient verifies the specified message characteristics against registered UA parameters and depending on the verification result returns either a Delivery Report or a Non-Delivery Report.

Informational Model

3. Probe (Cont'd)

- Failed routing at a transferring MTA (non-reachability) effects also a Non-Delivery-Report.

- Only direct AMHS users shall be able to submit AMHS probes.

Functional Model

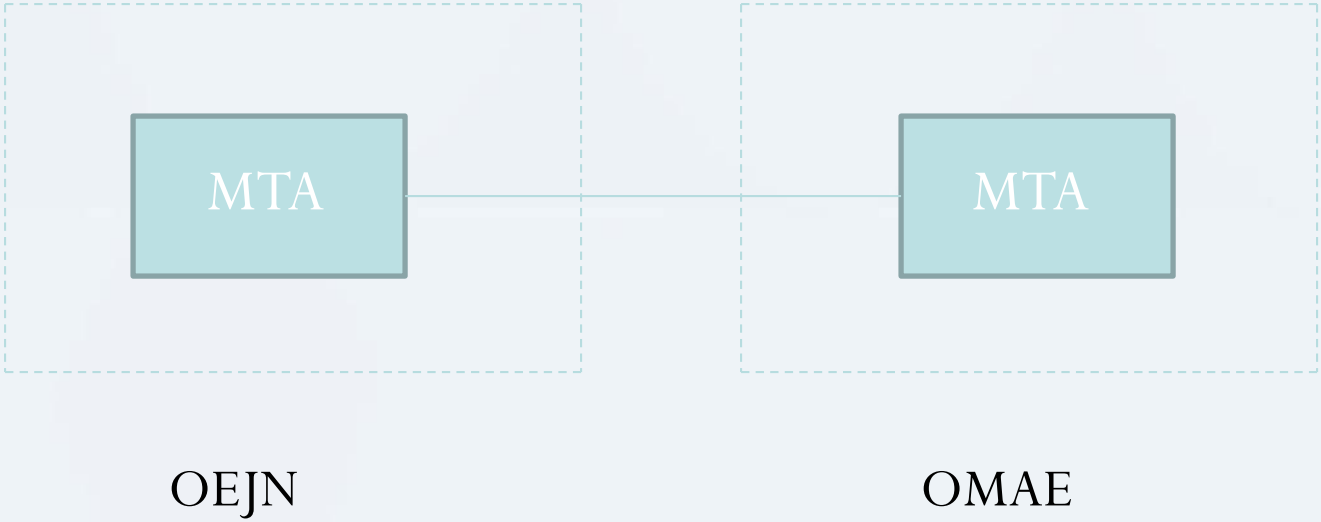
1- ATS Message Server

An ATS Message Server shall include a MTA and optionally one or several Message store (MS)s.

For the support of the Extended ATS Message Handling Service, an ATS Message Server shall include a DUA

Functional Model

1- ATS Message Server



Message transfer agent: (MTA)

ATS Messaging Management Centre

- The ATS Server accepts, relays and delivers messages in a store-and-forward mode, and serves attached ATS Message User Agents

- MTA Name should be Unique;

- Can be used for National and International MTA

- The Recommendation scheme of the MTA:
  - the term “MTA”;
  - the Location Indicator of the MTA location; and
  - a number (for future extensions if required).

MTA – HECA-1

- MTA Password is required when create an association with remote MTA

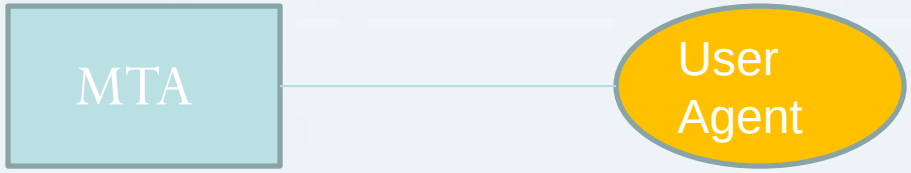
- The recommended scheme of default password:
  - the term “ICAO”;
  - the Location Indicator of the MTA location; and
  - the specific number of the MTA.

ICAO-HECA-1

Functional Model

2- User Agent

a- P3 User Agent



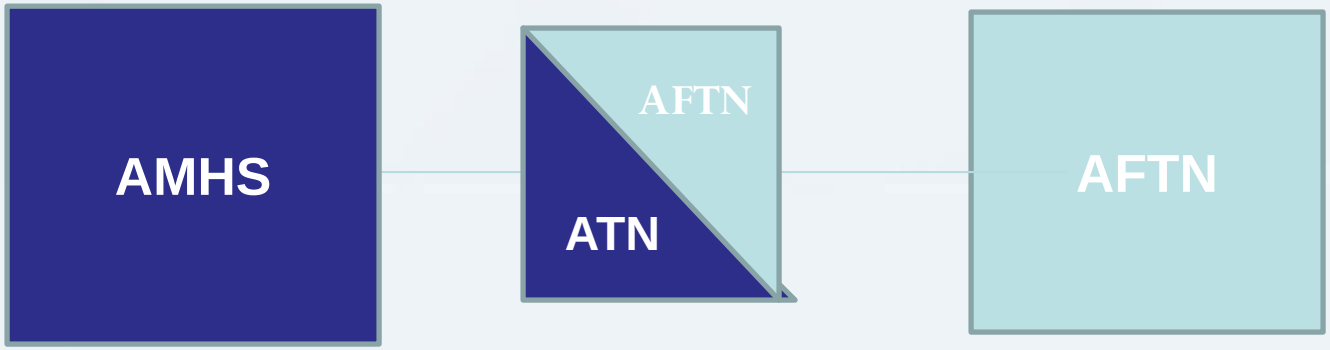
b- P7 User Agent

Functional Model

3- AFTN/AMHS Gateway

An AFTN/AMHS Gateway shall provide for an interworking between the AFTN and the ATN such that communication with other AFTN/AMHS Gateways, with CIDIN/AMHS Gateways supporting the AFTN MTCU.

3- AFTN/AMHS Gateway



AFTN/AMHS Gateway

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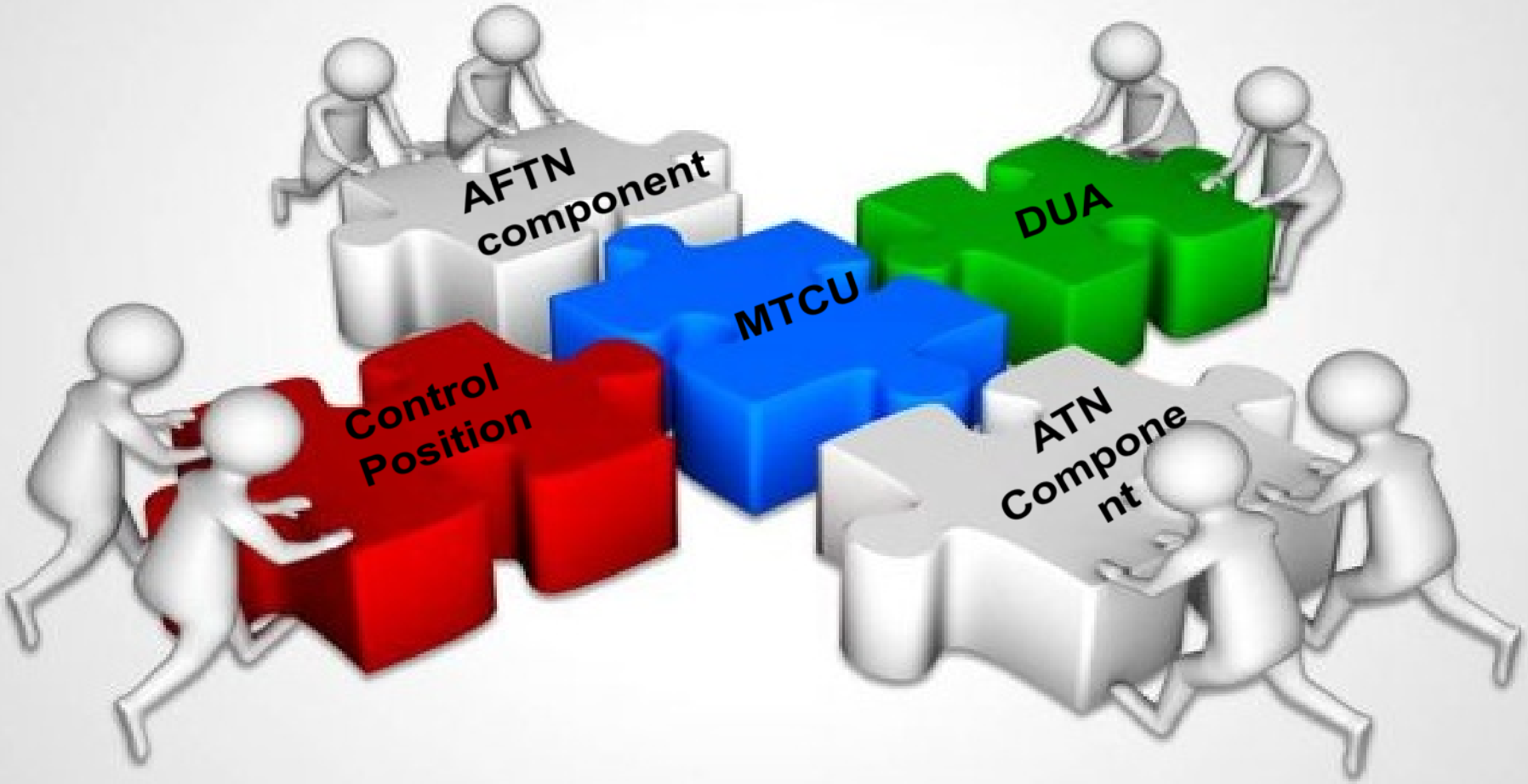


a) AFTN Component

The AFTN Component incorporates an AFTN procedure handler providing for all AFTN functions and procedures as prescribed in Annex 10, VOL II for an AFTN station.

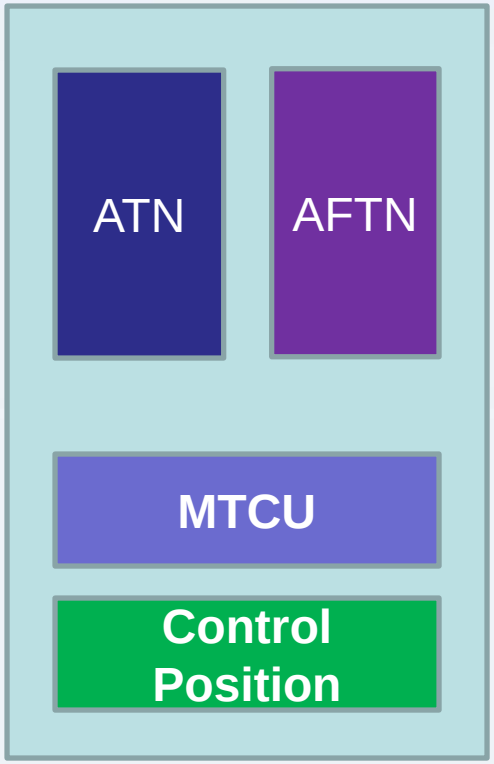
b) ATN Component

The ATN Component incorporates an MTA complying with the profile specification for an ATS message server. In this way, the gateway is externally indistinguishable from ATS Message and can communicate with other ATS Message Servers and peer gateways

C) Message Transfer and control Unit

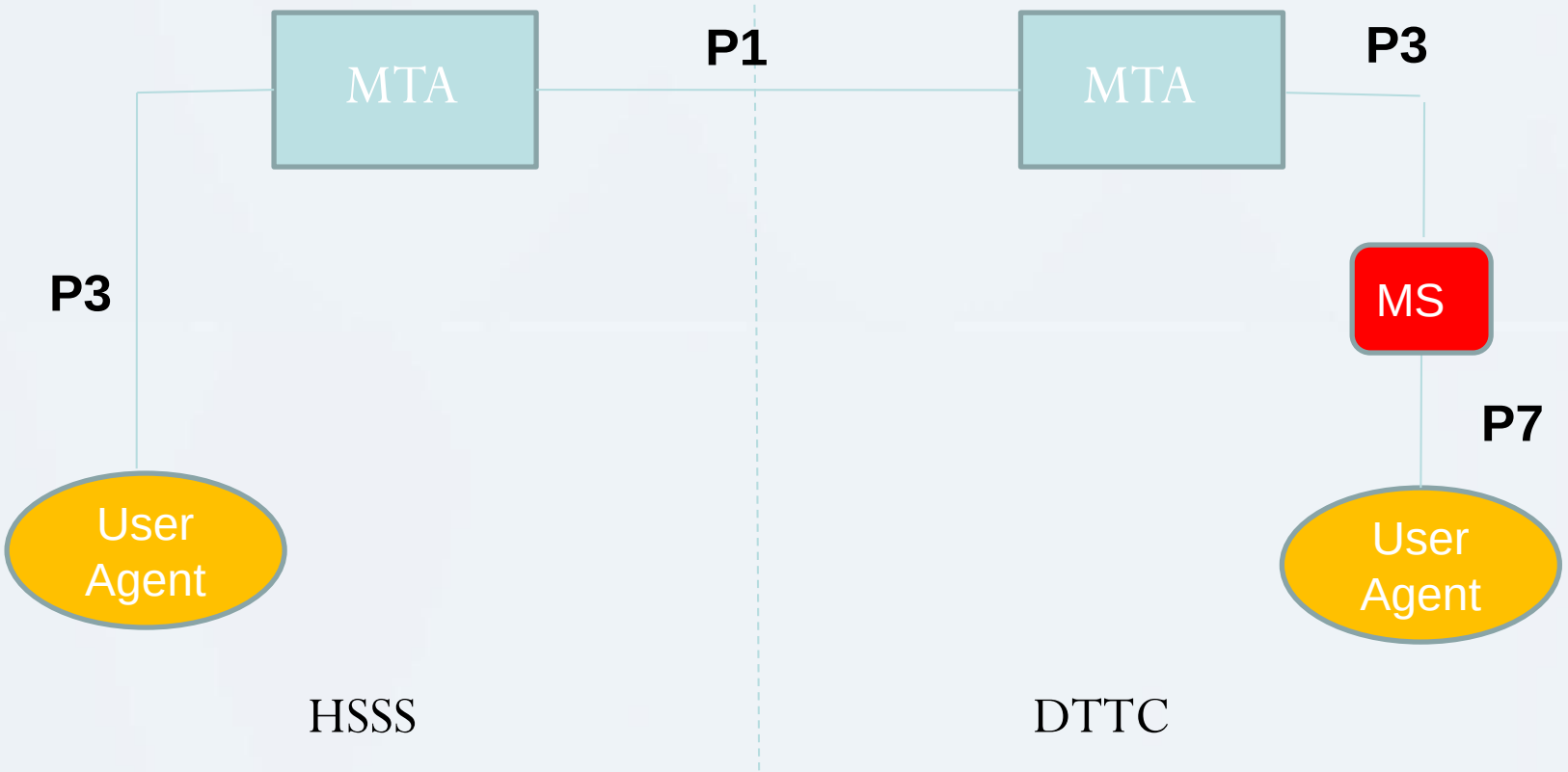
The MTCU performs bi-directional conversions (mappings) between AFTN and AMHS information objects

D) Control position: where error reported



- **X.400** is a suite of ITU-T Recommendations that define standards for Data Communication Networks for Message Handling Systems (MHS)
- P1 protocol is used explicitly for communication among MTAs,
- P3 between the user agent and an MTA
- P7 between the user agent and message store.

ATS Messaging Management Centre



ATS Messaging Management Centre