

AMHS Implementation Workshop 2013

User Agents and Character Encoding

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**Federal Aviation
Administration**



Agenda - Key Issues

- ✓ Definitions used in Air Traffic Services (ATS) Message Handling System (AMHS)
- ✓ ATS Message User Agent (UA) Levels of Service
- ✓ User Agent Advantages
- ✓ User Agent Considerations
- ✓ Character Sets and Encoding
- ✓ Conclusions



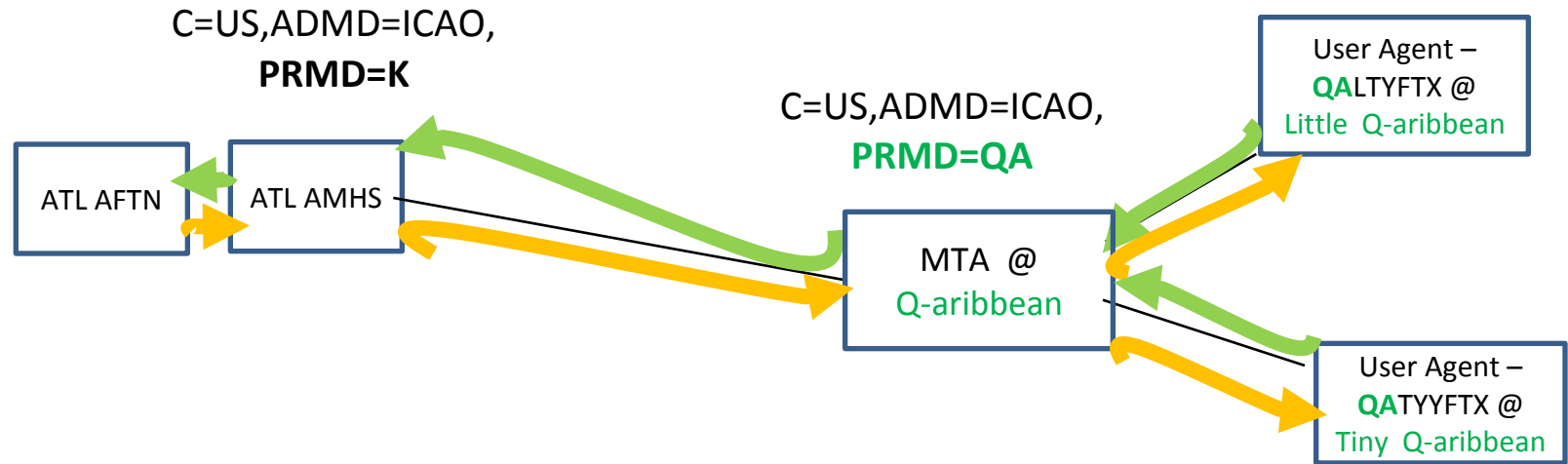
Definition - ATSMHS User

- ✓ Direct AMHS users (AMHS User Agents) shall use either the Basic AMHS or the Extended AMHS at an ATS Message User Agent.
- ✓ Indirect AMHS users shall use only that part of the AMHS which corresponds to AFTN functionalities by using the interworking capability provided by an AFTN/AMHS gateway.
- ✓ The ATS Message Service fully complies with the ISO standards which are mature and widely implemented. ICAO Doc 9880 is latest AMHS standards.
- ✓ The Basic ATS Message Service (Basic Services) provides AFTN functionality.
- ✓ The extensible nature of X.400 lends itself to 'hiding' the necessary AFTN fields. The usage, specific to ATS, is defined in ICAO Doc 9880.

Definition - ATSMHS User Agent

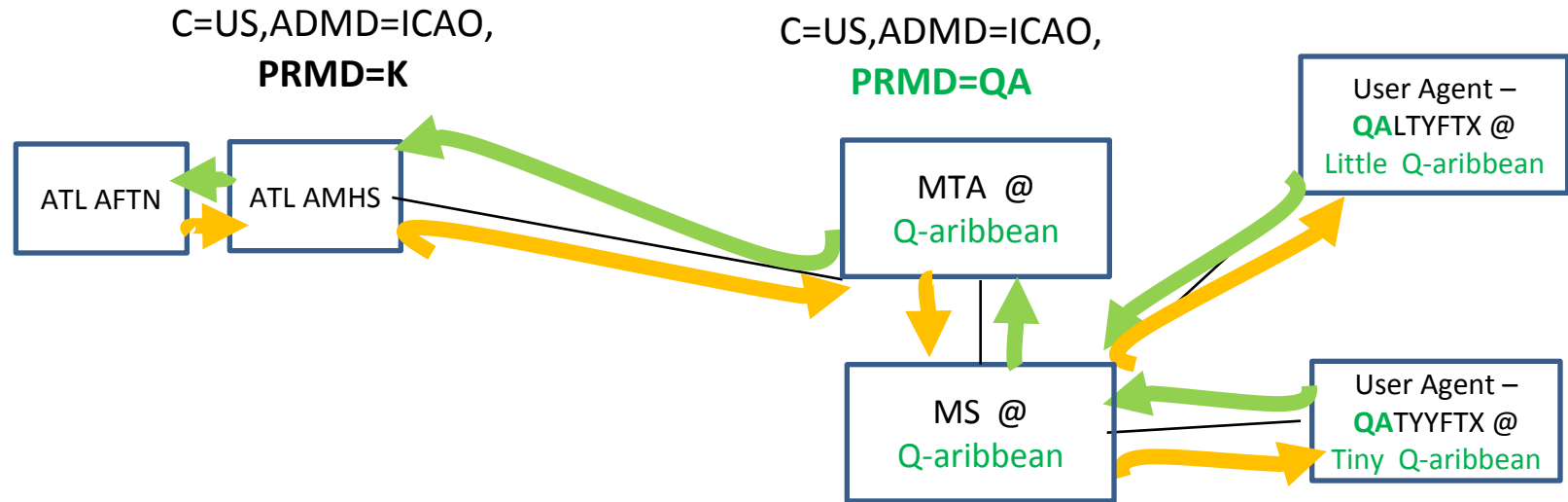
- ✓ User Agents provide user access to the MTA.
- ✓ Protocols are standardized.
- ✓ Human – machine interface is not standardized.
- ✓ User Agents can access the MTA directly for submission and receive delivery of messages.
- ✓ User Agents can operate with a MTA and a Message Store (MS). The UA submits and retrieves from the Message Store. The Message Store communicates with the MTA. A Message Store provides longer and/or fixed term archiving.

User Agent - Message Server Configuration



User Agents can access the MTA directly. Typically used when there is always access between the UA work station and the MTA. (ie. Not a shared work station)

User Agent - Message Server – Message Store Configuration



User Agents can access the MTA through a Message Store. The basic model is that the MS is a server process that is "always there" and will take immediate delivery of all messages sent to a UA, and store them in an "In Box" to be retrieved by the UA immediately or some time later.

Definition - ATSMHS User Agent (cont'd)

- ✓ The parameters used upon creation of a message depend upon:
 - ✓ a) the level of service (basic or extended) supported by the originator;
 - ✓ b) the nature of data (text or binary) which is intended to be exchanged; and
 - ✓ c) the level of service (basic or extended) supported by the intended recipients.

Definition - ATSMHS User Agent (cont'd)

- ✓ A direct AMHS user may determine from the information stored in the AMHS directory what level of service is supported by the intended recipients.
- ✓ Currently, Directory Service is **not** widely implemented.
- ✓ The Basic ATS message header shall be generated by the originating user if:
 - ✓ a) the originator supports only Basic Service or
 - ✓ b) at **least one of the intended recipients** of the message implements only the Basic Service.

Definition - ATSMHS User Agent (cont'd)

- ✓ Each User Agent in the Management Domain is identified with an O/R Address consisting of a unique set of attributes (OU-Organizational Unit and/or CN – Common Name)
- ✓ The O/R-address distinguishes one user from another and identifies the user's point of access to the MHS.
- ✓ In the case of a Distribution List (DL), the O/R address identifies the DL's expansion point. A Distribution List is similar to an AFTN Group Address.

Basic - ATSMHS User Agent

- ✓ The Basic ATS Message Service (Basic Services) provides AFTN functionality.
- ✓ Less limitation on the number of recipients.
- ✓ Less constraint on the size of the message text.
- ✓ Presently, our messaging service is providing AFTN functionality. (Basic Service)



Extended - ATSMHS User Agent

- ✓ Large extension capability (redirection, security) with functional groups (FGs), with Extended ATS Message Service
- ✓ Provides a secure message service when coupled with the use of the ATN directory.
- ✓ It is intended that the extended ATSMHS will eventually be supported by all ATSMHS users, however, this will be a long and gradual process.



ATSMHS User Agent Advantages

- ✓ Non-delivery reports
- ✓ Subject indication. Although the 'subject' indication will be lost when entering an AFTN/AMHS Gateway.
- ✓ Less limitation on the number of recipients.
- ✓ Less constraint on the size of the message text.



ATSMHS User Agent Considerations

- ✓ Basic ATS Message should be used, unless you are certain that all recipients and every AMHS node in the path is capable of processing Extended ATS Messaging.
- ✓ Limit on message length needs to be considered, when we are in 'mixed' AFTN/AMHS mode. (Ex. Message received at US AFTN center from a remote user consisting of 102 parts.)
- ✓ Limit on number of recipients per message
- ✓ Limit the use of extended character encoding, as most all message will transit an AFTN/AMHS Gateway and be destined for a remote AFTN user.

ATSMHS User Agent Considerations (cont'd)

- ✓ Data types, including the use of XML, and character encoding are issues that need careful inspection to prevent any possible interruption in the AFTN network.
- ✓ A global AMHS network coordination is required to ensure smooth operation.
- ✓ Sharing of common network-related data and user capabilities.
- ✓ Air Traffic Service Message Management Center (AMC) operation is a key component in the Global AMHS operation, until Directory service (part of AMHS Extended Service) is widely implemented.

User Agent Character Set and Encoding

- ✓ Character sets:
- ✓ ASCII is 0-x'7F (7 bit) – encoded into a single character
- ✓ AFTN character set is a more restricted subset of the standard ASCII IA-5 character set.
- ✓ ISO 8859-1. Often called Latin-1. Includes the characters (Hex 0-xFF , **except** the characters between x80-9F). The characters x80-9F includes Microsoft Word's (MS) left and right quotes, euro symbol, etc
- ✓ ANSI is ASCII + x80-xFF.
- ✓ Identify, coordinate, and test your capabilities

Content Encoding - AMC

ATS Messaging Management

Network Inventory Operational Area [HELP]

Persons & Contacts /
 Com Centres /
 AFTN / CIDIN Capabilities /
 AMHS Capabilities /
 Connections

Region: COM Centre: Location: Country:

MD Common Name: Country-Name: ADMD-Name: PRMD-Name:

MTA Name: **ATS Message Server**

Maximum Content Length:

Extended Encoded Information Types in Support of:

IA5 FTBP
 General Text Body Part (ISO 646)
 General Text Body Part (ISO 8859-1)

Messages Lifetime (Minutes):

Urgent: Non Urgent:
 Normal: Report:

AFTN/AMHS Gateway

Currently Authorized Message Length:

Maximum Number of Addresses:

Converted General-Text Body Parts:

ISO 646 ISO 8859-1

Operational Status:

Protocol Capabilities

Protocol	P-SEL	S-SEL	T-SEL	Network Address (NSAP or IP)	Active
AMHS/TCP-IP			atl		<input type="checkbox"/>

User Agent Character Set and Encoding(con't)

- ✓ Messages created with MS Word can be problematic. MS Word uses CP-1252 character set, which includes characters from 0x80 - 0xA0, which are not a part of ISO-8859-1. Exercise extreme caution if copying text from another document into a UA text box.
- ✓ MS Windows options of auto complete or auto correction can effect a UA's output. (ex long dash)
- ✓ In these cases, be aware that rejection or automatic character substitution will occur.
- ✓ AMHS Basic Services message text shall comprise a single body part carrying IA-5 characters.
- ✓ Any characters > x7F will likely be translated to '?'

Conclusions

- ✓ At this time, Basic ATS Message service should be used in the Operational network
- ✓ User Agents offer extensive capabilities for the future
- ✓ Extensive testing between partners should be executed before using any of the expanded capabilities are used operationally. Character encoding and body part types should be clearly defined during testing.
- ✓ This testing should be done between originator and end recipients, as well as all relaying nodes in between.
- ✓ The dual operation of AMHS with User Agents and AFTN requires global coordination.
- ✓ AMC is an important tool in global coordination.

The End

As always, it's been a pleasure.

Thanks for your time !

