

ATNP/WG3

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## **AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL(ATNP)**

### **WORKING GROUP 3 - APPLICATIONS AND UPPER LAYERS**

Redondo Beach, 27-30 October 1997 (eleventh meeting)

**Agenda Item 7.2: Planning for future work program and progress of related activities (Ground-Ground Applications)**

**WP/11-16 : AMHS Directory Requirements and Specification Approach**

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#### **Summary**

The SG1 Future Work Programme includes several items related to Directory Services, either in a manner dedicated to ATS Message Handling Services, or in a general manner not restricted to a ground-ground ATN application but covering potentially the entire ATN requirements for Directory Services. This paper is presented as a contribution to the elaboration of documents relevant to this subject of ATN Directory.

It provides a first analysis of the requirements for Directory Services in support of AMHS. It also provides a presentation of the ISO Profile for MHS Use of Directory (ISO/IEC DISP 11189, also known as FDI2).

The paper recommends an approach for the specification of the ATN Directory in support of AMHS. This approach includes the mandatory support of FDI2 and of the DL functional group of FDI2. It also identifies a number of areas to be further studied to progress such specification.

An initial version of this paper has been discussed within WG3/SG1. The subgroup agreed with the recommendations of the initial paper, complemented with a few additional comments. The paper has consequently been updated to incorporate the outcome of the SG1 discussion.

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## References

- [1] ATNP/WG3 WP/10-15 (Langen, June 1997) SG1 Future Work Programme - Jean-Yves Píram (also presented to SG1 as WP/155)
- [2] ISO/IEC 9594-1/7: 1995 Data Communication Networks - The Directory (see also ITU-T X.500:1995 Series)
- [3] ISO/IEC ISP 10616:1995 - Information Technology - International Standardized Profile FDI11 - Directory Data Definitions - Common Directory Use (Normal)
- [4] ISO/IEC DISP 11189 - Information Technology - International Standardized Profile FDI2 - Directory Systems - MHS Use of Directory

## 1. INTRODUCTION

### 1.1 Background

The SG1 Future Work Programme (ref. [1]) includes several items related to Directory Services, either in a manner dedicated to ATS Message Handling Services, or in a general manner not restricted to a ground-ground ATN application but covering potentially the entire ATN requirements for Directory Services.

This paper has been presented to SG1 as a contribution to the elaboration of the following documents identified in this work programme:

- D141 Analysis of the AMHS requirements for Directory services;
- D142 Analysis of the relevance of the Use of Directory (DIR) Optional Functional Group defined in the MHS Profiles, and of the FDI2 (MHS Use of Directory) ISP to meet the AMHS requirements for Directory Services;
- D311 Analysis of the service and information to be provided in support of ATSMHS.

After discussion and approval by SG1, this paper has been updated to reflect the outcome of the SG1 discussion and to be presented to WG3 as an SG1 report on this subject.

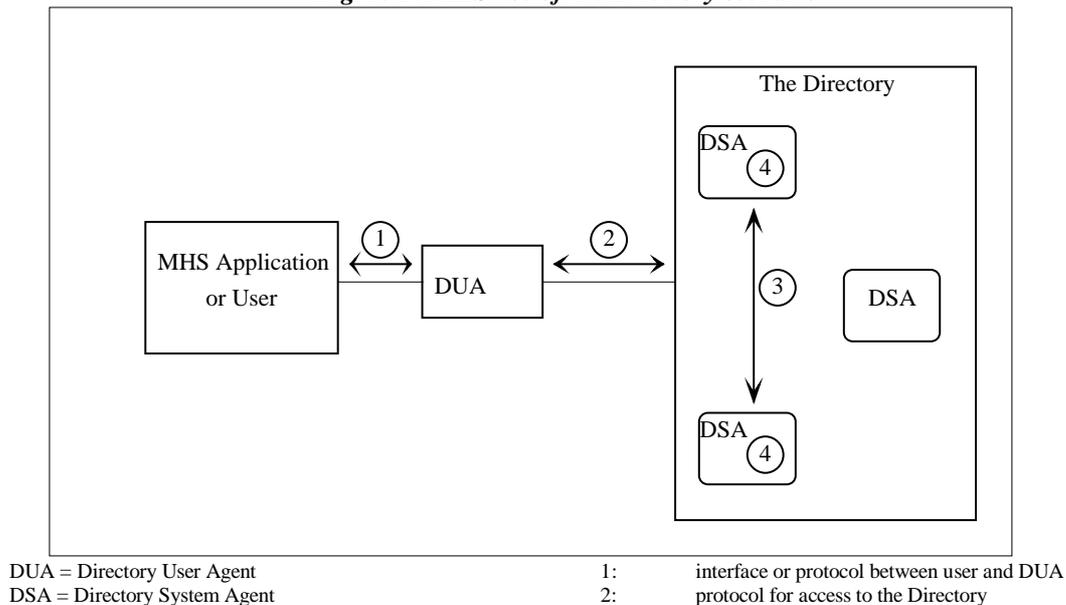
### 1.2 Goal of the paper

The goal of this paper is to provide a first analysis of the ATN Directory requirements in support of AMHS, and to analyse the relevance of the FDI2 Profile (MHS Use of Directory) ISP to meet these requirements

### 1.3 Scope of the paper

Figure 1 depicts the general scenario by which an MHS application, by means of its associated DUA, obtains Directory information by accessing directly or indirectly one or more DSAs of the Directory.

*Figure 1: MHS use of the Directory scenario*



- 3: protocol for exchanges between DSAs
- 4: information held by DSAs

In the specification of the Directory in support of AMHS, items 1 to 4 of Figure 1 may be specified. This paper addresses only the issue of the information to be held in ATN Directory System Agents (DSAs) for use by AMHS Systems, i.e. item 4 of Figure 1. Other elements in the specification should be the subject of further work, as suggested in section 4.

The considered AMHS Systems may be either ATS Message Servers, AFTN/AMHS Gateways or ATS Message User Agents.

From a standards' perspective, this paper addresses specifically the subjects covered by ISO/IEC DISP 11189 (International Standardized Profile FDI2 - Directory Systems - MHS Use of Directory), whose relevance to the AMHS environment was to be addressed as part of the WG3/SG1 work programme.

The considered ATN DSAs may either:

- be dedicated to the AMHS Directory; thus being "AMHS DSAs"; or
- be part of the overall ATN Directory and thus retaining further information as required by other ATN end systems and/or intermediate systems.

## **2. OVERVIEW OF FDI2 (AMHS USE OF DIRECTORY) ISO ISP**

### **2.1 General**

ISO/IEC ISP 10616 (also known as FDI11, ref. [3]) profiles information to be stored in the Directory which is common to a variety of applications.

The FDI2 profile, as specified in ISO/IEC DISP 11189 (ref. [4]), augments this information by specific information for use with Message Handling Systems. This profile, at present with the status of Draft International Standardized Profile, should gain soon the final status of International Standardized Profile (ISP).

This specific information which may be supported in relation with Message Handling Systems is itself specified in the MHS base standards, namely in Annex A of ISO/IEC 10021-2. The FDI2 profile explicitly refers to this annex.

The primary objective of FDI2 is to define the minimum capabilities that Directory System Agents (DSAs) must have to support an MHS application's view of Directory information. It does this by specifying a minimum set of structure and naming elements for the Directory Information Tree (DIT) which a DSA must be capable of holding and accessing, and other minimum schema requirements.

The ISP (in fact DISP 11189) does not limit DSAs to these minimum capabilities. The implementation of additional information handling (storage, retrieval and modification) capabilities is encouraged, but not mandated as this is not in the scope of the considered ISP.

As stated above, FDI2 augments the requirements specified in FDI11 (ISO/IEC ISP 10616). This means that an implementation claiming conformance to FDI2 must also be compliant with FDI11.

Like many other ISPs, the FDI2 profile, as specified in ISO/IEC DISP 11189, specifies basic requirements and optional functional groups. The meaning of such concepts is identical to that of, e.g. MHS ISPs; however the way it applies is slightly different due to the different context. Three FGs are defined in ISO/IEC DISP 11189:

- the Distribution List (DL) Functional Group,

- the Additional Matching Rules (AMR) Functional Group, and
- the Substring Matching Rules (SMR) Functional Group.

The scope of FDI2 is limited to the elements above. This means that it does not address, for example, the protocols used from a Directory User Agent (DUA) to access and retrieve information from DSAs. Neither does it address the relationship between the MHS Application or user and the DUA.

## 2.2 Support

The basic requirements of ISO/IEC DISP 11189 mandates the support of:

- the mhs-user object class,
- the following attribute types:
  - mhs-deliverable-content-types,
  - mhs-exclusively-acceptable-eits,
  - mhs-maximum-content-length,
  - mhs-or-addresses.

The DL functional group of ISO/IEC DISP 11189 mandates the additional support of:

- the mhs-distribution-list object class,
- the following attribute types:
  - mhs-dl-archive-service,
  - mhs-dl-members,
  - mhs-dl-policy,
  - mhs-dl-related-lists,
  - mhs-dl-submit-permissions,
  - mhs-dl-subscription-service.

The support of object classes and attribute types other than those listed above is optional in the ISP (tbc). These include object classes such as mhs-message-transfer-agent, mhs-user-agent, etc.

ISO/IEC DISP 11189 also places requirements on the support of structure and naming elements, and on matching-rules. The reader is invited to refer to [4] for detailed information.

### 3. APPLICABILITY TO THE ATN AND ATSMHS ENVIRONMENT

#### 3.1 Directory requirements in support of AMHS

Since this paper is mostly related to the potential use of the FDI2 profile in the ATN environment, only the AMHS is considered in this analysis. FDI2 is neither applicable to the ATN Pass-Through Service, nor to other ATN applications.

In a first instance, the following requirement is considered as mandatory in support of the AMHS, when considering Directory Services:

- Determination of an AMHS user's OR-Address from its directory name, and from an alias which would be its AF-Address if existing.

Again in a first approach, although not strictly mandatory, the following requirements may be considered as useful good practice in support of the AMHS, when considering Directory Services:

- storing and retrieving information on DLs for DL-expansion (list of dl-members, etc.);
- MHS user capability assessment (deliverable content length, etc.);
- determination of information about the application entities supporting MTAs (ATS Message Servers), MSs (if any) and ATS Message User Agents (UAs). Such information may include for example addressing information.

These functions may also be achieved by other implementation solutions, such as local tables for example. However, if a Directory Service is to be implemented, e.g. to meet the mandatory name resolution requirement, it seems logical to use the same Directory as a standard technical means of implementing the functionalities above.

These requirements are summarised in Table 1, together with the AMHS Systems to which they are applicable.

*Table 1: List of Directory requirements in support of AMHS*

| Reference | Requirement  | Level                       | Applicable to          |
|-----------|--|-----------------------------|------------------------|
| R1        | Determination of an AMHS user's OR-Address from its directory name, and from an alias being its AF-Address | Mandatory                   | AFTN/AMHS Gateway      |
| R2        | Determination of an AMHS user's OR-Address from its directory name, and from an alias being its AF-Address | Optional                    | ATS Message User Agent |
| R3        | Storing and retrieving information on DLs  | Recommended (good practice) | ATS Message Server     |
| R4        | MHS user capability assessment   | Recommended (good practice) | ATS Message Server     |
| R5        | Determination of information about the application entities supporting MTAs,                               | Recommended (good practice) | ATS Message Server     |

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|  |              |  |  |
|--|--------------|--|--|
|  | MSs and UAs. |  |  |
|--|--------------|--|--|

### 3.2 Adequacy of FDI2 to meet the AMHS requirements for Directory Services

In the ISO/IEC and ITU-T environments, the FDI2 profile has been designed to meet the requirements above, as far as the information to be held is concerned. Apart from the AMHS specifics (such as the use of AF-Address as an alias), it is supposed to fulfil the requirements placed on a DSA for this purpose.

Additionally, since support of the DL functional group of the MHS ISPs has been made mandatory in the ATSMHS SARPs, it is suggested to adopt the same approach as far as Directory is concerned.

As stated in the general description of FDI2, only the minimum set of information to be held in the Directory Information Tree (DIT) is specified in this profile, without precluding the implementation of additional capabilities. In the ATN environment, this allows a DSA supporting the AMHS not to be restricted to this environment, and to be possibly used for other purposes. However, a DSA claiming "general support of the ATN", including AMHS, would need to conform to FDI2.

## 4. PROPOSED APPROACH

The following approach is proposed, for the specification of the Directory Services in support of AMHS to be included in a future CNS/ATM SARPs package:

1. mandate the support of the basic requirements of Profile FDI2, as specified in ISO/IEC ISP 11189 (as soon as DISP gains the ISP status);
2. mandate the support of the DL FG of Profile FDI2, as specified in ISO/IEC ISP 11189;
3. investigate if the support of other object classes or attribute types is required and should be made mandatory, to fulfil the expressed requirements in support of AMHS, including the specific requirements of AMHS (support of AF-Addresses). Such support would be required from ATN DSAs, for use by AFTN/AMHS Gateways and possibly ATS Message User Agents;
4. investigate if the support of the Additional Matching Rules (AMR) or Substring Matching Rules (SMR) is required and should be made mandatory (e.g. to help from AF-Address to/from MF-Address conversion). Such support would be required from ATN DSAs, for use by AFTN/AMHS Gateways and possibly by ATS Message User Agents;
5. investigate the requirements to be placed on the AMHS applications obtaining information from the ATN Directory. The related AMHS applications are the ATS Message Server, the AFTN/AMHS Gateway and possibly the ATS Message User Agent;
6. investigate the requirements to be placed on the DUAs associated with such AMHS applications. This work should include an analysis of the suitability of the ISO/IEC ADInn Profiles to the AMHS environment.

## **5. RECOMMENDATION**

The Working Group is invited:

1. to endorse the approach adopted by SG1, which is described in section 4 above;
2. if the ATNP Working Groups jointly adopt an integrated strategy for an overall ATN Directory, to report to any other appropriate ATNP working group, that the specification for such ATN Directory should satisfy items 1 and 2 of this approach;
3. to note that SG1 intends to further refine the study of requirements and analysis of the Directory ISPs, in order to progress the investigation identified in items 3 to 6 of the proposed approach;
4. to analyse the suitability of ISO/IEC Profiles ADInn and FDI11 for the specification of the Directory in the overall ATN environment.