International Civil Aviation Organization

Fifth Meeting of Aeronautical Telecommunication Network (ATN) Transition Task Force of APANPIRG

Phuket, Thailand, 9 – 13 June 2003

Agenda Item 9: Review ATN implementation activities/issues

AFS PLANNING ACTIVITIES IN THE EUROPEAN REGION

SUMMARY

This paper presents several issues discusses at the Sixth Meeting of the Aeronautical Fixed Services (AFSG/6) of the European Air Navigation Planning Group (EANPG) held in April 2003.

(Presented by Secretariat)

1. Introduction

1.1 The Sixth Meeting of the Aeronautical Fixed Services (AFSG/6) of the European Air Navigation Planning Group (EANPG) was held in the EUR/NAT Office of ICAO, Paris, from 7 to 11 April 2003.

1.2 Several issued discussed at the EANPG AFSG including the demise of the X.25 communication protocol may be of the interest to this meeting.

2. Discussions

2.1 Internet Protocol for Aeronautical Information Exchange (iPAX)

2.1.1. The iPAX Task Force was established in July 2001. Its focus was on ground applications and services, making use of data, voice and mobile protocols, use industry standard communication products within the ATM sector to provide a secure internet protocol (IP) network service. This work was necessary because key manufacturers had stopped selling X.25 telecommunication switches. Manufacturers were expected to support existing equipment only until the end-2005.

2.1.2 A major component of the work would include WAN Trials. After completing ANSP staff training, the iPAX-TF would then launch the following WAN trials:

- 12 European ANSPs, 22 logical interconnections
- various lower media (VPN, Internet, LL, ISDN, MW)
- 14 European sites connected via IPv6
- Directory services
- IP security (IPsec and firewalls)
- X.25 over TCP/IP

- OLDI over TCP/IP data exchange
- ASTERIX over IP data exchange
- AMHS over TCP/IP

2.1.3 There was a need to follow the work of the iPAX Task Force very closely because the expected demise of X.25 would have a major impact on AFS facilities and the work of the AFSG.

2.1.4 Recent developments with the systems used in Scandinavia and the observation of the rapid demise of X.25 had led to an investigation of alternates to replace X.25 in connection with CIDIN. The Nordic States investigated the possibilities and developed a solution based on the IP-protocol to be used as transport layer for CIDIN.

2.2 Inter-regional Coordination for AMHS/ATN Implementation

2.2.1 The AFSG was informed of a proposal for amendment to the Asia/Pacific Regional Air Navigation Plan that specified the requirements for inter-regional gateways in the United Kingdom, Italy and the Russian Federation, which need to be met by 2005. In the case of the Russian Federation this involved the BBIS (X.25) routers of Japan (64Kbit/sec) and China (19.2 Kbit/sec). The response of the Russian Federation to the proposal was to propose to change the specified parameters and date to TBD, in order to have time to develop a more coherent approach, based on agreed and common principles. The Group agreed with this approach and requested as a first step, that the CNS Officer in Paris coordinate his counter part in Bangkok, in particular with respect to the X.25 developments and the operational requirements that had to be accommodated.

2.3 Study and Planning of AMHS Communications in Europe

2.3.1 In order to define and promote the implementation of the ATN messaging in Europe (AMHS), Eurocontrol, France, Germany, Spain and the United Kingdom decided in 1998 to join their efforts in a common project named SPACE (**S**tudy and **P**lanning of **A**MHS **C**ommunications in **E**urope). This project received the support of the European Commission as a TEN-T ATM project, which was successfully completed at the end of 2002.

SPACE's Objectives

As TEN-T ATM Task FR/98/228/S, the main objectives of the study were:

a) Definition of a European AMHS addressing plan,

b) Specification of the Technical Design for the European AMHS,

c) Development of an overall Implementation Plan.

The goal of SPACE was to develop a Master Plan for AMHS deployment in Europe, including a Technical Design and an overall Implementation Plan for the European AMHS.

The geographical area considered in the SPACE Project comprises primarily the SPACE Participating States and Organisations (SPSOs), namely Eurocontrol-CFMU, France, Germany, Spain and the U.K. Moreover, it had been one of the SPACE objectives to define the principles for AMHS design and implementation in other European States, so as to ensure consistency and efficiency of AMHS deployment in Europe.

During the progress of SPACE, it appeared that studies of a similar nature were being conducted in other regions of the world, among which the Asia/Pacific Region. Areas

of interest included in particular AMHS addressing. This led to co-ordination sessions being held to work jointly towards a world wide harmonization of AMHS addressing and address conversion principles. This common work was based upon the study work performed earlier in the scope of SPACE. Under the aegis of the ICAO ATN Panel, the SPACE conclusions on AMHS addressing and AFTN/CIDIN to AMHS address conversion were endorsed for applicability on a world wide basis. Therefore, the SPACE conclusions in this area were included in the latest Edition of ICAO Document 9705 - Technical Provisions for the ATN, Edition 3 published in August 2002, and in the latest Edition of ICAO Document 9739 - Comprehensive ATN Manual, Edition 2 to be published shortly. This harmonization work, although not strictly included in SPACE but strongly relying upon its outcome, is now seen as a major facilitator of transition to AMHS on a global basis.

The outcome of SPACE has been used by the Future Planning Group (AFSG/FPG), to develop a EUR AMHS Manual that is presented separately for endorsement to the AFSG/6 meeting. This ICAO Regional Manual aims at providing guidance to European States willing to implement AMHS.

Finally, a great benefit of the SPACE project was also to develop a common practical understanding of AMHS, between project partners, and to introduce common working practices allowing to perform international projects in close co-operation as a single project team. This is seen by the SPACE project partners as a excellent preamble to actual AMHS implementation, and it could also form a basis for further European studies or projects related to aeronautical ground communications.

Extensibility of the SPACE results

2.3.2 The SPACE project had developed a number of design principles in order to allow its participating States and Organisations to establish a viable AMHS service among themselves. The project has also addressed international aspects and established a number of design principles that apply to an area larger than the SPACE area. The goal is to generalise this approach in a structured methodology defining “Extensibility Principles” by which SPACE conclusions can be broadened for use by ATSOs which have not been directly involved in the SPACE project.

2.4 Common facilities for EUR AMHS

2.4.1 The general organisation of the European AMHS would be based on a number of national Management Domains, each being implemented by the national ATSO in its own State, and operating in a co-operative framework similar to the current institutional framework of the AFTN/CIDIN. Whilst individual States and ATSOs can plan for the technical deployment of systems in their remit, the SPACE project has identified and made recommendations in a number of areas where AMHS implementation choices as well as efficient AMHS operation are subject to common agreements and common facilities.

2.4.2 The deployment of AMHS in the EUR Region did not depend only on the implementation of national AMHS systems by ATSOs. In principle, every single ATSO can independently plan and implement its own AMHS system in accordance to the four generic Implementation Stages. However, there were a number of areas where AMHS implementation choices and efficient AMHS operation were subject to common agreements and Common Facilities. In this context, Common Facilities were resources supporting the EUR AMHS, which are implemented, operated (and financed) in a collective fashion by all States implementing AMHS.

2.4.3 The AFSG agreed that the related details in AFSG/6 – WP/14 provided valuable material for its ongoing AMHS implementation planning. A Working Paper was to be prepared by the Planning Group on behalf of the AFSG to advise the EANPG to consider the possibility of including AMHS off-line management in the CMC. The PG would undertake these tasks.

2.5 AMHS and CIDIN Management

2.5.1 There were parallels with some of the roles required to manage and co-ordinate the European AMHS with those of the existing CIDIN Management Centre.

2.5.2 The Group agreed that, subject to further analysis, such AMHS off-line management functions needed for the initial deployment of the European AMHS could easily be introduced within the current CMC systems. The Group recommended that Eurocontrol be requested by the EANPG to implement the AMHS off-line management function required for the deployment of AMHS in the EUR Region.

2.6 ATS Message Service Profile for Europe

2.6.1 AMHS was specified in Sub-volume III of ICAO Doc 9705, Manual of technical provisions for the Aeronautical Telecommunication Network (ATN), Third edition – 2002. Two levels of service were defined, namely the *Basic* ATS Message Service and the *Extended* ATS Message Service. The extended service is functionally a superset of the basic service and is backward compatible with the basic service. Both services are specified by reference to the ISO/IEC 10021 MHS Standard and the related international standardized profiles (ISP) ISO/IEC 10611 and 12062. With a view to ease an early and easy transition from the current AFTN/CIDIN to AMHS, the basic service offers a limited range of user services. Conversely, the extended service makes extensive use of MHS features and offers a level of service significantly superior to that of the basic service.

2.6.2 The Group recognized the need to specify the profile of the EUR AMHS services, but before this could be done further study would be needed, along with more specific information on the impact of the introduction of MET BUFR codes.

2.7 BUFR and CREX

2.7.1 The Group noted the WMO decision to use the table driven code forms BUFR (**B**inary **U**niversal **F**orm for the **R**epresentation of meteorological data) and CREX (**C**haracter form for the **R**epresentation and **EX**change of data) as their standard code forms. The codes offer the great advantages of flexibility and expandability compared with the traditional alphanumeric code forms. This WMO decision would have a very substantial impact on the aeronautical network when it is implemented. A considerable amount of very useful material on the subject is available on the WMO web site at the URL http://www.wmo.ch/web/www/WDM/wdm.html#Documents.

2.7.2 An ad-hoc meeting of the WMO and ICAO was to be held in Geneva during May this year. At that meeting the timetable for implementation would be discussed.

3. Action by the meeting

3.1 The meeting is invited to note the information provided in this paper.
