ATNP/WG1&3
WP/
10 March 1995

AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL

Working Group 1 & 3

Toulouse (France), 13.3 - 24.3.95

Request for operational requirements for the CNS/ATM-2 package

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Summary

This working paper indicates the means to get the required information for the support of the development of SARPs for a second CNS/ATM package.

A recommendation has been made to coordinate with the ADS Panel the provision of the required information in a timely and structured manner.

1. Introduction

Within the ATN Panel (ATNP), much effort is given to accomplish draft SARPs and Guidance Material for the CNS/ATM-1 package. This package basically supports the Automatic Dependent Surveillance (ADS) concept as developed by ICAO's ADS Panel.

The ADS concept is intended to improve the oceanic Air Traffic Services (ATS). The CNS/ATM-1 package, however, will only bring limited benefits to continental flight operations. A subsequent CNS/ATM package should bring the benefits of data communication for this kind of operations. Within the work schedule of ATNP WG1, presented in [1], two important related deliverables have been mentioned:

WG1-03 List of package 2/3 ATM/ATN requirements; and

WG1-05 (Assumed) Operational scenario/concept & anticipated benefits for package 2/3.

According to [1], these two deliverables have to be provided to ATNP at the second meeting of the ATN Panel (ATNP/2), planned to be held in 1996.

The purpose of this working paper is to emphasize the needed coordination between the ATNP and ADSP in order to have these deliverables, providing the operational requirements for a CNS/ATM-2 package, available at ATNP/2.

The text presented in the following sections has been visualized in figure 1.

2. CNS/ATM-2 package

2.1 Source(s) of information

The two deliverables identified in the introduction will act as baseline material for the development of the CNS/ATM-2 package. Within ICAO, the material should be provided by ICAO's operational oriented ADS Panel. On their turn, they will get the information from Member States, international organisations, and ICAO Regional Planning Groups, participating in the development of future ATM concepts.

The foreseen ADS Panel's task in the provision of the required information for a CNS/ATM-2 package is to review operational ATM concepts, to identify commonalities and to forward them to the ATN Panel. Subsequently, the ADS Panel should extract a coherent, consolidated set of operational requirements, also to be sent to the ATN Panel. This set of consolidated operational requirements should at least contain a list of data link applications to be standardized as well as a description of the operational requirements on each application.

2.2 Scope of the CNS/ATM-2 package

The development of a CNS/ATM-2 package should coincide with the development of more advanced ATM systems, planned to be operational beyond the year 2000. Throughout the world, ATM systems are evolving, in order to be able to handle the increase in air-traffic at at least the current level of safety, and to enable a higher efficiency in flight operations.

In some ICAO Regions and Member States, like Europe and the USA, ATM concepts are being developed. Consider, for example, the developments within the USA (the

Aeronautical Data Link System Stages 2 and 3) and within Europe (EATCHIP Phase III and EATMS Stage 1 (part of EATCHIP Phase IV). At the same time a lot of potential data link applications have been identified by different international groups. Standardisation of all of the potential applications would not only take a lot of time, but it will also result in a proliferation of data link applications.

The identified data link applications for standardization should directly relate to the operational ATM concept(s). In the optimum case, the operational concept is first being defined and the data link applications will emerge from such a concept.

In order to be able to develop draft SARPs for a CNS/ATM-2 package supporting advanced (continental) ATM systems, the required information should be available within ATNP within a couple of years. According to [1], the information should be available by ATNP/2, scheduled for the second half of 1996.

Due to this short time frame, a timely coordination with the ADS Panel is required.

3. Support for the definition of operational requirements and standardisation of the CNS/ATM package-2 data link applications

The acceptance of one or more operational ATM concepts is a first step for the ADS Panel. Based on this step the ADS Panel has to retrieve the operational requirements for the CNS/ATM-2 package. (This includes the list of applications to be standardized and the requirements on each of them.) To get a coherent set of operational requirements, it is recommended that ICAO Regions or groups of Member States provide an agreed set of operational requirements, related to a (validated) operational ATM concept.

For the determination of the operational requirements, these Regions and groups of Member States should be supported by ICAO to perform preliminary validation processes of the ATM concepts provided to ICAO (i.c. the ADS Panel). Such validation processes (or even experiments/trials) are useful for the refinement of the (initial) operational requirements.

Simultaneously, when performing an experiment c.q. validation of a particular concept, functional requirements and functional specifications will be established. This information could be valuable for input to the ATN Panel, for the support of the development of SARPs for the CNS/ATM-2 package data link applications. ICAO should support the provision of such information to ICAO (i.c. ATNP).

For example, in Europe, a number of programmes exists supporting the development of future ATM concepts in which future ATM data link applications are also being investigated (e.g. the Programme for Harmonised ATM Research in EUROCONTROL (PHARE) and the French CAMELIA project). Member States should be supported to obtain information from these kinds of projects and forward it to ICAO (i.c. the ADS Panel).

Guidance could be provided by ICAO indicating the way to present their information in a structured manner. For instance, the use of standard forms could be supported, like the Data Link Application Requirement Description (DLARD) (provided by SICASP/5 [2]) and the Data Link Communication Requirement Document (DLCRD) to specify the operational and functional requirements on a particular data

link application.

4. Conclusions

The follow-up of the CNS/ATM-1 package, the CNS/ATM-2 package, should support more advanced continental ATM systems, planned to become available beyond 2000. For the definition of the CNS/ATM-2 work package, operational requirements should be delivered to the ATN Panel by the ADS Panel.

The ADS Panel, on their turn, should receive (operational) input from Member States.

Therefore, Member States should be stimulated to validate their future ATM concepts and to provide ICAO with any information contributing to the definition of:
1) Operational Requirements for the CNS/ATM-2 package (including the data link applications to be standardized and the associated requirements), and
2) draft SARPs for the ATN upper layers and the CNS/ATM-2 data link applications.

5. Recommendations

The ATNP Working Groups 1 and 3 are invited to consider the contents of this working paper and to coordinate with the ADS Panel the mechanism to retrieve the input required for the definition of CNS/ATM-2 package in a timely manner.

6. References

1. Minutes of the ATNP Systems Planning and Concept Working Group (WG1), October 17-28, 1994.
2. Report of the fifth meeting of the SSR Improvements and Collision Avoidance Systems (SICAS) Panel, SICASP/5-WP/87, November 1993, ICAO.

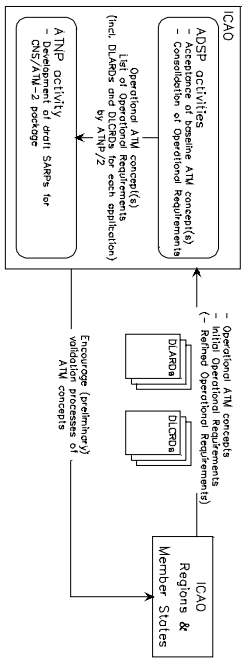

Figure 1. Information flow for the retrieval of operational requirements for the CNS/ATM-2 package