

**ATNP Working Group2  
20<sup>th</sup> Meeting  
Tokyo, Japan  
3 December 1999**

**ATNP Working Group 2 Rapporteur's Report to ATNP/3**

Presented by Ron Jones

**INTRODUCTION**

Attached the ATNP WG2 Rapporteur's report that has been prepared for presentation to ATNP/3.

**RECOMMENDATION**

WG2 is invited to review the attached proposed WP to ATNP/2 and to concur that it accurately reflects the activities of WG2 since ATNP/2. With the approval of WG2 the rapporteur will forward this WP to the Working Group of the Whole as information.

**ATNP Working Group of the Whole  
Third Meeting  
Tokyo, Japan  
6 - 10 December 1999**

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**INTRODUCTION**

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AERONAUTICAL TELECOMMUNICATION NETWORK PANEL  
THIRD MEETING

Montreal 7<sup>th</sup> - 18<sup>th</sup> February 2000

**Agenda Item 3: Development of the ATN SARPs and guidance material relating to ATN systems management and security as well as to the enhancement of existing ATN functionalities and applications**

**ATN Internetwork Working Group (WG2) - Report of Progress since ATNP/2**

(Presented by ATNP WG2 Rapporteur)

WORKING PAPER

SUMMARY

ATNP/2 approved the continuation of three Working Groups (WG1, WG2 and WG3) to, inter alia, progress the development of SARPs and guidance material for the ATN. This paper presents an overall summary of the progress made by WG2 (the ATN Internet WG) since ATNP/2 towards completing its assigned objectives. Each of the primary WG2 deliverables are briefly introduced, additional Working Papers introduce each of these deliverables in greater detail.

REFERENCES

1. ATNP/2 Report on Agenda Item 5, November 1996.
2. Proposed Draft Doc 9705 Third Edition, December 1999, Attachment E
3. Draft Validation Report for Doc 9705 Third Edition, Attachment F

# 1. Introduction

1.1 ATNP/2 approved the continuation of three Working Groups, as originally created at ATNP/1, to further the work of the Panel as defined below:

Working Group 1 - Systems Planning and Concept Working Group

Working Group 2 - ATN Internet Working Group

Working Group 3 - Applications and Upper Layers Working Group

1.2 This paper summarises the progress made by WG2 towards completing its assigned objectives, these being derived from the terms of reference and Work Programme of WG2 agreed as ATNP/2 and reproduced below:

## 5.3.1.2 ATN Internet Working Group

5.3.1.2.1 The ATN Internet Working Group (WG/2) would conduct the following activities:

- a) enhancements to the ATN SARPs and guidance material based on new or revised user requirements;
- b) enhancements to SARPs and guidance material based on operational experience;
- c) provision of security mechanisms with the ATN internet communications service consistent with the security strategy and mechanisms defined by ATNP Working Group 1;
- d) provision of subnetwork dependent convergence functions (SNDCFs) with the ATN SARPs for additional subnetwork types (e.g., asynchronous transfer mode, frame relay, VDL Mode 3 / 4, HF data link, etc.);
- d) investigation of the provision of quality of service (QOS) management functions service;
- f) provision of systems management capabilities within the ATN internet communications service consistent with the system management strategy and mechanisms defined by ATNP Working Group 1;
- g) definition of financial accounting mechanisms including the identification of network cost parameters;
- h) investigation of the provision of multicast/broadcast functions in the ATN;
- i) investigation of the provision of network and transport layer fast byte protocol (ISO draft international standard (DIS) 14699 and ISO DIS 14700);
- j) investigation of the provision of broadband transport;
- k) investigation of the provision of data/voice service integration;
- l) investigation of the provision of air-to-air communications;
- m) ensuring backwards compatibility of SARPs enhancements with existing ATN SARPs; and
- n) investigation of the provisions of ATN subset(s) consistent with constrained network topologies (e.g., single mobile subnetwork, single airborne end system, full ground connectivity, etc.).

1.3 Since ATNP/2, WG2 has held ten meetings to progress its assigned tasks, these being in Thailand (March 1997), Germany (June 1997), United States (October 1997), Brazil (March 1998), Netherlands (June 1998), France (October 1998), United States (January 1999), Italy (May 1999), Spain (September 1999) and Japan (December 1999). Furthermore, WG2 members participated in a Working Group of the Whole meetings held in Thailand (March 1997), United States (November 1997), and Japan (December 1999).

1.3.1 Mr. Sharma (U.K.) served as the WG2 rapporteur for the WG2 meeting in Thailand (March 1997) and Mr. Jones (U.S.) served as the WG2 rapporteur for the subsequent WG2 meetings.

1.4 In general, the meetings have been attended by on average 15 to 25 participants representing Panel Members from ARINC, Brazil, A.S.E.C.N.A., EUROCONTROL, France, Germany, IATA, Italy, Japan, Thailand, UK, and the USA.

1.5 Based upon its terms of reference the WG has concentrated its efforts on the development of three primary deliverables, these being:

- a) proposed draft Doc 9705 3<sup>rd</sup> Edition, Sub-Volume V, "Internet Communications Service" (for ATNP/3);
- b) first edition guidance material for the "Internet Communications Service" (for the WG meeting in November 1997); and
- c) Validation Reports documenting the strategy, validation objectives and results of the validation of the Doc 9705, Sub-Volume V, "Internet Communications Service" - 1<sup>st</sup> Edition (for the WG meeting in March 1997) and for the 3<sup>rd</sup> Edition (presented at ATNP/3).

1.6 In developing these deliverables it should be noted that there has been close co-operation with ATNP Working Groups 1 and 3 and with the ATNP CCB. This co-operation has taken place through joint meetings, through the exchange of material between the WGs and presentation of progress reports to Working Group 1. In addition, the Rapporteurs of each of the WGs have maintained close co-operation throughout the period since ATNP/2. There has also been close co-operation with the Panel Secretary which has included issues related to inter-Panel co-ordination, e.g. with the AMCP.

1.7 In addition, it should be noted that significant use of the commercial "Internet" to exchange e-mail and files containing the latest versions of the draft documents and Working Papers which has enormously facilitated the exchange of information between members of the individual Working Groups and the dissemination of the latest information to the aeronautical industry. Significant use has been made of the services of a "Server" offered for use by one State which has been used to archive the draft documents and Working Papers that have been presented to the Working Groups. Without the availability of such tools it is considered that the progress made to date would not have been achieved.

1.8 In order to carry on the drafting of the 3<sup>rd</sup> edition of the Doc 9705 Sub-Volume V and related guidance material WG2 formed a Internet Communications Service (ICS) Drafting Group (IDG). The IDG held three meetings between June 1999 and November 1999.

1.9 The remainder of this paper summarises the progress made by the WG in the development of each of the deliverables and references additional ATNP/3 Working papers which specifically introduce each of the deliverables in additional detail.

## **2. Discussion**

### **2.1 Draft Technical Provisions for the Internet Communications Service (ICS)**

2.1.1 The proposed draft Internet Communications Service technical provisions (Doc 9705 3<sup>rd</sup> Edition, Sub-Volume V) propose to add a number of enhancements to the current baseline document (i.e., Doc 9705 2<sup>nd</sup> Edition). The WG has reviewed and agreed to all enhancements that have been introduced in the proposed Doc 9705 3<sup>rd</sup> Edition, Sub-Volume V through review of Working Papers presented by individual members and the WG2/ICS Drafting Group.

2.1.2 Prior to submission of the draft material to ICAO the WG endorsed the results of a detailed editorial review of the material the objective of which was to ensure consistent use of terminology with respect to the document itself, other components of the proposed draft 3<sup>rd</sup> Edition of Doc 9705, and Annex 10 to the extent practicable. The WG considers the proposed draft Doc 9705 3<sup>rd</sup> Edition, Sub-Volume V to be complete, except as noted below, and mature. While the validation of several of the enhancements introduced with this update has been to a large extent completed, additional validation activities are expected to be completed with 6 months of ATNP/3 which could identify certain minor revisions that need to be made to the proposed provisions. It is anticipated the additional validation results and any recommended minor corrections to the proposed draft Doc 9705 3<sup>rd</sup> Edition, Sub-Volume V provisions will be reported to a Working Group of the Whole meeting in the June-September 2000 time frame.

2.1.3 ATNP WG2 has had a series of exchanges with AMCP related to ATNP WG2 work programme item (d) for the definition of new or revised SNDCFs needed to support the new mobile subnetworks for which the AMCP is developing SARPs. The current proposed draft of Doc 9705, Sub-Volume V, third edition is aligned with the work of the AMCP. However, no specific provisions have been proposed for incorporation into Doc 9705 provision related to new mobile subnetworks currently being developed, but not yet approved by AMCP. ATNP WG2 has begun work on the development of the technical provisions for a generic mobile SNDCF for use with future mobile subnetworks that employ a “Frame Mode” access protocol. Draft text has been prepared for a Frame Mode SNDCF and coordination of proposed technical provisions are underway with AMCP. Since the level of maturity of these provisions are not at the same level as that of the other provisions proposed in the draft 3<sup>rd</sup> edition of Doc 9705, Sub-Volume V, the frame mode SNDCF provisions have been not been incorporated into that document. Rather, the draft provisions for the frame mode SNDCF have been submitted for the consideration of ATNP/3 under a separate working paper. It is anticipated that the coordination with AMCP may be completed and the proposed additions to Sub-Volume V can be finalized and validated by the time of the proposed ATNP WG2 meeting in the mid- 2000 time frame. If the frame mode SNDCF provisions cannot be finalized by the time of the mid-2000 proposed WG2 then working group 2 would proposed this enhancement be considered for incorporation into a later edition of Doc 9705, Sub -volume V.

## **2.2 Guidance Material for the Internet Communications Service**

2.2.1 The first edition guidance material for the Internet Communications Service was reviewed at ATNP/2 and subsequently agreed at a Working Group of the Whole meeting in November 1997. The WG has not yet developed specific proposed revisions to the guidance material to reflect the corresponding enhancements proposed for Doc 9705, Sub-Volume V, 3<sup>rd</sup> Edition. However, some draft materials, in the form of working paper reviewed by the WG exist which will provide a basis from which to develop the guidance material. The WG considers the development of the updates to the guidance material to be an important future work programme item..

## **2.3 Validation Report for the Internet Communications Service**

2.3.1 Working Group 2 developed a comprehensive Validation Strategy to support and co-ordinate the overall global SARPs validation. In summary the WG agreed on a set of ATN Validation Objectives (AVOs) which collectively provide total and complete coverage of the proposed draft Doc 9705, 3<sup>rd</sup> edition, Sub-Volume V enhancements. The results of the validation initiatives have been reported against the applicable AVOs. Based upon the preliminary results, the conclusion of the WG is the draft ATN Internet SARPs have been validated to a sufficient level of confidence deemed necessary to recommend their incorporation into a 3<sup>rd</sup> edition of Doc 9705 with the caveat that the final validation results be reviewed by a Working Group of the Whole in the June-September 2000 time frame.

2.3.2 The validation report for proposed draft Doc 9705, 3<sup>rd</sup> edition introduces the approach for the overall

Validation Strategy that has been adopted for the validation of the entire set of draft ATN SARPs. An appendix to that ATNP/3 Working Paper documents the detailed results of the Validation of the enhancements to the Internet Communications Service introduced in proposed draft Doc 9705, 3<sup>rd</sup> Edition, Sub-Volume V.

### **3. Future Work**

3.1 Given the ongoing validation activities associated with the proposed draft Doc 9705, 3<sup>rd</sup> Edition, Sub-Volume V, some minor corrections to the proposed technical provisions may become necessary. The WG foresees the completion of this validation within 6 months after ATNP/3.

3.2 The guidance material associated with the enhancements to the Internet Communications Service is still under development and can be completed within 6 months of ATNP/3.

3.3 Further work will be required for item (d) of the work programme to develop, coordinate and validate the provisions for the new and/or enhanced SNDCFs associated with the new mobile subnetworks currently under development by the AMCP. Furthermore, the development of SNDCFs for ground subnetworks, such as those based on ATM and Frame Relay, is considered to be a useful topic for the development and validation of enhancements for future editions of Doc 9705, Sub-volume V.

3.4 The WG investigations for the following work programme items have led to the conclusion that either the potential enhancement as identified by ATNP/2 is not feasible and/or should not be further investigated due the lack of any operational requirement necessitating such a technical/functional capability: items (i) - transport fast byte; (j) - broadband transport; (l) - air-to-air communications; and (n) - ATN subsets.

3.5 The WG considers that item (k) - data/voice integration, should be retained on the work programme beyond ATNP/3 pending inputs on associated operational requirements.

3.6 The WG has made progress on item (h), multicast functions, as assigned by ATNP/2. A proposed multicast architecture has been developed and has been submitted for the consideration of ATNP/3. However, further work is required to progress this work from a high level architecture to detailed technical provisions.

3.7 A Joint Subgroup (JSG) was formed by the three working groups of ATNP to develop the technical provisions for systems management. This subgroup reported to WG1 and coordinated with WG2 and WG3 for the development of the draft technical provisions for systems management. This group has produced Doc 9705, proposed draft third edition, Sub-Volume VI. This work has specifically addressed WG2 work programme item (f) - systems management; and has partially addressed the WG2 work program items: (g) financial accounting mechanisms; and (e) QOS management. Additional post-ATN/3 activities will be necessary to fully define the technical provisions associated with these latter two work programme items.

3.8 In addition to the development of the above referenced deliverables, the WG identified a number of areas of functionality that potentially require standardisation and for which the working group had not completed the work, as identified by ATNP/2, or which new tasking would be necessary. In addition to these potential areas of standardisation the Working Group agreed on the principle of a top down approach to the development of additional draft Internet Communications Service technical provisions. The WG2 inputs on required future work, beyond that described above have been consolidated with the future work programme items identified by the other working

groups of ATNP and have been submitted to ATNP/3 in a separate working paper.

#### **4. Recommendation**

4.1 The Panel is invited to note the progress made by WG2 in discharging its tasks and responsibilities as agreed at ATNP/2.