ATNP WG2
27 Sept. – 1 Oct. 1999 (
Gran Canaria, Spain

WG2 Inputs to ATNP/3

Presented by R. Jones

Summary

ATNP WG2 is expected to provide a number of inputs to the upcoming third meeting of the ATN Panel (ATNP/3), scheduled for February 2000. This working paper proposes the documents, and the responsible WG2 member or subgroup, that are to be prepared for submission to ATNP/3.

1.   INTRODUCTION

ATNP WG2 is expected to provide a number of inputs to the upcoming third meeting of the ATN Panel (ATNP/3), tentatively scheduled for February 2000. This working paper proposes the documents that are to be submitted to ATNP/3. This is an update to WP-509 reviewed by WG2 at its 18th meeting in Naples, Italy.

2.   BACKGROUND

ATNP/2 tasked Working Group 2 to 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.);

e) 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.).

Pursuant to the above tasking of ATNP/2, WG2 must be able to report to ATNP/3 for each of the above items either:

- Significant progress has been made by WG2 and specific proposals are being reported to ATNP/3.

- WG2 recommends the item not be pursued any further and it be eliminated from the WG2 work programme. Such a recommendation will require a justification on an item by item basis.

- While some progress may have been made, significant additional development work will be required to progress the item before a definitive proposal can be made to a future panel meeting.

3. RECOMMENDATION

a) It is proposed that WG2 review the WG2 work programme (above) and identify the status we will report for each item to ATNP/3.

b) It is proposed that WG2 review and approve the following list of documents for submission to ATNP/3 as well as the proposed schedule for the final working group review of the draft of each document.

No.	Description of Needed Input	Status by Oct. WG2 meeting	Lead	Status by Dec. WGW Meeting
1	Draft Package-2 Sub-Volume V	Draft approved	K-P Graf/ IDG	Approved WGW WP with proposal to ATNP/3 to approve the attached Doc 9705 (including Sub-Volume V corrected as necessary based on validation results)
2	Working Paper on Multicast Architecture	Draft approved	J. Moulton	Approved WP with proposal to ATNP/3
3	Rapporteur's report on WG2 progress	Draft Working Paper for review	R. Jones	Final Working Paper to ATNP/3
4	Validation Report for ICS enhancements	First draft (still incomplete results)	R. Jones for cover WP	Approved cover WP with validation report attached. Inputs to validation report to be consolidated during WG2 breakout session at WGW
5	Proposed Work Programme for ATNP/4 to progress ICS provisions	Draft approved and submitted to WG1 for coordination	R. Jones	Approved WGW WP with consolidated proposal for detailed (i.e., at the working group level) Work Programme items
6	Proposed Enhancements to the ICS guidance material (i.e., CAMAL)	Status Report/ Discussion	IDG	Draft of ICS GM. WGW WP to ATNP/3 with status and potentially a draft of comprehensive 'Package-2' GM otherwise final GM from May 2000 WGW meeting
7	Summary of ICS backwards compatibility provisions with the current ATN SARPs and Doc 9705 (first edition with Amendment 1)	Status Report/ Discussion	IDG	Approved WP with comprehensive description of 'Package-2' backward compatibility provisions

c) It is proposed that WG2 approve the attached draft flimsy to WG1 on "Proposed Work Programme for ATNP/4 to progress the ICS provisions" and request that WG1 consolidate the WG2 inputs with the inputs of WG3 and WG1 to prepare an input to the WGW meeting in December 1999. The attached draft communiqué is an update of Flimsy 2 from the 18th meeting of WG2 in Naples.

d) It is proposed that WG2 approve the attached draft "Rapporteur's report on WG2 Progress" for submission to the WGW meeting in December 1999.

Communiqué to ATNP/WG1

Prepared by ATNP/WG2
19th Meeting, 27 Sept. - 1 Oct. 1999
Gran Canaria, Spain

Proposed Work Programme Items for ATNP/4 to Progress ICS Provisions

WG2 has identified the following work programme items that are needed beyond ATNP/3 to progress the technical provisions for the Internet Communication Service area of the ATN SARPs/Doc 9705.

ATNP WG2 requests that ATNP WG1 consolidate this list with the inputs of WG3 and WG1 to produce a draft ATNP/3 Working Paper for review/approval at the Working Group of the Whole meeting in December 1999.

	Work Programme Item - Title	Sample Description	WG2 Reference
01	Enhancements to the ATN SARPs and Guidance Material based on new and/or revised user requirements	Additional requirements for subnetworks, ISs and/or ESs based on Required Communications Performance (RCP). Also potential further enhancements to the mobile SNDCF for the handling of changing mobile subnetwork connectivity	WG2/18 WP510 No. 1
02	Enhancements to the ATN SARPs and Guidance Material based on operational experience	Enhancements to the connection oriented transport service to better cope with the loss of TPDUs that will result from changes in mobile subnet connectivity	WG2/18 WP510 No. 2
03	Provision of subnetwork dependent convergence functions (SNDCFs) within the ATN SARPs and Guidance Material for additional subnetwork types	Support for new mobile subnetworks (e.g., VDL 4, asynchronous transfer mode, frame relay, broadcast subnetworks, etc.)	WG2/18 WP510 No. 4
04	Investigate the provision of quality of service (QoS) management functions service	QoS routing and performance management enhancements (beyond Doc 9705 3rd Editon)	WG2/18 WP510 No. 5
05	Provide Guidance Material on financial accounting mechanisms, including the identification of network cost parameters	ATN accounting management elements and requirements are closely tied with systems management provisions	WG2/18 WP510 No. 7
06	New ATN SARPs and Guidance Material based on the multicast architecture adopted at ATNP/3	Following the ATNP/3 adoption of the multicast architecture, prepare Doc 9705 proposed changes for ATNP/4	WG2/18 WP510 No. 8
07	Address issues related to backwards compatibility of SARPs enhancements with existing ATN SARPs	Working paper needed for ATNP/4	WG2/18 WP510 No. 13
08	Aid for global ATN implementations	Provide inputs to States and Regional Planning Groups as requested by ICAO	

Prepared by ATNP/WG2
19th Meeting, 27 Sept. - 1 Oct. 1999
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Rapporteur's report on WG2 progress

See attached draft working paper (electronic copy in WordPerfect 5.1 format)

AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL
THIRD MEETING

Montreal 7th - 18th November 1999

**Agenda Item 3: Development of the ATN SARPs and Guidance Material
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.
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REFERENCES
1.   ATNP/2 Report on Agenda Item 5, November 1996.
2.   Draft Doc 9705 Third Edition, December 1999 - ATNP/3 WP*ww*
3.   Draft revisions to the ATN Guidance Material - ATNP/3 WP*xx*
4.   Draft Validation Report for Doc 9705 Third Edition - ATNP/3 WP*yy*
5.   Proposed work programme beyond ATNP/3 - ATNP/3 WP*zz*

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.);

f) 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 nine 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), and Spain (September 1999). Furthermore, WG2 members participated in a Working Group of the Whole meeting held in Japan in December

1999.

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)   draft Doc 9705 3rd Edition, Sub-Volume V, "Internet Communications Service";
   b)   draft guidance material for the "Internet Communications Service"; and
   c)   a Validation Report documenting the strategy, validation objectives and results of the validation of the Doc 9705 3rd Edition, Sub-Volume V, "Internet Communications Service".

1.6   In developing these deliverables it should be noted that there has been close co-operation with both ATNP Working Groups 1 and 3. 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 SARPs 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 SARPs 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 3rd edition of the Doc 9705 Sub-Volume V and related guidance material WG2 formed a Internet Communications Service (ICS) Drafting Group (IDG).

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

2.   Discussion

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

2.1.1   The development of draft Internet Communications Service technical provisions (Doc 9705 3rd Edition, Sub-Volume V) introduced in ATNP/3-WP*ww*, are introduce a number of enhancements to the current baseline document (i.e., Doc 9705 2nd Edition). The WG has reviewed and agreed all enhancments that have been introduced in the proposed Doc 9705 3rd 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 draft 3rd Edition of Doc 9705, and Annex 10 to the extent practicable. The WG considers the draft Doc 9705 3rd Edition, Sub-Volume V to be complete and mature. While the validation of many of the enhancements introduced with this update has been to a large extend completed, additional validation activities are expected to continue for approximately 60 days beyond ATNP/3 which could identify certain minor revisions that need to be made to the proposed provisions. This is anticipated at the additional validation results and any recommended minor corrections to the draft Doc 9705 3rd Edition, Sub-Volume V provisions will be reported to a Working Group of the Whole meeting in the May 2000 time frame.

2.2   Guidance Material for the Internet Communications Service

2.2.1   The development of draft revisions to the guidance material for the Internet Communications Service, introduced in ATNP/3-WP*xx*, has also been based upon the guidance material reviewed at ATNP/2 and subsequently agreed at a Working Group of the Whole meeting in November 1997. Additional guidance has been developed and incorporated specifically related to the enhancements introduced with the proposed Doc 9705 3rd Editon. The WG considers the material introduced in ATNP/3-WP*xx* as both preliminary and requiring further development to before consideration for publication by ICAO.

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 a total and complete coverage of the draft ATN SARPs. The results of the Validation initiatives have been reported against the applicable AVOs. Based upon these results, the conclusion of the WG is the draft ATN Internet SARPs have been to a large extent validated to a sufficient level of confidence deemed necessary to recommend their incorporation into a 3rd edition of Doc 9705 with the caveat that the final validation results be reviewed by a Working Group of the Whole in the May 2000 time frame.

2.3.2   ATNP/2-WP*yy* introduces the approach for the overall Validation Strategy that has been adopted for the validation of the entire set of draft ATN SARPs. The appendix to that Working Paper documents the detailed results of the Validation of the enhancements to the Internet Communications Service introduced in draft Doc 9705 3rd Edition Sub-Volume V.

3.   Future Work

3.1   Given the ongoing validation activities associated with the draft Doc 9705 3rd Edition, Sub-Volume V some minor corrections to the proposed technical provisions may become necessary. The WG endorses the convening of a Working Group of the Whole meeting in the May 2000 time frame to review the additional validation results and to approve any necessary corrections to Doc 9705 3rd Edition.

3.2   The guidance material associated with the enhancements to the Internet Communications Service is still under development and will requirement additional time to reach the level of maturity necessary for consideration by ICAO for publication. Therefore the WG endorses the convening of a Working Group of the Whole meeting in the May 2000 time frame to review draft guidance material and to prepare the submission to ICAO.

3.3   The working group investigations for the following work programme items have lead 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, j, k, l and n.

3.4   The working group has made progress on item g) as assigned by ATNP/2, but further work is required to progress this work from a high level architecture to detailed technical provisions.

3.5   In addition to the development of the above referenced deliverables the Working Group 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 WP*zz*.

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.