AERONAUTICAL TELECOMMUNICATION NETWORK PANEL (ATNP)
Working Group 3 -- Applications and Upper Layers
Third Meeting

(Fairfax, Virginia USA, 15-19 May 1995)

I.   Introduction

The third meeting of ATNP Working Group 3 (WG3) took place on 15 to 19 May 1995 in Fairfax, Virginia, hosted by the Federal Aviation Administration (FAA). As a matter of common interest to the group, Mr. Ron Jones, US Member and Rapporteur of WG3, announced that the Federal Aviation Administration Technical Center (FAATC) in Atlantic City has successfully sent ADS messages from a test aircraft through FAATC and Mitre ATN routers to an ADS end system located at Mitre in McLean, Virginia. An invitation was extended to the participants to visit Mitre's ACET Lab.

Mr. Jones welcomed the participants and recalled the status of work at the completion of the Toulouse WG meeting as related to the outstanding issues to be addressed by WG3. The results of WG1, represented in WP 3-6, called for discussion and resolution of outstanding issues associated with satisfying the operational requirements described in WP 3-3. Another issue to be addressed is the organization of documentation under development by WG2/WG3.   Other discussions would center on the organization and timelines for progression of Package 2 documents. It was also noted that the validation approach and timing for Package 1 should also be considered.

A list of participants is presented in Attachment 1. The agenda (WP 3-1) was approved. (Attachment 2 refers). The list of papers with presenter and agenda item is presented in Attachment 3.

II.   Minutes of the Meeting

1.   Agenda Item 1: Approval of the Agenda

The proposed agenda (WP 3-1) was reviewed by the working group and ammended to include an agenda item on the Approach to Validation (Attachment 2).

2.   Agenda Item 2: Review Report of the second meeting of WG3 (Toulouse) related to air-ground applications and upper layer architecture

Since this meeting of WG3 is of limited scope, without the full representation of the members, approval of the WG3/2 report was deferred until WG3/4 Meeting.

3   Agenda Item 3: Review of issues arising from Toulouse WG meetings related to the definition of operational requirements and their implications on ATN communications services

3.1   Review of WG1 discussions and recommendations

Mr. Tom Calow, Rapporteur of WG1, presented selected material from WP 3-6, and noted that Appendix D the report from the Toulouse WG1 meeting included two key aspects of operational requirements, QoS and message typing. The original list of requirements generated at the first WG meeting in San Diego needed to be more definitive in order to address the concerns of the airspace users.   ICAO considers ATSC and AOC to be both safety and regularity of flight communications. The airlines have expressed a strong desire for draft ICAO SARPs by June 1995 in order to proceed with equipping the North Atlantic Fleet for the 97/98 timeframe.

The group was informed that WG1/2 endorsed flimsy #3 (Appendix D to the Toulouse WG1/2 Report) as valid user requirements, but discussed the possibility that there might be further operational requirements beyond Package 1. It was recognized by WG1 that consideration would need to be given to what an application may want to specify in terms of traffic types at that time. WG3 will address this possibility. One consideration is the indication that the users, in the long term, might want the capability to select ground routing domains or subnetworks.   Further discussion on this took place under Agenda Item 5.1.

Mr. White indicated that a relative mapping of priorities for AOC & ATC was needed, since AOC can be either safety or regularity of flight.

3.2   Review Flimsy 3 from WG1 (Appendix D to WG1/2 Report

This agenda item was considered in conjunction with Agenda Item 3.3.

3.3   Review WG3 SG2 inputs on operational requirements

It was explained that the purpose of Appendix D to the report of WG 1/2 was to serve as an internal medium to convey a summary of requirements between working groups; the level of detail may appear insufficient if it is to be judged with the same criteria as a SARPs document. Mr. Murphy summarized the contents of WP 3-3 and Mr. Van Roosbroek presented the corresponding comments form WP 3-5. The following comments and issues were discussed:

Transit delay

Mr. Van Roosbroek noted that transit delay needed to be clearly defined, and Mr. Murphy indicated that transit delay is being defined values by SG1 for the air/ground applications to indicate mean, 95 percentile, and 99 percentile.

Residual error rate:

Mr. Murphy stated that the air/ground applications subgroup has defined a general requirement. As to the acceptable level of residual error, i.e., the number of messages which can be transmitted with an error that cannot be detected by the communications service, Mr. Jones indicated that some preliminary analysis has indicated that anticipated residual error rate (r.e.r.) over the ATN will be substantially better than that being specified by the air/ground subgroup.

It was noted that there are some proponents of using application CRC to assume end-to-end message integrity. Mr. White noted that all ATS applications have the same r.e.r. values, but questioned the need for application CRCs. Mr. Murphy indicated that this is still an issue. At present there is no integrity checking being defined in the applications SARPs. This issue will be forwarded to the air/ground subgroup for further review.

Service Loss Reporting:

This is not an application requirement.

Availability

Availability is application specific, and not a design requirement. Mr. Van Roosbroek noted he felt that the definition of is in need of clarification. Mr. Murphy explained that SG2 is developing a definition of availability.

Service restoration :

The design parameter will be defined in SARPs for each application and will be referred to the internet group.

Message sequencing:

Mr. Murphy noted that the applications SARPs will assure the ATN communications services will provide message sequencing. If sequencing is not available, then an abort indication will be given. This is essential in certain applications, e.g. ADS event reporting for which sequence of events would be essential to determine the impact of event and status of aircraft. It is assumed that all messages will continue through the internet in sequence. Mr. White asked for differentiation between message sequencing and data sequencing. For Package 1, the transport layer services provide for message sequencing.

Communication service termination:

It was noted that this will be treated as a request/response service. The term is not used in ASN.1 sense.

Priority

Priority will be a fixed value for each application, e.g., ADS will always be priority x and will not change.

Routing policy:

This is still an open issue. The air/ground applications subgroup has not yet reached agreement on specifying a routing policy. Clarification was sought by the air/ground subgroup from the working group on this capability.

Traffic type policy:

The airlines users group has indicated a need to be able to select air/ground sub-network for use by "traffic type".   Further discussion of this matter appears under Agenda item 5.

With regard to ground/ground messages over the ATN, the question was raised as to whether it was necessary to provide the ability for an application to specify routing domains that were valid or invalid. No conclusion was arrived at on this matter

Message Duplication

Mr. Murphy indicated that there is an operational requirement for the communications infrastructure not to cause messages to be delivered more than once.

QoS monitoring:

Mr. Murphy noted that at present QoS monitoring not a stated operational requirement.

3.4   Review IATA inputs on operational requirements

Information on this item is included with the information under Traffic Type above, and under Agenda Item 5.

4.   Agenda Item 4:   Develop WG3 position on issues/proposals with operational requirements for CNS/ATM-1 Package

The substance of this agenda item was presented at a joint session with WG2 (Agenda Item 5)

5.   Agenda item 5: Joint Session of WG/2 and WG/3

5.1   Discuss, clarify and resolve any issues associated with the operational requirements that are being supported by the CNS/ATM-1 Package of ATN communications services.

The joint working groups reviewed Appendix D to the report of WG1/2 (Toulouse): "Requirements Placed on the ATN Communication Service by Air-Ground Applications". (editorial note: the referenced paragraph numbers in this section refers to that appendix)

General Design Requirements (2.1):

These were not intended to be hard parameters but rather design considerations.   Mr. Murphy indicated that the group is considering developing two performance levels for transit times for large and small messages.

Message Sequencing (2.2):

While all CNS/ATM-1 air-ground applications require connection oriented transport services (i.e., TP4).   WG2 will be defining a connectionless transport protocol for CNS/ATM-1 Package, although the airspace users may not implement due to concerns

about costs.   TP4   is required for Package-1; but not connectionless transport service.   Mr. Jones stressed that this document (i.e., Appendix D to the report of WG1/2) was limited in scope to air/ground requirements, and the ground/ground requirements may be different.

Communication Service Termination (2.3):

The air-ground subgroup is defining a dialogue-type service to meet the service requirements. ACSE provides orderly release in the application layer.

Priority (2.4):

Priority will be defined for each application.   The question arose as to how the transport and upper layers will use priorities as opposed to internetwork use of priority.

A drafting group was tasked with writing a flimsy (Flimsy 1, Attachment 5) to define the use of priority and the relationship of the use of priority at transport and network layers to convey this information to WG1. WG3 , as a matter of its work program, will determine the priority values assigned by each application. The material was reviewed to clarify the language which requires Package 1 upper layers will convey the priority to the transport layer, which will in turn carry that priority forward to the network. Another issue was the delineation of specific application priority values, and the table was amended to indicate that ATIS was the only Package 1 application of AIS which has this requirement.

Routing Policy (2.5):

The group discussed WG3 Flimsy 4 (Attachment 8) which seems to address the issue raised by AMCP, by delineating the routing policy for the application layers. While some expressed concerns that no hard numbers were given for ATSC message performance parameters and the randomly chosen number of categories of ATSC messages, it was agreed that the framework presented was a viable structure and when mature, would meet the users' and States' concerns as to selection of routing policy.

QoS Policy (2.5.1):

This requirement asked for three options, (minimal transit delay, minimal cost or no-policy). The members of WG2 indicated that

the internet cannot meet this requirement for Package-1 on an end-to-end basis, although it could be applied locally. A local decision could result in selecting only local benefits and ultimately connect the user via a path of slower or more costly options when viewed on a total end-to-end basis. At earlier meetings, service providers had indicated a strong desire for a QoS capability in future builds, to choose among the options (delay/cost/neither). Package 1 cannot assume that a benefit would accrue to users from implementing QoS, since it would only be applied locally. The only reason to include it in Package 1 would be if WG2 could assure the group that the requirement would be on a migration path for future builds.

On a related issue, the group considered the Aeronautical Communications Panel (AMCP) request for comments on the draft VDL SARPs material. Specifically, the group considered the suitability of VDL to carry certain types of messages, due to the lack of prioritization specified in the SARPs for that subnetwork. The group's approach had heretofore been to specify performance parameters rather than evaluate a particular subnetworks, however, Mr. Jones noted that it would still be possible for VDL to meet the performance requirements specified for the ATN if, for instance, all safety messages were allocated to one channel, and all other messages on another frequency. Material representing the consensus of both working groups was drafted material for submission to AMCP (see flimsy 8, Attachment 12).

Traffic Type Policy (2.5.2):

Since Traffic Type Policy will take precedence over QoS (if and when "weak QoS" routing decisions are applied), it may address the concerns of users to be able to select a specific sub-network. If this policy cannot be met, the message is discarded

WG2 is still developing details on how a router will respond if that router has only incomplete knowledge which would not permit forwarding via the most preferred sub-network. From an operational viewpoint, Mr. Murphy pointed out that operators have a need to control the costs of their communications, and as such, would need assurance that, say, satellite subnetworks would not be used if a lower cost preference were available, if not with complete confidence, at least for a significant percentage of the time.

A drafting group was tasked with drafting a description of ATSC traffic types which could then enable the working groups to proceed in SARPs development. The results are presented in Attachment 8 (Flimsy 4).

WG2 should consider that it may be necessary for airlines to direct messages to the router operated by a CAA and not necessarily a path through a service provider (e.g., those requirements listed AOC's section 1. b) i-ix.). If the distinction is that all ATSC messages could be flagged to go to the CAA preferred router, and AOC messages would go to service provider, then this could be implemented with Package 1. The requirement was accepted as being satisfied by connection-oriented transport service.

Message Duplication (2.6):

The requirement that the ATN communication services should not cause the delivery of duplicate messages was accepted.

QoS Monitoring (2.7):

It was accepted that there is no requirement of QoS monitoring in CNS/ATM-1 Package.

5.2 Discuss organization of CNS/ATM-1 Package SARPs and Guidance Material including internet, upper layers and applications

The group discussed information forwarded by the Secretariat regarding the structure of SARPs and technical material for ICAO. The Air Navigation Commission (ANC) had recommended that Annex material be very brief and high level; and detailed technical material, which will carry the weight of SARPs, would be published separately. Guidance Material would provide operational information and would not be published within the Annexes. However, the Council was at present unwilling to ask States to endorse technical material to which they had not had an opportunity to respond via a State letter, as they would for Annex amendments. Discussions are ongoing within ICAO on this matter.

Given the suggestions by the ANC, it was suggested that a table of contents and high level material might suffice for the Annex material; the technical material would comprise what was traditionally included in SARPs, and the guidance material would be located in a third document.

The group discussed WP/123 from WG2 which proposed a high level structure of Package 1 SARPs and Guidance Material. Several revisions were made to the outline during the joint WG2/WG3 session. WG3 subsequently prepared flimsy 6 (Attachment 10) proposing revisions to the SARPs structure. The proposed revisions were accepted by WG2. The final version of the

CNS/ATM-1 package SARPs structure, as endorsed by WG1 and WG2, is found at Attachment 4.

Timescales for SARPs development and submission to ICAO to accommodate the need for translation were discussed. The Secretariat had previously indicated that June 1996 would be the latest date acceptable, but given the size and complexity of the material, it was considered advisable to forward a substantial amount of the material to ICAO after the January-February 1996 meeting. Any changes made during the June 1996 WG meeting would be forwarded to ICAO, along with the validation documents. Some participants indicated concern as to the amount and complexity of revisions which might be necessary after validation, and the short time available for validation. This was viewed as a significant risk to the ATNP/2 work schedule.

5.3 Plan for the development of ICAO Manual material for CNS/ATM-2 Package

It was agreed that at least some preliminary material on Package-2 would be submitted to ATNP/2. The group also agreed that information concerning the activities, products and timescales should be sent to the ADSP. Previous information transmitted to the ADSP had requested information on the scope of Package 2 operational requirements by ATNP/2; if this date is too late, then the group will need to amend the ATNP position. A flimsy was prepared to transmit these concerns to the ADSP (flimsy 5 Attachment 9).

The group identified several areas of development for Package 2, including security, which will not be well-defined by ATNP/2.

It was also noted that, given the size and complexity of the Package 1 SARPs, some may wish to only publish only the deltas in Package 2. Another option was providing a high level summary of Package 1, and a description of additional requirements/capabilities introduced with Package 2. It was noted that WG1 has the lead for defining the scope of Package 2 , and WG2 and WG3 should be prepared to support WG1 in preparing a first draft of the Package 2 manual material for review at the WG meeting planned for January-February 1996.

It was also agreed to request that the Secretariat be prepared to accept the material from the panel in the electronic form produced by the participants (i.e., Word for Windows). Since there were many difficulties in converting ATN files to the current software used by ICAO during SICASP/5, and at ATNP/1, and given the late 1996 timeframe for the ATNP/2 Meeting, the group noted the urgency of determining the software capabilities of the Secretariat before material was submitted for translation. (See flimsy 2, Attachment 6) Specifically, all working groups were producing material exclusively in Word for Windows.

6. Agenda Item 6: Review ATN Upper Layer SARPs

6.1 Report from SG3 meeting

Mr. Van Trees related that the advisor from IATA had requested clarification on a statement in the WG3/2 report. The amended para. 3.2.3.1 would read:

> "The meeting was informed by Mr. Hennig that the International Air Transport Association (IATA) feels backward compatibility for ATN airplanes in 622 airspace and/or 622 airplanes in ATN airspace can best be accomplished either by dual stack architecture on the ground or by service provider gateways. There is no requirement that airplanes be bilingual for backward compatibility."

Mr. White presented information proposed to be used by the ground/ground subgroup as operational criteria for further SARPs development for traffic types. The group agreed that although the approach was different from that taken by the air/ground group, the material should be considered by the ground/ground subgroup as an example of how traffic could be used for routing ground/ground message traffic. This working paper along with revisions will be transmitted to SG1, along with Appendix D to WG1/2 and the information provided by the air/ground group. (See Appendix 5).

After some discussions WG3 examined routing policies based on traffic types and has initially concluded that there is no need for additional policies to support ground/ground communications for Package 1. WG3 requests that SG1 analyze the routing policies needed to support Package 1 applications and to confirm this conclusion. Also, the WG3 requests that SG1 address the use of IDRP in the ground/ground environment in conjunctions with its routing policy analysis.

6.2   Review scope, structure, issues and draft SARPs material

Mr. Van Trees presented SG3 (Upper Layer Architecture (ULA)) activity since the Toulouse WG3 meeting. SG3 has had a SARPs drafting session in Toulouse, a presentation to SG2 in Bracknell (UK), and a full SG3 meeting in Reston (US). The SG3 meeting was led by Mr. Overgaauw (France), the SG3 chair.

The Reston SG3 work was presented to the WG3 meeting in the form of four flimsies produced at the meeting. The first two flimsies responded to a WG3/2 action item on SG3 to make recommendations for the ULA for the Type A AFTN/ATN gateway and Inter-Centre Communication (ICC). SG3 recommended that the ULA for the Type A gateway be ACSE, edition 2 (the current edition) and the ITU-T presentation and session efficiency enhancements. The group also recommended that the ITU-T efficiency enhancements be used whenever the session requirements are limited to the full-duplex and kernel functional units. SG3 also sought and received WG3 approval for a liaison statement to ITU-T endorsing an urgent requirement for the presentation and session efficiency enhancements.

Mr. Van Trees then presented the Upper Layer (UL) SARPs for CNS/ATM-1 package. The document is a complete draft of the Upper Layer SARPs. The document comprises the following chapters (editors in parentheses):

1   Introduction (Mr. Pearce, Australia)
2   Service Description (Dr. Kerr, Eurocontrol)
3   Quality of Service (Mr. Pearce, Australia)
4   Application Entity Specification (Mr. Van Trees, USA)
5   Profile Requirements Lists (Dr. Kerr, Eurocontrol)
6   Conformance (Mr. Overgaauw, France)

Mr. Pearce is the managing editor for the CNS/ATM-1 Package UL SARPs. It was noted that Section 2 is the most mature. It has been reviewed and is being used by SG2 for air-ground applications. Section 4 still needs protocol verification of its Control Function (CF) specification. Section 5 is now complete, but has not been reviewed by SG3.

It was noted that the upper layers and applications subgroups are actively trying to accommodate the need to develop material in the three levels currently indicated by the Secretariat. The Standards will use the word "shall", Recommended Practices will contain the word "should" and notes will be clearly designated.

7.   Agenda Item 7: Review Air-ground Applications SARPs

7.1   Report from SG2 meeting (verbal)

Mr. Murphy reported that the air/ground subgroup met May 8-12 in the Washington area, and was able to incorporate the comments of the upper layers subgroup into the draft documents. He anticipated that the first mailing of the initial draft of SARPs to WG members in mid-May. There will be subgroup meetings of the air-ground applications subgroup (SG2) in Canberra (7-11 August). After this meeting, the SARPs will be mailed in mid-September, for consideration at the October WG3 meeting in Banff. (See also Agenda Item 7.2)

7.2   Review scope, structure, issues and draft SARPs material

Mr. Murphy presented information on the structure of the air/ground SARPs. The outline of the material contains six parts (to be renamed "sections" to accommodate the decision of the WG2/3 as to the structure of the SARPs. See Attachment 4). The basic division of material is as follows:

1   Introduction, Acronyms, and Operational Requirements, and Functional Description
2   Abstract Service Description
3   Formal Definition of Messages (ASN.1)
4   Message Sequencing Information
5   Communication Service Requirements
6   Conformance Requirements (to include user requirements)

The group addressed areas of commonality among the upper layers' material and the applications material, and a revised draft will be forwarded to the working groups for comment.

The subgroup asked for guidance from the WG as to the relative importance of subset rules which are (essentially operational capabilities). Traditionally, ICAO has regarded such information as neither Recommended Practices nor Standard, i.e, a conformance requirement. If so, this material would be included in section six.

More information on this subject is contained in Agenda item 6. 2.

8.   Agenda Item 8: Approach to Validation

Mr. Van Roosbroek presented WP 3-4 which discussed an approach to validation of SARPs. He noted that Eurocontrol would be able to do interoperability testing no earlier that early 1996. The group agreed that the goal of the validation would be realized if two independent implementations have been thoroughly tested for interoperability. It was noted that there will not be sufficient numbers of aircraft to do adequate flight testing before ATNP/2 and emulation would suffice for validation of upper layer and applications SARPs. The group agreed to re-visit this issue at the October WG meeting. It was generally felt that validation report material should be approved by the Working Group 3 Meeting in June 1996 for submission to ATNP/2.

9.0   Agenda Item 9: Other business

1.   The WG3 Subgroup 3 meetings will be in Brussels, 7-9 June 1995, and 10-12 October 1995 in Banff, Canada.

 2.   The upper layers subgroup will meet in Canberra from 31 July to 4 August. (Note: date subject to change)

3.   The applications subgroup will meet in Canberra from 7 to 11 August.

4.   The next WG meetings will be in Banff, Alberta, Canada. WG1 will be held 9-12 October 1995, the Joint WG will be held on 13 October 1995, and WG3 meeting will be held 16-20 October 1995.

5.   Mr. Calow indicated that he had received informal confirmation that the Jamaican ATN Member was prepared to host the WG in January-February 1996, and would present further information on the date and venue of the Jamaica meeting at the WG meetings in October 1995 in Banff.

ATTACHMENT 1

ATTENDANCE

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AGENDA

1. **Approval of the Agenda**

2. **Review Report of the second meeting of WG3 (Toulouse) related to air-ground applications and upper layer architecture**

3   **Review Issues arising from Toulouse WG meetings related to the definition of operational requirements and their implications on ATN communications services**

  3.1   **Review WG1 discussions and recommendations**
  3.2   **Review Flimsy 3 for WG1 (Appendix D to the WG1 meeting report)**
  3.3   **Review WG3 SG2 inputs on operational requirements (from Toulouse WG meetings)**
  3.4   **Review IATA inputs on operational requirements**

4. **Develop WG3 position on issues/proposals associated with operational requirements for CNS/ATM-1 Package**

5. **Joint Session with WG2**

  5.1   **Discuss, clarify and resolve any issues associated with the operational requirements that are being supported by the CNS/ATM-1 Package of ATN communications services**
  5.2   **Discuss organization of CNS/ATM-1 Package SARPs and Guidance Material including internet, upper layers and applications**
  5.3   **Plan for the development of ICAO Manual material for CNS/ATM-2 Package**

6. **Review ATN Upper Layer SARPs**

  6.1   **Report from SG3 meeting**
  6.2   **Review scope, structure, issues and draft SARPs material**

7. **Review Air-ground Applications SARPs**

  7.1   **Report from SG2 meeting (verbal)**
  7.2   **Review scope, structure, issues and draft SARPs material (if available)**

8. **Approach to Validation**

9. **Any Other Business**

ATTACHMENT 3   **LIST OF PAPERS**

No	Agenda	Presenter	Title
3-1	1	R. Jones	Agenda
3-2	2	R. Jones	ATNP WG3 Report Second Meeting (Toulouse 13-17 March 1995)
3-3	3,5	M. Murphy	Requirements placed on the ATN Communication Service by Air/Ground Applications
3-4	8	D. Van Roosbroek	Approach to Validation of Air/ground and Upper Layer SARPs
3-5	3	D. Van Roosbroek	Comments on ICAO ATNP WG1/2 Report, Appendix D (previously Flimsy 3)
3-6	3	T. Calow	Report of the Systems Planning and Concept Working Group (WG1)

ATTACHMENT 4   ACTION ITEMS

Structure of SARPs and Guidance Material

	Title	Responsible Group
Part I	Introduction and System Level Requirements for CNS/ATM-1 Package	WG1 with inputs from WG2 and WG3
Part II	CNS/ATM-1 Air/Ground Applications	WG3
Part III	CNS/ATM-1 Ground/Ground Applications	WG3
Part IV	CNS/ATM-1 Upper Layers SARPs	WG3
Part V	CNS/ATM-1 Internet SARPs	WG2

ATTACHMENT 5

Aeronautical Telecommunication Network Panel (ATNP)
Working Group 2/Working Group 3
Fairfax, Virginia, USA
15-19 May 1995

Handling of Priority in CNS/ATM-1 Package

An example of the CNS/ATM-1 Package Air-Ground Application Priorities is as follows (based upon ICAO ADSP requirements):

Application	ITU-R Category	CLNP Priority Value
ADS	Communications relating to Radio Direction Finding	11
CPDLC	Flight Safety Messages	10
FIS (ATIS Service only)	Flight Regularity Communication	8
CM	Flight Regularity Communication	8

Note -- Applications may dynamically specify priority.

The End System hosting the application shall optionally specify transport priority. The end system shall ensure by the appropriate mechanism that the "priority" field within the CLNP PDU is set according to the application SARPs, for each NPDU related to the application.

The relationship between transport and network priority shall be equivalent to Table A5-1 of the internet SARPs.

The network layer shall implement re-ordering of forwarding queues based on expressed priority.

The above information shall incorporate as appropriate Appendix D to the WG1/2 report.

Action Items

1. Mr. Pearce will provide a paper to the Australian ADSP member requesting application priority determination.

2. WG2 is asked to consider whether the black line denoting ATSC in Table A5-1 of the internet SARPs should be moved down one line below priority level 7.

ATNP Working Group 2/3 Joint Meeting

Fairfax, USA, May 1995

> This flimsy expresses the concerns of ATNP working groups 2 and 3 regarding the ability of ICAO to support the electronic format of the SARPs being generated by the groups.

Background

Due to the complexity of the documents being generated by the ATNP working groups it has become necessary for the groups to adopt a word processing software package that meets the needs of the working groups in the generation of large complex technical documents.

In evaluating what software would be appropriate the working groups considered the following:

- The difficulties encounter during the development of the ATN manual, the ATS Messaging Service and the ADSP Guidance Material and the subsequent transfer of these documents to the word processing environment (WordPerfect 5.1) supported by ICAO;
- The ability of the software to support tables, graphics, multifile documents and complex referencing; and
- The availability of the software and its portability.

The resulting software chosen which is the PC based Word package has met the needs of the groups and is common use in other ICAO panels.

Present Work

The SARPs for the applications, upper layers and the internet are all presently in Word for windows and in an advanced state of development. The documents are large and complex and the advanced features of Word have been used in order that the documents are easily managed.

Given the time frame in which the working groups are attempting to produce the SARPs, it is imperative that no external process, such as document conversion, adds additional delays to their work.

Recommendation

In order for the ATNP working groups to meet the time frames set for the generation of the SARPs for ATNP/2, ICAO is invited to consider the support of documents generated by the Word software.

ATTACHMENT 7

GROUND-GROUND ATN COMMUNICATIONS

OPERATIONAL REQUIREMENTS

ATNP WG3 -
Third Meeting (Limited Scope)

May 15-19,
Fairfax, Va.

1   Introduction

1.1   Appendix D to the ATNP WG1/2 meeting report contains requirements and implementations for A/G applications.   Included in this document is information concerned with Traffic Type Policy for ATN Operational Communications (ATSC and AOC), ATN Administrative Communications, General Communications, and ATN Systems Management Communications.

1.2   To be effective Traffic Type routing needs to be completed for A/G ATSC possibilities, and G/G ATSC possibilities.

2.   G/G Traffic Routing

2.1   The exchange of data over the ground portion of the ATN in support of ATSC communications shall route data to achieve, for example, one of the following Traffic Type policies:

a)   Route traffic only via CAA routing domains.

b)   Route traffic using ordered preference of CAA domains first, then airline domains, then communications service providers domains.

c)   Route traffic using ordered preference of CAA domains first, then airline domains.

d)   Route traffic using ordered preference of CAA domain first, the communications service provider domains, then airline domains.

e)   Route traffic using ordered preference of CAA domain first, then communications service provider domains.

3.   Proposed Action for Subgroup 1

3.1   The action for this meeting is to review the examples of traffic type routings in paragraph 2.1 and use this information as appropriate along with the Appendix D to ATNP WG1/2 Meeting, and Flimsy 4 (Attachment 8) from ATNP WG2/3 Meeting, as the basis for determining the appropriate use of traffic types to support the routing of ground applications traffic over the ATN.

ICAO ATNP Working Group 2/3 Joint Meeting
Fairfax, Virginia, USA   May 1995

Routing Policy Requirements Placed on the ATN
Communications Service by
Air/Ground Applications

1.   Scope and Purpose

1.1   This flimsy presents a summary of the routing policy requirements placed on the ATN communications service by air/ground applications as agreed at the ICAO ATNP Working Group 2/Working Group 3 joint meeting.

1.2   The purpose of this flimsy is to recommend changes to Working Group 2 and Working Group 3 in their development of SARPs and Guidance Material to meet these requirements.

2.   Routing Policy

2.1   ATSC Routing Policy

Note: ATSC messages must only be routed using routes authorized to carry ATSC message traffic.

2.1.1   ATSC routing policy shall be applied on a "strong" basis.

Note: "Strong" ATSC routing policy means that routing decisions will be based upon the advertised capability of the route. If the route advertises the capability to provide the stated service, the route will be considered for use. "Strong" ATSC policy does <u>not</u> mean that a particular message will be "killed" if a particular route which advertises a particular capability does not actually provide that capability for a given message.

2.1.2   ATSC applications shall be able to specify that message traffic for a given association be routed according to a class of service based upon the following requirements:

Note: Transit delay values will be provided for each class of service at the next Working Group 3 meeting.

1.   Class A, maximum expected transit delay of TBD.

2.   Class B, maximum expected transit delay of TBD (value will be greater than for Class A).

3.   Class C, maximum expected transit delay of TBD (value will be greater than for Class B).

4.   Class D, maximum expected transit delay of TBD (value will be greater than for Class C).

5.   Class E, maximum expected transit delay of TBD (value will be greater than for Class D).

6.   Class F, maximum expected transit delay of TBD (value will be greater than for Class E).

7.   Class G, maximum expected transit delay of TBD (value will be greater than for Class F).

8.   Class H, no maximum expected transit delay.

2.1.3   For a given class of service, route selection shall be based upon the routes capability to meet or exceed the required level of service (e.g., if Class D is selected by the application, routes which provide Class A, B, C, or D service may be used). If multiple routes are available which meet or exceed the selected service, the route with the lowest relative cost shall be selected.

Note: For the CNS/ATM-1 Package, it is expected that subnetworks will be allocated a service class and a relative cost on a local basis for local routing policy decisions. It is expected that the delay allocation will only be enforced on the air/ground path selection for the CNS/ATM-1 package.

Note: Routes which advertise the capability to meet a designated service class are expected to deliver messages with an actual transit delay performance whereby 99% of messages are delivered in less than the route allocation of the maximum expected delay for that service class.

2.2   AOC Routing Policy

2.2.1   AOC routing policy shall be applied on a "strong" basis.

Note: "Strong" AOC routing policy means that air/ground path decisions will be based upon the stated policy. If applicable air/ground paths are not available at the time of message delivery, the particular message will be "killed".

2.2.2   AOC applications shall be able to specify that message traffic for a given association be routed according to a class of service based upon the following requirements:

Note: Airlines have a requirement that the mechanism defined for support of ATN policy routing be capable of allowing the inclusion of up to 20 traffic types for AOC traffic.

1.   No Traffic Type Policy Preference.

2.   Route Traffic only via Gatelink.

3.   Route Traffic only via VHF Data Link.

4.   Route Traffic only via Satellite Data Link.

5.   Route Traffic only via HF Data Link.

6.   Route Traffic only via Mode S Data Link.

7.   Route Traffic using an ordered preference of Gatelink first, then VHF Data Link.

8.   Route Traffic using an ordered preference of Gatelink first, then VHF Data Link, then Satellite Data Link.

9.   Route Traffic using an ordered preference of Gatelink first, then VHF Data Link, then HF Data Link, then Satellite Data Link.

Note: Expect future traffic type routing policy for ATN Administrative Communications, General Communications, and ATN Systems Management Communications.

2.3   Local Routing Policy

2.3.1   Routers initiating connectivity with other routers shall provide the capability to implement local routing policies (e.g., avionics routers shall provide a mechanism to select a specific ground-based air/ground router based upon local policy, if necessary for operational purposes).

ATNP WORKING GROUP 2/3 JOINT MEETING

Fairfax, Virginia, USA, May 1995

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

1. Introduction

In the report of the ATNP WG1/2 meeting, held from 21-24 March 95, a request was made to ADSP (Appendix E to ATNP WG1/2) which emphasized the needed co-ordination between the ADSP and the ATNP in order to support the development of the package 2/3 ATN/ATM requirements and the Operational scenario/concept and anticipated benefits for these packages. An outline of the ATNP understanding with respect to Package 2/3 was included in this request.

The WG1 request stated that the needed information from ADSP should be made available "at ATNP/2 scheduled to be held in the second half of 1996."

2. Discussion

In the joint WG 2/3 meeting in May 95, the members charged with the responsibility of drafting the ATN SARPs determined that if they were to be able to make ready Package 2/3 SARPs profiles for the ATNP/2 meeting in the fourth quarter of 1996, some lead time was required. They noted that there were three scheduled meetings of the Working Groups between this meeting and ATNP/2. If any reasonable input to ATNP/2 was to be expected, information from ADSP would be required, at the latest, by the final WG meeting before ATNP/2. ADSP is requested to provide preliminary information on operational requirements associated with the CNS/ATM-2 Package by the January 1996 Working Group meetings.

The three scheduled Working Group meetings are:
October 1995
January 1996
June 1996

3. Conclusions and Recommendation

The ADS Panel is invited to consider the contents of this materiel and to co-ordinate with the ATN Panel so as to allow receipt of the CNS/ATM-2 Package requirements in a timely manner.

ATNP Working Group 3 Meeting

Fairfax, USA, 15th - 19th May 1995

> This flimsy proposes a change to the CNS/ATM-1 Package overall document structure.
>
> Working Group 2 is invited to examine the material and recommendation contained within this flimsy.

1. Proposal

1.1 During the 4th meeting of the ATNP Working Group 3 it was proposed that the Air/Ground and Ground/Ground applications be included in separate parts of the overall SARPs document for the CNS/ATM-1 package.

1.2 The proposal was made to allow the application SARPs documentation to be developed independent of any structural changes made to the overall SARPs document as accepted in the joint Working Group 2/3 meeting.

2. Recommendation

2.1 It is recommended that the overall SARPs document structure, accepted by the joint Working Group 2/3 meeting, be as follows:

    Part 1: Introduction and System Level Requirements for the CNS/ATM-1 package
    Part 2: CNS/ATM-1 Air/Ground Applications SARPs
    Part 3: CNS/ATM-1 Ground/Ground Applications SARPs
    Part 4: CNS/ATM-1 Upper Layer Applications SARPs
    Part 5: CNS/ATM-1 Internet SARPs

ATTACHMENT 11

AERONAUTICAL TELECOMMUNICATION NETWORK PANEL

WORKING GROUP 3 (APPLICATIONS AND UPPER LAYERS)
Fair Oaks, Virginia, USA, 1-5 May 1995

Liaison from ICAO/ATNP/WG 3 to ITU-T SG 7 on Efficiency Enhancements to the Session and Presentation
Services and Protocols

SUMMARY
This flimsy contains a liaison to ITU-T SG 7 on our position on the standardization of efficiency enhancements

" The Upper Layer Experts of the Aeronautical Telecommunication Network Panel (ATNP) have reviewed the drafts of the Efficiency Enhancements to the Session and Presentation Services and Protocols and have determined that proposed enhancements meet an urgent technical requirement for the design of the ATN. They support these enhancements and strongly support their progression as Recommendations under Resolution 1 at ITU-T SG-7 meeting 26 June - 7 July in Geneva."

ATNP Working Group 2/3 Joint Meeting

Fairfax, USA, May 1995

This flimsy expresses the position of ATNP working groups 2 and 3 regarding the use of the initial VDL system to support ATS communications in the context of CNS/ATM-1 Package services over the ATN.

Background

The initial VDL SARPs defines a VHF data link subnetwork of the ATN that does not provide support for the use of priorities to support queue management. An issue was raised if this lack of priority handling within VDL would limit its applicability to support ATS Communications (ATSC). Working Groups 2 and 3 of the ATNP have considered this issue at a joint session held 19 May 1995 and have arrived at the conclusions stated below.

Conclusions

The CNS/ATM-1 Package application SARPs will specify the operational requirements of each service as well as the performance requirements that must be satisfied by the underlying ATN communication services. Additionally, each data unit associated with ATSC will identify the 'Traffic Type' of the data unit. These traffic types will be specified as the maximum allowable (at the 99% level) transit delay that must be satisfied by the air-ground subnetwork selected by the ATN routing infrastructure to delivery the ATSC traffic between airborne router and the associated ground router (air-to-ground and ground-to-air). The specific performance requirements and traffic type values associated with ATSC will be defined within the next several months by the WG3 of ATNP based on inputs received from the ADS Panel. If the VDL subnetwork can satisfy the operational and performance requirements defined for ATSC, as will be defined by the CNS/ATM-1 Package applications SARPs, and if the VDL subnetwork satisfies the maximum allowable transit delay requirement associated with ATSC traffic types, then VDL would be viable ATN subnetwork to handle ATSC traffic. This conclusion is from strictly a technical standpoint and other factors, such as spectrum management constraints would need to be satisfied by the local routing decisions. ATNP expects that the ability of the VDL to satisfy the operational and performance requirements associated with the CNS/ATM-1 Package services may be dependent local implementation decisions that are outside the scope of the VDL SARPs. Perhaps the AMCP should consider providing guidance material in this area.