AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL

Working Group 2

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IDG Work Items - Status Report

Working Paper

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<u>**Summary**</u>

This paper presents a status report of the work items delegated by WG2 to the Internet Communication Service SARPs Drafting Group.

1   Introduction

At WG2-18 an ICS SARPs Drafting Group (IDG) was created to develop the detailed changes required in Sub-Volume 5 for the 'Package-2' enhancements. The IDG has met three times and has progressed its work between these meetings at WG2-19 and by e-mail. An IDG progress report was presented to WG2-19 (WP532) and this paper is the closing report of the IDG. This paper is structured as follows:

Section 2 - Lists the Terms of Reference and provides a short summary of the progress against them.
Section 3 - Lists each of the Work Items and indicates the action taken for each one.
Section 4 - Explains the 'ICS Enhancements' and explains the action taken for each one.
Section 5 - Conclusions and recommendations to WG2-20.

2   Progress against the Terms of Reference

- Use Doc 9705 First Edition, Sub-Volume V, WordPerfect files from ICAO as the baseline document that will be used as the starting point for the producing the proposed "Package-2" update for WG2 submission into ATNP/3.
  ICAO issued Edition 2 (instead of Edition 1, Amendment 1) and this document was used as the baseline for the work of the IDG.

- The Amendment 1 baseline will then be used for producing a redlined draft of the proposed second edition of Sub-Volume V.
  ICAO issued Edition 2 (instead of Edition 1, Amendment 1) and this document was used as the baseline for the work of the IDG.

- Use the draft guidance material for the ICS, as provided by the panel secretary in WordPerfect files, as the baseline for producing a red-lined draft of a proposed second edition of the ICS section of the 'CAMAL'.
  No new GM was incorporated into the CAMAL because of resource limitations. Material suitable for use as Guidance Material was recorded to assist future development of GM.

- Draft revisions to Doc 9705, Sub-Volume V, to incorporate the technical provisions for the enhancements to the ICS that have been accepted by ATNP Working Group 2.
  Done - WP557 to this meeting presents the redlined draft Edition 3 of Sub-volume 5. This document includes changes already accepted by WG2, changes arising from SDM agreed PDRs and changes arising from the work of the IDG.

- Draft editorial changes to Doc 9705, Sub-Volume V, as necessary to clarify the ICS technical provisions and to insure the consistency of the technical requirements.
  Only minor editorial changes were made under this TOR and those were implemented via the CCB.

- Submit the proposed Doc 9705, Sub-Volume V, Second Edition draft to the 19th meeting of ATNP WG2, being held in Spain the week of 27 September 1999 and the proposed final draft to the Working Group of the Whole meeting held prior to ATNP/3.
  Done - WG2-19 WP530 and WG2-20 WP557.

- Draft revisions to the ICS related guidance material and submit for approval, in the form of proposed redline changes, to the Working Group of the Whole meeting being held prior to ATNP/3.
  No changes to GM have been made. It is likely that the GM on ACA Compression will be deleted in the version of CAMAL released after WGW/3.

3 Progression of IDG Work Items

At IDG-1, a review of the work items was undertaken and rationalisation occurred. The Work Items were converted into specific ICS Enhancements and an identification system developed. The enhancements are identified as ICS3-xx and 16 potential enhancements were identified. Some of the Work Items were immediately identified as being post-ATNP/3 work, some Work Items were directly mapped to a single Enhancement number and other Work Items were mapped into several, smaller enhancements. The list below records what happened to each Work Item.

1. Review relevant materials related to the requirements for mobile subnets issuing of Join and Leave Events and develop proposed revisions to Sub-Volume V. Reference WG2 documents include: WP484, WP485 and Flimsy 17-6.
   Mapped to ICS3-01

2. Review relevant materials related to SNDCF improved handling of changing subnetwork connectivity and develop proposed revisions to Sub-Volume V. Reference WG2 documents include: WP471 and WP520.
   Mapped to ICS3-02

3. Review relevant materials related to Connection Oriented Transport Service improved handling of the loss of TPDUs experienced during changes in subnetwork connectivity and develop proposed revisions to Sub-Volume V. Reference WG2 documents include: WP486 and WP512.
   Mapped to ICS3-03, ICS3-10 and ICS3-11

4. Investigate potential enhancements to the Connection Oriented Transport Protocol profile to provide improved efficiency for ground/ground communications and develop proposed revisions to Sub-Volume V as appropriate.
   Closed - no action required.

5. Investigate the potential use of IDRP adaptive retransmission timers to better cope with changing subnetwork performance and develop proposed revisions to Sub-Volume V as appropriate.
   Closed - no action required.

6. Review relevant materials related to route selection based on required support for additional mobile subnetwork types and additional criteria (e.g. service provider selection). Develop corresponding proposed revisions to Sub-Volume V. Reference WG2 documents include: WP521 and Flimsy 18-7.
   Mapped to ICS3-04

7. Review relevant materials related to new subnetwork types and develop proposed revisions to Sub-Volume V. Reference WG2 documents include: WP459, WP491, Flimsy 18-4 and Flimsy 18-5.
   Mapped to ICS3-12

8. Investigate potential enhancements to IDRP based on recent work such as that of the IETF "QoS Routing Mechanisms and OSPF extensions" and develop proposed revisions to Sub-Volume V as appropriate. Reference WG2 documents include: WP409
   Mapped to ICS3-16

9. Review relevant materials related to enhanced fault and performance management and develop corresponding proposed revisions to Sub-Volume V. Reference WG2 documents include: WP497, WP501 and WP524.
   Mapped to ICS3-05

10. Review relevant materials related to IDRP security and develop corresponding proposed revisions to Sub-Volume V consistent with the ATN security architecture (i.e., draft Sub-Volume VIII). Reference WG2 documents include: WP488, WP492,WP493, WP518, WP522 and draft Sub-Volume VIII.
    Mapped to ICS3-06

11. Review utility of the ATN NSAP compression algorithm (ACA) and either update the ACA technical provisions or propose deletion of ACA. Develop corresponding proposed revisions to Sub-Volume V.
    Concluded that deletion was the best approach and then mapped to ICS3-07

12. Investigate potential enhancements to the DEFLATE algorithm to allow for the dynamic negotiation for the use of pre-stored dictionaries. Develop proposed revisions to Sub-Volume V as appropriate.
    Ultimately several enhancements were possible and these were mapped to ICS3-13 and ICS3-14

13. Investigate potential benefits from the octet alignment of ATN address prefixes in IDRP. Develop proposed revisions to Sub-Volume V as appropriate. Reference WG2 documents include: WP474
    Closed - no action required

14. Investigate the suppression of re-advertisement of routes in the case of changing mobile subnet connectivity. Develop proposed revisions to Sub-Volume V as appropriate. Reference WG2 documents include: WP520
    Mapped to ICS3-08

15. Review relevant materials related to removal of redundancy in signalling mobile subnet capabilities and develop proposed revisions to Sub-Volume V.   Reference WG2 documents include: WP520 and PDR98060006
    Mapped to ICS3-09

16. Investigate the addition of a parameter in the ISH PDU for signalling the non-support of IDRP. Develop proposed revisions to Sub-Volume V as appropriate.
    It was concluded that no action was necessary and the work item was closed.

17. Ensure the presence and use of technical provisions to support backward compatibility (e.g., use of version numbers) and develop proposed revisions to Sub-Volume V as appropriate. Reference WG2 documents include: WP520
    Mapped to ICS3-15

18. Developed proposed revisions to Sub-Volume V as appropriate to define the ICS related system management requirements (i.e., through reference to Sub-Volume VI). Reference documents: draft Sub-Volume VI
    Mapped to ICS3-05

19. Develop proposed revisions to the ICS guidance material to reflect the additions and changes to the ICS technical provisions and for topics where additional guidance is considered useful for clarifying an existing technical provision. Reference WG2 documents include: WP409 (i.e., implications associated with the current regime of downgrading or upgrading routes).
    The Editor maintained a separate record of material suitable for use as Guidance Material but no proposed changes to the CAMAL were made.

4 ICS Edition 3 Enhancements and current status.

This table summarises the status of each of the ICS Edition 3 enhancements. WP564 lists all of the changes made in the redline draft Edition 3 for each of the Enhancements.

ID	Enhancement Title	Status	Work Item
ICS3-01	Requirements for mobile subnetworks to issue Join and Leave Events within given latency intervals	SARPs updated to indicate leave event generation requirements but validation is required to determine if the numbers are viable. A communiqué was issued from WG2-19 to AMCP informing them of this proposed change as changes to mobile SN SARPs may be necessary.	1
ICS3-02	Requirement for IS-SME to respect quarantine time before processing next Join event from mobile subnetworks having issued a Leave event	The SARPs have been updated. The change introduces a processing delay in processing Join Events from SNs that do not control generation of Join/Leave Events in coverage fringe areas. Receipt of a Leave Event within a parameter time result in the Join Event being discarded without processing.	2
ICS3-03	Use of adaptive retransmission timers in the Connection Oriented Transport Protocol	The SARPs have been updated. A mechanism for measuring round-trip transit times and subsequent adjustment of the re-transmission timer has been introduced.	3
ICS3-04	Route selection based on required support for additional mobile subnetwork types and additional criteria (e.g. service provider selection)	IATA indicated that this change was not required for Edition 3 and thus the Enhancement was deferred until a requirement is identified. A minor change was made to reserve the unused values for future use.	6
ICS3-05	Requirements for ICS-related systems management consistent with the ATN systems management concept (i.e. draft Sub-Volume 6)	The SARPs have been updated to include references to SV6	9, 18
ICS3-06	Requirements for enhanced IDRP security consistent with the ATN security architecture (i.e. draft Sub-Volume 8).	Comprehensive changes included in the SARPs to introduce Type-2 IDRP security. Mechanism as discussed in WG2-19.	10
ICS3-07	Deletion of the ATN NSAP address compression algorithm (ACA)	The SARPs have been updated and a PDR issued, adopted and actioned for Edition 2 of SV5.	11
ICS3-08	Suppression of re-advertisement of routes in the case of changing mobile subnetwork connectivity	The SARPs have been updated.	14
ICS3-09	Conveyance of data link capability parameter in air/ground ISH PDU exchanges to signal protocol capabilities which	The SARPs have been updated. A new octet has been added to enable post-Ed 1 facilities to be indicated.	15

ID	Enhancement Title	Status	Work Item
	are beyond 1st edition of Doc 9705 between air/ground and airborne routers in a backwards compatible manner		
ICS3-10	Improved handling of the loss of TPDUs experienced during changes in subnetwork connectivity	This enhancement considered making use of Selective Acknowledgement mandatory. Concluded this was unnecessary and no changes made. Enhancement closed.	3
ICS3-11	Modification of the TP4 Local Acknowledgement Timer, A	A value of 1 sec was agreed because on balance this resulted in improved performance without too much extra a/g data transfer. The SARPs were updated.	3
ICS3-12	Potential amendment of existing mobile SNDCF and/or development of additional mobile SNDCFs to include new subnetwork types	There was an exchange of communiqué with AMCP via WG2 for the progression of this enhancement. A Frame Mode Mobile SNDCF was developed, however as this was a major piece of work which still needed significant co-ordination with AMCP it was decided not to include it in SV5 Ed 3. Instead, it is presented it as a separate paper to this meeting for discussion, with a view to it becoming a separate paper into ATNP/3. Further, this enhancement raised another issue, which is referred to as 'Make Before Break'. This issue relates to the attempts to identify way of removing the need for a complete route initiation where sub-network availability is unchanged by a change of VDL Mode 2 Ground station. It was concluded that this was a VDL mode 2 network design issue and that no SV5 SARPs were required at this stage.	7
ICS3-13	Potential enhancements to the DEFLATE algorithm to allow for the dynamic negotiation for the use of pre-stored dictionaries	The SARPs have been updated. Note: the changes introduce an SNDCF Header field extension and a resultant version roll in a backward compatible manner. PDR 99090002 refers. WG2 backward compatibility paper updated.	12
ICS3-14	Potential additional mobile SNDCF option to allow maintenance of DEFLATE history window when changing ground stations or air/ground routers respectively	Introduced alongside ICS3-13.	12
ICS3-15	Potential use of additional security tags to introduce new routing capabilities in a backwards compatible manner	No changes but PDR 99100005 was raised to address this issue.	17
ICS3-16	Potential QoS-related enhancements to IDRP based on recent work such as that of the IETF "QoS Routing Mechanisms and OSPF extensions"	This Enhancement was defined in IDG1/Flimsy 3. There was insufficient resource to address this change and the need was not urgent. Deferred post ATNP/3 work.	8

5 Conclusions / Recommendations.

The IDG has progressed most of the work items delegated by WG2 and has the following recommendations for WG2-20:

a) A close review of the redline draft Edition 3 of SV5 (WP557) should be undertaken in association with the change control log (WP564) to approve the detail of the changes made by the IDG.
b) WG2-20 should note that GM was not developed and that this task should be included on its future work programme.
c) Some proposed enhancements were postponed until after ATNP/3 and these could also be included on the future work programme. [ICS3-12 and ICS3-16]

END.