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WORKING GROUP 3 - APPLICATIONS AND UPPER LAYERS

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Agenda Item 7: Interoperability and the development of PICS for all applications

Honolulu, 25-28 January 1999 (WG3/SG1 seventeenth meeting)

Agenda Item 3 : ATS Message Handling Services

WP/15-37 : Definition of PICS for the AMHS

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Summary

The goal of this paper is to provide WG3 with an analysis of the work to be performed for the definition of PICS in the technical specification of the AMHS (for inclusion in either Doc 9705 or CAMAL).

This is based on a request by the WG3 Rapporteur made in Bordeaux, during the 15th WG3 meeting, that the SARPs Editors should consider the feasibility of technical PICS for each application.

This paper highlights that such a work can be easily performed for the AMHS, since the specification is based on International Standardised Profiles (ISO ISPs) which themselves include PICS.

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References

- [1] ICAO Document 9705 – Technical provisions for the ATN – Sub-Volume 3.1 ATS Message Handling Services

Note : for the sake of convenience, the term « SARPs » is used in this paper to refer to [1].

- [2] ISO/IEC ISP 10611-3:1994. Information Technology - International Standardized Profiles AMH1n - Message Handling Systems - Common Messaging - Part 3: AMH11-Message Transfer (P1).
- [3] ISO/IEC ISP 10611-4:1994. Information Technology - International Standardized Profiles AMH1n - Message Handling Systems - Common Messaging - Part 4: AMH12-MTS Access (P3).
- [4] ISO/IEC ISP 10611-5:1994. Information Technology - International Standardized Profiles AMH1n - Message Handling Systems - Common Messaging - Part 5: AMH13-MS Access (P7).
- [5] ISO/IEC ISP 12062-2:1995. Information Technology - International Standardized Profiles AMH2n - Message Handling Systems – Inter-Personal Messaging - Part 2: AMH21-IPM Content.
- [6] ISO/IEC ISP 12062-4:1995. Information Technology - International Standardized Profiles AMH2n - Message Handling Systems - Inter-Personal Messaging - Part 4: AMH23-IPM Requirements for MTS Access (P3).
- [7] ISO/IEC ISP 12062-5:1995. Information Technology - International Standardized Profiles AMH2n - Message Handling Systems - Inter-Personal Messaging - Part 5: AMH24- IPM Requirements for Enhanced MS Access (P7).
- [8] ISO/IEC ISP 10611-2:1994. Information Technology - International Standardized Profiles AMH1n - Message Handling Systems - Common Messaging - Part 2: Specification of ROSE, RTSE, ACSE, Presentation and Session Protocols for use by MHS.
- [9] ISO/IEC ISP 11188-1:1995. Information Technology — International Standardized Profile — Common upper layer requirements — Part 1: Basic connection oriented requirements.
- [10] ISO/IEC 8650-2:199x. Information Technology – Open Systems Interconnection – Connection-oriented protocol for the Association Control Service Element: Protocol Implementation Conformance Statement (PICS) proforma.
- [11] ISO/IEC 8823-2:199x. Information Technology – Open Systems Interconnection – Connection-oriented presentation protocol: Protocol Implementation Conformance Statement (PICS) proforma.
- [12] ISO/IEC 8327-2:199x. Information Technology – Open Systems Interconnection – Connection-oriented session protocol: Protocol Implementation Conformance Statement (PICS) proforma.
- [13] ISO/IEC 9066-2:199x. [Note: reference and accurate title TBC] Information Technology – Open Systems Interconnection – Protocol for the Reliable Transfer Service Element (RTSE): Protocol Implementation Conformance Statement (PICS) proforma.
- [14] ISO/IEC 9072-2:199x. [Note: reference and accurate title TBC] Information Technology – Open Systems Interconnection – Protocol for the Remote Operation Service Element (ROSE): Protocol Implementation Conformance Statement (PICS) proforma.

1. INTRODUCTION

In the 15th WG3 meeting (Bordeaux), it was suggested to develop Protocol Implementation Conformance Statements, known as PICS (or rather PICS pro-forma) for ATN applications, in order to provide tools to the implementors for the description of their implementation, including an accurate description of the use made of “optional” features. The WG3 Rapporteur consequently requested each subgroup and Editor to consider the possible definition of such PICS proforma.

This paper aims at providing WG3 with an overview of the work which would be required to develop such PICS proforma for the ATS Message Service, which is part of the ATSMHS application.

2. BACKGROUND

In general, the ATSMHS SARPs, concerning the AMHS, have made an extensive use of ISO International Standardised Profiles (ISPs) for Message Handling Systems.

Each of these ISPs includes as Annex A of the ISO/IEC document an ISPICS (International Standardised Profile Implementation Conformance Statement) Proforma.

These ISPICS have already been used in the development of the ATSMHS SARPs. For example, these ISPICS have been used as a basis to define the PRLs (protocol requirement lists), which the AFTN/AMHS Gateway is made of, and to define the requirements additional to the base ISP which are placed on ATS Message User Agents.

This is to show that such an approach is already inherent in the AMHS SARPs, and could be easily complemented to provide PICS proforma for each category of ATN End System implementing the AMHS. This is further detailed in Section 3.

3. WORK INVOLVED IN THE DEFINITION OF AMHS PICS

3.1 ATS Message User Agent

3.1.1 Current shape of the SARPs

The ATS Message User Agent may require PICS proforma at three different « levels » :

- a) for the IPM content (MHS P2 protocol),
- b) for the MTS- or MS-access protocol (MHS P3 or P7 protocol),
- c) for the common upper layer requirements (basic connection oriented requirements).

At present, only item a) is specified in the SARPs. It is based on profile AMH21 as specified in ISO/IEC ISP 12062-2. Items b) and c) are considered as a matter local to the AMHS Management Domain implementing the ATS Message User Agent.¹

¹ This may be subject to a change in the Extended ATS Message Service, if secure messaging is introduced in the SARPs.

Furthermore a structured body is specified for the IPM body part, in the Basic ATS Message Service.

Currently, the SARPs include a PRL only for the requirements additional to the base profile (AMH21), and for the structured body.

3.1.2 Work to perform for ATS Message User Agent PICS proforma development

To produce an ATS Message User Agent PICS proforma conformant with the SARPs, the following needs to be performed :

- copy the PICS proforma out of Annex A.1 to AMH21 (ref. [5]) ;²
- add two columns to the tables :
 - one column for « Basic ATS Message Service Support », which in a first instance would be identical to the ISP specified support ;
 - one column for the « ATN reference », which by default would refer to clause 3.1.2.2.1.1.1 of the SARPs ;
- amend the tables using the additional requirements listed in Table 3.1.2.-1 of the SARPs ;
- create an additional PICS proforma table based on Table 3.1.2-2 of the SARPs (which specifies the IPM body structure) by adding a column for the « Support » ;
- use sections A.0 (« Identification of the implementation ») and A.3 (« Additional information ») of Annex A to AMH21 (ref. [5]) unchanged.

There is no need to produce a PICS proforma for the P3/P7 protocol, since AMH23 (ref. [6]) and AMH24 (ref. [7]) are referred to only in a Note. An implementor claiming conformance with these profiles would simply use the ISPICS proforma included in the ISPs.

There is no need nor any way to produce a PICS proforma for the upper layers, since this depends on the MTS/MS access protocol selected. An implementor claiming conformance with a given profile would simply use the ISPICS or PICS proforma included in the relevant ISP or standard, if existing.

3.2 ATS Message Server

3.2.1 Current shape of the SARPs

The ATS Message Server may require PICS proforma at two different « levels » :

- a) for the P1 protocol,
- b) for the common upper layer requirements (basic connection oriented requirements).

Currently, the SARPs include no PRL for the ATS Message Server.

² All ISPICS Proforma have a copyright release in the ISO/IEC Documentation

3.2.2 Work to perform for ATS Message Server PICS proforma development

To produce an ATS Message Server PICS proforma conformant with the SARPs, the appropriate sections of the following ISPICS or PICS proforma may be used for MHS ASEs (item a in section 3.2.1 above) without amendment :

- sections A.0 (« Identification of the implementation ») and A.3 (« Additional information ») of Annex A to AMH11 (ref. [2]) ;
- section A.1 (« Basic Requirements ») of Annex A to AMH11 (ref. [2]), which is indirectly mandated by AMH22, for P1, updated using the requirements of section A.2.2 (« Distribution List (DL) Optional Functional Group »).

As far as upper layers (item b in section 3.2.1 above) are concerned, the ISP requirements are specified by means of ISO/IEC ISP 10611-2 (ref. [8]). This includes PRLs for ROSE and RTSE, referring to their standard PICS (ref. [13] and [14]) and mandates compliance with ISO/IEC ISP 11888-1 (ref. [9]). The latter in its turn includes PRLs for ACSE, Presentation and Session referring to their standard PICS (ref. [10], [11] and [12], respectively).

This upper layer profile for the ATS Message Server is a well-known ISO profile (CULR-1, basic oriented connection requirements). The effort involved in the development of PICS for this part would be significant and at the same time probably useless.

If a PICS proforma were to be developed for these upper layers, the approach should be the following :

- aggregate all the mentioned PICS proformas in a single document ;
- add a column stating the « Basic ATS Message Service » requirement, which would be filled in by means of the requirement (classification as M, O, C, etc.) of the base standards, updated as appropriate by the set of PRLs mentioned above.

3.3 AFTN/AMHS Gateway

3.3.1 Current shape of the SARPs

The AFTN/AMHS may require PICS proforma at four different « places » :

- a) for the ATN Component,
- b) for the MTCU, in the AMHS to AFTN direction (this may be further refined according to the type of information object being processed),
- c) for the MTCU, in the AFTN to AMHS direction (this may be further refined according to the type of information object being processed),
- d) for the AFTN component.

Currently, the SARPs include no PRL for the ATN Component. However, the ATN Component specification is exactly aligned on the ATS Message Server specification.

The MTCU specification in the SARPs makes an extensive use of PRLs, for each type of converted information object, in each direction. The refinement of items not used has been deleted from the PRLs, because it was useless in that context.

Finally the SARPs include no PRL for the AFTN Component of the AFTN/AMHS Gateway. It should however be noted that there are extremely few variations possible within an AFTN message, indeed only the Optional Heading Information is optional.

3.3.2 Work to perform for AFTN/AMHS Gateway PICS proforma development

To produce an AFTN/AMHS Gateway PICS proforma conformant with the SARPs, it should be considered that the MTCU PICS proforma are probably sufficient. The following then needs to be performed :

- in the AFTN to AMHS direction :
 - add a blank column titled « Support » to change the AFTN PRL into a PICS proforma ;
 - reinsert in the MHS PRL the elements which had been deleted for information objects and detailed elements which were not required, in order to have a complete MHS P2 and P1 PICS. Fill in the column « Basic ATS Message Service » for these elements with « X » (for excluded);
 - add a blank column titled « Support » to change this MHS PRL into a PICS proforma ;
- in the AMHS to AFTN direction :
 - reinsert in the MHS PRL the elements which had been deleted for information objects and detailed elements which were not required, in order to have a complete MHS P2 and P1 PICS. Fill in the column « Basic ATS Message Service » for these elements with « D » (for discarded);
 - add a blank column titled « Support » to change this MHS PRL into a PICS proforma ;
 - add a blank column titled « Support » to change the AFTN PRL into a PICS proforma.

4. POTENTIAL BENEFITS AND DRAWBACKS OF DEVELOPING PICS PROFORMA FOR THE AMHS

It may be seen from the analysis above that the PICS proforma for the AMHS would be largely a copy of documents existing in similar fashions elsewhere, either in the form of PICS proforma in ISO/IEC ISPs, or in the form of PRLs in the SARPs.

As usual when suggesting to copy documents, the questions which arise are the following:

- is it better to copy the document or just refer to it ?
- how will changes in the base document be handled ?
- which document takes precedence in case of discrepancy ?

These subjects were addressed when initially drafting the AMHS SARPs. The answer was then that to ease the work of implementors and to ensure consistency with the base standards, referencing would be used whenever possible. WG3 should note that the development of PICS along the guidelines above would contradict this initial approach.

However, it appears that in the ISPs evolution process, later version may appear, obsoleting the versions upon which the SARPs are based. The referenced versions would then be no longer available for purchase, if an implementor wishes to do so. In this context, it may be preferable to stabilise the AMHS PICS and to make them self-contained, by copying as much as possible of the ISP PICS.

5. RECOMMENDATION

The analysis above shows that the development of PICS proforma for the different AMHS End Systems is feasible, with a small number of restrictions (e.g. P3/P7 profile for ATS Message User Agents).

Nevertheless, the upper layer profile for the ATS Message Server (and consequently the AFTN/AMHS Gateway) corresponds to a well-known ISO profile (CULR-1, basic oriented connection requirements). For this part of the AMHS specification, the corresponding effort would be significant and at the same time probably useless.

The working group is invited to take the elements above into account and to provide guidance to WG3/SG1 about the need to proceed in this effort. Clarification should also be given about the nature and place where this additional material is expected to be inserted in the set of ICAO ATN documentation, if developed.

Finally a common approach should be retained in all cases where ISO international standardised profiles are used in the ATN (e.g. use of AOM12 for ATN Systems Management).