Telecommunication Standardization Sector
Study Group 15
Experts Group for ATM Video Coding
(Rapporteur's Group on Part of Q.2/15)

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SOURCE: Japan
TITLE: Multimedia multiplex/AAL for audiovisual communication using WS
PURPOSE: Discussion

1. Introduction

A framework for a multimedia multiplex/AAL suitable for communication between work stations (WSs) was investigated. One of the basic ideas for the investigation was that it would be better to use a framework supported in both ATM-LAN and B-ISDN environments because a considerable percentage of WSs will be used in connection with ATM-LAN. Another idea was that an excellent picture quality will not necessarily be required in communication between WSs.

2. Supposed applications and requirements

The following applications described in MPEG2 Video CD were supposed for communication between WSs here.

IPC: Interpersonal Communications
ISM: Interactive Storage Media
MMM: Multimedia Mailing
NDB: Network Database Services

The requirements from all or a part of the above applications were the following.

(1) Low delay (real time)
(2) Efficiency: Good efficiency is desirable in some degree considering that the data for these applications will also be used through B-ISDN in some cases.
(3) Picture quality: Quality level around "fair" (or "poor"?) may be allowed
A strict clock recovery is not necessarily required. A frame slip can be allowed if it doesn't occur very often.
(4) Implementation: The easier the better. A reasonable cost for performance will be required in using a motion picture.

3. MPEG2 System

Assuming that MPEG2 System is partially used in the H.22X structure as an upper layer of AAL, candidates are TS (Transport Stream), PS (Program Stream), and PES (Primary Elementary Stream)[1]. Among these three, PES seems to be the most desirable for the following reason.

It is difficult to think that multiplexing of plural programs for real time use is essential in the above-mentioned applications. Therefore, TS contains unnecessary elements for our purposes. Considering that a part of the multiplexing function is realized by AAL, even PS is functionally redundant.

Note: It is desirable to also support PS considering the case when PS is used in database servers.

4. AAL

The adoption of AAL Type 5 seems to be suitable for WSs for the following reasons.
(An increase in delay may be worried in using AAL Type 5, but see ref. [2] for a delay analysis.)

(1) There have already been many products launched supporting AAL Type 5 in ATM-LAN environments. It is not clear at this moment whether AAL Type 1 will be supported in an ATM-LAN environment or not.
(2) Type 3/4 is less efficient than Type 5 except when CS-PDU is very short.
(3) Error detection/correction in a cell-by-cell basis is not necessarily required considering the expected picture quality.

Note: AAL Type 1 may also be necessary considering the connectibity to H.320 terminals.

5. Conclusion

If we must choose one multimedia multiplex/AAL framework for communication between WSs in the current situation, the combination of PES and AAL Type 5 seems to be the most desirable.

References

[1] AVC-598R	Annex 5 Use of Packetized Elementary Stream as an interface point	Oct. 1993
[2] AVC-609	Multimedia multiplex/AAL for high quality videoconferencing (Japan)	March 1994

END