CCITT SGXV
Working Party XV/1
Experts Group for ATM Video Coding

Document AVC-178
March 1992

SOURCE: SGXV EG representative to SGXVIII Melbourne meeting 2 - 13 Dec 1991 (M. Biggar, Australia)

TITLE: Report on Melbourne meeting of SGXVIII, 2-13 December 1991.

PURPOSE: Information

Abstract

A representative of the SGXV Experts Group (M. Biggar) was able to attend the full meeting of SGXVIII in Melbourne in December 1991, permitting verbal presentation of the issues of concern to the Experts Group. This document represents the report of that meeting as it related to the issues raised by the Experts Group in its Liaison statements from the third (Santa Clara) and fourth (Yokosuka) meetings, and is intended to be complementary to the liaisons from SGXVIII. Personal representation proved to be highly effective, and it is recommended that any future opportunities for SGXV EG members to attend SGXVIII meetings (and vice-versa) be exploited.

1. Introduction

The SGXV Experts Group on Video Coding for ATM Networks raised several issues at two meetings (Santa Clara and Yokosuka) that were considered at the Melbourne SGXVIII meeting. These are dealt with in turn below.

2. IVS

All of the recommendations made by the Experts Group concerning the IVS Baseline Document were accepted and incorporated into the Baseline. The continuing support by the Experts Group of the IVS initiative and the Baseline Document itself was appreciated. The Baseline Document was re-edited to integrate the inputs from several groups during 1991, and is now available as document AVC-209.

On the wider issue of the IVS initiative, there were some dramatic developments that came from the IVS co-ordination meeting in Tokyo in September 1991. SGXV's efforts, directed at video coding specifically for the B-ISDN, were well regarded, but concern was expressed about the role of CMTT. CMTT have given the impression that they are developing a video codec standard for STM networks, on the assumption that the same bit stream may later be carried on the ATM-based B-ISDN. The expansion of CMTT's terms of reference to include secondary distribution was dependant on these studies being consistent with the B-ISDN.

As a result, there were some suggestions within SGXVIII to re-orient the Video Coding work within CCITT so that SGXV would take on coding for all purposes on the B-ISDN. The eventual output from the meeting, and the liaison, was somewhat more restrained, expressing "uncertainty as to the extent that CMTT/2 are studying and producing video coding standards specifically suited to the ATM basis of B-ISDN", and recommending "an assessment of other options to progress the study of ATM video coding for secondary distribution". Depending on the response from CMTT, this issue may emerge again.

There is likely to be a technical workshop for IVS on B-ISDN scheduled around Oct/Nov 1992 in Europe.

3. UPC and CLP bit

3.1. Violation tagging

In several liaison statements to SGXVIII in the past, the Experts Group has expressed concern about the wording used in describing use of the CLP bit and, in particular, under what conditions this bit might be altered by the network after it has been set by the user. It was clarified that the

CLP bit will **ONLY** be altered by the network if the usage parameter agreement has been violated by the user, i.e. as long as the user conforms to the agreement reached with the network concerning traffic to be carried over the connection, the CLP bit will not be changed by the network.

3.2. Use of CLP bit a multiplex indicator

The possibility of using the CLP bit as both a priority indicator and a multiplex indicator caused some considerable confusion within SGXVIII. It called into question how the CLP bit was to be used and whether the priority indicator was needed at all. A special joint meeting was called to resolve the issue.

It seems that SGXVIII could accommodate the use of the CLP bit as a multiplexing indicator, but it is not an attractive option. It would mean that violation tagging could not be used on certain circuits, and would add considerable complexity to the network. SGXVIII's preference would appear to be that multiplexing be carried out at a higher layer (AAL).

Nevertheless, it appears that some user-to-user signalling may be possible in the ATM layer if anyone really wants to use it. The previously reserved bit in the header has now been merged with the Payload Type bit and these bits may be preserved from end-to-end.

3.3. Value of CLR

The Performance group has begun estimating CLR, and produced some figures based on Rec. G.82X (Performance). These were not based on network characteristics, but on the need to meet given end-to-end performance targets. The results obtained (CLR of the order of 2x10-6) are conservative, and there was considerable debate about whether they should be quoted in a liaison statement. Further work in this area can be expected.

The approach taken by the SGXV Experts Group, to estimate CLR so progress can be made, is considered the most appropriate by SGXVIII.

Estimates have also been made of the burst length, again to satisfy G.82X targets, and these appear in the liaison. The performance figures apply to the ATM layer; AAL functions could provide improved performance to higher layers.

3.4. Fast resource allocation

The suggestion from the Experts Group that rapid reallocation of resources may be required to match the capability offered by terminal-based multiplexing schemes such as H.221 has been noted by SGXVIII. Text in Rec. I.371 discusses the issue, but further work on this is still required.

3.5. UPC measurement point

The issue of a mismatch, between what the user can measure and what the network receives in terms of cell statistics, is recognised by SGXVIII. The liaison back to the Experts Group discusses a limit on cell delay variation as a means of decoupling the two reference points T and S. In informal discussions, it was also suggested that a "safety factor" may be built in to the agreed UPC parameters to allow for variation between the two. It is still under study in SGXVIII.

3.6. Negotiation for High and Low priority channels

The precise mechanism by which the two priority channels are to be negotiated is still under consideration in SGXVIII. However, the use of CLP=0 plus the aggregate CLP=0 + CLP=1, as proposed in the liaison from the Experts Group in Santa Clara, is one of the options being discussed. The work is described in the liaison from SGXVIII to the Experts Group.

One significant step has been taken, and that is the agreement that there will be a guaranteed QoS on both priority levels, as required by the Experts Group.

4. AAL

4.1. Clarification of definition of CBR

The interpretation of CBR that was discussed at Yokosuka was raised at the SGXVIII meeting. Confusion had occurred as to whether CBR meant a Continuous bit stream that could nevertheless be varying in rate. The SGXVIII meeting reconfirmed that CBR, and AAL Type 1, referred to genuinely constant bit rates.

4.2. AAL Type 1

The Experts Group requested that interleaving, proposed by CMTT as a CS sub-layer function, be optional because of its delay implications. This request was accepted.

SGXVIII is inviting input on the functionality of AAL Type 1 CS.

4.3. AAL Type 2

There appeared to be some misinterpretation of the SGXV Experts Group liaison concerning commonality of AAL for the support of VBR and CBR video. Some participants interpreted this as a request for commonality between AAL Type 1 and Type 2. There was some input to SGXVIII advocating this upward-compatible approach, whereby AAL Type 2 would provide all the functionality of AAL Type 1 plus enhancements necessary for VBR support. This may, however, be inefficient if AAL Type 2 provides fields whose functions are not needed for VBR services developed by the SGXV Experts Group. The Experts Group should consider this proposal and respond appropriately with its views.

SGXVIII is now requesting inputs concerning the required functionality of AAL Type 2, as stated in the liaison. The "Example" AAL Type 2, about which the Experts Group had expressed some reservations, has now been deleted from Rec. I.363.

5. Timing Recovery

The SGXV Experts Group had expressed a preference for Time Stamping (TS) over Synchronous Frequency Encoding Technique (SFET) for VBR applications. During the SGXVIII meeting, a method that combines features of both techniques and appears to be an attractive compromise, was adopted for future work. This method, titled SRTS (Synchronous Residual Time Stamp) should be considered by SGXV Experts Group members to ensure that it will satisfy video service requirements. The revised text will appear in Rec. I.363.

To further progress work on timing recovery, SGXVIII is seeking inputs on the detailed timing requirements of video services. i.e. is bit timing all that is required, or must the network pass on more detailed structure (e.g. octet timing)? There appears to be a need to work closely with SGXVIII on this issue, so that the precise timing requirements are understood and accommodated.

6. Network Interworking

Though work is ongoing in SGXVIII on interworking between the 64 kbit/s ISDN and the B-ISDN, consideration of the main issues of significance to the Experts Group (e.g. handling of multimedia) appears to be immature. It would therefore seem to be necessary for the Experts Group to identify those issues which it is felt are holding up progress, and to convey the urgency of progress in these areas to SGXVIII and SGXI.

7. Multimedia Multiplexing

7.1. Support of Low Bit Rate services

Where packing delay is critical (e.g. in the 300 bit/s service example offered by the SGXV Experts group), the preferred mode of data transfer is the use of partially filled cells.

7.2. Signalling to request synchronisation between associated media

Studies on signalling for multimedia are at an early stage in SGXVIII, but the requirement to provide this functionality has been noted and it appears in Draft Rec. I.37y.

8. Conclusion

The opportunity to personally represent the Experts Group was a valuable one and achieved much in gaining greater understanding of our requirements and concerns. SGXVIII holds the Experts Group in high regard and actively seeks input from the Group on such matters as network requirements for video, AAL functionality, etc. There is much to be gained for both groups if representatives from SGXV Experts Group and SGXVIII Working Party 8 can attend one another's meetings in future.