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

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Subject: Comments on the Table for Multimedia Multiplexing Methods

Source: Bellcore

Purpose: Discussion

In this document we would like to add the following three service attributes to the list of requirements identified in Table 1 of Document AVC-129 (for reference this Table is shown in the next page).

- Quality of Service (QOS):
  - — Cell Multiplex - QOS based on each individual VC carrying a separate medium
  - — SAR Multiplex - QOS associated with the VC must be that of the most demanding medium
  - — User Multiplex - Same as for the SAR Multiplex
- Operation and Management (OAM):
  - — Cell Multiplex - OAM more involved since each VC needs to be individually managed
  - — SAR Multiplex - OAM relatively simple since the multiplexed media enters the network as a single stream supported by a single VC.
  - — User Multiplex - Same as for the SAR Multiplex.
- Cost/VC:
  - — A useful parameter which is usually outside the scope of discussion in the CCITT. This is related to the two previous attributes and will have great impact on the choice of multiplexing scheme.

Table 1 : The comparison of three multi-media multiplex methods

REQUIREMENTS \ SCHEMES		Cell multiplex (VC multiplex : VCI approach) merit : Variety of services	SAR multiplex (SAR-PDU multiplex : Packet approach) merit : Easiness for VBR?	User multiplex (Bit multiplex : H.221 approach) merit : Compatibility with H.320
1.Efficient channel utilization	Over head	0	192/(packet_size+192) + 4/384 - (UW) (dummy bits) (IT bits) (Unique Words) *1)	16/p*640
	Sharing with other media	Impossible	Possible	
2.Multiplexing delay		No delay due to multiplexing.		
3.Compatibility	with H.320	H.221 is neccesary (switchable)		Easy (Embeded)
	with MPEG	MPEG bit stream should be transimitted as data. MPEG demultiplexer is necessary.		
4.Multi-media	Media identification	HLC or user information at call setup	Indicated by IT?	BAS
	Bit rate identification	Call signaling	User protocol?	BAS
	Cross media synchronization	Not guaranteed now	Guaranteed	
5.Media selectability in Multi-point conference		Easy but copy function for each medium in network or MCU is required. Otherwise mesh type connection is required.	Difficult but possible by MCU with some transmission efficiency loss.	
6.Real time transmission for the low bit rate (eg. 2400bps) data		Delay and transmission efficiency is a trade off. delay = 384bits/bit rate*efficiency		300/1200/4800 bits etc.
7.The influence of one cell loss		One medium Recover at the next packet?		Several media Recover at the next packet? (The probability of FAS,BAS errors due to cell losses is assumed significantly low.)
8.Easy to implement		Easy by using media-VCI's table	Easy by using media-IT table	Already implemented in H.221 using LSI chip

*1) If GOB is aligned with cell, UW is GOB start code. If such alignment is not used, first term and third term can be deleted.