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Study Group 15
Experts Group for ATM Video Coding — May 26, 1993
(Rapporteur's Group on Part of Q.2/15)

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1. Opening (TD-1,2,3)

Mr Yamashita's welcome on behalf of Japanese Administration, kindness of NTT; attendees as listed in Annex 1 (TD-3); agenda (same as sections of this report); document list in Annex 2 (TD-2).

2. Review of current status (TD-4,24)

Origin of meeting. Presentation by Mr Matsumoto of results of recent SG1 meeting (AV/MM question)

3. Finalisation of H.Key (TD-9,10,17,19,33)

Agreement reached on way forward to White paper for adoption by SG15 in Sept. Detailed action in Annex 3 (extracts from H.KEY draft); electronic text to reach Sp. Rapp. by 25th June latest. Following discussion of the human factors in the first part of a call (see TD-17), it was decided to clarify the complete procedure. Text and a table is added to H.Key for the September meeting, but it may be considered more appropriate to transfer it to another place (eg H.320 future revision).

4. Drafting of AV.420 (Call Control) (TD-5,6,20,26,31,39)

4.1 Standardisation process: agreed that there is now no need for urgent action on new or unfinished Recs. - the material in Q.931/939 and H.320 seems sufficient for the time being, though further inspection of Q.939 and relevant regional draft standards will be made before the September meeting, to check this.

AV.420 will continue to be improved as a living document covering and giving a consistent account of all the interrelated matters forming a harmonised scheme for call control in the multimedia regime; it will not itself be given Recommendation status, so there is no problem with overlap onto Recs. coming from other SGs. Instead, it will be submitted for adoption in the WP15/1 meeting reports. However, from time to time consideration will be given to introducing new material for standardisation, in SG15 or by liaison to other SGs, based on the consistent approach developed in the AV.420 Report. Specific topics of concern to the group, for action in the near future:

- more generalised terminals beyond pure H.320, including non-real-time services (telematics)

- supplementary services, including call transfer and conference

calls (Mr Okubo will forward some comments on the latter to Mr Skran, who will kindly coordinate input to the next meeting).

4.2 Content of present document (TD-10) as draft Report:

The principle of generalised HLC values is strongly supported. Since, as far as services on ISDN are concerned, the H.221/242-based in-band system could very well be used even for essentially telematic multimedia applications (that is, no human-human conversation is involved), it was decided that only one general HLC should be created at present, this being defined only as H.221/242 multimedia - the word "multimedia" is included to be clear that when/if H.221 is used purely for channel aggregation without regard to data content then this HLC codepoint should not be used. The more detailed (3-level) hierarchy proposed in TD-6 would only be needed if non-H.221 multimedia schemes for ISDN are standardised. The proposal by SG11 in its TD/11/2-44 concerning "general audiovisual" was not thought adequate to meet diverse user requirements, so a reasoned case will be put to SG11 as liaison from the September meeting.

If the above general HLC is assigned, it was not thought necessary to press for a specific codepoint for audio+data or audiographic teleconferencing. If an HLC is returned in the CONNECT message, it must be consistent with the HLC (or one of the HLCs) in the SETUP reaching the destination terminal. If the latter is specific, the same should be returned - this is the current position; if the incoming HLC is general, then a more specific one may be returned (eg general H.221 incoming in SETUP, F.721 returned). If HLC = telephony is incoming, F.721 may not be returned. {Concerning use of Mode 0F when a videophone answers incoming BC=speech, HLC=telephony, there was no consensus; AV.420 will merely describe the circumstances under which this could provide better service than using Mode 0U.}

[Note: if only one HLC was delivered to destination terminal in the SETUP message, an HLC included in the CONNECT message may not be passed on.]

Although LLC is not now thought to be useful, it was decided not to advocate dropping it in case future evolution brings some advantage. The current view is: optional to send (apparently it may now be allowed to send even with 2xHLC); optional to check at destination BUT if checked and not_incompatible then ALERT; that is, absence of LLC shall not cause the terminal to reject or ignore the request.

The concept of converting a communication from a BC=speech call to an H.221-based audiovisual call was put forward in TD-26.

It was said that, on a network supporting two BCs and two HLCs, a SETUP containing for example {BC1=Udita, BC2 absent, HLC1=F.721, HLC2=H.731} may result in loss of the HLC2. Since {BC1=Udita, BC2=Udita, HLC1=F.721,HLC2=H.731} would also not be allowed, this news caused some consternation, as a potential further undesirable constraint imposed by the network even in the long term. Random pairs of BC are also not allowed. SG11 will be approached for clarification. Other detailed points in TDs will be taken into account in the improvement of AV.420.

5. JPEG profile in AV Recs. {and protocol} (TD-7,8,18,37,38)

[For protocol stack issue, see point 7 below.]

5.1 Profile

Three profiles are recommended, hierarchically related and differing only in the resolution, but with possible pixel aspect-ratio variants. All other parameters in the profiles are the same and are as follows:

Colour space	Y,U,V (receiver must be able to decode and display colour); JPEG component identifier 0 = Y, 1 = U, 2 = V
Sampling ratio Y:U:V	2:1:1 (with respect to luminance, chrominances are subsampled horizontally by 2:1:1 and vertically by 1:1:1)
A/D conversion	8 bits/ pixel
Coding	Baseline sequential, non-hierarchical, DCT only, Huffman only, interleaved (....)
Markers	
Picture re-start	

{This report table need not show too much detail, which is available in the contributions, but we must identify the parameters and the choice made.}

Profile A: receiver has a picture store of at least 352 x 288; the pixels respresented by the encoded transmitted data are of aspect ratio (4:3)/(360:288), corresponding to the CIF of H.261.

Profile B: receiver has a picture store of at least 768 x 576; the pixels respresented by the encoded transmitted data may be of various aspect ratios, preferred values being:

(4:3)/(704:480),	corresponding to a normal CCIR 601 "525-line" picture
(4:3)/(768:480),	corresponding to a "525-line" picture with increased horizontal resolution
(4:3)/(704:576),	corresponding to a normal CCIR 601 "625-line" picture

It was decided that for the time being no "computer-like" 1:1 aspect ratio would be included, since for preservation of source-quality photograhic images filtering and other conversions must be avoided - the complete capture, storage and display system has to be studied.

Profile C: receiver has a picture store of at least [>1000:>1000, for further study], corresponding to HDTV standard now under study.

The magnitude and aspect ratio of displayed pixels is a matter for the receiving terminal: clearly, users may normally expect display at the aspect ratio defined by the header of the transmitted data, but according to implementation this may involve conversion (interpolation, filtering....) which could compromise the image quality. The image may also be cropped or not, according to users' preference and/or implementation.

5.2 Application layer

The proposal put forward in TD-37 (Japan) is taken as a basis for further study. It is noted that this contains also a method of pointing, as an integrated application. Referring to the work in Question 10/8, this is appropriate to the T.AGC, whereas both still-image and telewriting applications should also be able to stand alone. Potentially therefore three requirements in the top level of MLP are covered by this proposal.

Taking into account the appointment of an editor for this Question 10/8 work and the need for joint SG15/SG8 work on this application area, it was decided to approach the Editor (Mr R C Sherman, Bellcore)

to hold such a joint experts meeting in the near future, as the settlement of the still image transmisssion in H.320-based equipment is particularly urgent.

TD-38 proposed methodology which would be of value (as modification to the TD-37 proposal) only if connectionless transmission is used. This is therefore held over, in case connectionless channels are introduced into MLP (presently f.f.s.).

6. Channel Aggregation (TD-11,22,23)

Agreement reached on way forward to White paper for adoption by SG15 in Sept. Detailed action:

- means of sending network addresses quickly by MBE (text from Mr Skran by 25th June); this method will be included in draft H.Agg but will also be useful for multipoint calls

- revise new simplified proposal to allow interworking between unmodified non-aggregating (SA) and aggregating terminals via a single CAU, and minimise constraints applicable to the SA-CAU=CAU-SA case; this includes new Nx64-comp values, not modifying "6B-HO-comp"; this scheme to be sent to members within 2 weeks for checking

- revise draft Rec. H.Agg to same objectives as Nov.'92 version but new technical scheme; also clarify wet string OK for SA-CAU (H.221 on CAU side not mandatory for non-AV use); also clarify use of "transparent" mode for AV as well as non-AV use, BUT not mode equivalent to Bonding Mode 3 (which would duplicate H.221 framing); also mention MCU relationship (eg "Mode 3" excluded)

- liaison back to ISO/IEC to be drafted by Mr Skran for approval at WP15/1 meeting - comments on first draft TD-42 to him by 1 July, please

7. Data transmission in H.320-based systems (TD-12,13,14,16,28,29,30,34,35)

7.1 General

This agenda point considered primarily the policy to be adopted for telematics and other data applications within H.221-framed systems. Although some contributions introduced matters of technical detail (such as data rates and code allocation), these taken for information only, and will be considered fully at the next meeting.

The need for closer working with Question 10/8 rapporteur's group was recognised; it was hoped that more joint meetings might be held, perhaps in the autumn or late January 1994.

- a paper to be prepared, crystallising the power and benefits of the H-series Recs. (and planned Recs.), and particularly advocating use of MLP for audiographic/telematic schemes on LANs, ISDN, B-ISDN and so on; this would be widely distributed, sent by WP15/1 to IEEE 802.9, ISO....

7.2 Protocol stack

It was generally considered desirable that only one protocol stack should have to be provided in any equipment which is intended only for "open" use to any other multimedia user at random, making use of standardised application tools (such as still image, conference control, remote camera control..... when using other Recommendations of the harmonised multimedia set). This single stack should be the MLP of the T.120 series under Question 10/8.

Consequently, the use of LSD and HSD is only for applications outside the above regime. The codepoints in Table A3/H.221 for still-image transmission using JPEG are not adequately defined and should be deleted; those for facsimile are not adequately cross-referenced to standards but will not be deleted.

The provision of general tools for improvement of LSD/HSD use for proprietary or closed-user-group purposes was not thought to contradict the above policy: V.120 is in the data applications Table A3/H.221, V.14 reserved, and H.DLL as a new simplex protocol is being finalised.

Although the above represent the desired objective, it is extremely urgent to establish methods of providing applications for which there is strong demand in the marketplace - these specifically include still-images, remote camera control, telewriting (whiteboard, pointer...) and file transfer. If the MLP cannot fulfil the requirements within a very short time (months, only) then it will be necessary to make provision for their fulfilment with LSD/HSD; in this regard, proposals are already to hand for camera control (TD-13) and still images (TD-37). WP15/1 will review the situation at its September 1993 meeting. In this regard, there was no time to reach full consensus on TD-30 which puts forward a suggestion regarding the division of resposibility between SG8 and SG15- WP 15/1 consider again fully.

Regarding the use of MLP for camera control, and also other applications requiring near-real-time response, it was felt that not enough is known about the performance of the MLP, and in particular the latency, throughput, etc. A liaison will be sent to Q10/8 seeking information; as a bench mark, 3 cascaded MCUs, 6.4 kbit/s MLP and effect of increasing rate to a point where the rate does not contribute to delay, effect of making use of connectionless method (unnumbered frames) in Q.922, low throughput needed for FECC, coupled with high priority and/or inhibition of competing applications by withdrawing their tokens, relationship of forward FECC path to inevitable video return delay to be taken as 200ms for example.....

Matter of avoiding congestion by limiting token issue

TD-37 tight coupling between "lower" and "upper" layer, but could be separated.

Competitor to MHEG? May be action needed.....

Cost of implementation (Mr Gruber point).

8. Workplan for broadband audiovisual recommendations (TD-21)

Broad support for the approach taken in TD-21 concerning topics requiring planning. Specifically:

- target early 1995 for "minimum system" Rec. to deter from prior divergence; also show "committee draft" on the plan (May 1994?) to focus attention on preparation of first solid draft

- go for "technical alignment" of multiplex Rec. with MPEG-2 scheme, but not common text

- how to tackle the general problem of fast moving unofficial standardisation w.r.t. LANS?

- a detailed plan showing all standards objectives and intermediate steps is to be fixed at the September meeting, in order to make clear to other parties the scope and timescale of the work

9. A.O.B. [other multipoint matters, if time available] (TD-25,27,36)

TD-25,27 on video mixing for multipoint working and TD-36 on claification of mandatory/optional status of H.230 codepoints were presented, and will be referred to experts for consideration before the next meeting; it is asked that TD-25 material be clearly separated into those aspect for consideration by video experts and those appropraite to multipoint conference management.

10. Report adoption (TD-40)