ITU-T Telecommunications Standardization Sect **AVC 776**

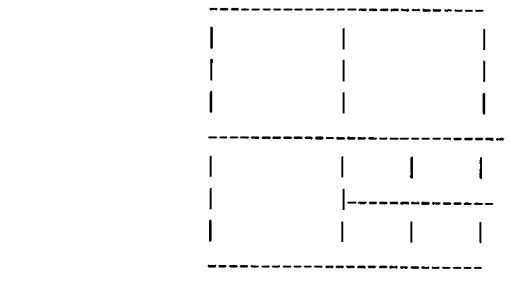
Study Group 15 **15 May 95**
Experts Group for Video Coding and Systems in ATM and Other Network Environments

Source: AT&T (Reha Civanlar, Glenn Cash, Barry Haskell)

Title: **Proposals for Multipoint Video**

Purpose: Information and Proposal

Introduction:
Picture-in-picture or, in its more general form, simultaneous multiple video displays is a common feature for higher-end TV's of today. An economical way of providing this functionality with MPEG-2 based video is to code every frame as a P frame and use I macroblocks within these streams when needed. It is a relatively easy task for a decoder or Multipoint Control Unit (MCU) to merge multiples of such bitstreams (whose resolutions may add up to the full resolution) with simple header manipulations so that the merged stream can be decoded by one regular decoder. Encoders may simulcast such lower resolution streams for this purpose. A possible screen with multiple video displays is shown below:



1/4 and 1/16 Resolutions in a Multi-Video Display

Syntax:
We propose adding a flag to the ISO (or ITU) video_stream_descriptor that will not break existing decoders. (Also, note that 13818-1 IS video_stream_descriptor is broken anyway). In addition, capability for multipoint should be added to H.245

For purposes of error resilience, we also propose a way of indicating that the GOP structure does not change in the video sequence.

See next page for proposed video_stream_descriptor()

```
video_stream_descriptor(){
    ...
    still_picture_flag                      1     bslbf
    if(MPEG_1_only_flag==0){                            (IS has ==1 here)
        profile_and_level_indication        8
        chroma_format                       2
        frame_rate_extension_flag           1
        P-frame_GOP_flag                    1     bslbf   (NEW PROPOSED)
        P-frame_only_indicator              1     bslbf   ( "       )
        GOP_repeat_indicator                1     bslbf   ( "       )
        reserved                            2
    }
}
```

P-frame_GOP_flag-- This is a 1 bit flag which when set to '1' indicates the presence of **P-frame_only_indicator** and **GOP_repeat_indicator.**

P-frame_only_indicator-- This is a 1 bit flag which when set to '1' indicates that all frames of the sequence are P-frames with all fcodes set to their minimum value, default quantization matrices, progressive, zigzag scan, etc..

GOP_repeat_indicator-- This is a 1 bit flag which when set to '1' indicates that all picture header data (except vbv_delay, pan-scan, etc.) in a GOP is to be repeated in the following GOPs.

In H.245 Section 4.2, H262VIDEOCAP ADD

pFramesOnly [6]IMPLICIT INTEGER OPTIONAL,

In H.245 Section 5.2, H262VIDEOCAP ADD

pFramesOnly : default parameters for P-frame multipoint
minimum fcode
default Q matrix
progressive
zigzag scan
etc.