ITU Telecommunication Standardization Sector
Study Group 15
Experts Group for Video Coding and Systems in
ATM and Other Network Environments

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TITLE: Syntax for video frame synchronous C&I
PURPOSE: Proposal

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1. Introduction

The agreement at the Haninge meeting concerning video frame synchronous C&I (VFS C&I) was that [1]:

(1) VFS C&I information is packed in PES packets, and PTS is used for timing the event;

(2) These PES packets are carried in the video synchronous subchannel of the ITU H.222.1 type C elementary stream as specified in H.222.1 [2];

(3) The specification of VFS C&I is described in H.310.

Following these agreements, a syntax for VFS C&I is proposed in this document.

2. Proposed syntax for video frame synchronous C&I

The following are the features of the proposed syntax shown in the next page:

- ASN.1 PER (Packed Encoding Rule) is used as in H.245 [3].
- "video freeze picture release control", "split screen indication", "document camera indication", and "closed caption" are currently defined as VFS C&Is [4]. For the C&Is which can be signified at the video stream level (i.e. "video freeze picture release control", "split screen indication", and "document camera indication" for H.261 and H.263 streams), the video synchronous subchannel is not used.
- Since the VFS C&I information is carried outside the H.245 channel, the usage of **logicalChannelNumber** may not be appropriate. In this case, other information may be used for specifying the stream to which the VFS C&I is applied. The possible substitutes are **portNumber** defined in H.245, or **PID** (for Transports Streams) and **stream_id + stream_id_extension** (for Program Streams) defined in H.222.0 and H.222.1.
- The VFS C&I information a PES packet is byte alligned by adding less than eight "0"s at the end of the encoded data. If this information is delivered in a Transport Stream (TS), the **stuffing_byte** field in the TS adaptation_field() defined in H.222.0 is used for alignment with the TS packets.

5. Conclusion

A syntax for VFS C&I has been proposed. Further discussion concerning the following issues is necessary:

- The information used in the video frame synchronous subchannel for specifying the elementary stream to which the VFS C&I is applied.
- Specification of additional VFS C&Is and the detailed usage of each VFS command or indication.

References

[1] AVC-800R, "Report of the nineteenth experts group meeting in Haninge", S. Okubo, May 1995.
[2] ITU-T Draft Recommendation H.222.1, "Multimedia multiplex and synchronization for audiovisual communication in ATM environments", July 7, 1995.
[3] ITU-T Draft Recommendation H.245, "Control protocol for multimedia communication", July 6, 1995.
[4] AVC-725 , "C&I signals and their channels", Japan, Jan. 1995.

(The proposed syntax for video frame synchronous C&I is shown in the next page)

```
VideoFrameSynchronousCandIPDU       ::=SEQUENCE  SIZE  (1.. 65535)  OF
{
  logicalChannelNumber              INTEGER  (1..65535),
-- ==================== Alternatives for specification of elementary streams ====================
-- or   portNumber                  INTEGER  (0..65535),
-- ------------------------------------------------------------------------------------------------
-- or   elementaryStream            CHOICE
--      {
--          ts-PID                  INTEGER  (0..8191),
--          ps-StreamID             SEQUENCE
--          {
--              streamID            INTEGER  (0..255),
--              streamIDExtension   INTEGER  (0..255)
--          }
--      },
-- ================================================================================================
  videoFrameSynchronousCommand      VideoFrameSynchronousCommand  OPTIONAL,
  videoFrameSynchronousIndication   VideoFrameSynchronousIndication  OPTIONAL,
  ...
}

VideoFrameSynchronousCommand        ::=SET
{
  nonStandard                       NonStandardParameter  OPTIONAL,
  videoFreezePictureReleaseControl  NULL  OPTIONAL,  -- not used for H.261 or H.263 streams
  closedCaption                     OCTET  STRING  OPTIONAL,
  ...
}

VideoFrameSynchronousIndication     ::=SET
{
  nonStandard                       NonStandardParameter  OPTIONAL,
  splitScreenIndication             NULL  OPTIONAL,  -- not used for H.261 or H.263 streams
  documentCameraIndication          NULL  OPTIONAL,  -- not used for H.261 or H.263 streams
  ...
}

-- The following lines have been quoted from draft H.245

NonStandardParameter                ::=SEQUENCE
{
  nonStandardIdentifier             NonStandardIdentifier,
  data                              OCTET  STRING
}

NonStandardIdentifier               ::=CHOICE
{
  object                            OBJECT  IDENTIFIER,
  h221NonStandard                   SEQUENCE
  {
      t35CountryCode                INTEGER  (0..255),
      t35Extension                  INTEGER  (0..255),
      manufacturerCode              INTEGER  (0..65535)
  }
}

END
```