Multi-view Streams in SDP and RTP Sessions

draft-huang-mmusic-multiview-00
ietf94@Yokohama
Multi-view Video

- Multi-view video consists of multiple views taken by multiple cameras from different positions and angle.

- Free view-point TV/3D TV

- Multi-view Conferencing

Streaming of such multi-view applications on Internet should be offered at varying speeds and costs over a variety of physical infrastructure.
Multi-view Video Transmission

• Multi-view simulcast
  - Encode each view and/or depth map independently using a monocular video codec

• Multi-view video compression
  - Encode all the views using specific technique to decrease the overall bitrate by exploring the inter-view redundancies.
  - MVC

• Combination transmission
  - Multi-view simulcast and multi-view video compression may be combined to use in some specific scenarios. E.g., the multi-view video compression technique may work well for closely related views but not for widely differing views.
Related IETF Work

• RFC5583
  – Used to signal the usage of SVC or MC.
  – Cannot be used to signal multi-view simulcast, adaptive multi-view transmission and combination transmission.

• Simulcast [I.d-ietf-mmusic-sdp-simulcast]
  – Mainly used for the same video source encoded with different video encoder types or image resolutions.
  – Will it consider multi-view transmission case?

• CLUE
  – CLUE involves multiple devices like multiple cameras.
  – Currently, 3D or multi-view video is not considered in the CLUE scope.
  – Telepresence is just one use case of multi-view video.

• 3D Signaling
  – There are 3 expired documents in MMUSIC to propose signaling solution for 3D video.
  – They are out of date and may not be closely to current techniques like simulcast.
SDP Signaling Requirements for Multi-view Video

• REQ-1: It must be possible to signal whether multi-view simulcast or multi-view video compression is used.
• REQ-2: It must be possible to signal adaptive multi-view video transmission.
• REQ-3: It must be possible to signal combination transmission where multi-view video compression is used with simulcast.
• REQ-4: Bundled usage must be considered.
• REQ-5: It must be possible to signal multi-view video related decoder constraints, e.g., maximum number of video streams.
• REQ-6: It must be possible to support both declarative SDP and offer/answer.
• REQ-7: It must be possible to have some ways to allow receivers to ask for required view stream that they want to receive when simulcast is used.
• REQ-8: It must work with other existing mechanisms, e.g., RTP retransmission, FEC.
Discussion

• Is this work interesting enough to work in IETF?
• Proposals for possible solutions are welcomed.
• Welcome reviews and suggestions.
THANK YOU