JPEG XS Interoperability Activity Group

February 2020
John Dale, Media Links

Presentation Outline

1. JPEG XS Overview

2. JPEG XS over MPEG2TS/SMPTE 2022-2

3. Request for VSF Members to Join

4. JPEG XS over SMPTE ST 2110 22

5. Request for VSF Members to Join

6. Conclusion

1. JPEG XS Overview

JPEG XS is ISO/IEC standard, 21122, (JPEG XS), designed for latency-critical real time applications and offering near lossless and visually lossless quality with low complexity

- Applicable to SD, HD, UHD, and HDR, WCG content
- Near lossless at 6:1
- Visually lossless at up to 10:1
- Smooth lossy compression beyond
- Robust over multiple coding
- Low power consumption (less processing and memory needed)

2. JPEG XS over MPEG2TS/SMPTE 2022-2

Consider both WAN and LAN applications for JPEG XS coding

- Develop interoperable profiles for JPEG XS coded media for 2K and 4K applications and including HDR and WCG, using as much as possible existing standards
  - ✓ISO/IEC standard, 21122, (JPEG XS)
  - ✓ISO/IEC standard 13818-1 2019/Amd 1 2020, Carriage of JPEG XS in MPEG-2 TS
    - ✓JPEG2000/TR-01 2018
- Create 2022-2/MPEG2TS TR/Interop point(s) utilizing JPEG-XS as the media codec
- Organize base level interop workshop/VidTrans Demonstration

2. JPEG XS over MPEG2TS/SMPTE 2022-2

Interop Points Draft, non HDR/WCG

Interop Points	Profile/Short Name	Format & Frame Rate*	Bit Rate 10:1, Mbps	Bit Rate 6:1, Mbps	Bit Depth	Color Sampling	Color Space	Audio	Audio	Audio ****	Uncompressed Video, Mbps
1	SD	480i/29	20	33	10bit	4:2:2	BT 601-6	24- bit	1 ChPr	1 PID	200
2	SD	576i/25	21	35	10bit	4:2:2	BT 601-6	24- bit	1 ChPr	1 PID	207
3	HD	720px1280/59	109	181	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	1087
4	HD	720px1280/50	92	154	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	922
5	HD	1080ix1920/29	120	201	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	1203
6	HD	1080ix1920/25	104	173	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	1037
7	3G	1080px1920/59	245	408	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	2447
8	3G	1080px1920/50	207	346	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	2074
9	S3D-HD	720px1280/59	109L 109R	181L 181R	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	1,087
10	S3D-HD	720px1280/50	92L 92R	154L 154R	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	922
11	S3D-HD	1080ix1920/29	104L 104R	173L 173R	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	1,037
12	S3D-HD	1080ix1920/25	245L 245R	408L 408R	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	2,447
13	S3D-3G	1080px1920/59	207L 207R	346L 346R	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	2,074
14	S3D-3G	1080px1920/50	109L 109R	181L 181R	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	1,087
15	UHD4	2160px3840/59	979	1,631	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	9,787
16	UHD4	2160px3840/50	829	1,382	10bit	4:2:2	BT-709	24- bit	1 ChPr	1 PID	8,294
*	Video format is given as active lines, scanning (interlaced or progressive) and frame rate (—59.9 is equivalent to —60/1.001 while —29.97 is equivalent to —30/1.001										
****	Audio to be analyzed on a single channel pair, however multi channel support up to maximum in TR-01:2018 could be included										

2. JPEG XS over MPEG2TS/SMPTE 2022-2

Areas of needed input
- HDR/WCG with specific direction for video payload header and IP layer metadata, ANC vs, JPEG code stream
- Typical broadcast formats
- Cinema or higher quality formats/bit depth/sampling

3. Request for VSF Members to Join

Current Interested Parties
- Media Links, IntoPix, Evertz, ESPN/Disney, GVG, Net Insight, Nevion, Barco, Comprimato, Sumavision, Imagine, AT&T/Warner Media
- Specifically, looking for VSPF members (service providers) and VSUG members (end users) to join
- Use this opportunity to input towards industry direction and realize real world usable solutions
- Document editing is usually a smaller subset of team membership, which interested parties can volunteer for or not
- Team members can participate via conference calls, no need to travel
- Document editing is usually a smaller subset of team membership

Next Steps
- Sign Up
- Start Regular Meetings
- Complete TR
- Conduct Interop

4. JPEG XS over SMPTE ST 2110 22

- Develop interoperable profiles for JPEG XS coded media for 2K and 4K applications and including HDR and WCG, using as much as possible existing standards
    - ✓ ISO/IEC standard, 21122, (JPEG XS)
    - ✓ ST-2110-22
    - ✓ Draft IETF RFC; Payload RTP JPEG XS
- Create Interop point(s) utilizing JPEG XS as the media codec
- Create recommendation on SDP file contents
- Organize base level interop workshop/VidTrans Demonstration

VSF
VIDEO SERVICES FORUM

5. JPEG XS over SMPTE ST 2110 22

Areas of needed input
- HDR/WCG with specific direction for video payload header and IP layer metadata, ANC vs, JPEG code stream and specific indications in SDP file
- Liaison with AMWA for specific control parameters
- Consideration of Cinema or higher quality formats/bit depths/sampling

5. JPEG XS over SMPTE ST 2110 22

Current Interested Parties
- Media Links, IntoPix, Evertz, GVG, Net Insight, Nevion, Barco, Comprimato, Sumavision, Imagine, AT&T/Warner Media
- Specifically, looking for VSPF members (service providers) and VSUG members (end users) to join
- Use this opportunity to input towards industry direction and realize real world usable solutions
- Document editing is usually a smaller subset of team membership, which interested parties can volunteer for or not
- Team members can participate via conference calls, no need to travel
- Document editing is usually a smaller subset of team membership

Next
- Sign Up
- Start Regular Meetings
- Complete TR
- Conduct Interop

VSF
VIDEO SERVICES FORUM

5. JPEG XS Conclusion

Two Activity Groups
- JPEG XS over MPEG2TS/SMPTE 2022-2
- JPEG XS over SMPTE ST 2110 22

Sign UP
Start Effort

Thank You