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VITEC

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VIDEO INNOVATIONS

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HEVC 422 10-bit
Ultra Low Delay
Contribution Quality CODEC

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HEVC - HISTORY

High Efficiency Video Coding, HEVC is a well established ITU-T - ISO/IEC CODEC standard published in January, 2013

HEVC received and Engineering Emmy Award
Joint Collaborative Team on Video Coding (JCT-VC) for High Efficiency Video Coding (HEVC)
2017

HEVC - ORIGIN

HEVC was designed by companies and institutions involved in Video Coding as part of the Joint Collaborative Team on Video Coding (JCT-VC)

Based on efforts by:

ITU-T VCEG

H.265

ISO/IEC MPEG

23008-2

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HEVC - STANDARDS

ITU-T H.265

https://www.itu.int/rec/T-REC-H.265-201802-I/en

ISO/IEC 23008-2 (2017)

https://www.iso.org/standard/69668.html

HEVC - POSITIONING

HEVC is perfectly positioned for use with its Main 10 422 10-bit ultra low delay profile to efficiently deliver contribution caliber performance.

HEVC - Video Quality

HEVC and its vast set of compression tools facilitates contribution video quality (VQ) requiring less than half the bits compared to AVC

HEVC inter-frame compression is nearly ten times more efficient compared to J2K intra-frame coding

HEVC intra-frame encoding is on average 44% more efficient compared to J2K intra-frame coding

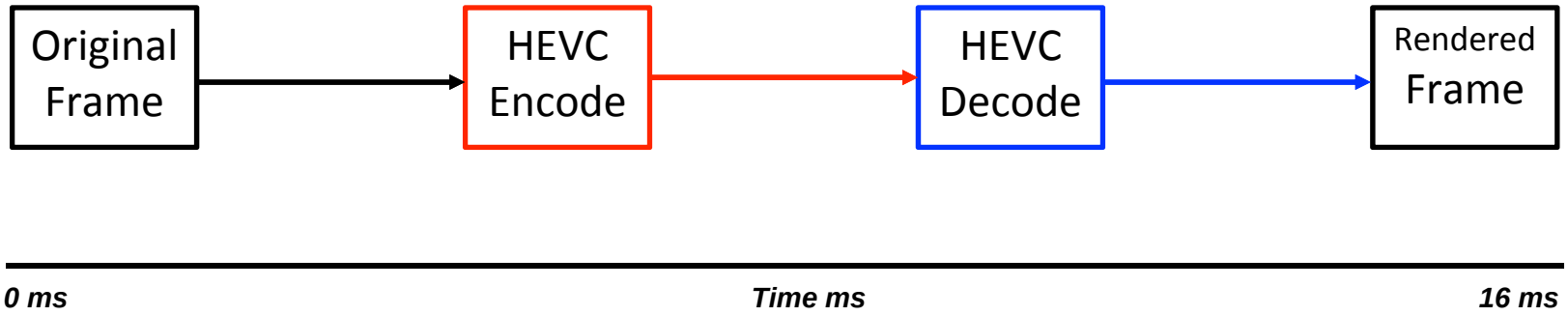
HEVC - LATENCY

It is a common misconception that HEVC means high latency

HEVC is capable of sub-frame ultra low latency (ULL)

ULL is measured as glass to glass presentation

HEVC - LATENCY



HEVC - SCALE

HEVC frame sizes

Sub SD, SD, HD, 2K, 4K, 8K

HEVC frame rates

Still Image to hundreds of frames per second

HEVC's dynamic frame size and frame rate support make it ideal for use from still images and large format high frame rate video applications

HEVC - AUDIO

HEVC does not specify audio encoding, it is a video CODEC

HEVC can be used in a Transport Stream or other containers

Containers supporting MPEG 2, AVC, J2K all support varying audio CODECs

HEVC also supports varying audio CODECS including uncompressed PCM passthrough, Dolby passthrough, Dolby, AAC, MPEG and other efficient audio CODECS

HEVC - AAC-ELD AUDIO

To achieve HEVC ULL video performance, audio encoding must also use a low delay CODEC

AAC- enhanced low delay (AAC-ELD) audio encoding is required

AAC-ELD requires hundred of Kbs, not Mbs

PCM requires 2.3 Mbs per pair consuming ~20 Mbs for 16 channels of audio alone

HEVC - ANCILLARY

Like AVC, HEVC does provide mechanisms for passing SDI ancillary data in the supplemental enhancement information (SEI) payloads

Ancillary support depends on the CODEC implementation, SDI extraction capabilities and optional support for socket based data services

HEVC does NOT limit the support of traditional SDI ANC payloads, implementations by CODEC vendors can vary

HEVC - HDR

HEVC supports HDR in the SEI payload

HDR color transfers are defined in SMPTE 2084 PQ

HDR Standards:

HLG

HDR10

HEVC - USE

HEVC is not royalty free

There are two primary licensing organizations

MPEG LA

HEVC Advance

Licensing questions and royalties remain for distribution

Contribution is approved by major US operators

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HEVC - CONCLUSIONS

HEVC is a mature CODEC standard

HEVC is approved for contribution by Major US operators

HEVC supports low and ultra low latency modes

HEVC supports many audio CODECS including PCM pass

HEVC Supports SEI data

Thank you

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