Alan Lambshead

Standards for Video Compression

During the past 15 years, SMPTE has been involved in standardizing four video compression standards. The SMPTE 10E Essence Technology Committee that is responsible for drafting these standards is continuing to update these standards to address the continuing needs of the broadcast industry.

VC-2 is a SMPTE mezzanine video compression standard, based on BBC's DIRAC pro, first standardized by SMPTE in 2009. The SMPTE 2042 family has been recently revised to support UHDTV and adds a high-quality profile to support archiving and production applications. The SMPTE 2047 family is being revised to add a new level 66 mezzanine compression of UHDTV for use with HD Infrastructure. Supporting conformance documentation and bitstreams are also being revised. Most of these documents are either published or nearing completion.

VC-3 is a SMPTE compression format, based on Avid's DNxHD video codec, first standardized by SMPTE in 2009. The four documents in the SMPTE 2019 family have recently been revised to add image resolution independence (up to 16384 × 16384) as well as support for 12 bits and ITU-R Recommendation BT.2020 color space. The additions are backward compatible, and no current features are deprecated. This work was completed in late 2016.

VC-5 is a SMPTE compression format, based on the Cineform/GoPro video compression system, first standardized by SMPTE in 2014. Seven documents are planned for the SMPTE 2073 family. Recent work has added the "layer" capability to support embedding multiple images in a single bitstream; used for stereoscopic, HDR, and interlaced frames. The recent work also adds the ability to implement special functions without disturbing standard decoders. These revised documents will be published together shortly when the conformance specification (which includes a reference decoder, sample encoder, and sample bitstreams) is complete.

This update will be my last in the Journal, as my term as Standards Vice President completes at the end of 2017. I have truly enjoyed serving the Society these past four years, and working with the scores of volunteers who work tirelessly in the SMPTE standards community.

UPCOMING STANDARDS MEETINGS

4–8 December 2017
Santa Clara, CA, USA
Hosted by Arista

12–16 March 2018
SMPTE HQ
White Plains, NY, USA

June 2018
Toronto, ON, Canada
Hosted by the SMPTE Toronto Section

September 2018 (following IBC)
Geneva, Switzerland
Hosted by EBU

Outcome reports from each of these meetings will be posted on the SMPTE website to report publicly on SMPTE standards activities. The most recent report is available at https://www.smpte.org/standards/engineering-committees.

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