



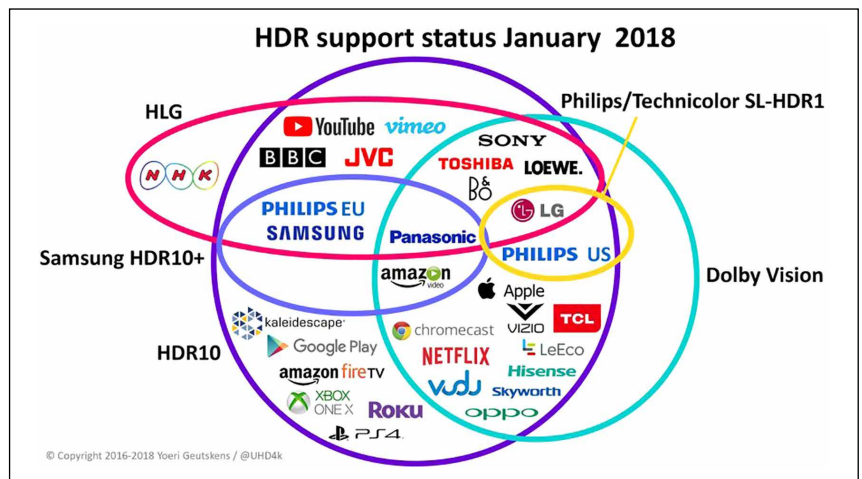
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Standards for UHD, HDR, and WCG

Forget HD! You want to upgrade to UHD HDR!” was the third comment in the Facebook thread on my timeline the other night. Usually I would let those comments slide but this time, my interest was engaged. This wasn’t a professional TV group, this was a community group for one of my small neighboring villages in the U.K. with about 2000 inhabitants. The conversation usually covers pubs, potholes, farming, and the local school, so a mention of high dynamic range (HDR) was very strange indeed.

After a few exchanges with the commenter, it turns out that he was very excited by the ultrahigh-definition (UHD) HDR streaming services that had appeared on his brand new smart TV. I was surprised that he was able to get UHD because the internet in this delightful picture-postcard corner of the U.K. seems to be delivered over damp string via a dial-up modem. We did a little investigation and he confirmed that he wasn’t getting UHD. He was getting an HD HDR stream but had never noticed.

When a piece of technology that is very new, quite hard to explain, and generates much excitement with the general public, we know that it will eventually be a winner. Not being able to tell the difference between well-delivered HD HDR and more pixels in UHD is understandable, especially if the viewing



distance from the screen is more than 1.5 times the picture height. The important takeaway is that nonexpert viewers used the terms UHD and HDR in the right context to describe an improved viewing experience. In today’s mixed delivery environment with variable viewer bandwidths, the content value chain needs to be filled with UHD, HDR content that can satisfy the needs of the well-connected and the poorly connected viewers alike. SMPTE’s standards are the key to putting content into that value chain.

If you have been following the press and the standards communities for the past few years, then you will know that there has been a lot of work on HDR and wide color gamut, but there isn’t currently a single global unifying standard. In fact, depending on how content is being shot, post-produced, and then delivered to the consumer, there

may be several HDR systems being used just to get the signal to you. Blogger Yoeeri Geutskens produced the HDR support diagram above, which was really popular on Twitter. He succinctly points out why consumers might be a little confused about HDR.

To make the end-to-end ecosystem a reality, SMPTE is working with other standards bodies to make the whole value chain HDR aware. The standards bodies include the International Telecommunication Union (ITU), Advanced Television Systems Committee (ATSC), and the UHDTV forum. SMPTE has, of course, standardized ST 2086, which carries the core metadata upon which consumer formats like HDR10 are based. For the more sophisticated HDR value chains, it is not sufficient to carry just one piece of HDR metadata for the entire clip, and it is necessary to carry HDR metadata that varies on a scene-by-scene

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basis or even a frame-by-frame basis. SMPTE ST 2094 provides a framework for carrying that metadata

and there are several parts to the standard covering different HDR metadata applications.

From a SMPTE standards perspective, the most important thing is to be able to carry HDR signaling through the various transports that SMPTE has standardized. The technology committees are reaching the end of a major upgrade to many transport standards that now provide mechanisms for HDR signaling. For specifics, the December 2017 and March 2018 standards outcome reports are available on the SMPTE website and a Webcast is available on the @smpteconnect YouTube channel.

Finally, if you need an overview of UHD, don't forget that SMPTE runs an excellent educational course and there are many freely available overview documents in the SMPTE Digital Library; simply search for the "-0" document in a suite and you will get the free PDF that describes how it all fits together.



UPCOMING TECHNOLOGY COMMITTEE (TC) MEETINGS

18–21 June
Ryerson University
Toronto, Ontario, Canada

19–22 September
EBU
Geneva, Switzerland (following IBC)

3–6 December
Dolby Laboratories
San Francisco, CA, USA