



Bruce Devlin

UHD/HDR

We are at the beginning of the ultrahigh-definition (UHD)/high-dynamic-range (HDR) journey. It is a curiously different journey than the introduction of HD and likely to be a faster one. With UHD, the screens, cameras, lenses, and even user-generated content arrived early, but a discovery that better pixels, as well as more pixels, led to an almost complete redefinition of the entire content supply chain. Standards definition organizations, including SMPTE, have been at work defining the fundamental colors, brightness levels, conversion processes, and transport processes for getting the content from camera to screen.

The good news is that much of the standardization work is done. SMPTE has documented a wide variety of mechanisms for moving the UHD/HDR content over serial digital interface (SDI) and Internet Protocol and files in a range of technologies to fit the needs of different operators. The various HDR mechanisms in use today have defined the metadata that can be carried in live signals as well as in files. The *SMPTE Journal* and

YouTube channels are rich in tutorial content explaining the subtle difference between scene-referred and display-referred HDR.

We should not forget the audio. We all know that great audio improves perceived picture quality, and SMPTE has recently published SMPTE ST 2098-2 that defines a bitstream for carrying immersive audio. Extensions to the existing transport layers are being created to allow Immersive Audio to be carried, and the SMPTE metadata register has many new entries covering audio and video to help UHD systems give better experiences to consumers.

So what is missing? I was at the European Broadcasting Union Production Technology seminar

recently and, for me, one of the most fascinating topics was the practical use of UHD/HDR in the different genres. Simple questions like “How do I mix this SD feed into the UHD source?” have complex workflows to ensure that the resulting signal looks good on the UHD service (with relatively few viewers), looks good on the HD service (with probably the maximum number of critical viewers), looks good on the SD service (which still has a lot of viewers watching the adverts), and looks good online (where bitrate and resolution may be variable).

As is often the case with new technology, simplicity can suffer until the good working practices are known and the technology has been tamed. I am looking forward to seeing some great content delivered over the next year in UHD and HDR. I am also looking forward to seeing how the standards and specifications get refined as talented people tame the technology and give us the content that would have been unimaginable when I started in the industry in the 1980s.

If you are working in this area and think a SMPTE standard needs updating, please get in touch. The standards community is always open to new members with working knowledge on how we can make things better.



UPCOMING TECHNOLOGY COMMITTEE MEETINGS

17–20 June 2019

Imagica
Tokyo, Japan

18–21 September 2019

Fraunhofer
Erlangen, Germany

9–12 December 2019

Arista Networks
Santa Clara, CA

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