

For expanded coverage of this month's topic on "HDR/WCG/HFR," the following articles are available only in the Digital Edition of this issue. Visit the SMPTE digital library at <http://journal.smpte.org> to access the issue and to read these papers.

A UHD 2/3-inch CMOS Imager with Dynamic Pixel Management—An Enabler for New Format Flexibility

By Klaus Weber and Peter Centen

The broadcast market currently faces changes that are very challenging for imaging solutions; the change from HD to UHD and the introduction of high dynamic range (HDR). In phases of change, more flexible solutions are needed. The dynamic pixel management (DPM) technology already available in some FT-charge-coupled devices offered a unique solution for lossless switching between 4:3 and 16:9 aspect ratios, as well as between all the different HD formats, including 2.37:1 widescreen. Smaller UHD pixels do not offer the same performance as larger HD pixels and, until now, CMOS imagers have not allowed the pixel size to be changed. This is a real limitation for anyone who needs to produce in UHD as well as in HD. The new CMOS-based Xensium^{HAWK} imagers with DPM^{Ultra} technology offer a solution to select the pixel size for native UHD or native HD, to deliver UHD or HD performance with no compromise. This paper explains the background and the development of the new flexible pixel size technology.

Adapting Content to Different Display Capabilities and Viewing Environments

By Jack Holm

The emergence of high dynamic range (HDR) content and displays requires methods for adapting content to different display capabilities. This paper addresses mastering and encoding considerations, and presents methods for adapting HDR-mastered content for viewing on displays with different capabilities and viewing environments. Specifically, HDR grading considerations and coordinated methods for dealing with reductions in highlight and/or shadow range are presented, along with methods for adjusting mid-tone brightness to compensate for reductions in dynamic range and/or different surround luminances. The degree to which such adaptations can and should preserve the mastered appearance is discussed. Issues in converting between SDR (1886), HLG, and PQ EOTFs are also addressed. The conclusions note the importance of creating high-quality well-defined masters on well-behaved displays in appropriate environments, and some problems that can arise when displays aggressively remap images. The recommendations include mastering for a target HDR display, methods for adapting content for different receiving displays, and coordination of display and surround luminances to preserve the mastered appearance.

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SMPTE ST 430-2:2017, D-Cinema Operations – Digital Certificate

SMPTE OV 2067-0:2017, Interoperable Master Format – Overview for the SMPTE ST 2067 Document Suite

SMPTE ST 2091-1:2017, Ruggedized Fiber-Optic Connectors for HDTV and UHDTV SDI

Amendment 1:2017 to SMPTE RP 2092-1:2015, Advertising Digital Identifier (Ad-ID[®])
Representations – Amendment 1

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