



SECTION MEETINGS

Atlanta August 2015

Despite a heavy downpour as the meeting time approached, a large crowd gathered at Turner Broadcasting to listen to Matthew Goldman, senior vice president of technology at Ericsson and Executive Vice President of SMPTE. The topic of the August meeting was titled “High Dynamic Range for HD and UHD-TV: Real World Considerations.” Goldman began by describing the high dynamic range (HDR) experience: “Once you see it, you’ll know it.” Several examples of still HDR images were simulated by a process known as tone mapping, which can involve multiple copies of the same image, with each exposed for different amounts and the result combined to make the “perfect” picture. This process creates the effect of an image of a larger dynamic range while displaying it on a device without a large dynamic range.



Attendees at the Atlanta meeting in August.

HDR images can be presented on any size screen, from the largest movie theater screen to a small cellphone. What defines an HDR image is a high contrast ratio, typically 16 f-stops or more. Over the years, the luminosity of display devices has increased. Reference white in the era of cathode ray tube (CRT) devices was 100 nits. Typical liquid crystal displays today output 300 to 400 nits. HDR displays in the future will likely produce 1000 to 4000 nits. For comparison, a movie theater screen today measures 55 nits. However, the

darker room and the darker regions of the image can give rise to a larger dynamic range in the case of the movie theater.

The eye has a large dynamic range (roughly 10^{-8} to 10^8). Our eyes respond logarithmically to light just as a display device natively produces light output that corresponds logarithmically to its analog voltage input. A desired goal for future systems and display devices is a more immersive viewing experience. This has sometimes been called HDR+, because it involves not only a larger dynamic range but also a wider color gamut. Looking toward future systems, the consideration of a higher frame rate also enters the picture. There are proponents of ultra-high-definition (UHD) 1 in the 2017 to 2018 time frame with 10-, 12-, or 14-bit color depth; a spatial resolution of 3840 x 2160 pixels; and frame rates of 100 or 120 frames/sec. These same visionaries see UHD-2 in International Telecommunication Union Radiocommunication Sector (ITU-R) Recommendation BT.2020 with the same color depth and frame rate and with a spatial resolution of 7680 x 4320 pixels. Goldman pointed out that with these gains come the challenges of legacy viewers. Do we try to create a compatible system that can be viewed on any device? Do we create converters that down-convert signals for legacy receivers? Do we simulcast? What about our infrastructure for production and post-production? Do we take a dual-layer approach? Or do we create in the higher standard and downconvert as needed?

The subjects of viewing distances and the human eye’s limiting resolution were discussed. In the case of UHD resolutions, it is likely that many consumers will view their televisions (TVs) from a distance greater than the ideal distance. This essentially eliminates the advantages of a higher spatial resolution. However, the advantages of a higher dynamic range and larger color gamut will still exist. Goldman discussed the research done by Peter Barten, which relates changes in the luminance level to device brightness and viewer perception as to what is a just-noticeable difference. For greater amounts of device brightness, more quantizing bits are needed to prevent seeing steps in tran-

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sitioning through the digital levels. Barten's curve shows the relation between these. The audience was presented with various proposed solutions to optimize the light-to-video level back to light transfer functions to minimize visible quantizing effects. A graph showing how code words relate to tristimulus values for each of the transfer standards offered (ITU-R BT.709, British Broadcasting Company/Japan Broadcasting Corporation, and SMPTE Timed Text 2084) was presented, as well as some advantages of each.
 —Richard Perin, Secretary/Treasurer

New York June 2015

The June New York Section meeting, titled "HDR: More Challenges for Post-Production," was held jointly with the Blue Collar Post Collective (www.bluecollarpostcol



Photo (c) Mark Forman Productions, Corp.

Front (L-R): Tim Dwight, Katie Hinsien, Tim Spitzer, Luc Amiot, Mark Schubin, Nat Jencks, John Dowdell, John (Pliny) Eremic, Joe Beime. Back (on-screen): Howard Lukk (via Skype).

lective.com), on 3 June 2015, at the Iris & B. Gerald Cantor Film Center at New York University (NYU). Refreshments were sponsored by Iron Mountain and Avid Technol-

ogy. A record 273 people registered for this event, filling most of the seats in the theater.

New York Section Chair Bruce Follmer opened the meeting, introduced the pro-

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Bruce Follmer addresses attendees at the New York meeting in June.

ducers, and announced the September New York Section meeting, titled "IP Architecture: Beyond the Buzzwords." He also spoke about SMPTE standards being a cooperative, collaborative process.

Guest speakers included Katie Hinsien, who delivered the keynote address titled "HDR: New Challenges for Post-Production." Mark Schubin on HDR in a nutshell; Howard Lukk, director at Pannon Entertainment (via Skype); and Luc Amiot, senior principal product design at Avid, who spoke on work in progress on HDR. Joe Beirne of Technicolor-Postworks, John Dowdell of

Goldcrest Post, John (Pliny) Eremic of HBO, Nat Jencks of Outlier Post, and Tim Spitzer of Jigsaw Productions served as panelists. Ryan Dismukes of NYU; Tim Dwight of ABC; Follmer, also of ABC; Patrick Gerrity of Post Factory; and James Reyes of Light Iron produced the meeting.

Lukk was also an integral part of the meeting, attending via Skype. He discussed the making of his short film *Emma* (www.em-mathemovie.com); showing an excerpt of the movie using NYU's projectors to give attendees a firsthand perspective on how HDR can be used in today's movies. The video was shot by students at Kingsborough Community College and edited by Farisa Ahmed at New York City College of Technology. Spiro Karantzalis was the projectionist and Mark Forman was the official SMPTE photographer.

Hinsien compared the viewer's experience of HDR to that created using 3D techniques, in that overuse of these techniques can lead to jitter, judder, and eye fatigue. He stated that the professional market is playing catch-up

to the consumer market.

Schubin presented a technical overview of HDR, titled: "HDR: What is it? Why is it good? And what's tricky about it?" Schubin's slide presentation can be seen at the Schubin Cafe (www.bit.ly/hdr20150603). Amiot spoke about technical aspects of editing in HDR.

Gerrity moderated a lively discussion among the audience and panelists, including Lukk via Skype. SMPTE Membership Vice President Bill Miller discussed the need for the user community to be active in SMPTE standards committees, such as the study group on the HDR ecosystem.

A video of this and other New York Section meeting videos are available at www.youtube.com/user/smpteny. For more info and videos on this and other past New York Section meetings, visit www.smpteny.org/meetings.—Tim Dwight, Meeting Producer/Section Manager

Toronto June 2015

The Toronto Section meeting on 24 June was an annual year-end barbecue and tour, at held at Shaw Media in Downtown Toronto. Following the BBQ, held in the main company's courtyard, members gathered on the 16th floor penthouse, where the formal meeting was held.

The meeting commenced with short announcement and updates by Section Chair Paul Briscoe. Meeting organizer, and Secretary/Treasurer Tony Meerakker then introduced the speakers.

Bruce Wiseman, broadcast engineering designer at Shaw Media, the first presenter explained the recent master control rebuild at Shaw Media. The process began with creating a temporary master control, then major construction mainly replacing the main



Photo courtesy Roger Keay

Meeting attendees enjoying the Toronto Section annual year-end BBQ.

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Members on the Shaw Media CER tour.

monitor wall and moving the sitting position. After that construction, the equipment was reinstalled and the room was put back in to service.

The second presenter, Craig Jasman, senior broadcast technologist at Shaw Media, discussed Shaw's new dual UPS system. He explained that each rack in their main machine room has two power strips; each strip goes to a different UPS. So if one UPS fails,



Members touring Shaw Media's media control room.

the other one will take the full load. Devices without dual power supplies can be plugged into a special unit called an ATS that will automatically switch between the two UPS.

The presentations were followed by a tour of the facility. Members were given a guided tour of the main master control (that was

recently rebuilt) and the central equipment room where the dual UPS system lives. Attendees were also given a tour of the ground floor news studio, which has a unique design with almost all the equipment and control done from another central location.—

Craig Jasman, Section Member

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