



By Matthew Goldman

# Introduction to the SMPTE 2016 Progress Report

## Introduction

**T**he 2016 Progress Report marks another year of progression within SMPTE and the motion imaging industries as a whole. The Progress Report provides not only a vision of where the motion picture and television (TV) industries are heading but also a reflection on how far we have advanced in the past 100 years since SMPTE's formation, on July 24, 1916. Happy Centennial SMPTE!

Our industries continue to evolve. The migration to IT-based broadcast infrastructures and more software-defined media processing in traditional workflows presents us with daunting but interesting challenges to overcome. New immersive technologies—such as high dynamic range (HDR), wide color gamut (WCG), higher spatial resolution, advanced audio objects and personalization, and virtual reality—increase the complexity of the solution as well as stress the limited resource of bandwidth. Of course, overcoming these challenges is what makes being an engineer or creative so exciting!

The progress report begins with a summary of the activities of the ten SMPTE Technology Committees. Almost 800 SMPTE members are involved in standards activities, and over the past year, over 35 SMPTE standards have been published.

The progress report continues with industry reports from leading experts covering a wide range of various subjects in the motion image, sound, and metadata ecosystems. As broadcasters look to migrate to Internet Protocol (IP)-based infrastructures, effective ways to guarantee the delivery of mission-critical, live video over IP must be developed.

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Thomas Edwards of Fox Networks discusses activities in the area of studio video-over-IP standardization and interoperability. Ultra-high-definition (UHD) continues to be a hot topic, particularly in the advancement of larger color volumes using new HDR and WCG standards, as well as immersive audio. David Wood, SMPTE Life Fellow, reviews the state of the industry of UHD, including what trials and services have been done and are planned to be done soon. In the progress report from the Motion Picture Experts Group (MPEG), Jacob Ström and Jonatan Samuelsson of Ericsson give an overview of MPEG's previous major video compression standards and then explain the activity to determine what, if any, impact that HDR and WCG have on the coding efficiency of the new High Efficiency Video Coding (HEVC) standard and what the current activities are. In an article about HDR TV, Scott Miller of Dolby describes all the major activities related to HDR, including transfer functions, static and dynamic metadata, and HDR program interchange.

The Advanced Television Systems Committee (ATSC) provides an update on the state of ATSC 3.0, their next-generation broadcast TV system, as well as evolutionary activities of the existing ATSC digital TV (DTV) system. Considerable progress has been achieved over the past year with the core physical layer specification for ATSC 3.0 being approved as a Standard and more than a dozen other ATSC 3.0 specifications reaching Candidate Standard status. The Digital Video Broadcasting (DVB) Project provides an update on their new standards and their activities in terrestrial broadcasting, satellite broadcasting, receiver interfaces, next-generation audio, and UHDTV. New UHD-1 Phase 1 services have been launched, as well as systems using DVB-S2X and DVB-T2 modulation techniques. Work continues on

*Digital Object Identifier 10.5594/JMI.2016.2598661*  
*Date of publication: 10 October 2016*

UHD-1 Phase 2 and IP-delivered over-the-top (OTT) delivery specifications, as well as in many other areas.

The Consumer Electronics Association renamed itself to The Consumer Technology Association (CTA), to reflect the diversity of its membership. In its progress report, the CTA discusses the display market shift toward 4K UHD resolution and the new HDR and WCG compatible displays. A key new interoperability effort known as Web Application Video Ecosystem (WAVE) is also discussed, as well as updates to receiver recommendation practices and the high-speed uncompressed DTV interfaces (the core interface for the High-Definition Multimedia Interface [HDMI]). The American Society of Cinematographers reports on their progress with HDR and WCG, digital cinema laser projection, and virtual reality production, among many other topics. The Academy Color Encoding System (ACES) is becoming the industry standard for managing color throughout the life cycle motion of picture or television production. With several new “immersive viewing experience” technologies being introduced concurrently, the need to preserve creative intent is more important than ever. The European Broadcasting Union Technical Committee examines the latest technology trends in production and media distribution. Many of these areas are examined, including spectrum usage, OTT services, mobile technologies, personalization, loudness, 360° video and virtual reality, and IP studio infrastructure.

Many of the topics overviewed in this Progress Report will be covered in detail in expert presentations and panels at the SMPTE 2016 Annual Technical Conference and preconference symposium, on 24-27 October, in Hollywood. See you there!

### About the Author

**Matthew Goldman** is the senior vice president of technology, TV & media, at Ericsson, where he is focused on video processing and media delivery solutions. He has been actively involved in the development of DTV systems since 1992. He was a prominent participant in MPEG, where he helped create MPEG-2 systems and digital storage media command and control (DSM-CC) standards, and he continues to be influential in other industry organizations, including SMPTE, the Ultra HD Forum, the ATSC, the DVB Project, and the Society of Cable Telecommunications Engineers. His recent activities include UHD and HDR technologies. Four of his projects have been recognized by Technology & Engineering Emmy Awards. Goldman received BS (high honors) and MS degrees in electrical engineering from Worcester Polytechnic Institute. He holds six patents related to digital video transport. A SMPTE Fellow, he is also a senior member of the IEEE and an inductee of the Academy of Digital Television Pioneers. Goldman is currently serving as the Executive Vice President on the SMPTE Board of Governors.



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