



**Dave Schnuelle** represents Dolby Laboratories as senior director image technology, and is responsible for guidance in Dolby's efforts in the television, cinema, and consumer imaging areas. He began his career in 1969 as an engineer on television outside broadcasts while attending Purdue University. Schnuelle later held positions as chief engineer and director of engineering at various post-production facilities such as Image Transform and Modern VideoFilm in Los Angeles. Working with Lucasfilm's THX Division, beginning in 1991, Schnuelle was responsible for founding the THX Digital Mastering Program for quality assurance of home video masters and duplicated software. As director of technology for THX, he directed research efforts into new technology for cinemas. During that period, he directly supervised the international digital cinema exhibition of the new *Star Wars* movies—*Episode 1* (1999) and *Episode 2* (2002). Schnuelle holds four patents on imaging and audio technology and has been deeply involved with film and television standards activities for 30 years, publishing and presenting many papers over that period. Schnuelle is a SMPTE Fellow.



**John Hurst** is co-founder and chief technology officer of CineCert, LLC, an internationally recognized developer of digital cinema technology, where he is currently engaged in the development of the D-Cinema Comprehensive Test Plan for Digital Cinema Initiatives (DCI). Hurst has been an active participant in the SMPTE DC28 Technology Committee, and has served as editor of several of the standards published by that committee. He has over 25 years of experience in sound recording and post-production, including the design and construction of well-known recording studios and post-production sound facilities in the Los Angeles area. He has technical responsibility for many location recordings and live-to-air broadcasts. Hurst is a member of the Audio Engineering Society and is an active radio amateur and community volunteer.

## Television Applications (22TV) **Michael Dolan, Chair**

### OVERVIEW

The 22TV technology committee covers the application of mastered essence to television distribution, including compression, encryption, wrapping, marking, packaging, media, control, display presentation, reproduction, and related topics.

### ORGANIZATION

Most work to date has been organized as individual, project-oriented study groups, or ad hoc groups that are somewhat transient.

### ACTIONS AND PUBLICATIONS

The following projects concluded in the past year and the work has been published: RP 201 (Lambhead) was revised to add support for 2-perf 35mm format. RP 215 (Lambhead) was revised to add support for progressive video formats, ASC color decision list, and alternative mapping for non-film applications. 2038 (Goldman) was created to define the mapping of VANC data packets to the MPEG-2 Transport. 370M (Wus) was amended to correct a few errors in a table. RP 168 (Bancroft) was revised to enhance and harmonize it with SMPTE 425 and 318. 273M, RP 197, and EG 25 have all been archived. 2016-1, 2016-2, 2016-3, 2016-4, RP 2007, and RP 2027 were all re-affirmed.

An Advisory Note was published clarifying ambiguous language in SMPTE 2016-1 and 2016-3 regarding VANC carriage.

### WORK IN PROGRESS

#### Lip Sync Standards and Practices (Jones)

This group is preparing a report on the status of the industry on lip sync (audio/video synchronization) and is starting to draft new standards to address some of the facility domain issues.

#### Image Formatting Amendments (Jones)

This group is amending 2016-1 and 2016-3 to address VANC carriage issues outlined in the Advisory Note published on the SMPTE website.

#### RP 168 Amendment (Bancroft)

This group is amending the new RP 218 to address interim progressive timing.

#### RDD on Dolby-E (Lyman)

This new RDD provides recommendations on the carriage of Dolby-E with more video frame rates.



**Michael A. Dolan** is founder and president of Television Broadcast Technology, providing specialized professional encoders, test tools, and technical consulting in the field of digital television. He holds a BSEE degree from Virginia Tech and has worked for and founded various leading-edge computer graphics and realtime systems companies, including early foundational work in W3C technology and analog data broadcasting. Dolan has been involved in digital television engineering for the past eight years, including data broadcast system architecture and digital receiver design and compliance. He also currently chairs the ATSC Data Broadcasting Specialist Group (TSG/S13) and is active in the Consumer Electronics Association (CEA) and the Society of Cable Telecommunications Engineers (SCTE). A SMPTE Fellow, Dolan authors the SMPTE Journal Almanac column, and holds several patents in computer web technology.

## Broadband (23B) **Birney Dayton, Chair**

The 23B committee was created to develop standards for delivery of content via broadband channels including the Internet. The inaugural meeting was held in Hollywood in October 2008. Two ad hoc groups have been formed to deal with specific aspects of the assignment.

### CONTAINER AD HOC GROUP (MIKE DOLAN, CHAIR)

This group was formed to specify an open, interoperable multimedia container format for use in broadband to support multiple essence formats and interactive formats; ensure the content can be delivered, identified, protected, played, copied, and recorded to physical formats such as DVD; and identify needed metadata sets. The group has evaluated a wide variety of existing technology and is in the process of completing detailed requirements and use cases,

after which the group plans to liaise with external standards organizations and draft an appropriate Engineering Document.

### CAPTIONS AD HOC GROUP (CRAIG CUTTNER, CHAIR)

This new group was formed to determine the interoperability requirements for distributing digital content captioning information and subtitles via the Internet for contribution and consumer consumption. This minimally includes identifying the functional requirements for Internet content that will work on a global basis and in multiple languages. This group has been developing liaisons with other organizations to harmonize captioning approaches to minimize authoring/re-authoring and to provide maximum interoperability. The group has been collecting information and is in the process of developing standards.



**Birney Dayton** has been active in the broadcast industry since 1968. In 1973, he joined Grass Valley Group, Inc., and for the next 16 years he designed and managed the design of many products. In 1989, Dayton with two others, founded NVISION, Inc. In December 2008 Miranda Technologies acquired NVISION. Dayton is currently director of technology for Miranda.

Over the past 30 years, Dayton has spent considerable time working on industry committees helping to advance the state of the art. He was involved in the development of SMPTE analog and digital component video standards and was technical chair of the SMPTE High Definition Electronic Production working group and subsequently chaired the new technology committees, S22 and 22TV. He is currently chair of the 23B technical committee. He also chaired the Systems Analysis working party of the Advisory Committee on Advanced Television Service.

Dayton has authored numerous industry papers, has served as a governor of SMPTE, is a Fellow of SMPTE, and in 2008 was awarded the SMPTE Progress Medal. He currently holds 16 patents.

**Craig Cuttner** is senior vice president, advanced technology, for Home Box Office, responsible for all projects in the areas of video and audio distribution systems, and distribution-related computer and communications systems. This includes satellites, compression, DRM and related technologies including HDTV, SVOD and wireless services to cell phones in the U.S. and worldwide.

Cuttner serves on several industry committees, and has been active in HDTV since the late 1980s, contributing to many aspects of HDTV industry-wide.

Cuttner has several patents and patents pending. He is a SMPTE Fellow.