

Section Meetings

Hollywood—June 2007

The meeting on June 26, which was held at the Linwood Dunn Theater, was the final event of the current season. Los Angeles members of the Audio Engineering Society were invited to attend, due to the subject matter, "Sound Restoration in Motion Pictures." Several National SMPTE officers and executives, in Los Angeles for other meetings, also attended the meeting, which had about 120 attendees.

The usual pre-show reception preceded the program, which began with a Road Runner cartoon to settle the audience into the mood of the evening. Hollywood Section Chair Patricia Keighley announced the topic for the evening and thanked the staff members of the Academy's Theater Operations department for their cooperation and presentation skills. She then announced the results of the recent elections and introduced the new Section officers who were in the audience.

SMPTE Executive Director Kimberly Maki outlined the upcoming plans for SMPTE's operations, and introduced Peter Symes, Director of Standards and Engineering, and Joel Welch, Director of Professional Development. She also asked members for comments and suggestions.

Keighley returned with the introduction of the first presenter, Jim Crawford, Film Technology Co., Inc., who explained some of the problems encountered in restoring sound tracks from the earliest days of "audible" pictures. This was illustrated by showing a few minutes of the Columbia picture, *A Song of Love*, made in 1929, using the sound as originally recorded 78 years ago. This same section was shown again, with the restored sound. The demonstration showed how background noise, splices, slugs, etc., were removed. Crawford commented that these noises probably were not heard in the theater sound systems of their day, but with even the quality of television now, are very annoying.

John Polito, Audio Mechanics, gave the next presentation. One of their current projects is the restoration of the 1951 feature, *Invasion of the Body Snatchers*, which was released with Perspecta Stereo Sound. This was actually a monophonic recording, directed to different speakers in the theater, using sub-audible tones to cue a special unit called an "integrator." Using a specially prepared demonstration, Crawford demonstrated the differences between straight mono reproduction and the use of Perspecta Sound.

James Young and Brian San Marco of Chace Productions, gave the final presentation, discussing the latest restoration of the 1961 Academy Award winner, *West Side Story*. This picture was originally released with 6-track magnetic sound, and the restoration first required an extensive search to find the earliest generation of the recordings. The end result was a 5.1 sound track, reproduced with the DTS digital system. This was demonstrated spectacularly with a new 70mm print of the America musical number and the newly restored sound. The meeting ended after a brief Q & A session.

—Richard P. May, Section Manager



Executive Director Kimberly Maki outlines SMPTE plans to the audience.



Pre-show reception: Governor Wendy Aylsworth, Director Standards and Engineering Peter Symes, Manager Sieg Heep, Secretary/Treasurer Paul Chapman.



Program presenters John Polito, Jim Crawford, James Young, and Brian San Marco.

The meeting on June 19, which was held jointly with the Rochester Chapter of the Society of Broadcast Engineers (SBE), was a review of new technologies shown at the National Association of Broadcasters (NAB) exhibit in Las Vegas and a presentation from Grass Valley on Ad Insertion in the Compressed Domain. Art Cosgrove, who is retired from Eastman Kodak Co., chaired the NAB review.

Mark Henry, Kodak, discussed the Digital Cinema Summit, noting that many companies are trying to emulate the "film look." The worldwide digital cinema screen count has increased from 360 to 2,600 in the past year, from a total of 150,000 screens. A major driver for the installation of DC projectors is 3-D movies. Henry also discussed Television over the Internet (IPTV), which is expected to require 50 Mbits/sec bandwidth to the home, within three years.

Ricky Figueroa, Kodak, reviewed the digital cameras shown at NAB. These included the Red Digital Camera, which generated a big buzz at the show, with its impressive specification (single CMOS sensor, 4K with 11 stops dynamic range), and low base price. Sony showed its "Genesis-like" HDC-F23 camera. Dalsa had its Origin II and Evolution cameras (4K, 12 stops, using 35mm cine

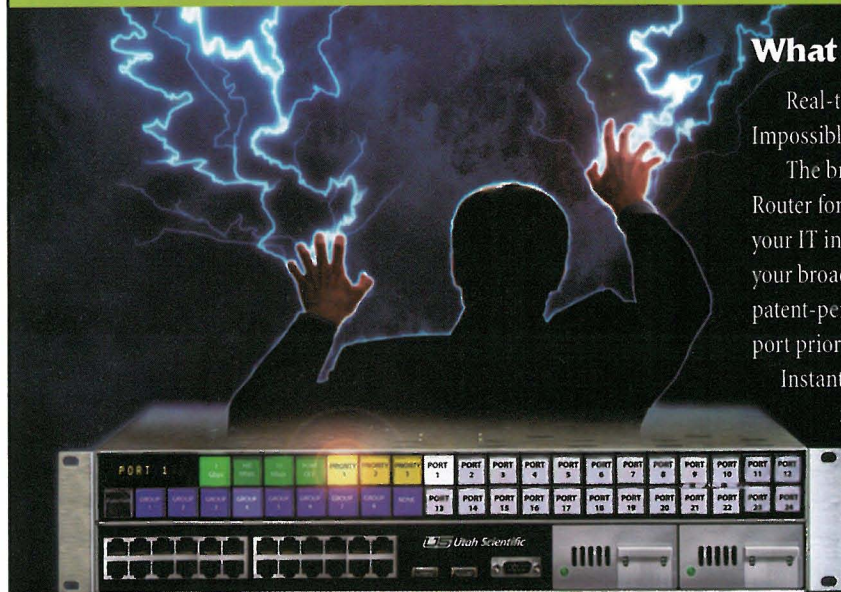


Speakers at the Rochester meeting in June. (L-R) Mark Henry and Ricardo Figueroa, Kodak; John Walsh, WHEC-TV; and Tom Dennett, Grass Valley Inc.

lenses); Silicon Imaging SI-2k camera using 16mm cine lenses; the Phantom HD camera from Vision Research, with frame rates up to 1000 frames/sec and the Phantom 65, both with the largest pixel size (12.5um).

John Walsh, WHEC-TV, talked about the impact that the demand for mobile, portable, and handheld television display via Internet Protocol Television (IPTV) will have on the local TV content provider. Additional UHF channels are being added to satisfy the need for local content demanded by viewers.

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Ed Wright, WXXI-TV and SBE, introduced Tom Dennett, Grass Valley Inc., who described the technology for ad insertion in the compressed domain as part of the 3-phase rollout of digital television. Already, many people are watching digital transmissions, with the analog

shut-off rapidly approaching in February 2009. MPEG-2 encoding is expected to be in use for some time, with MPEG-4/HD coming later.

—Alan J. Masson, Secretary/Treasurer

San Francisco—June 2007

On June 14, Al Kovalick, an Avid Technology Fellow, gave a presentation on “The Fundamentals of AV/IT Systems.” Networked media has revolutionized the way audio/video production and distribution systems are being built. In contrast to the traditional tape-based methods of handling rigidly timed video, networked media unshackles the system designer and allows for new possibilities of connectivity, storage, media management, and media handling. The presentation reviewed the basics of AV+IT tapeless systems and technology. Kovalick discussed these fundamentals with stories about developing the

world’s first MPEG video server, the HP MediaSteam, in 1995. In the short time since then, magnetic storage disk density has increased by a factor of 500. Kovalick presented eight “IT forces” that are vectoring traditional tape-based video systems to file-based AV/IT hybrid systems. The material discussed was derived from Kovalick’s book, “Video Systems in an IT Environment—the Essentials of Professional Networked Media” (www.theAVITbook.com).

—Rick Reagan, Section Chair

Washington, D.C.—June 2007

Aspect Ratio Management Using AFD

Images—Letterboxed. Pillarboxed. Postage-stamped. Horizontally stretched or squeezed. We’ve all seen them, and wished we hadn’t. The migration from 4:3 to 16:9, plus the rapid introduction of widescreen cameras and displays, has raised the issue of managing aspect ratios to optimize the image for the display’s shape. More than 30 people attended the Washington, D.C., Section’s June 2007 meeting, held at WETA’s Arlington, VA, facility, at which the featured speakers addressed that subject.

Graham Jones, NABs director of communications engineering, Chair—SMPTE S22 Image Formatting Group; Michel Proulx, Miranda’s CTO; and Brian Markwalter, CEA’s vice president for technology and standards, provided a succinct background and explained how SMPTE, ATSC, and CEA standards for Active Format Description (AFD) and Bar Data (in place after only two years intense effort) will help solve the problem in the broadcast facility, for transmission, and in the receiver/display.

Broadcasters will continue to use new and old material produced in 4:3, plus programs created in 16:9. Meanwhile, in addition to the rapidly growing numbers of 16:9 displays being bought, millions of perfectly working 4:3 sets will be used by people who won’t discard them. Thus, at both ends of the broadcast chain, multiple aspect ratios will coexist for many years.

The goals of SMPTE’s S22 Image Formatting Group’s have been to optimize the image display for the viewer, taking into account multiple production aspect ratios and at least two display aspect ratios; provide guidance for



PowerPoint from the SMPTE DC presentation on AFD & Bar Data.



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(L-R) Michel Proulx, Miranda; Christopher Lane, WETA; Brian Markwalter, CEA; and Graham Jones, NAB.

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the format conversion process in post-production, pre-broadcast, and in the receiver/display; minimize changes to the originally created image, and retain critical image content.

Manual adjustment and data entry must be avoided as much as possible. To solve the aspect ratio problem, metadata that is carried from program creation through the entire production and broadcast chain to the home display is the only rational approach. AFD & Bar Data is intended to guide downstream format converters, image scalers, and display processors to show the optimum picture.

The metadata needed has been undergoing development in three parts: (1) AFD & Bar Data was added to ATSC A/53B DTV standard in 2002. It is carried in the MPEG-2 transport stream video user bits—the vertical ancillary data space. The codes are based on European DVB/ETSI standards. However, until now, they have not been implemented by broadcasters or in receivers in the U.S. (2) In June 2004, the ATSC Implementation Subcommittee issued IS-312 “Optimization of Image Formatting for Transmission and Display.” (3) During 2005 to 2006, a joint initiative involving SMPTE, the ATSC, and the CEA produced an end-to-end standardized system solution for image formatting, using AFD & Bar Data.

This resulted in a three-part system solution: SMPTE 2016, which includes AFD & Bar Data generation and entry, plus handling of that data throughout production and post-production, on into the broadcast chain, up through editing/switching. SMPTE 2016 has five parts.

1. SMPTE 2016-1: “Format for AFD & Bar Data” specifies the raster format and the active image area.
2. SMPTE 2016-2: “Format for Pan-Scan Information.”
3. SMPTE 2016-3: “VANC Data Mapping of AFD & Bar Data” defines carriage in SMPTE 259M and SMPTE 292M serial bitstreams.
4. SMPTE 2016-4: “VANC Data Mapping of Pan-Scan Information.”
5. SMPTE 2016-5: “KLV Coding for AFD, Bar Data & Pan-Scan Information,” needed for MXF. This section is in preparation.

In addition, a SMPTE Engineering Guideline on system implementation is in preparation.

- ATSC A/53 Part 4, which includes the ATSC encode/MUX and transmission, added clarifications to the semantics to match CEB16.
- CEA’s CEB16 “Active Format Description & Bar Data Recommended Practice” (published July 2006) reviews methods for representing AFD, aspect ratio information, and bar data, and provides guidance for consumer devices (receivers, STBs, and displays) and recommendations for output signaling and display appearance.

Displays are also affected by Aspect Ratio Control (ARC; SMPTE RP-186; carried in the VBI; used within the broadcast plant), the widescreen signaling (WSS; carried in the VBI in transmission to the viewer), CEA 861 (for HDMI uncompressed video), and CEA 805 (for component analog video).

AFD, which is independent of image resolution, uses a four-bit code that defines active image area and protected image areas for various combinations of aspect ratios. In other words, it guides downstream devices to automatically adjust the image’s shape, optimizing the image aspect ratio (including cropping and framing) to the display’s aspect ratio. It has been designed to eliminate postage stamped images.

While AFD & Bar Data will most often be used with 16:9 and 4:3 images and displays, it has been designed to



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accommodate other aspect ratios, and includes codes for 14:9. The Bar Data will accommodate non-standard aspect ratios for which no codes have been established, such as for Cinemascope movies, by delineating the thickness of the bars in number of lines or pixels for the aspect ratio being processed or transmitted.

The Pan-Scan information uses vertical and horizontal image size, as well as vertical and horizontal offsets to control processing and display.

AFD & Bar Data have been implemented for NBC's HD/SD operation in New York, and for HD/SD simulcasting at the Canadian Broadcasting Corporation.

AFD & Bar Data offers a way for content creators to optimize the image aspect ratio and protected image area seen by viewers, whether they have a 4:3 or a 16:9 display. It still depends on someone setting the parameters during program creation, plus equipment at every stage in production, post-production, broadcast, and reception/display that properly handles, and where necessary, passes or appropriately modifies, the AFD & Bar Data.

Thanks to Ed Kennedy, Pat Williamson, and Chris Lane at WETA-26 for their hospitality, and Miranda for providing excellent refreshments.

—David J. Weinberg, Section Manager

Washington, D.C.—May 2007

May 2007 featured the Section's annual "NAB Wrap-up" meeting, with several speakers, who discussed the recent convention in Las Vegas. Lynn Claudy, NAB, began with an introduction and provided information on two major broadcasting issues that were heavily evident at the show: Mobile DTV and the ongoing transition to DTV broadcasting. Claudy provided technical details and photos of several possible Mobile DTV approaches. He also noted the problems with consumer awareness of the coming broadcast change and NAB's efforts to improve this situation.

Next, Graham Jones, also of NAB, discussed statistics and history of the convention, and detailed the multiday conference program, which featured seminars and workshops on a wide range of broadcast and non-broadcast topics. The final NAB presenter, Kelly Williams, offered video snippets of keynote addresses from the conferences and discussed speakers' views on technological change. He then introduced Mark Schubin, the evening's guest presenter.

Schubin is a well-known television engineer, consultant, and contributor to industry publications. He provided an overview of changes and developments in many areas of television technology evident at the show, including cameras, storage, lighting, and distribution. Schubin highlighted particularly interesting products and added wry commentary on developments, which are not always what they seem.

PowerPoint shows of the evening's presentations are available on the DC Section website (smptedc.org). Thanks to Graham Jones and the NAB for providing facilities and refreshments.

—Eric Wenocur, Section Manager and Program Chair



SMPTE DC Section members at the NAB wrap-up meeting (note the blue shirts).



(L-R) DC Section Chair Karl Kuhn, Speaker Mark Schubin, Lynn Claudy, and Graham Jones of NAB.