

Section Meetings

Chicago

January 18, 2000

The January meeting attracted 25 attendees for a presentation by Jim Edwards, senior video applications engineer, Tektronics Measurement Business Div. Edwards discussed the ways engineers measure the quality of picture being delivered to viewers via compressed digital video services. As MPEG transport streams are being used for transmission, picture defects must be monitored; in addition, MPEG delivery methods allow multiple programs to be contained within a transport stream. Therefore, if engineers can reliably measure quality of service on a per program basis, bandwidth can be managed and allocated in a more effective manner.

Edwards reviewed the history and evolution of testing techniques. An early approach involved a double-ended, A/B measurement. Essentially a test signal at the source was compared to the signal at the destination and differences could be measured. The problem with this method was that it required the source test signal to be available at the destination, and the test was typically an out-of-service one. The goal was to be able to make realtime, in-service measurements and create a scale that could be used to accurately grade the service at a destination. Edwards went on to discuss the progress to that end.

Products now exist which allow measurements to be made on multiple programs simultaneously. The devices take into account such characteristics as blockiness, interruptions,

freezes, and uncorrelated Gaussian noise. Current systems also examine baseband video and MPEG protocol and analyze the transmission channel. Following his formal presentation, Edwards answered several questions from the audience.—Steve Robinson, Secretary/Treasurer

Detroit

December 14, 1999

Twenty-one people attended the meeting hosted by WXYZ in their Southfield studios. Michael Taylor, product specialist, Sony Electronics, displayed a compact MPEG-2 server with VTR functionality, remote browsing, and realtime editing capabilities. He explained the technology behind the new multichannel videodisk recorder developed by Sony Electronics. The MAV-555, based on MPEG-2 4:2:2 MP@ML compression technology, handles both linear and nonlinear editing tasks.

A Q&A session followed the presentation. —Helge Blucher, Secretary/Treasurer

Detroit

January 11, 2000

The Detroit section meeting in January was held at TV Warren in Warren, MI and was attended by 26 people. The speaker, Harvey Arnold, director of engineering, Sinclair Broadcast Group, addressed comparative receiving tests of COFDM versus 8VSB.

Many broadcasters, including Sinclair, have become increasingly concerned about the ability of digital television signals to be received by portable and mobile receivers. One of the characteristics of 8VSB

receivers to date has been the relatively long lockup time and fussiness of indoor antennas typical in urban situations. Arnold echoed his company's concerns that a TV signal, whether digital or analog, must be easy to receive, because the consumer will not put up with having to make lots of adjustments in the process.

As an outgrowth of this concern, Sinclair tested for ease of reception between 8VSB and COFDM in the Baltimore area. An STA was obtained to operate a 50-kW station on channel 40, and Sinclair assembled enough equipment to produce comparable 8VSB and COFDM signals on that channel, including a Zenith 8VSB modulator and a Rohde & Schwartz COFDM modulator. A common RF chain was used with the output of either modulator switched into the exciter.

Several dozen receive sites, both close in and at distances of several miles, both indoor and outdoor, were visited. Typical consumer set-top bowtie antennas were used for reception of the channel 40 signals close-in, and yagis were used for the distant sites. Production model 8VSB receivers by Panasonic and Pioneer were used, along with NDS and Nokia COFDM receivers, made for the European market and modified for the 6-MHz channel. The transmitter and receive equipment were carefully calibrated and checked at the beginning and end of each day's run and the results were tabulated.

Analysis of the data showed of 31 sites using a single bowtie antenna, 8VSB reception was possible at only eight, while

COFDM came in at all 31. Using a double bowtie antenna, 18 sites received a COFDM signal while only seven 8VSB sites did. Another parameter, ease of reception, was determined by rotating the receive antenna and noting the azimuth range over which a usable signal was produced. COFDM exhibited much greater robustness in this measure, with over 30 opportunities receivable, regardless of antenna orientation, compared with 24 opportunities in which 8VSB was receivable at all.

Arnold emphasized that there is no "hidden agenda" behind Sinclair's investigation of COFDM. The group has 58 television stations facing conversion to DTV and they feel their efforts would be wasted if the transmission system did not allow for easy reception by the public. Over 400 stations are in support of its petition asking the FCC to allow stations to choose 8VSB or COFDM.—Frank Maynard/Chair

Hollywood

January 19, 2000

Hollywood's first meeting of the new century addressed "24 Frame Progressive Scan HDTV Technology: The Inception, The Present, and the Future." Held at the Autry Museum of Western Heritage, the meeting covered specifics of 24-frame digital technology and included presentations on both acquisition and post-production. A panel Q & A session on the various issues surrounding work being done in 1080p24 concluded the meeting.

The standing-room-only audience of approximately 300 SMPTE members and

guests were treated to three presentations by guest speakers Dave Wiswell, Panasonic Broadcast; Larry Thorpe, Sony Electronics; and John Galt, Panavision. Additional participants on the Q&A panel included Emory Cohen, Laser Pacific; and Gary Morse, Fox Digital.

Wiswell began with an overview of the current HDTV post-production stream and outlined specific areas where 1080p24 is likely to become an important element. Next, Panasonic's development of a universal format converter was discussed, along with a comparison of various HD recording formats, including D-5, HDCAM, and DVCPRO. Wiswell noted the new 1080p24 frame D-5 model would implement eight audio channels, and the UFC would maintain audio sync with whatever video delay was introduced during conversion. An explanation of DCT compression, common to many digital formats was offered, along with specifics on support of segmented frame signal distribution and manipulation in the HD digital plant.

Thorpe followed with an overview of the development of the HD CCD. He referenced various papers and articles he has authored over the past 12 years relating this technology to film. He pointed out that Sony is offering the fourth generation of HD CCD technology in the new 1080p24 frame camcorder due out in production models sometime around NAB. Sony's pursuit of achieving results comparable to film prints, if not negatives, was the topic of several graphical slides comparing resolution and depth of modulation of video versus 35mm film. In general, Sony wants the creative community to under-

stand that the HDWF-900 camcorder is just the first step in offering a digital capture alternative to film.

Galt followed with an update on Panavision's implementation of a "Panavixed" version of the new Sony camcorder. Panavision has taken on this project to satisfy a commitment to George Lucas and the team at Lucasfilm and ILM to provide the digital camera packages for the next *Star Wars* trilogy. Galt showed specific mechanical modifications Panavision is making to the lightweight camcorder to accommodate Panavision lenses and accessories. Next was an overview of the complete digital acquisition system, including a very complete metadata record subsystem that would assure frame-by-frame data capture on the camera and the lens. This will facilitate CG insertion of set extensions and 3-D animation during digital post-production. An optional full-bandwidth disc recorder was shown in a diagram to allow capture of certain effects shots without compression.

A very interesting and informative explanation by Galt followed on the complexity of building a cine lens system for the 2/3-in. HD CCD format. Comparisons of format, aperture, depth of field, and depth of modulation confirmed the challenge Panavision has had in creating two lenses for the new digital system, an 11x1 and a 4x1. He noted that the final projected format (2.35) is to be achieved by letterboxing the native 1.77 capture on the camcorder, and not by anamorphic processes.

The follow-up panel answered questions covering a number of topics including Laser Pacific's early experience this season posting in 1080p24 using

prototype Sony VTRs and Fox Digital's experiments with 24p capture in standard definition compared to film. Digital acquisition shortcomings in frame aspect ratios and capture rates (no under/over cranking) were noted. Thorpe repeated Sony's intent to keep improving the technology and work towards the holy grail of uncompressed full bandwidth capture at even higher progressive frame rates.

Practical demonstration followed in an adjacent room. Monitors were set up showing comparisons of 35mm film versus 1080/60i HDCAM; Fox Digital material: 35mm film versus 480p comparison shot with a Phillips progressive PAL camera; and shots made on the 1080p24 "Panavixed" Sony camcorder.—Phil Squyres, Manager

New England October 20, 1999

"Production for the Next Millennium, Managing Content for the Changing Shape of Television" was the theme for this event held at WHDH-TV, Channel 7 in Boston.

The featured speakers were Steve Dirksmeier and Steve Wynn from Sony Broadcast & Professional Group. Meeting hosts were Jim Shultis, director of engineering, WHDH-TV; John C. Gates, SMPTE Section Chairman; and Robin Shahid, Sony Broadcast and SMPTE Section Manager who served as the meeting coordinator/planner.

Wynn gave the principal address, which related to the emerging picture sizes and image formats that have evolved for DTV broadcast television and the cinema industries since the

1940s, relating them to the new high-definition widescreen formats that are currently proposed and rapidly being adopted worldwide.

Specifically, Wynn touched upon the commonality of the new 16:9 image formats, which are very close to various Cinema widescreen formats, such that with the new digital television systems in the next year or so, professionally-produced motion pictures will "fit better" than the earlier cinema works produced in the conventional 4:3 image format.

The presentation touched on how interchange between these formats will be accomplished with various imaging stretching techniques, pan-and-scan approaches, and even multiple pictures on the new widescreen format simultaneously. In short, the future of new "wide screen" television pictures will be brighter, bigger, better, and bolder, all for clearer and sharper images for the consumer and industrial/institutional end-user.

Also discussed was the "convergence" for image display screens, which will accommodate both the new digital television systems and various computer displays from business or home computers. It's a brave new DIGITAL world!—Paul Beck, Secretary/Treasurer

New England November 17, 1999

"Digital ENG, Newsgathering on the Move," was the theme for the November New England Section meeting held at Wolf Coach, in Auburn, MA.

The featured speaker was Richard Wolf, president and CEO of Wolf Coach.

The meeting host was Emeric Feldmar, engineering manager at Wolf Coach and an SMPTE Section Manager, serving as the Meeting Coordinator/Planner.

Wolf gave an in-depth PowerPoint presentation on a newly developed digital transmission system used by mobile television vans, aircraft, or water vessels, which allows almost flawless picture and sound transmission, even when the vehicles are moving.

The system is termed COFDM for co-orthogonal frequency domain multiplexing and is being considered as a technological advancement for digital broadcast systems direct-to-home, largely because of the inherent reduction of ghosting and other artifacts with conventional analog and digital transmission.

Wolf's presentation very graphically showcased how COFDM technology has already revolutionized the ENG industry. The presentation included videotape playback of recent live coverage of major news events in downtown New York City, where the presence of multiple tall buildings frustrates any attempts at "direct-path" transmission. The videotape depicted remarkably stable images from multiple locations in the heart of Manhattan, transmitted directly from moving land vehicles.

The presentation discussed how the current COFDM system provides acceptable MPEG-2 digital video transmissions in the 4:2:2 or 4:2:0 formats, good enough for "Contribution Grade" digital signals.

Wolf emphasized that the new COFDM technology offers several unique and key advantages over other technologies: high level of protection against both static and dynamic multipath signal degradation; mini-

mally, a 4-dB co-channel rejection; excellent adjacent-channel interference reduction; ultrareliable "fixed-path" radio links; "user-friendly" digital ENG systems; allows dual mode SNG and ENG on the same vehicle; dual-Path (two-camera view) using simple multiplexing; and true "all-mobile" applications from fast-moving land vehicles, watercraft, and both rotary and fixed-wing types of aircraft. Further information is available from Richard Wolf or Emeric Feldmar at Wolf Coach (508-791-1950).—Paul Beck, Secretary/Treasurer

New England December 15, 1999

The last New England section meeting of 1999 featured a two-part technology presentation and panel discussion, "Meeting the New Man on the Block: Nortel DWDM Video-MAN." Meeting introductions featured Section Chair John Gates and Moderator C. Robert Paulson.

Paulson gave an in-depth discussion of the newly-emerging technologies involving digital transmission of broadcast and data signals using fiber-optic systems in large and often-congested metropolitan urban areas. He emphasized that recent product offerings in fiber-based networks and server-connected storage services have made giant leaps forward in affordability, technical reliability, and of very increasing importance, total system security and integrity.

The first Technology Presenter was Marc Abatiell, Nortel, whose graphical presentation detailed how many technology manufacturers and service providers are working together with

each other to provide "integrated system" solutions to broadcast or data transmission storage /server issues. Abatiell discussed specific enterprise ventures and successful examples in the Metropolitan Boston area, and touched upon concepts for some downtown/ urban applications.

The Second Technology Presenter was Chris Skarica, Nortel Networks, who gave a detailed graphical presentation on the technologies and system capabilities of the existing and planned Nortel applications.

Scott Berry, MetroMedia Fiber Networks, was the third technology presenter. He discussed the plans and schedule for the Boston-area MAN start-up and expansion. This was also a computer graphics-generated presentation, with detailed maps and charts describing the system development and linkages. Historical examples of how MetroMedia has done similar successful large-capacity fiber-based systems in downtown New York City were also discussed.

The Fourth Technology Presenter was Graeme Jarvis, StorageNetworks, Inc., who discussed the concept of SANs (storage area networks) with specific applications to the television broadcast industry. Key to this presentation was the emphasis on the ability to have substantially all the end-user's video/audio/metadata "Program Data Storage" exist in an "off-campus" situation for very high volume users, most especially with multiple digital nonlinear editing/production workstations.

System security, pathway redundancy, access protocols, and data recovery integrity were topics of the presentation, with emphasis on how the "off-campus"

storage area network can be custom-tailored to the demanding applications for modern, multiple-stream, all-digital broadcast and cable industries.

At the conclusion of the scheduled presentations, Moderator Paulson initiated an open forum with the more than 50 attendees. Open and frank discussion between the presenters and attendees lasted for about 30 minutes, leading into a pair of brief observation/ reaction presentations by Panel Members Karl Renwanz, Video Transfer, and Ross Kauffman, Hearst-Argyle Broadcasting.

The meeting wrap-up was provided by Paulson who touched briefly upon developments being discussed and considered within the film production and electronic cinema arenas, which represent an obvious next step for emerging fiber-based storage and distribution technologies.

Paulson extended an open invitation for all attendees to join an ad hoc "DWDM VideoMAN Applications Advisory Council," which would provide an industry and community resource of end-users to pool their expertise and concerns as the fiber-based storage and distribution systems proliferate.

The entire 3-hour meeting, with individual presentations and the attendee interaction was "captured" with a DVC minicam, for SMPTE archival purposes. Those recordings are available on a single T-182 VHS videocassette.

For copies of this tape or any further information, contact C. Robert Paulson at Omnimedia (508-366-4694).—Paul Beck, Secretary/ Treasurer