SMPTE
Technical Conference & Exhibition
New York Hilton, NYC - November 9-12, 2005

What Will You Bring Back from the SMPTE Technical Conference?

When we hear that an attendee has learned something at the SMPTE Conference, and successfully implemented what they've learned at their own organization, we're delighted. Their success is our success.

Bring your company practical information from the SMPTE Conference. Maybe it will come from an All-Day Digital Cinema Forum, or from three full days of educational sessions, though probably both. Maybe you'll pick up some advice from one of the exhibit booth personnel in our exhibition hall, which is just teeming with the latest in motion imaging technology. We have expert keynote speakers, and our special events are sure to keep you busy networking with your colleagues, clients, and customers. Come, join the excitement!

REGISTRATION HOURS & LOCATION

SMPTE's registration will be located in the Hilton New York's East Promenade on the third floor. Registration will be open during the following hours:

Tuesday, November 8	**1:00 p.m. – 3:00 p.m.**
Wednesday, November 9	**7:00 a.m. – 5:00 p.m.**
Thursday, November 10	**7:30 a.m. – 5:00 p.m.**
Friday, November 11	**7:30 a.m. – 5:00 p.m.**
Saturday, November 12	**8:00 a.m. – 2:00 p.m.**

BOOKSTORE HOURS

Stop by the SMPTE Book Store. We've canvassed the speakers of the conference, and have asked them to suggest books for further reading. These books can be found in the SMPTE Bookstore, along with CD-ROM Standards, SMPTE T-Shirts, and more! The SMPTE Bookstore will be open during the following hours:

Wednesday, November 9	**8:00 a.m. – 5:30 p.m.**
Thursday, November 10	**8:00 a.m. – 5:30 p.m.**
Friday, November 11	**8:00 a.m. – 5:30 p.m.**
Saturday, November 12	**8:00 a.m. – 5:30 p.m.**

CONFERENCE PROGRAM

Wednesday
8:30 a.m. – 5:30 p.m.

All-Day Digital Cinema Forum
Includes Boxed Lunch

Thursday Morning
8:30 a.m. – 12:15 p.m.

HDTV Newsgathering—How About It?
Media Infrastructure—MXF, GXF, and AAF

Thursday Afternoon
1:30 p.m. – 5:15 p.m.

Digital Motion Imaging Production—New Small-Format HD Acquisition Formats
Sharpening Your Storage IQ

Friday Morning
8:30 a.m. – 12:15 p.m.

Digital Motion Imaging Production—Recent Advances
Sound in the Digital Era

Friday Afternoon
1:30 p.m. – 5:15 p.m.

Digital Imaging Production—New Large-Sensor Systems

Consuming Content—An Unquenchable Thirst

Saturday Morning
8:30 a.m. – 12:15 p.m.

Advances in Motion Picture Film Technologies

Content Protection—Preserving and Sharing Rights in a Digital World

Saturday Afternoon
1:30 p.m. – 5:15 p.m.

Managing IP-Centric Television—Trends in the Digital Broadcast Plant

Display Technologies: Fixed Pixel Displays Go Mainstream

SPECIAL EVENTS

SMPTE's Welcome Bash
Wednesday, 5:30 – 7:00 p.m.

Exhibit Hall, Americas Hall II

It's opening night, so be ready to party! Join us as we mix, mingle, and have fun, all in the Exhibition Hall, giving you greater exposure to the latest technology show exhibitors have to offer.

Honors and Awards Reception
Thursday, 7:00 – 9:00 p.m.

Rendezvous Trianon

Annually, SMPTE gives awards to those in the industry who have demonstrated great achievement and contribution to motion imaging. Awards include the SMPTE Progress Medal, the Eastman Kodak Gold Medal Award, the John Grierson Gold Medal Award, the Technicolor/Herbert T. Kalmus Gold Medal Award, SMPTE Journal awards, and more.

Industry Luncheon
Friday, 12:15 – 1:30 p.m.

West Ballroom

Sit down to a banquet with your colleagues; share information, business cards, and a great meal. The event is capped by the conference's keynote address.

SMPTE Fellows Luncheon
Saturday, 12:15 – 2:00 p.m.

Petit Trianon (For SMPTE Fellows Only)

SMPTE Fellows, old and new, are honored for their accomplishments, and given a chance to get together annually at this luncheon.

SESSION PROGRAM AND DESCRIPTIONS

The following program is subject to change without notice.

Wednesday, November 9

All-Day Seminar

Forum on Digital Cinema

In light of the accelerating advances in technologies and standardization related to Digital Cinema, SMPTE believes the 2005 Fall Technical Conference is an ideal time to report to conference attendees on the present status of this exciting and now fast-paced industry movement.

The Digital Cinema Initiative (DCI) consortium has reached a major milestone with the finalization of their specification in mid-2005. This substantive document reflects the consensus of the major studios on all that should constitute an end-to-end digital cinema system, as well as their detailed technical specifications and recommendations relating to all of the primary elements that constitute the total system. Because of the importance of this achievement, SMPTE has asked representatives from DCI to conduct a detailed tutorial explaining the core sections of their specification. The morning session of the All-Day Seminar will be dedicated to this technical tutorial.

The afternoon session will be conducted by SMPTE and will broaden the exploration of works-in-progress relating to digital cinema. This session will encompass some in-depth technical tutorials on technologies central to a digital cinema system. In particular, an update of the JPEG 2000 compression algorithm will be included. Representatives from National Association of Theater Owners (NATO) will outline their present thinking on a rollout model for digital cinema. SMPTE will provide the latest overview on the current status of

standardization activities within their various DC-28 Working Groups on Digital Cinema.

Thursday Morning, November 10

HDTV Newsgathering—How About It?

Chair: Don Perez, KUSA-TV

Broadcast News has become so pervasive and competitive that it now constitutes a major driver of technological innovation in video acquisition, editing, storage, networking, and archiving. Competing new standard-definition (SDTV) tapeless newsgathering systems are just entering the marketplace and are now vigorously vying for the hearts and minds of broadcasters and cable operators.

At the same time, HDTV is finally taking off, with 2005 perceived by many as the decisive "kick-up" year. And, already an industry debate is stirring about the possibilities of HDTV newsgathering. New technological developments in lower cost HD acquisition and editing systems are making their debut this year. Yet the yardsticks for acceptable HDTV news quality and system workflow are still only loosely defined.

This session will explore this topic, from the viewpoint of broadcaster aspirations in terms of HDTV quality and workflow, and manufacturer goals and innovations that seek to meet these needs. An open discussion on performance tradeoffs in optics, cameras, and recording systems with associated product cost levels will be encouraged.

XDCAM Professional Disc System for SD/HD Broadcast and Professional Applications, *Tori Suzuki, Sony*

Will Moore's Law Make HD News Technology More Affordable?
Ray Baldock and Ed Casaccia, Thomson Grass Valley

Managing the Bandwidth Transition Requirements from Standard Definition (SD) to High Definition (HD) in Microwave Electronic Newsgathering, *Michael Payne, MRC*

Building an End to End Workflow for HD News, *David Schleifer, Avid Technology*

HD Graphics—What's the Big Deal? *Caren Anhder, Avid Technology (formerly Pinnacle Systems)*

A Real-World View of HD News, *Don Perez, KUSA-TV*

Media Infrastructure—MXF, GXF, and AAF

Chair: Hugo Gaggioni, Sony
Co-Chair: Bruce Devlin, Snell & Wilcox

The increased application of IT-based technology within the content creation, storage, and distribution areas of the television and movie industries has resulted in the use of file formats that can be interchanged, streamed, and archived, using IT networks, computer hardware, and professional A/V hardware. The success of the standardization activities of the past few years is well proven by unprecedented industry support and with many new products and systems now available to end users.

The file formats standardized to-date provide not only a change in production and distribution workflows, but also enable backward compatibility with tape-based analog and digital formats so that a migratory path could be established.

This session will present information related to the practical use of devices and systems that employ MXF and GXF interchange file formats, as well as the use of the Advance Authoring Format (AAF) for complex, content creation operations.

Shared Metadata in the Broadcast Environment, *Jamie Meyer, Pathfire*

Schedule Metadata Flow—The Times They are a Changin', *Chris Lennon, Harris Corp.*

Storing User Metadata in MXF (and other) Files, *Oliver Morgan, Metaglue Corp.*

What Grass Valley Learned from GXF and How It Can Help Everyone, *Bob Edge, Grass Valley*

MPEG-2 Long GOP Mapping for MXF File Storage Applications, *Jim Wilkinson, Sony*

RASC for MFX, *Chris Golson, SGI*

Thursday Afternoon, November 10

Digital Motion Imaging Production—New Small-Format HD Acquisition Formats

Chair: Theresa Alesso, Sony
Co-Chair: Bob Mueller, JVC

This year, the HDV tape format entered the marketplace and is already revolutionizing lower-budget high-definition production. The number of manufacturers supporting the format with low-cost acquisition systems is increasing. The number of major nonlinear editing manufacturers already solidly behind the format is nothing less than extraordinary. The format promises to democratize HD production within multiple strata's of low-budget production in the B2B markets, wedding videography, corporate training and promotion, and independent filmmaking.

Close on the heels of the HDV debut, the first of the tapeless HD acquisition systems have also appeared. They all have 24P capability in addition to the traditional television capture rates. Their specifications suggest imaging and recording performances somewhere between the HDV and the mainstream tape-based HD systems.

This session will address the technologies underlying these new and more cost-effective production systems, and their many possible applications.

Magnetic Tape Requirements of HDV Recording with MPEG-2 Compression, *Wayne Desmond, Hideki Kikuchi, and Steve Tice, Sony*

The Optics of Small-Format HD Acquisition, *Mark Schubin, Consultant*

2005 Van Cliburn Piano Competition—HDV Shooting, *Molly McBride, Sathya Productions Services*

Development of High-Performance HDV Devices Based on the 1080i HD Format for Acquisition and Production Applications, *Juan Martinez, Sony*

Canon Digital Signal Processing Method for Video and Photo and Multitrack Audio Recording Methods using HD and HDV Formats, *Joseph Bogacz, Canon Inc.*

Sharpening Your Storage IQ

Chair: Al Kovalick, Pinnacle Systems

This session examines storage systems' data flow and architectures for AV applications. Storage is the core of most hybrid AV/IT facilities and its technology is rapidly evolving. Topics to be discussed include: distributed storage concepts, intrastore data flows, performance acceleration, clustered file systems, reliability methods, SAN/NAS, object storage, infrastructure

tradeoffs, and data management concepts. Presenters will illuminate the latest storage related concepts and give you insights to understand and evaluate product technology. If your view of storage is just a rack of disk drives, this session is for you. You will leave with new appreciation and a higher storage-techniques IQ.

Storage I/O Acceleration for Realtime Digital Media Production Environment, *Ji Zhang, Exavio, Inc.*

New Technologies for Accelerating File Transfers Across WAN Links, *Balraj Singh, Juniper Networks, Inc.*

The Future of Shared Storage, *Mike Rockwell, Avid Technology*

"MXF Aware"—Data Tape Storage for Video Archives, *Mark Ostlund, Quantum Corp.*

Holographic Storage—Breakthroughs for the 21st Century, *Kevin Curtis, InPhase Technologies*

Architecting Digital Content Storage Systems & Archives, *Tom Inglefield, StorageTek*

Friday Morning, November 11

Digital Motion Imaging Production—Recent Advances

Chair: Robert Siedel, CBS

Digital 24P has been in the marketplace about five years. This 2/3-in.-based image format system has gained significant popularity within certain genres of primetime television programming and is advancing more slowly in others. It has penetrated moviemaking to a degree where its merits are more definitively emerging, and new products are becoming increasingly reflective of the needs of directors and cinematographers. It continues to seek credibility within the larger universe of high-end television commercial production. This session will examine the status of this still-evolving system and some of the latest productions using this system. Technological advances in 24P 4:4:4 imaging and recording will be explored. The latest in 24P post-production tools and techniques, and advances in overall production workflow will be described.

High-Definition Does Not Equal Two Times Standard Definition! *Dave Guerrero, Videotek*

Development of a Three-CMOS 1080p/300 Frame/Sec HDTV High-Speed Camera, *Masakatsu Gotoh, et al., NAC Image Technology Inc.*

Tapeless HD Camcorder, *Alan Keil, Ikegami*

Technologies for a High-Definition Optical Camcorder Utilizing XDCAM Professional Optical Disc Storage Media, *Hugo Gaggioni, Sony*

Panasonic P2 HD Camcorder, *Steve Mahrer, Panasonic*

Development of Compact Motion Control Camera System for HD Digital Broadcasting, *Hiroyasu Masuda, NHK (Japan Broadcasting Corp.)*

Sound in the Digital Era

Chair: Tomlinson Holman, TMH Corp.

With a completely digital audio workflow, questions arise as to where to do what with program audio. Should production sound be compressed so that "it sounds good on the Avid?" Should editors perform equalization? Where should it be protected from copying and how? What are the criteria for fully reproducing the recorded sound in theaters and homes? This session will attempt to begin answering some of these questions by examining parts of the chain.

The X-Curve: Its Origins and History, *Ioan Allen, Dolby Laboratories*

Cinema Sound Quality Redux, *Tomlinson Holman, USCA Schools of Cinema/Television Engineering*

DC-PCM, an Audio Packaging Proposal for D-Cinema, *Stan Cossette and Pierre Lemieux, Dolby Laboratories*

Dolby Metadata Woes? Standardization to the Rescue! *David Strachan, Evertz Microsystems Ltd.*

Managing Multichannel Audio in Master Control, *Birney Dayton, NVision*

Dynamic Range Realities for Digital Television Audio, *Tim Carroll, Linear Acoustic Inc.*

Friday Afternoon, November 11

Digital Imaging Production—New Large-Sensor Systems

Chair: Stephen A. Stough, Lockheed Martin
Co-Chair: Volker Bahnemann, ARRI

A variety of larger 35mm single-sensor digital systems have recently arrived, promising higher performance and closer adherence to the traditional practices of high-end moviemaking. Different imager technologies and sampling lattice strategies are used. Both tape-based and hard-disk based recording systems are used for the capture media.

This session will explore these technologies and the associated acquisition performance that is achieved by each system. The proposed workflow of some of these systems will be examined.

Trade Analysis of Large Sensors for Digital Cine Acquisition Cameras, *William A. Hill, Steve Persall, and Robert McGriff, Lockheed Martin*

The European IP-RACINE Project for Electronic Cinema—A Participant's Report, *Dave Bancroft, Peter Centen, Dieter Haupt, Jan van Rooy, and Jens Peter Wittenburg, Thomson*

Initial Experience with a Film-Style Digital Camera, *Michael Koppetz and William Lovell, ARRI*

Advanced Research in Ultrahigh Density Non-magnetic On-camera Storage, *Robert McGriff, Lockheed Martin and William Oakley, Nanoscale Storage Solutions*

High-Dynamic Range Data Centric Workflow System, *Lucian Ion, Alan Lasky, and John Coghill, DALSA Digital Cinema*

If Film is Dead, is Video Far Behind? *John Galt and James Pearman, Panavision*

Consuming Content—An Unquenchable Thirst

Chair: Mike Tsinberg, Key Digital Systems

The consumer has direct access to view and manage digital content at increasing rate via a variety of digital media and transmission pipelines that include: Blu-Ray, HD-DVD, DVR, satellite, cable, home networking, and the internet. Not long ago, the DVD brought them

random-access, menu-driven storage with high-quality digital video and audio. That format has had an unprecedented rate of growth in the consumer market from both a device and content point of view. Consumers seem ready for more quality and choice: Blu-Ray and HD-DVD; HDTV/SDTV DVR linked to cable or satellite; home networking; IP distributed video; digital connectivity between consumer devices (HDMI, IEEE-1394), etc. During this session, speakers will discuss unprecedented opportunities being created in the field of digital connectivity and storage technologies for managing digital content in consumer homes.

Advanced Video Capabilities of HD-DVD-Video, *Kilroy Hughes, Microsoft Corp.*

Enabling Digital Home Media Distribution with HDMI, *Stevan Eidson, Silicon Image, Inc.*

Enabling Multiroom DVR via the Home Entertainment Network, *Ladd Wardani, MoCA*

CEA and Home Entertainment Networking—Filling in the Gaps, *Bill Rose, WJR Consulting, Inc.*

Blu-Ray: New Opportunities and Challenges, *Don Eklund, BluRay Disc Association*

Saturday Morning, November 12

Advances in Motion Picture Film Technologies

Chair: Chris DuMont, Eastman Kodak Co.

Motion picture film continues to evolve, both technologically and in the diversity of stocks for different applications. These advances are accompanied by a stunningly rapid adoption of digital intermediate techniques that enhance overall feature production workflow and produce a higher quality release print. Elevation of the digital intermediate scanning to 4K resolution promises even further quality improvements.

This session will look at developments in film stocks, both negative and print. It will also explore the advances being made in digital intermediate (DI) technologies and production workflow, and their supporting systems for post-production. The separate application of digital technologies to the restoration of film classics is also making impressive advances. This session will examine some of the latest work in this important area.

Latest Technology of Motion Picture Color Negative Film, *Tetuo Kikuchi, Fuji Photo Film*

Spatial Aliasing and Reconstruction Artifacts in Digital Intermediates, *Gabriel Fielding, Ryan Hsu, Paul Jones, and Chris Dumont, Eastman Kodak*

Designing Camera Origination Films for Scan-Only Applications in Television and Digital Intermediate, *David Long and Tom Maier, Eastman Kodak*

Motion-Compensated Spatial-Temporal Reduction of Film Grain Noise in the Wavelet Domain, *Stefan Eichner, et al., Technical University of Ilmenau*

Bringing Film Classics Back to Life, *Simon Lund and Dan DeVincent, Cineric; Schawn Belston, 20th Century Fox.*

Content Protection—Preserving and Sharing Rights in a Digital World

Chair: James M. Burger, Dow, Lohnes & Albertson
Co-Chair: C. Bradley Hunt, Motion Picture Association of America

Digital cinema is looming large as the relevant technologies advance, the standardization work of DCI and SMPTE matures, and the industry shows increasing enthusiasm. New high-definition packaged media, in the form of HD-DVD and Blu-Ray, are poised to enter the consumer marketplace. Home networking between digital still-image cameras, digital camcorders, computers, game stations, and audio storage systems are a hot topic. Looming over all of the digital-driven systems and services is the issue of ownership of intellectual property and all aspects of the associated copy protection schemes.

This session will explore the present status of the technologies, standardization, and policy/regulatory issues.

Designing and Marketing Technologies in a Post-Grokster World: An Analysis of the "Active Inducement" Standard for Copyright Infringement, *Kathleen E. Fuller, Esq., Dow, Lohnes & Albertson*

MGM vs. Grokster: A Supreme Court Ruling Protective of Constructive Innovation, *Troy Dow, The Walt Disney Company*

DRMs and High-Value Video Content Business Models, *David P. Beddow, Movielink, LLC*

Protecting D-Cinema Content, *Pierre-Anthony Lemieux, Dolby Laboratories*

Content Protection Protocols in Digital Living Network Alliance Home Networked Device Interoperability Guideline, *Florian Pestoni, Microsoft Corp.*

An Overview of the Advanced Access Content System, *Alan Bell, Warner Bros.*

Saturday Afternoon, November 12

Managing IP-Centric Television—Trends in the Digital Broadcast Plant

Chair: TBA

Broadcast and media production systems are rapidly adapting internet protocol (IP) routing and networking for moving audio and video files. Among other advantages, this has allowed engineers to leverage storage and processing equipment originally designed for the information technology (IT) industry. But do we fully understand the implications in performance, quality, and reliability? Will proprietary broadcast interfaces such as SDI and AES become obsolete? How can quality levels be monitored in the IP domain? This session will dive headfirst into these critical topics, addressing IP network strategies, the handling of compressed bitstreams, monitoring quality, and designing for reliability.

No Turning Back—IT & IP in the Broadcast Environment, *Danny Wilson, Pixelmetrix Corp.*

Master Control as a Compressed IP Environment, *Michael Adams, Terayon Communication Systems*

Next-Generation Hybrid Playout Infrastructure, *Charles Morin and Stéphane Blondin, Snell & Wilcox*

Adaptable Multitrack Annotation for Repurposing Assets, *John Wadle, OmniBus Systems*

Video Quality Monitoring over IP Networks, *Henry Sariowan, Path 1 Network Technologies*

Display Technologies: Fixed Pixel Displays Go Mainstream

Chair: Peter Putman, CTS, ROAM Consulting Inc.

High-definition display technology is branching in numerous directions. The global investment in development of high-resolution displays is today at an unprecedented high. The dominance of the CRT for high-end studio and post-production picture quality monitoring is being challenged by a variety of matrix display technologies. Direct-view screens are rapidly increasing in size and pixel count. Digital projection systems are also rapidly advancing in screen size, brightness, and resolution. LCD, Plasma, LCOS, SED, DLP, and GLV are all display technologies that today contend for a place in the HDTV home viewing arena, in production houses, and in digital cinemas.

This session will examine the relative merits and compromises of these technologies, for both consumer and professional high-definition viewing. In particular, picture sharpness, contrast, and color reproduction for some of these disparate technologies will be described.

Implementation of the First Commercially Available 4K Resolution Projector, *Gary Mandle, Sony*

Overview of TFT LCD Technology, *Pete Putman, Roam Consulting*

Evaluating the Performance of Fixed-Pixel Displays, *Jed Deame, Teranex Division Silicon Optix Inc.*

Full HD 1920 x 1080 Pixel Digital D-ILA Microdisplay Technology, *William Bleha, JVC North America R&D*

Plasma Display Image-Quality Advances, *Bill Schindler, Panasonic*

EXHIBITION HOURS

SMPTE's Exhibition will take place in the Americas Hall II at the Hilton New York:

Wednesday, November 9	**10:00 a.m. – 7:00 p.m.**
Thursday, November 10	**10:00 a.m. – 5:00 p.m.**
Friday, November 11	**10:00 a.m. – 2:00 p.m.**

Directory of Exhibitors

ADC	Booth 227
Avitech Video	Booth 255
Avocent	276

CONFERENCE SPONSORS

SMPTE would like to thank the following companies for their contributions and support of our Technical Conference & Exhibition:

SMPTE would also like to thank the following companies for sponsoring the Gold Medal Awards, to be presented at the Honors & Awards Ceremony:

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Leitch
National Film Board of Canada
Technicolor
Warner Bros.
(See Program Guide for Full and Updated List)