Proceedings

143rd SMPTE Technical Conference and Exhibition

Pixels, Packets, Processing and Infrastructure

November 4-7, 2001
Hilton New York
New York, NY

Editorial Vice President
Edward P. Hobson

Program Chairs
Phil Livingston
Chuck Phelan

Book Editor
Marilyn Waldman

595 West Hartsdale Avenue, White Plains, NY 10607
Contents

Program paper number in parentheses after the paper title.

All Day Seminar
Packets and Streaming Media — A Tutorial

Systems, Servers & Devices

1  Media Friendly Microprocessor Architectures and Tools, Ralph Biesemeyer, Intel Corp. Beaverton, OR (S-2)

9  CTVNEWS.com Case Study: Rich Media Content Management Meets Interactive News, Jamie Olliver, Blue Zone, Inc., Vancouver, BC, Canada (S-3)

Coding, Codec and Players

26  Digital Rights Management in a Multimedia Environment, Marcus Peinado, Microsoft Corp., Redmond, WA (S8)

Technical Program

Broadband, Internet, and New Distribution Methods

34  Two-Way Satellite Broadband: New High-Speed Connections for the Production and Post-Production Communities, Marty Stein, Motorola Broadband Communications Sector, San Diego, CA (2)

40  Encrypted Satellite Multicast: Quality, Security, and Reliability Considerations Attending the Distribution of Television as Addressable Data, Dom Stasi, TVN Entertainment, Burbank, CA (3)

51  Monitoring and Control of Audio-to-Video Delay in Broadcast Systems, Tom Tucker and Dan Baker, Tektronix, Beaverton, OR (5)

59  Overview of the CBC Radio Digital Archiving System, Tom Holden, Canadian Broadcasting Corp., Toronto, Canada (7)
Servers and Networking

72 Content Creation Utilizing Large-Scale Archive with Content ID and Original Time Code, H. Hiki, Y. Ishibashi, M. Kawabata, and F. Hasegawa, Telecommunications Advancement Organization of Japan, Yamagata, Japan (9)

82 Protected Storage Area Networks for Broadcast Environments, C. Jason Mancebo, SGI, Mountain View, CA (11)

93 Fault Tolerance in a Distributed Media Server, Donald C. Craig, Omneon Video Networks, Sunnyvale, CA (12)

File Formats for Interchange

103 Enabling Network Interoperability Between Video File Servers, The SMPTE 360M General eXchange Format (GXF), Ray Baldock, Grass Valley Group, Nevada City, NV (14)

111 Stream and File Formats — Where Are We Now? Bob Edge, Grass Valley Group, Beaverton, OR (15)

118 The Material Exchange Format (MXF) and Its Application, James H. Wilkinson, Sony BPE, Hants, U.K.; and Bruce Devlin, Snell & Wilcox, Hants, U.K. (17)

Case Studies: New Digital Facilities


143 Intelligent Infrastructure for New Digital Installations, G. Bowen, M. Holmes, and John Shike, Snell & Wilcox, Santa Clara, CA (22)


Film Acquisition and Processing: Emulsions, Cameras, and Facilities

166 Color Space Conversion with 3D-LUT for Laser Film Recorder, Ado Ishii, Imagica Corp., Tokyo, (26)

179 A Tour up the Gray Scale Vector of the RGB Color Cube: How Computer Graphics Color Spaces Relate to Digital Video Color Difference Space, Leonard J. Reder, Arete Entertainment, Sherman Oaks, CA; and Michael Farris, Innoveda Inc., Camarillo, CA (27)
Application of the Latest Technologies to a New Fujicolor Negative Film, K. Kawai, K. Makino, H. Murakami, and S. Yamaryo, Fuji Photo Film Co., Ltd., Ashigara Research Lab, Minami-Ashigara, Kanagawa, Japan (28)

Design Improvements for Motion Picture Film Projectors, C.L. DuMont, A.F. Kurtz, B. D. Silverstein, and D. H. Kirkpatrick, Eastman Kodak Co., Rochester, N.Y. (29)

Using 35 mm Digital Intermediate to Provide the 70 mm Quality in Theaters — A Progress Report, R.A. Morton, M.A. Maurer, G. Fielding and C.L. DuMont, Eastman Kodak Company, Rochester, NY (31)

New Standards for New Media: MPEG-4 and IPMP

Coding of Natural Audio in MPEG-4, Schuyler Quackenbush, AT&T Labs (34)

Archive and Asset Management

Need for Integration of Physical and Virtual Media Asset Systems, Hugh R. Heinsohn, Xytech Systems Corp., Burbank, CA (39)

24 P: An Update

Advanced Techniques for Conversion To and From 1080p 24, Jed Deame, and Scott Ackerman, Teranex, Orlando, FL (47)

1080P/24 — 2001 Review, David Strachan, Evertz, Burlington, Ont., Canada (48)

The Search for a Universal Timing Reference Signal, Peter Symes, Grass Valley Group, Nevada City, CA (50)

How to Easily Move and Utilize Film Images as Data in a Real-World Video Facility, Steve Roach, da Vinci Systems, Inc., Carson City, NV (51)

Metadata: Case Studies, Expectations, Realities, Lessons Learned

Video Content Management in Broadcast, Derek Gascon, Convera Corp., Carlsbad, CA (52)

Case Study of an Early Adopter: The CNN Digital News Archive, Samuel R. Shore, Concadia Solutions, San Jose, CA (53)

UMID Watermarking for Managing Metadata in Content Production, Jason Pelly, Daniel Tapson, John Stone, and Stephen Keating, Sony Broadcast & Professional Europe, Basingstoke, Hampshire, U.K. (57)
D-Cinema

283 The Business of Digital Cinema — The Exhibitor’s Perspective, John Fithian, National Association Theatre Owners, North Hollywood, CA (58)

292 Experimental Ultrahigh-Definition Color Camera System with Three 8M-Pixel CCDs, K. Mitani, M. Sugawara, and F. Okano, NHK Science & Technical Research Laboratories, Tokyo, Japan (60)

299 In Pursuit of the “Agile Codec” — Parallel Processing Enables Flexible, Low-Cost Digital Cinema Solutions, B. Jason Crew, Teranex, Inc., Orlando, FL (61)

305 The Laser Cathode Ray Tube—A Paradigm Shift in Illumination, Michael D. Tiberi and Glenn H. Sherman, Principal Light Works, Inc., Marina Del Rey, CA (62)

310 A Review of Survey Responses to High Quality Digital and Film Presentations, Charles S. Swartz, Charles S. Swartz Consulting, Sherman Oaks, CA (63A)

Video and IP

323 Applying DRM Technologies to Video on the Internet: Characterizing Problems and Solutions, Eric Grab, DivXNetworks, Inc., San Diego, CA (64)

333 Satellite, Broadcast, and Broadband Networks Powered with Storage Area Networks (SAN), Greg Reitman, LSI Logic Storage Systems, Inc., Los Angeles, CA (65)

340 Realtime Video and Audio Content Delivery over IP Packet Networks—TrueCircuit® Implementations, Carsten Baumann, Leitch, Inc., Burbank, CA; and Yendo Hu, Path 1 Network Technologies, San Diego, CA (66)

349 Extending Video Networks with IP and Ethernet, Ted Brunner, Omneon Video Networks, Sunnyvale CA (67)

362 Development of Electronic Camera Systems using Progressive Scanning, James M. DeFilippis, News Technology Group Los Angeles, CA (44)