



## SMPTE 2012 Annual Technical Conference and Exhibition

As the premier event for the motion-imaging industry, and with one of the strongest paper lineups in recent history, SMPTE 2012 lets you hear from and engage with academic, engineering, executive, and standards thought leaders from around the world - and across the broadband, broadcast, and cinema industries.

**Come hear about the latest, foundational advancements for the digital media ecosystem!**

**Come Experience:**

**Anthony Wood,**  
CEO, Roku

Opening Keynote Speaker

**Darryl Jefferson,**  
NBC Universal

Industry Luncheon Keynote Speaker

*Innovative Use of Technology  
at the 2012 Olympics*

3 days of highly technical sessions

High-tech exhibition hall

More than 75 papers to be presented

Unparalleled networking opportunities

**Join Us – Register Today:**

**[www.smpte2012.org](http://www.smpte2012.org)**

**Tuesday, 23 October 2012**

through

**Thursday, 25 October 2012**

Loews Hollywood Hotel  
(formerly the Renaissance Hollywood Hotel & Spa)

1755 North Highland Ave

Hollywood, CA 90028

USA

**SMPTE Symposium** on Monday, 22 October 2012

**Douglas Trumbull**

**Oscar® Winning Director, Cinema Pioneer**

Symposium Keynote Speaker

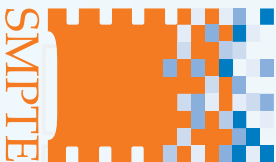
**High Frame Rates for Digital Cinema**

Add a day to your itinerary to attend this timely Symposium and fully explore the impact of high frame rates on the entire movie system, from production to post to distribution and exhibition on the big screen. The Symposium is particularly geared toward professionals who are involved in the creation of images or working with systems that handle those images. It will provide concrete examples and cutting-edge demonstrations. You will walk away with practical knowledge that you can implement right away!



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The 2012 Annual Technical Conference & Exhibition

23 – 25 October 2012

Pre-Conference Symposium 22 October

Hollywood, California



# CONFERENCE PROGRAM

## Tuesday, 23 October

09:00 – 9:15

### Welcome

09:15 - 10:15

### Keynote: Anthony Wood, CEO, Roku

10:15 - 10:45

### Break

10:45 - 12:15

### Topics in File-Based Workflows (Part 1)

#### Applying File-Based Workflows

Chair: Don Craig (Arboretum Studios, USA)

File-based workflows have replaced videotape methods for a majority of production and broadcast operations. Key to this is the transition to IT methods and techniques; flexible workflows built on the principle software services; architectural elements of QoS, networking, storage, control, scalability, reliability, management, security and systems integration. Come to learn the latest in file-based workflow best practices and more.

#### The Pipe Dream Becomes Real: Advertising Workflows

**Come of Age**, Christopher J. Lennon (Harris Corp., USA); Harold Geller (AD-Id, USA)

**Lessons Learned Implementing FIMS 1.0**, Ian Hamilton and Tony Vasile (Signiant, Inc., Canada)

#### Developments in the Realization of Practical File-Based Workflow Environments

David A. Pease (IBM Almaden Research Center, USA); Andrew G. Setos (Blackstar Engineering Inc., USA); Ed Childers (IBM, USA)

### Image Processing (Part 1)

#### Real-Time Workflows

Chair: Matthew Goldman (Ericsson, USA)

What can you do to maintain image quality throughout the chain, enhance certain features of images or detect relevant features from a sequence of images? How does the process work and where is it likely to be used? This is where you hear answers.

**GPU-Based Real-Time 4K RAW Workflows**, Thomas True and Andrew Page (NVIDIA Corp., USA)

**Dynamic Rate Control Technologies Enabling Priority-Based Bandwidth Allocation for IP News Gathering Networks**, Shuhei Oda, Katsunori Aoki, and Yosuke Endo (Japan Broadcasting Corp. (NHK), Japan)

**Realtime File System for Content Distribution**, Heiko Sparenberg and Siegfried Foessel (Fraunhofer IIS, Germany);

12:30 - 14:00

### Industry Luncheon

#### Luncheon Keynote: NBC's Innovative Use of Technology at the 2012 Olympics

Darryl Jefferson (NBC Universal, USA)

14:15 - 15:45

### Topics in File-Based Workflows (Part 2)

#### Performance Issues in File-Based Workflows

Chair: Don Craig (Arboretum Studios, USA)

**Performance Parameters in File-Based Workflows**, Karl E. Paulsen (Diversified Systems, USA)

**Optimized IP Multicast Architectures for Realtime Digital Workflows**, Thomas Kernen and Javed Asghar (Cisco, Switzerland)

**Being the Change You Wish To See: Changing Broadcast Schedules Right Up To Air**, Christopher J. Lennon (Harris Corp., USA)

### Image Processing (Part 2)

#### Algorithms and Compression

Chair: Matthew Goldman (Ericsson, USA)

**HEVC—Enabling Commercial Opportunities through Next-Generation Compression Technology**, Lukasz Litwic (Ericsson Television, U.K.)

#### Automatic Interlace or Progressive Video

**Discrimination**, Manish Pindoria and Tim Borer (BBC, U.K.)

#### Spatial Concealment for Damaged Images Using

**H.264/AVC Intra Prediction and Neighborhood Clique**, Seyfullah Halit Oguz (Qualcomm Incorporated, USA)

15:45 - 16:15

### Break

16:15 - 17:45

### Topics in File-Based Workflows (Part 3)

#### The Unexpected in File-Based Workflows

Chair: Don Craig (Arboretum Studios, USA)

**High-speed Format Converter with Intelligent Quality Checker for File-based System**, Kenichiro Ichikawa, Takuji Shimmi, Yasunori Iguchi, and Kentaro Higashijima (Japan Broadcasting Corp. (NHK), Japan)

**Corralling the Chaos of Ancillary Data within Multiple File Formats**, Sara Kudrle (Miranda Technologies, USA)

**And the Winner is... Workflows for Judging Content Submissions at Siggraph and VES**, Ben Roeder (Sohonet, Inc., U.K.); Martin Rushworth (Sohonet, Inc., USA)

### Image Processing (Part 3)

#### Perception and the Human Visual System

Chair: Matthew Goldman (Ericsson, USA)

**Quantitative Evaluation of Human Visual Perception for Multiple Screens and Multiple CODECs**, Sean McCarthy (Motorola Mobility, USA)

**Perceptual Signal Coding for More Efficient Usage of Bit Codes**, Scott Miller, Mahdi Nezamabadi and Scott Daly (Dolby Laboratories, USA)

**Human Perception & Advancements in File-Based Quality Control**, Eric Carson and Atul Ravindran (Digimetrics, USA)

## Wednesday, October 24

09:00 - 10:30

**SMPTE Timed Text for Captioning Internet-delivered Content (Part 1)**  
**New Regulations and Implementations**  
Chair: Ann Marie Rohaly (Microsoft Corp., USA)

Earlier this year, the U.S. Federal Communications Commission issued new regulations requiring closed captions for Internet-delivered video programming and adopted SMPTE Timed Text as the “safe harbor” captioning standard. This session will provide an overview of the new closed captioning regulations and industry efforts to meet the new requirements.

**Compliance with FCC Rules for IP Distribution of Video Programming**, Alison Neplokh (Federal Communications Commission, USA)

**Closed Captioning Challenges for IP Video Delivery**, Jason Livingston (CPC Closed Captioning, USA)

**Post-Deployment Considerations for use of SMPTE Timed Text**, Craig Cuttner (HBO, USA)

**High Performance Networks**  
Chair: Don Craig (Arboretum Studios, USA)

Digital television signals once confined to a wire for reasons of timeliness and capacity now find themselves transported hither and yon as payload in high-performance networks. New interconnects from the IT and consumer electronics arenas are deployed where once coax was king. With the growth of all things meta, the signals themselves incorporate increasingly complex metadata that permits the carriage of arbitrary media formats and components. Virtualization now applies to network layers and routing as much as it applies to application processors. In the high-performance networking session we examine recent innovations in the transport of media content over a variety of high-performance physical and logical pathways.

**Leveraging Fiber Properties to Our Advantage**, John Beatty, Kimberly Allen, Richard Zahm, John Bradford (Fiber Core Networks, USA)

**Trends in Wireless High-Bandwidth Display Technology**, Peter H. Putman (ROAM Consulting LLC, USA)

**Next-Generation Techniques for the Protection and Security of IP Transport**, Chin Chye Koh (Nevion, USA)

**Advances in 3D (Part 1)**  
**3D Production**  
Chair: Kevin J. Stec (Dynamic Digital Depth, Inc., USA)

The whole area of 3D continues to evolve. In both the cinema and broadcast worlds, techniques involved from production, all the way to distribution, are seeing improvements. Yesterday's obstacles are being overcome, and the entire

3D ecosystem is becoming much more mature. We'll look at the latest advances covering the entire gamut of 3D technologies, with an eye toward where it's all leading next.

**Unconstrained 2D to Stereoscopic 3D Image and Video Conversion Using Semi-Automatic Energy Minimization Techniques**, Raymond Phan, Richard J Rzeszutek, and Dimitri Androutsos (Ryerson University, Canada)

**Image Enhancement Using Similarity-based Color Matching for High-quality Stereoscopic 3D Image Acquisition**, Young hoon Lim, Eunjung Chae, Eunsung Lee, Wonseok Kang, Joonki Paik (Chung-Ang University, Korea)

**3D Production Issues During the London 2012 Olympic Games**, Jim Defilippis (Fox, USA)

10:30 - 11:00  
**Break**

11:00 - 12:30  
**Cinematography and Post (Part 1)**  
**Acquisition**  
Chair: Paul Chapman (Foto-Kem Industries Inc., USA)

Digital technology in cinematography and post-production has become the norm. Their quickening evolution creates as many questions as it does answers, in many cases. It also provides new opportunities for producing high-quality, innovative content. Choices of sensors, format, lighting equipment, and post-production platforms come together in the new world of cinematography and post-production.

**High-Performance Optics for a New 70mm Digital Cine Format**, Brian Caldwell (Caldwell Photographic, Inc., USA)

**Focusing on Lens Metadata**, Jonathan Erland (Composite Components Company, USA)

**Computational Photography for Dust and Scratch Detection on Transparent Photographic Material**, Giorgio Trumpy and Rudolf Gschwind (University of Basel (CH), Switzerland)

**SMPTE Timed Text for Captioning Internet-delivered Content (Part 2)**  
**Interoperability through Standards**  
Chair: Ann Marie Rohaly (Microsoft Corp., USA)

New U.S. regulations for captioning Internet-delivered video programming present interoperability challenges for the end-to-end chain from content creation to end-user consumption on devices. This session will provide insight into industry standards activities focused on addressing these issues.

**W3C Timed Text Updates**, Sean Hayes (Microsoft, U.K.)

**SMPTE Timed Text: Update from the 24TB Captions Ad Hoc Group**, Craig Cuttner (HBO, USA)

**SMPTE Timed Text in the UltraViolet Common File Format**, Mike Dolan (TBT, USA)

**CE Device Implementation of SMPTE Timed Text: Navigating to the “Safe Harbor,”** Mark Eyer (Sony Electronics, USA); Mike Dolan (TBT, USA)

12:45 - 14:00

## Fellows Luncheon

14:15 - 15:45

## Cinematography and Post (Part 2)

### Color Management

Chair: Paul Chapman (Foto-Kem Industries Inc., USA)

**Towards Higher Dimensionality in Cinema Color: Multispectral Video Systems**, David Long (Rochester Institute of Technology, USA)

**Issues in Color Matching**, Derek Smith, Joel Barsotti and Larry Heberlein (SpectraCal, Inc., USA)

**Accurate ACES Rendering in Systems Using Small 3DLUTs**, Yasuharu Iwaki and Mitsuhiro Uchida (Fujifilm Corp., Japan)

## Migrating to the Cloud: Understanding the Opportunities and Challenges (Part 1)

Chair: Al Kovalick (Media Systems Consulting, USA)

Cloud adoption is growing at a 22% annual rate. SaaS apps revenue will reach \$258 billion in 2020 (Forrester Research). This train is unstoppable. We are heading for a world where “everything-is-a-service,” don’t buy, rent. Business agility and speed are key drivers. As a media company or vendor, what does it mean to move to the cloud? This session will explore opportunities and challenges of making the move. Speakers will cover aspects of architecture, reliability, security, automation, governance, performance QoS, vendor lock-in, standards and interop. Are clouds ready to support large parts of broadcast and media facility operations? Come to this session and find out.

### Are Cloud Solutions Right for Your Media Workflows?

Jason Williamson and Michelle McGuire-Christian (Deloitte Consulting, LLP, USA)

**Leveraging the Cloud for File-based Workflows**, Ron Quartararo (Verizon, USA); Mark Brown (Verizon Digital Media Services, USA); Brian Campanotti (Front Porch Digital, Canada)

**A Cloudspotter’s Guide to Migration**, Al Kovalick (Media Systems Consulting, USA)

15:45 - 16:15

## Break

16:15 - 17:45

## Cinematography and Post (Part 3)

### Finishing

Chair: Paul Chapman (Foto-Kem Industries Inc., USA)

**The Unfolding Merger of Television and Movie Technology**, Gary Demos (Image Essence LLC, USA)

**Theatrical Versioning in the Content Pipe—Integrating Digital Dinema into End-to-End Workflow**, Richard J. Welsh (Technicolor, U.K.)

**Low-latency Transmissions for Remote Collaboration in Post-Production**, Sven Ubik and Michal Krsek, (CESNET, Czech Republic); Jiri Halak and Petr Zejdl (CESNET/CTU, Czech Republic)

## Migrating to the Cloud (Part 2)

Chair: Al Kovalick (Media Systems Consulting, USA)

### The Cloud—What Does it Mean for Media Archives?

Howard Twine, Bernie Walsh, and Doug Wynn (Software Generation Limited, USA); Chris Luther (Software Generation Limited, USA)

**Cloud Media Collaboration, Enter Stage Right: and Action**, Robert Jenkins (CloudSigma, USA)

**Delivering Live Multi-cam Content to Smart Devices through Cloud Platforms**, Werner Ramaekers, Maher Khatib, and Johann Schreurs (EVS, Belgium)

# Thursday, October 25

09:00 - 10:30

## Olympics

Chair: Patrick D. Griffis (Dolby Laboratories, USA)

**3D Production Edit Workflow, London 2012 Olympic Games**, Jim Defilippis (Fox, USA)

**Challenges, Solutions, and Lessons Learned for Content Protection from 2012 Olympics**, Michael Wilkinson; Clint Cox (NBC Universal)

**Challenges and Solutions In Production/Post Production for the 2012 Olympics**

## Asset Management and Archive

Chair: Jerry C. Whitaker (Advanced Television Systems Committee, USA)

In the past, the task of managing media assets was a lot simpler. However, recently, this has become quite the task. Facilities now must manage not only large volumes of assets, but multiple versions of those assets. To maximize their value, it is important to leverage media assets across multiple delivery platforms, and do so in an efficient and cost-effective way. This session will look at recent advances in the management of media assets, and explore how you can leverage these new capabilities to maximize the value of your assets. After all, the primary value that most media companies offer are these assets themselves.

**Towards using Audio for Matching Transcoded Content**, Dinkar Bhat (Motorola Mobility, USA)

**Using Name Spotting in Audio/Video Media Identification to Improve Media Discovery Service in Digital Object Architecture**, Manish Goswami and Lan Yang (California State Polytechnic University, Pomona, USA)

**Practical Quality Assessment for Digitized Film Content**, François Helt and Valerie La Torre (Doremi Technologies, France)

## Advances in 3D (Part 2)

### 3D Broadcast and Display

Chair: Kevin J. Stec (Dynamic Digital Depth, Inc., USA)

**They Must be Genlocked?—Missing Standards in the 3D Ecosystem**, J. Patrick Waddell (Harmonic Inc., USA)

**Effects of Viewing Conditions on Fatigue Caused by Watching 3DTV**, Toshiya Morita and Hiroshi Ando (National Institute of Information and Communications Technology, Japan)

**High-Performance Large-Format Polarization-Based 3D and 2D Presentation**, Gary Sharp, Miller Schuck, Dave Coleman, Kevin Curtis, Scott Gilman, and Erik Arend (RealD, USA)

11:00 - 12:30

### **Ultra-High-Definition Imaging**

**Chair: Peter H. Putman (ROAM Consulting LLC, USA)**

Ultra-high-definition television (UHDTV) continues to push the limits of technology to produce superb, encompassing images and accompanying sound. Progress continues to be made in bringing the technologies encompassed by UHDTV to practical applications. Recent work has focused on transmission technologies, program production equipment, and audio tools. This session will update attendees on work currently under way to move UHDTV from the laboratory to the studio.

**120 Hz-frame-rate Super Hi-Vision Capture and Display Devices**, Hiroshi Shimamoto, Kazuya Kitamura, Toshihisa Watabe, Hiroshi Ootake, Norifumi Egami, Yuichi Kusakabe, Yukihiro Nishida (Japan Broadcasting Corp. (NHK), Japan); Shoji Kawahito (Research Institute of Electronics, Japan); Tomohiko Kosugi, Takashi Watanabe (Brookman Technology, Inc., Japan); Tadaaki Yanagi, Tetsuo Yoshida (Hitachi Kokusai Electric Inc., Japan); Hideki Kikuchi (Link Laboratory Inc., Japan)

**Development of a 70mm, 25 megapixel Electronic Cinematography Camera With Integrated Flash Recorder**, John J. Galt and Branko Petljanski (Panavision, USA)

**1080p50/60, 4K and Beyond: Future Proofing the Core Infrastructure to Manage the Bandwidth Explosion**, John Hudson (Semtech Corp., Canada)

### **Evolving Broadcast Infrastructure (Part 1)**

**Chair: Harvey Arnold (Sinclair Broadcast Group, USA)**

**Production Media Data Centers: Scalable Computing, Networking, Virtualization, and Adaptive Bit Rate Encoding**, Tom Ohanian (Cisco, USA)

**A Study of the Optical Distribution Costs of Multichannel Baseband Digital Broadcasts over a FTTH Network**, Takeshi Kusakabe, Takuya Kurakake, and Kimiyuki Oyamada (NHK (Japan Broadcasting Corporation), Japan); Yoshihiro Fujita (Ehime University, Japan)

**Beyond HD—What are the Options— 4K or 3D—What will be Successful and When?** Hans Hoffmann (European Union (EBU))

12:30 - 14:00

### **Boxed Lunch**

14:00 - 15:30

### **Evolving Broadcast Infrastructure (Part 2)**

**Chair: Harvey Arnold (Sinclair Broadcast Group, USA)**

**Towards Documenting AVC Proxies in MXF**, J. Patrick Waddell (Harmonic Inc., USA)

**4K TV Capture: An Early Experience Sharing**, Jerome Vieron (ATEME, France); Matthieu Parmentier (FranceTelevisions, France)

**Systemization of Network-Based Genlock**, Paul Briscoe (Harris, Canada)

### **Sound Techniques (Part 1)**

**Chair: Thomas A. Scott (Onstream Media/EDnet, USA)**

How can sound in cinema theaters be made more consistent between venues now that sophisticated digital signal processing tools are readily available? Do the practices for adjusting sound systems for program material interchangeability need a 21st century revision? Can mathematical models of the human perception of sound help us to assure that a movie will sound the same to audiences in various types of theaters? In this session we'll attempt to provide answers to these and other questions on cinema sound.

**SMPTE Theater B-Chain Project Presentation/Panel**, Brian Vessa (Sony Pictures Entertainment, USA)

**Further Investigations into the Interactions Between Cinema Loudspeakers and Screens**, Brian Long, (Skywalker Sound, Lucasfilm Ltd, USA); Roger W. Schwenke, Peter Soper (Meyer Sound Laboratories, USA); Glenn Leembruggen (Acoustic Directions and ICE Design Australia & Associate of Sydney University, Australia)

**Frequency Response Versus Time-of-Arrival for Typical Cinemas**, Louis Fielder (Dolby Laboratories Inc., USA)

15:30 - 16:00

### **Break**

16:00 - 17:30

### **Evolving Broadcast Infrastructure (Part 3)**

**Chair: Harvey Arnold (Sinclair Broadcast Group, USA)**

**Broadcasting Video over the Cellular Network and the Internet**, Michael Payne and John Wood (Vislink, Inc., USA)

**Multiformat Operation—System Implications and Solutions for Routing Switchers**, Alan Smith and Kim Francis (Snell, U.K.)

**Here Comes Ethernet**, Stephen H. Lampen (Belden, USA)

### **Sound Techniques (Part 2)**

**Chair: Thomas A. Scott (Onstream Media/EDnet, USA)**

**Tutorial on Critical Listening of Multi-channel Audio Codec Performance**, Sunil Bharitkar, Grant Davidson, Louis Fielder, and Poppy Crum (Dolby Laboratories, USA)

**Scalable Format and Tools to Extend the Possibilities of Cinema Audio**, Charles Robinson (Dolby Laboratories, USA); Nicolas Tsingos (INRIA, France)

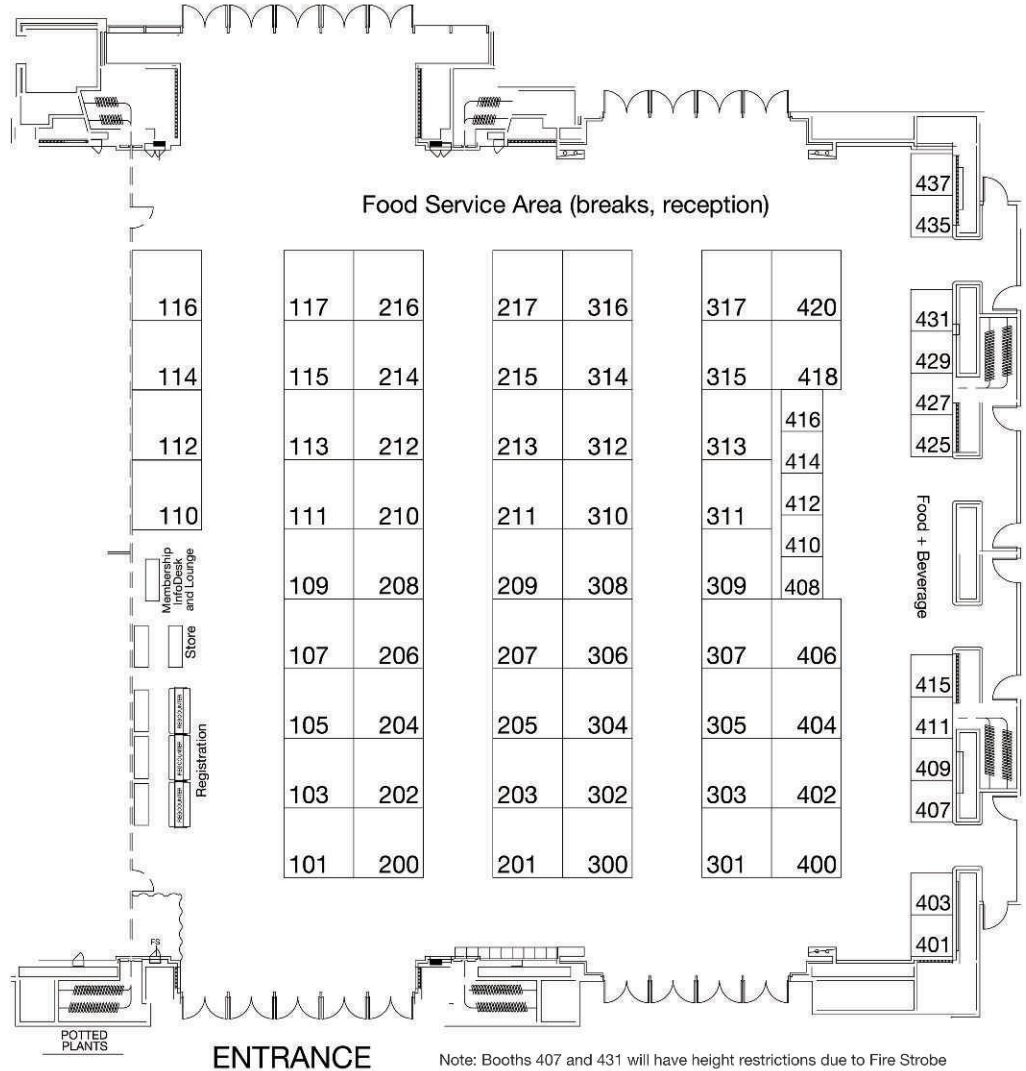
**Lee de Forest and the Invention of Sound Movies, 1918-1926**, Mike Adams (San Jose State University, USA)

### **Program Subject to Change**

# List of Exhibitors and Floor Plan

## Booth # . . . . . Exhibitor

- 401 . . . . . Advantage Video
- 215,217 . . . . . AJA
- 109 . . . . . AmberFin
- 301 . . . . . Artel
- 312 . . . . . Arvato/N3
- 303 . . . . . Aspera
- 204 . . . . . ATEME
- 212 . . . . . ATTO Technologies
- 202 . . . . . Avid
- 302 . . . . . Avocent (Preco)
- 408 . . . . . Big Pic Media
- 114 . . . . . Blackmagic Design
- 420 . . . . . Cambridge Research
- 211 . . . . . Canon
- 101 . . . . . Cinegy
- 206 . . . . . Cobalt Digital
- 415 . . . . . Communication Specialties
- 306 . . . . . Colorfront
- 414 . . . . . Crossroads Systems
- 435 . . . . . Cube Vision
- 316 . . . . . Digital Rapids
- 115 . . . . . Dolby
- 209 . . . . . Ensemble
- 203 . . . . . Ericsson
- 111,113 . . . . . Evertz
- 314 . . . . . Fiber Core Networks
- 311 . . . . . Film Light
- 304 . . . . . Grass Valley
- 313 . . . . . Gepco
- 107 . . . . . Harmonic
- 317 . . . . . Harris
- 116 . . . . . Hollywood DI
- 315 . . . . . IEEE
- 117 . . . . . Image Systems
- 307 . . . . . Konica Minolta
- 400 . . . . . Marshall Electronics
- 403 . . . . . Metaglude
- 214 . . . . . Miranda
- 427,429,431 . . . . . MPro
- 407 . . . . . Neutrik
- 305 . . . . . Nevon
- 205 . . . . . Photo Research
- 201 . . . . . Pixel Power
- 406 . . . . . Quantum
- TBD . . . . . Runnur
- 112 . . . . . Screen Systems
- 213 . . . . . Sierra Video
- 105 . . . . . Signiant
- 216 . . . . . SGL
- 409 . . . . . Smyth Research
- 200 . . . . . Snell
- 410 . . . . . SpectraCal
- 411 . . . . . Spectra Logic
- 425 . . . . . SRI Sarnoff
- 308 . . . . . StereoArt
- 437 . . . . . T-VIPS
- 103 . . . . . Tektronix
- 210 . . . . . Telestream
- 310 . . . . . Teradek
- 300 . . . . . TV Logic (Preco)
- 207 . . . . . Utah Scientific
- 208 . . . . . XenData
- 110 . . . . . XOR Media



ENTRANCE

Note: Booths 407 and 431 will have height restrictions due to Fire Strobe

## SMPTe Thanks the Sponsors of the 2012 Annual Technical Conference & Exhibition



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