

MATTHEW S. GOLDMAN

EXPERIENCE

SINCLAIR, Lakewood Ranch, Florida

2021-present

Vice President, Strategic & Technical Initiatives (2024-present); Senior Director, Media Engineering & Architecture (2021-2024)

Formulate and lead technical initiatives to perform proofs of concepts and rollout into commercial deployment (current projects include high dynamic range video, audio & video watermarking) for Sinclair's broadcast TV stations and sports properties. Evaluate new technologies and equipment to determine worthiness and application to Sinclair's production air chains. Mentor internal engineers and future leaders. Monitor technology trends in industry, standards setting organizations, and industry forums for applicability, and shape selected industry initiatives.

MEDIAKIND, Lakewood Ranch, Florida

2004-2020

(formerly ERICSSON, ERICSSON TELEVISION, TANDBERG TELEVISION), Bedford, New Hampshire

2004-2019

Senior Vice President of Technology (2011-2020), Vice President of Technology (2005-2010), Director of Technology (2004)

Subject Matter Expert. Monitored relevant technology trends and interacted with major industry leaders to determine potential new solution areas. Defined new product and feature requirements in conjunction with product management. Liaised with product management, engineering, business development, key account sales, and technical sales support. Led technical discussions and captured requirements at strategic customer meetings. Buoyed sales team in closing major customer contracts and building relationships with key high-level customer decision makers. Mentored and trained internal teams on product functionality, overall strategic messaging, and standards/industry trends.

Technology Evangelist. Created and delivered white papers and presentations for customers and industry trade events. Wrote contributed articles for trade magazines and blogs for corporate website. Established technology/thought leadership positions in the broadcast industry's transformation to All-IP infrastructure and protocols, High Dynamic Range video, Ultra-High Definition, High Efficiency Video Coding, 3D TV, TV broadcast analog transition to digital, and Advanced Video Coding. Crafted submissions to the National Academy of Television Arts & Sciences, resulting in the successful receipt of seven Technology & Engineering Emmy Awards (2007 Video-on-Demand Infrastructure & Signaling, 2008 HD MPEG-4 AVC, 2011 Active Format Description, 2013 Dynamic Advertising Insertion for Video-on-Demand, 2014 JPEG 2000 Interoperability, 2015 Remote Statistical Multiplexing, 2020 Artificial Intelligence Optimization for Real-Time Video Compression).

Standards and Industry Consortia. Coordinated cross-organizational activities and actively participated in industry standards development organizations, including the Advanced Television Systems Committee (ATSC), the Consumer Technology Association (CTA), the Digital Video Broadcasting Project (DVB), the Society of Cable Telecommunications Engineers (SCTE), the Society of Motion Picture and Television Engineers (SMPTE), and the Ultra HD Forum. Significant contributions to new industry standards.

Media Spokesperson. Interfaced with the press/media and analysts. Created interest in new products resulting in successful receipt of several media awards such as Broadcast Engineering's STAR Award and TV Technology's Best of Show Award.

TECHNOLOGY CONSULTANT, Spokane Valley, Washington

2002-2003

Clients included TV network broadcasters, set-top box manufacturers, and MPEG/DTV chip vendors. Researched and provided expert testimony for contract breach and patent litigations. Developed system and product requirements specifications, including for the broadcasting industry's first compressed-domain high-definition program splicer for the FOX TV Networks. Evaluated and determined preferred equipment suppliers, then managed relationship from inception to successful launch. Researched industry trends and recommended courses of action for products and features. Contributed to the updating of the ATSC Digital Television (DTV) System standard and implementation guidelines. Participated in the Joint Video Team (JVT) of the ISO/IEC Moving Picture Experts Group (MPEG) and ITU-T Video Coding Experts Group developing the MPEG-4 Advanced Video Coding (AVC) | H.264 standard. Participated in the SMPTE Windows Media Video (VC-1) standardization effort.

WORLD WIDE PACKETS, Spokane Valley, Washington

2000-2001

Director of Technology/Business Development (2001), Principal Engineer (2000)

Digital video systems solutions expert for a Gigabit Ethernet access network equipment provider. Identified and cultivated strategic partnerships. Defined technical requirements while collaborating with both technical and business contacts. Provided leadership and guidance to product management, marketing, engineering, sales, and professional services. Supported sales in direct customer interactions. Gathered competitive information and industry trends. Co-authored video solutions white paper. Performed research and evaluation for venture capital investors. Participated in the IEEE 802.3ah Ethernet in the First Mile Task Force, the Internet Engineering Task Force (IETF) Audio/Video Transport working group, and MPEG.

DIVICOM, Milpitas, California

1996-2000

Director of Engineering, Advanced Systems Development (1998-2000), Principal Engineer (1997), Senior Staff Engineer (1996)

Line Management. Established and led a team of subject matter experts in the area of DTV system design. Set group goals and priorities. Guided the efforts of and mentored both direct and indirect reports.

Systems Architecture/Solutions. Subject matter expert for system solutions in digital video/data broadcasting and networking. Wrote system and product requirements specs, and produced system reference diagrams. Influenced architectural design of subsystems. Collaborated with product marketing, sales, and professional services to ensure solutions addressed customer needs.

Standards and Industry Consortia. Coordinated corporate activities and actively participated in industry standards development organizations, including the ATSC, the Digital Audio-Visual Council (DAVIC), the DVB, MPEG, SCTE, and SMPTE. Drove corporate vision into open standards and recommended practices, and ensured that products implemented the same. Significant contributions to data broadcasting, service control and navigation protocols, transport stream interfaces, and metadata transport. Major contributor to ATSC standard A/65 Program and System Information Protocol.

Strategic Planning. Investigated technical gaps in product offerings and proposed new products or features to existing products. Organized and led a technology competitive information gathering team. Participated in corporate strategic long-range planning.

Technical spokesperson. Created and presented industry white papers. Served as a product and technology expert for interactions with the media on behalf of the marketing communications team.

DIGITAL EQUIPMENT CORPORATION

1986-1996

New Media Solutions Group (Shrewsbury, Massachusetts)

1992-1996

Consulting Engineer (1996), Principal Engineer (1993-1996)

Systems Architect for customer/vendor contracts involving complex digital video delivery systems. Analyzed customer requirements against system capabilities and designed solutions. Acted as the lead technical representative during customer and vendor-partner meetings, and worked collaboratively to produce a functional system. Participated in pre-sale meetings and wrote responses to Request for Proposals. Responsible for end-to-end systems design in the areas of network interfaces, control protocols, and digitized compressed video (MPEG). Co-developed an interactive multimedia server system. Specified the interfaces for real-time video delivery over ATM, T-carrier, and other networks; characterized the MPEG video storage and delivery format; created a flow control protocol for video delivery; defined the VCR-like command operation and session control protocols. Researched future needs and determined additional functionality to meet goals. Major contributor to several key foundation standards in the TV industry including ISO/IEC 13818-1 MPEG-2 Systems, ISO/IEC 13818-6 MPEG-2 Digital Storage Media Command and Control (served as Project Editor), DAVIC Mid-Layer Protocols, and ATM Forum Audio-visual Multimedia Services.

Various product development groups (Marlborough and Littleton, Massachusetts)

1986-1992

Senior Design Engineer

Principal contributor to the product definition of future file and application server products based on *i486* and *Pentium* microprocessors. As part of the design team of a high-performance Gallium Arsenide *Alpha AXP* microprocessor chip, developed portions of the execution and instruction units, and performed high-speed timing analysis and circuit simulations. As part of the design team of the *VAX 9000* mainframe computer, wrote the module and scan system functional specifications and designed the scan control and communication logic, which included a 26,000-gate CMOS ASIC and a MicroVAX-based BI module. Led the final development and release of the *VAX 9000* Service Processor hardware, which included five modules, four ASICs, and interconnect subassemblies. Directed the efforts of several engineers and technicians. Managed engineering development and release schedules. Principal engineering contact for the program office, manufacturing, and other groups.

RAYTHEON COMPANY, Equipment Division, Sudbury, Massachusetts

1983-1986

Design Engineer

Designed a 68010 CPU-based error detection and correction memory controller. Designed a five-port crossbar switch for an intelligent memory subsystem.

EDUCATION, HONORS & ACTIVITIES

Masters of Science degree in Electrical Engineering , <i>Worcester Polytechnic Institute (WPI)</i>	1988
Bachelors of Science degree in Electrical Engineering (High Honors), <i>Worcester Polytechnic Institute</i>	1983
<i>Tau Beta Pi</i> , National Engineering Honor Society	
<i>Eta Kappa Nu</i> , National Electrical Engineering Honor Society	
Fellow , Society of Motion Pictures and Television Engineers (SMPTE)	2008
Senior Member , Institute of Electrical and Electronics Engineers (IEEE)	2006
Inductee , Academy of Digital Television Pioneers	2007
Board of Directors: Eastern Region Governor, SMPTE	2010-2012
Finance Vice President, SMPTE	2013-2014
Executive Vice President, SMPTE	2015-2016
President, SMPTE	2017-2018
Past President, SMPTE	2019-2020
Technology & Engineering Emmy® Awards Committee , National Academy of Television Arts & Sciences	2003-present
Distinguished Lecturer , IEEE Broadcast Technology Society	2009-2020
Technical Conference Program Committee & Session Chairperson , SMPTE	2012, 2015, 2016
Technical Committee Chairperson , North American Broadcasters Association	2024-present

PATENTS

5,414,455	Segmented Video on Demand System	Issued: May 9, 1995
5,442,390	Video on Demand with Memory Accessing and/or Like Functions	Issued: August 15, 1995
5,535,216	Multiplexed Gapped Constant Bit Rate Transmission	Issued: July 9, 1996
5,561,791	Method and Apparatus for Conditioning Timed Program Independent of Transport Timing	Issued: October 1, 1996
5,745,696	Transport Controller for Timed Program Data	Issued: April 28, 1998
5,754,783	Apparatus and Method for Interleaving Timed Program Data with Secondary Data	Issued: May 19, 1998

INDUSTRY AWARDS

2015 NAB Broadcast Engineering Conference Best Paper Award	<i>Implications of High Dynamic Range on the Broadcast Chain for HD and Ultra-HD Content</i>	
Significant contributions to the following projects which have been industry recognized:		
2009 Technology & Engineering Emmy Award	<i>Pioneering Efforts in Development & Implementation of Network Distribution Workflows for ATSC DTV (Compressed Domain Program Splicer System)</i>	FOX Broadcasting (2003)
2011 Technology & Engineering Emmy Award	<i>Pioneering Development and Deployment of Active Format Description and Aspect Ratio Control Technologies and Systems (RX8320 ATSC Integrated Receiver/Decoder)</i>	Ericsson Television (2008)
2012 Technology & Engineering Emmy Award	<i>The Development and Commercialization for Digital Infrastructure for Local Cable Ad Insertion (Mediaplex Ad Server)</i>	Digital Equipment Corporation (1994)
2013 Technology & Engineering Emmy Award	<i>Development and Standardization of the MPEG-2 Transport Stream</i>	Digital Equipment Corporation and ISO/IEC Moving Picture Experts Group (1994)

PUBLICATIONS & CONFERENCE/SEMINAR PRESENTATIONS

Over 30 years of creating and presenting technical white papers, contributed articles to trade magazines, published contributions, and conference seminars/tutorials/presentations. See attached appendix for specific listing.

STANDARDS CONTRIBUTIONS

Hundreds of contributions to various standards-setting organizations, including ATIS IPTV Interoperability Forum, ATM Forum, ATSC, CTA/CEA, DAVIC, DVB, ITU-R SG6, MPEG, SCTE, SMPTE, Ultra HD Forum.

APPENDIX – LISTING OF CONTRIBUTED PAPERS, ARTICLES, SEMINARS

PUBLICATIONS

- “What Does the Postponement of the Olympics Mean for 8K?”, *TVB Europe* magazine, May 2020.
- “Achieving Next-Generation Media Experiences with High Dynamic Range”, *TM Broadcast International* magazine, February 2020.
- “The Future Is Here: Moving Into the Next Decade With All-IP”, *TV Technology* magazine, November 26, 2019.
- “Finding a Way to HDR”, *FEED* magazine, March 2019.
- “High Dynamic Range Video for Cable”, *SCTE-ISBE Journal of Digital Video*, Volume 3, Number 1, December 2018.
- “Viewpoint: Navigating the Challenge of UHD Delivery”, *Broadcast Bridge* magazine, December 2018.
- “Are We HDR Ready?”, *Videonet* magazine, September 7, 2018.
- Chapter 5.10 “ATSC 1.0 Encoding, Transport, and PSIP Systems”, Chapter 5.11 “Video Compression”, and Chapter 5.20 “Ultra-High Definition Television”, *NAB Engineering Handbook*, 11th Edition, 2018.
- “Kicking off Next-Generation Resolution with Live Sports”, *CED* magazine, July 3, 2018.
- “ATSC 3.0: A path beyond TV”, *TVB Europe* magazine, April 11, 2018.
- “Making Our Way into the All-IP Era”, *Asia Pacific Broadcasting* magazine, January-February 2018.
- “IP: Where We are Really at”, *FKG* magazine [German Broadcasters], January 11, 2018.
- “SMPTE 2017: Q&A—Matthew Goldman, President, SMPTE”, *TV Technology* magazine, October 23, 2017.
- “The IP Showcase: Back by Popular Demand”, IBC online, September 6, 2017.
- “SVG Sit-Down: Ericsson’s Matthew Goldman on SMPTE ST 2110, the Future of IP, the HDR Format Wars”, Sports Video Group online, June 6, 2017.
- “The Benefits of an All-IP Future – a Standard Way of Thinking”, *Broadcast Bridge* magazine, May 29, 2017.
- “SMPTE Q&A—Matthew Goldman,”, *TV Technology* magazine, October 24, 2016.
- “Bit Rate Requirements for High Dynamic Range Video”, *SMPTE Motion Imaging Journal*, July 2016.
- “UHD is About More Than Just Pixels”, *TV Technology* magazine, June 26, 2016.
- “Q&A: Matthew Goldman on 4K, UHD, HDR and More”, *TV Technology* magazine, April 16, 2016.
- “How Compression Technologies are Changing the Delivery Options for UHD Content”, *TVB Europe* magazine, March 2016.
- “Why Broadcasters Should Attend the HPA Tech Retreat”, *TV Technology* magazine, January 26, 2016.
- “In Search of Definition: The Challenges Facing Widespread Adoption of UHD”, *TVB Europe* magazine, April 2015.
- “Ultra-HD Content Acquisition and Exchange Using HEVC Range Extensions”, *SMPTE Motion Imaging Journal*, April 2015.
- “Understanding Ultra High Definition TV”, Ericsson White Paper, April 2015.
- “Implications of High Dynamic Range on the Broadcast Chain for HD and Ultra-HD Content”, *NAB Broadcast Engineering Conference Proceedings*, April 2015.
- “Ultra-HD Content Acquisition and Exchange Using HEVC Range Extensions”, *International Broadcasting Convention Conference Proceedings*, Amsterdam, September 2014.
- “HEVC Offers Potent New Tools”, *HEVC: New Tools, New Challenges*, Special Report, Broadband Technology Report, June 2014.
- “The Future of 4K Ultra-HD – Examining Methods to Acquire, Exchange and Distribute Content”, *NAB Broadcast Engineering Conference Proceedings*, April 2014.
- “The Future of 4K UHD TV – Examining Methods To Acquire, Exchange and Distribute High Quality Content”, *SCTE Cable-Tec Expo Conference Proceedings*, October 2013.
- “High Efficiency Video Coding (HEVC): The Next Generation Compression Technology”, *SMPTE Motion Imaging Journal*, July/August 2012.
- “High Efficiency Video Coding: Next Generation Compression Technology Driving New Business Models for Television”, *NAB Broadcast Engineering Conference Proceedings*, April 2012.

“HEVC is Just Around the Corner”, SVG Whitepaper, *Sports Tech Journal*, Spring 2012, Sports Video Group, April 2012.

“Next Generation Compression – High Efficiency Video Coding”, *International Broadband Network* magazine, March 2012.

“High Efficiency Video Coding (HEVC)”, *Society of Motion Picture and Television Engineers Technical Conference Proceedings*, October 2011.

“HEVC – Next Generation Compression Technology Delivering Commercial Opportunity in the TV Industry”, *SMPTE Australia Technical Conference Proceedings*, July 2011.

“Migrating from MPEG-2 Video to MPEG-4 AVC”, *Society of Motion Picture and Television Engineers Technical Conference Proceedings*, October 2010.

“ ‘It’s Not Dead Yet!’ – MPEG-2 Video Coding Efficiency Improvements”, *NAB Broadcast Engineering Conference Proceedings*, April 2009.

“Preparing for the Broadcast Television Analog Turn-Off”, *SCTE Cable-Tec Expo Conference Proceedings*, June 2008.

Chapter 5.22 “ATSC Encoding, Transport, and PSIP Systems”, *NAB Engineering Handbook*, 10th Edition, 2007.

“The ATSC Transport Layer, including Program and System Information Protocol (PSIP)”, *Proceedings of the IEEE, Special Issue on Global Digital Television*, Volume 94, Number 1, January 2006.

“ATSC Video and Audio Coding”, *Proceedings of the IEEE, Special Issue on Global Digital Television*, Volume 94, Number 1, January 2006.

“IPTV: Next-generation delivery of the television experience”, *Broadcast Engineering* magazine, November 2005.

“Paving the Way for the All-Digital Cable Network: The Role of Next Generation Compression Technologies”, *SCTE Cable-Tec Expo Conference Proceedings*, June 2005.

“Providing Interactive Digital Television over Broadband Ethernet”, technology paper, World Wide Packets, March 2001.

“TransRater™ Technology: Using Re-encoded MPEG Content for Distribution Efficiency”, technology paper, DiviCom, June 2000.

“The Digital Cable-Ready TV: Getting It all Together”, *Digital Television* magazine, May 1999.

“Why All the Fuss about 704 vs. 720?”, *Digital Television* magazine, April 1999.

“DTV: Many Technical Issues Remain Unresolved”, *Digital Television* magazine, November 1998.

“Understanding Data Broadcasting”, *Digital Television* magazine, October 1998.

“DTV Standards: A Work in Progress”, *Digital Television* magazine, June/July 1998.

“MPEG over ATM”, *53 Byte*, The ATM Forum, October 1995.

“VAX 9000 Service Processor Unit”, *Digital Technical Journal*, Volume 2, Number 4, Digital Equipment Corporation, 1990.

SEMINARS / CONFERENCE PRESENTATIONS

“Next Generation Video Codecs for Distribution” [VVC, AV-1, EVC, LCEVC], SMPTE Atlanta Section, October 2020.

“Video Transport Infrastructure: Encoders, Decoders, & Transmission”, TransSPORT, Sports Video Group, September 2020.

“A 5-Star Future with 5G”, webinar, IABM Future Trends Channel, September 2020.

“5G for Broadcast Operations”, webinar, North American Broadcasters Association, August 2020.

“Professional Media Evolution to IP”, webinar, MediaKind, August 2020.

“Driving Codec efficiency - Breaking down the bits”, webinar, MediaKind, August 2020.

“Upgrade to 4K and 8K: Role of Tokyo 2021 Summer Games”, IABM TV *In Conversation with* interview, IABM, June 2020.

“From On-Demand to Live: The Evolution of Adaptive Bit Rate Technology”, webinar, MediaKind, May 2020.

“Live Event At-Home Tech Focus”, *At-Home Production Series: Episode 1: Live Events* webinar, Sports Video Group, May 2020.

“Advances in Adaptive Bit Rate (ABR) Technology”, PBS Technology Conference, April 2020 [Cancelled due to COVID-19].

“Next Gen Video Compression: The Codec Conundrum”, PBS Technology Conference, April 2020 [Cancelled due to COVID-19].

“Next Gen Video Codecs”, VidTrans, February 2020.

“HDR Using the Perceptual Quantizer”, *HDR Video Formats: What Matters to Service Providers?*, SCTE Cable-Tec Expo, October 2019.

“Software Virtualization of Media Processing”, IABM Future Trends Theatre, International Broadcasting Convention, Amsterdam, September 2019.

“When Hype Meets Reality: Making the Move to IP”, IP Production Forum, Sports Video Group, August 2019.

“Moving to Microservices: Software Virtualization of Media Processing”, SMPTE Media + Entertainment Tech Expo19, Sydney, July 2019.

“Software-Defined Media Processing”, PBS Technology Conference, April 2019.

“New Standards That Will Make a Difference: HDR & All-IP”, SVG Summit, Sports Video Group, December 2018.

“4K or not 4K? That is the Question! Whether 'tis Nobler to Use HDR”, SMPTE Florida Tech Conference, December 2018.

“Broadcast Transition to All-IP”, SMPTE New York Section, October 2018.

“The Needle in the Compass: Navigating the Journey to All-IP”, IABM Future Trends Theatre, International Broadcasting Convention, Amsterdam, September 2018.

“SMPTE ST 2110 Standards Suite: Catalyst for Industry Transformation”, International Broadcasting Convention, Amsterdam, September 2018.

“All-IP State of Standards”, Brasileiro de Engenharia de Televisão (SET Broadcasting Conference), São Paulo, August 2018.

“HDR Update”, Brasileiro de Engenharia de Televisão (SET Broadcasting Conference), São Paulo, August 2018.

“All-IP Master Class”, Brasileiro de Engenharia de Televisão (SET Broadcasting Conference), São Paulo, August 2018.

Keynote, “Broadcast Migration to All-IP”, Australia Broadcasting Exhibition, Sydney, August 2018.

“HDR Master Class”, Australia Broadcasting Exhibition, Sydney, August 2018.

“Broadcast Migration to All-IP”, MediaTech Pacific Conference, Auckland, August, 2018.

“Broadcast Migration to All-IP”, BroadcastAsia, Singapore, June 2018.

“From Broadcast to IP: A Perspective on the Transition”, SMPTE Entertainment Technology conference, June 2018.

“Broadcast Migration to All-IP”, IP Production Forum, Sports Video Group, May 2018.

“Migration to All-IP”, Spotlight Session, National Association of Broadcasters Show, April 2018.

“The Transition to All-IP: Why We are Doing It & What It Means”, PBS Technology Conference, April 2018.

“High Dynamic Range: Everyone Got a Trophy ... Now What?”, VidTrans, February 2018.

“Professional Media over IP: Why SMPTE ST 2110 will Change Everything”, SVG Summit, Sports Video Group, December 2017.

“Professional Media over IP: Why it will Change Everything”, SMPTE Florida Tech Conference, December 2017.

“High Dynamic Range”, SMPTE Florida Tech Conference, December 2017.

“The Professional Media over IP Story: What Does the Future Look Like?”, NAB Show New York, November 2017.

“High Dynamic Range Video – Industry Update”, Video Services Forum, October 2017.

“SMPTE ST 2110 Update”, Media over IP Workshop, North American Broadcasters Association, October 2017.

“The Promise of SMPTE ST 2110”, International Broadcasting Convention, Amsterdam, September 2017.

“The Future of Broadcast Facilities: The Migration from SDI to IT Infrastructure”, Brasileiro de Engenharia de Televisão (SET Broadcasting Conference), São Paulo, August 2017.

“HDR Master Class”, Brasileiro de Engenharia de Televisão (SET Broadcasting Conference), São Paulo, August 2017.

“IP Transformation of Broadcasting Workshop”, SMPTE Australia Technical Conference, Sydney, July 2017.

“Broadcaster Migration to IT Infrastructure”, NAB Global Innovation Exchange, Shanghai, June 2017.

“High Dynamic Range Methods”, National Association of Broadcasters Show, April 2017.

“Software-Defined Media Processing”, SMPTE Bits by the Bay Conference, May 2017.

“IP Media Infrastructure 101”, PBS Technology Conference, April 2017.

“Future of TV: 4K, HDR, Immersive Audio”, TV 2020 Conference @ NAB Show New York, November 2016.

“Standardization Update on High Dynamic Range”, TranSPORT, Sports Video Group, November 2016.

“Ultra HD and High Dynamic Range Industry Update”, Video Services Forum, October 2016.

“High Dynamic Range Master Class”, SCTE Cable-Tec Expo, September 2016.

“Hot Session: UHD TV – From Production to Distribution”, Congresso Brasileiro de Engenharia de Televisão (SET Broadcasting Conference), São Paulo, August 2016.

“High Dynamic Range Master Class”, Congresso Brasileiro de Engenharia de Televisão (SET Broadcasting Conference), São Paulo, August 2016.

Keynote, “Delighting the TV Consumer”, Australia Broadcasting Exhibition, Sydney, August 2016.

“HEVC/HDR/Colour Gamut Standardisation Updates”, Australia Broadcasting Exhibition, Sydney, August 2016.

“Deploying HDR for Live TV – The Backward Compatibility Question”, Hollywood Professional Association Tech Retreat UK, Oxfordshire, July 2016.

“HDR: The Silver Bullet for Connected Content?”, SMPTE Entertainment Technology in the Internet Age conference, June 2016.

Keynote, “Ultra HD as a Differentiator”, SES Astra Ultra HD Conference, London, June 2016.

“Tutorial on Ultra HD”, World Broadcasting Unions International Media Connectivity Group, Crystal City, June 2016.

“High Dynamic Range Master Class”, PBS Technology Conference, April 2016.

“Technology Spotlight: Embracing High Dynamic Range and Wider Color Gamut”, FutureSport 2015, Sports Video Group, September 2015.

“The SDO Perspective” (part of Ultra HD Master Class), The Ultra HD Forum, International Broadcasting Convention, Amsterdam, September 2015.

“High Dynamic Range for HD & UHD TV - Real World Considerations”, Society of Motion Pictures and Television Engineers Atlanta Section, August 2015.

“Marrying High Dynamic Range with HD and Ultra-HD Content: Analysis of Impacts on the Broadcast Chain”, SMPTE Australia Technical Conference, Sydney, July 2015.

“Delivering a TV experience that is noticeably better than HDTV”, Connected TV World Summit, London, June 2015.

“If Bits are Bucks, What’s the Best Bang for the Bit?”, SMPTE Entertainment Technology in the Internet Age conference, June 2015.

“TV Service Trends Plus the Ultra-HD Immersive Viewing Experience”, Eastern China Television Technology League, Shanghai, June 2015.

“TV Service & Broadcasting Views from the USA”, Society of Motion Pictures and Television Engineers United Kingdom Section, London, June 2015.

“Delivering the Ultra-HD Immersive Viewing Experience”, SMPTE Bits by the Bay Conference, May 2015.

“Delivering the Ultra-HD Immersive Viewing Experience Master Class”, PBS Technology Conference, April 2015.

“Delivering the Ultra-HD Immersive Viewing Experience”, NAB Collaborative, Mobile World Congress, Barcelona, March 2015.

“High Dynamic Range for HD & Ultra-HD TV: Real World Considerations”, VidTrans, February 2015.

“It’s more than just pixels: What Makes Ultra-HD an Immersive Viewing Experience”, Content & Communications World, November 2014.

“Update on the State of HEVC”, TranSPORT, Sports Video Group, November 2014.

“Delivering the True 4K UHD TV Experience: A Case Study”, Congresso Brasileiro de Engenharia de Televisão (SET Broadcasting Conference), São Paulo, August 2014.

“What Makes UHD TV an Immersive Viewing Experience”, Congresso Brasileiro de Engenharia de Televisão (SET Broadcasting Conference), São Paulo, August 2014.

“HEVC Tutorial”, SMPTE Central Florida Subsection, August 2014.

“What Makes Ultra-HD an Immersive Viewing Experience and Where the Industry is Heading”, Free TV Australia Engineering Conference, Sydney, August 2014.

“High Efficiency Video Coding - Update on Direct-to-Home and the new Range Extensions for Contribution & Distribution”, Free TV Australia Engineering Conference, Sydney, August 2014.

“Next Generation Compression Technology: HEVC”, BroadcastAsia, Singapore, June 2014.

“Examining What Makes Ultra-HD an Immersive Viewing Experience”, BroadcastAsia, Singapore, June 2014.

“Ultra HDTV and HEVC”, Korea International Broadcast, Audio & Lighting Equipment Show (KOBAS), Seoul, May 2014.

“Understanding Ultra HD and its Impact on Truck and Product Design”, Chairman’s Forum, Sports Video Group, April 2014.

“It’s more than just more pixels – Examining what makes Ultra High Definition an immersive viewing experience”, PBS Technology Conference, April 2014.

“Why Does Next-Gen Content Acquisition & Exchange Need HEVC Range Extensions?”, VidTrans, February 2014.

“High Efficiency Video Coding”, Content & Communications World, November 2013.

“HEVC Master Class”, TransSPORT, Sports Video Group, November 2013.

“HEVC and Ultra HD tutorial”, World Broadcasting Unions International Satellite Operators Group Forum, Rio de Janeiro, November 2013.

“Understanding the Challenges and Opportunities with 4K Technology”, Via Satellite webinar, September 2013.

“HEVC Overview and Practical Time Table of Applications, including UHD TV”, Congresso Brasileiro de Engenharia de Televisão (SET Broadcasting Conference), São Paulo, August 2013.

“High Efficiency Video Coding tutorial”, Society of Motion Pictures and Television Engineers Atlanta Section / Society of Satellite Professionals International Southeast Chapter / Society of Broadcast Engineers Atlanta Chapter joint meeting, August 2013.

“Enabling the acquisition, exchange & distribution of the highest quality 4K UHD live content”, SMPTE Australia Technical Conference, Sydney, July 2013.

“4K Ultra-HD Contribution”, Society of Satellite Professionals International Southeast Chapter / Society of Broadcast Engineers Atlanta Chapter / Society of Motion Pictures and Television Engineers Atlanta Section joint meeting, June 2013.

“Remote Production Workshop: HEVC Master Class”, Chairman’s Forum, Sports Video Group, April 2013.

“Streaming Supersession: Streaming Video over the Internet”, PBS Technology Conference, April 2013.

“HEVC – The Next Gen Codec”, PBS Technology Conference, April 2013.

“HEVC – Beyond the Main Profile”, VidTrans, February 2013.

“The HEVC Promise – How Can Compression Standards Deliver New Video Services to Consumers?”, Free TV Australia Engineering Conference, Sydney, August 2012.

“Preparing Video Networks for Future Content Acquisition & Exchange Applications”, Free TV Australia Engineering Conference, Sydney, August 2012.

“High Efficiency Video Coding”, Video Services Forum, May 2012.

“AVC & HEVC: Encoding the Future”, PBS Technology Conference, April 2012.

“4KTV – Coming Soon to Your Living Room”, VidTrans, March 2012.

“High Efficiency Video Coding: Beyond MPEG-4”, Next Generation TV Workshop, League Technology Summit, Sports Video Group, December 2011.

“Who Wins When Video Goes Mobile?”, NAB Show Broadband Pit, April 2011.

“MPEG Bitstream Explained”, PBS Technology Conference, April 2011.

“MPEG-4 AVC vs. MPEG-2: Focus on the Future”, Satellite 2011 Conference & Exposition, March 2011.

“Delivering 3D Programming – A Snapshot into Realistic Technical Solutions”, Society of Motion Picture and Television Engineers Technical Conference, October 2010.

“3D TV: The Eyes Have It”, SMPTE Atlanta Section, July 2010.

“Migrating from MPEG-2 to MPEG-4 AVC”, NAB Broadcast Engineering Conference, April 2010.

“Differences between MPEG-4 AVC and MPEG-2”, PBS Technology Conference, April 2010.

“Introduction to MPEG-4 AVC” and “Advances in Video Compression Technology for Contribution and Distribution”, IEEE Broadcast Technology Society, Montreal Chapter, January 2010.

“DTV Transition Implementation Issues”, IEEE Broadcast Symposium, October 2009.

“Migrating from MPEG-2 to MPEG-4 AVC”, HD World Conference | SATCON Exposition, October 2009.

“Active Format Description (AFD): Everything You Need to Know”, PBS Technology Conference, April 2009.

“Video Compression Advances for Contribution & Distribution”, Society of Satellite Professionals International, Southeast Chapter, March 2009.

“When Does HD Become SD?”, Satellite 2009 Conference & Exposition, March 2009.

“Digital Television Transition”, TelcoTV Conference & Exposition, November 2008.

“DTV Transition: The Bigger Picture”, SMPTE Professional Development Academy webinar, November 2008.

“Video Compression Advances for Contribution & Distribution”, HD World Conference | SATCON Exposition, October 2008.

“DTV Transition Overview”, DTV: Strategies for a Smooth Transition (Part 1), Society of Cable Telecommunications Engineers webinar, September 2008.

“Preparing for the DTV Transition”, Light Reading Live!: Cable Next Gen Video Strategies, July 2008.

“Dealing with Legacy: Using New Compression Technology”, Canadian Digital Broadcasting Summit, January 2008.

“Getting the Best IPTV Picture Quality for the Best Bit-rate”, Video on the Net Fall Conference, October 2007.

“Outer Limits of MPEG-2”, Advanced Television Systems Committee Annual Meeting, May 2007.

“The Big Squeeze: Where is Compression Heading? Migration to MPEG-4 AVC”, PBS Technology Conference, April 2007.

“Next Generation Video Coding: Comparison to MPEG-2”, Great Lakes Broadcasting Conference, March 2007.

“Advanced Video Compression Technologies”, SMPTE New York Section, November 2006.

“Advanced MPEG-2 and MPEG-4 AVC Compression Techniques for the Broadcast Environment”, Society of Motion Picture and Television Engineers Technical Conference, October 2006.

“Why MPEG-4 AVC is needed for IPTV”, Midwest Telecom Exposition, October 2006.

“Next Generation Video Coding and IPTV Challenges”, TelecomNEXT, March 2006.

“High Definition Television Technology Trends”, Liberty Global Summit, February 2006.

“High Definition News – Transmission”, North American Broadcasters Association News and Operations Conference, February 2006.

“AVC Compression Update: FRExt and future”, Hollywood Post Alliance Technology Retreat, February 2006.

“Next Generation Video Codecs: Overview & Comparison”, Hollywood Post Alliance Technology Retreat, February 2006.

“Video Compression Standards – Are We Ready for IP HD?”, IP Trends Summit, November 2005.

“New Compression Technologies Increasing Bandwidth Efficiencies”, SATCON Exposition, October 2005.

“Advanced Compression Technologies for High Definition”, International Broadcasting Convention, Amsterdam, September 2005.

“Advanced Compression Ignites New Possibilities for IPTV”, IPTV 2005 Technology and Strategy Conference, April 2005.

“Breaking the High Definition Barrier in IPTV”, IPTV 2005 Technology and Strategy Conference, April 2005.

“Statistical Multiplexing of Advanced Video Codec Streams”, PBS Technology Conference, April 2005.

“A Comparison of MPEG-2 Video, MPEG-4 AVC, and SMPTE VC-1”, Hollywood Post Alliance Technology Retreat, January 2005.

“Reduced Bandwidth TV using Next Generation Video Encoding”, IT Developments for Broadcast Engineers road show, 2004-2005.

“Advanced Video Coding Furthers HD Services”, National Cable Telecommunications Association Conference, May 2004.

“Advanced High Definition Encoding & DTV System Architecture”, Society of Motion Picture and TV Engineers Technical Conference, February 2000.

“Dealing with Service Information: PSI and PSIP”, National Association of Broadcasters Conference, April 1999.

“Program Information Tables: MPEG, DVB and ATSC”, internal training, 1999.

“The ATSC Digital TV System”, Society of Motion Picture and TV Engineers Technology Conference, October 1998.

“Asynchronous Transfer Mode Overview and MPEG over ATM”, internal training, 1997-1999.

“Advanced TV Systems Committee Video Standard”, customer/affiliate training, 1998-1999.

“Advanced TV Systems Committee Transport Standard”, customer/affiliate training, 1998-1999.

“Digital Terrestrial Television”, internal training, 1998-1999.

“MPEG-2 Transport Standard”, internal training, 1998.

“MPEG-2 Video Standard”, internal training, 1998.

“The Future of Video over ATM”, ATM Year 1997 Conference, June 1997.

“MPEG-2 Part 6: Digital Storage Media Command and Control”, ISO/IEC MPEG seminar, 1996.

“End-to-End System Requirements for Real-Time Video Delivery”, ComNet Conference, January 1996.

“Multimedia Network Architectures: The State of the Art”, National Association of Broadcasters Conference, April 1995.