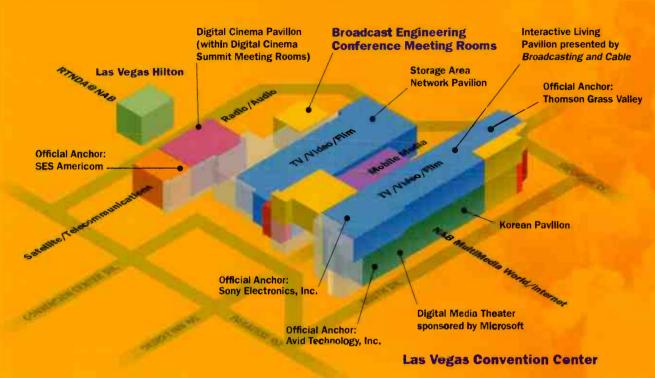
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65 Exhibits on Radio/TV Automation

110 Exhibits on Radio/Audio Broadcasting

70 Exhibits on Antennas and Towers 40 Exhibits on Lighting

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50 Exhibits on Digital Audio Broadcasting

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75 Exhibits on Networking: Hardware and Software 110 Exhibits on Video Editing and Effects

175 Exhibits on Video Production

60 Exhibits on Webcasting

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> 15 Exhibits on Large Screen Vehicle Mounted Production Systems

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Monday, April 7 - Wednesday, April 9 • 9:00 am - 6:00 pm Thursday, April 10 • 9:00 am - 4:00 pm

"The BEC is the premier event for engineers who MUST keep up on the changing technology of broadcasting. No other event has the breadth of offering. No matter your need or interest - transmission, production, digital transitions, Internet or multicasting strategies, high definition evolution – it's all here in one place."

> Thomas Weber Engineering Maintenance Supervisor

RTNDA@NAB exclusive preview on

Sunday, April 6 • 2:00 pm - 6:00 pm

SPECIAL OFFER! Register by February 28 and save up to \$200. www.nab.org/conventions/nab2003 "NAB is a must-see for the broadcast community, especially for those people, like me, in charge of their facility's technological development. NAB provides us with a perfect platform to exchange ideas with experts from related industries. I feel that I can miss almost every other show, but I won't miss NAB."

Ding Wenhua Chief Engineer of China Central Television (CCTV) Beijing, China



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The NAB2003 Broadcast Engineering Conference (BEC) is a world-class event, whose purpose is to address the progress of broadcast technology. Its continual success stems from a focus on solving implementation challenges facing broadcast professionals. Engineers looking ahead to facility upgrades and improvements attend the conference in order to glean invaluable guidance from expert panelists and presenters. In the rapidly changing broadcast environment, attending the BEC is a crucial step for industry leaders whose business depends on staying current.

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Keynotes & Special Events

Monday, April 7

All-Industry Ceremony & Keynote Address





SA Interactive and Vivendi



Wednesday, April 9

President, Multimedia ecom Italia Lab (CSELT Founder of MPEG



Tuesday, April 8

outing Technology Group



Monday, April 7

he Future of Desktop Digital Video



Bryan Lamkin Senior Vice President Digital maging and Digital Video



Technologies and Media on Wall Street — A Look at the

Kari-Pekka Wilska President Nokia, Inc.

Broadband Digital and Wireless Media: Show

Me the Money! Show Us the Promotion

Interactive Television and the Broadcast **Business Model**

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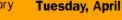


Washington Goes to NAB

Chairman and CEO

RealNetworks, Inc.

Make plans to attend the events where Regulatory Tuesday, April 8 and Congressional leaders go head-to-head discussing key issues to radio and television broadcasters. Last year there was standing room only - so don't miss out!



FCC Chairman's Breakfast - Sponsored by AGEdwards





BROADCAST ENGINEERING CONFERENCE SCHEDULE · SATURDAY, APRIL 5-THURSDAY, APRIL 10 · For more information, visit www.nab.org/conventions/nab2003

Saturday, April 5

BE ENNES WORKSHOP

Irpersons: Fred Baumgartner, Director of Engineering, Comcast Digital gramming Center; William Hayes, Director of Engineering and Technolog

Audio Processing for Digital Transmission
bert Reams, Chief Technology Officer, Co-Founder and Chief Scientist.

Tony Masiello, Vice President Operations, XM Satellite Radio Understanding the Sirius Radio Transmission System Mark Kalman, Vice President National Broadcast Studio, Sirius Radio

Understanding the Biguity IBOC Transmission Systems leepen Sinha, Director, Audio Development, IBIquity Digital

Cott Barella, Vice President of Engineering, Burst Communications

IP Based Content Distribution

e Fabiano, Chief Technical Officer, Pathfire Connectivity for Centralization

prove Station Operational Efficiency
m Handy, Telecommunications Project Manager, KWSU/KTNW,
shington State University

Making the Centralization Decision ndell Bailey, Chief Executive Officer, Strategic Technology International, NBC The New York Times-Remote Control Station and

insmitter Monitoring ank Chebalo, Senior Vice President of Engineering and Operations, The New rk Times Company Digital Operating Center & GM, WTKR-TV

McGraw-Hill's Centralcasting Initiative on Jennings, Director of Engineering, McGraw-Hill

The Evolution of LIN Broadcasting's Centralization wrence Oaks, CBT-Director of Engineering (Special projects), LINTV

Centralized Content and Control at the Emmis

ke McKinnon, Vice President of Engineering, Emmis Communications The Proposed, New and Improved Clear Channel

entralcasting Platform ichael DeClue, Vice President and Director of Engineering, Clear Channel Panel Discussion

◆IEEE TUTORIAL – 8 VSB ENHANCEMENTS

Background on 8 VSB and Overview of ivan Wu, Senior Research Scientist, Communications Research Centre

gnachew Birru, Philips Research; Wayne Bretl, Principal Engineer, Zenith

arles Einolf, Deputy Executive Director, Advanced Television Technology Cente

Minute State Backwards Compatibility Tests

iyan Wu, Senior Research Scientist, Communications Research Centre

ctor Tawil, Vice President, Association for Maximum Service Television, Inc.

rt Allison, Director, Advanced Engineering, NAB Science & Technology

om Gurley, Vice President, Technology, MSTV

DTV CODECS - HOW MUCH BANDWIDTH DOES IT TAKE?

derator: Mark O'Brien, Executive Vice President, SpectraRep

Sunday, April 6

BROADCAST ENGINEERING CONFERENCE OPENING 9:00 am-9:30 am

Keynote: Leonardo Chiariglione, Vice President, Multimedia, Telecom Italia Lab

DIGITAL MEDIA: CAN CONTENT, BUSINESS AND USERS COEXIST?

Ten years after the beginning of the digital media age we are still struggling achieve a point of equilibrium between creators, users and those providing nks between the two groups. The speech will call for less confrontation etween civil liberties, technology and legislation because the ongoing warfare damaging all parties and more dialogue. If the nature of civil liberties and usiness aspects that must be preserved is identified, technology can provide nany answers, leaving legislation the task of filling the remaining few issues.

IBOC DAB-READY FOR PRIME TIME-PART I

9:30 am-11:30 am

Chairperson: Milford Smith, Vice President, Engineering, Greater Media. Inc

9:30 am-10:00 am HD Radio and the Chips that Drive It ohn Gardner, Marketing Manager, Texas Instruments

10:00 am-10:30 am Swept Frequency Techniques for Evaluating AM Antenna System Bandwidth Ronald Rackley, Vice President, du Treil, Lundin and Rackley, Inc.

0:30 m-11 00 am FM IBOC Transmission Using Dual Input Antennas ric Wandel, Director of Product Development, Electronics Research, Inc

1.00 am-11:30 am AM High Definition Radio - Technical Issues Affecting

DTV CONVERSION ISSUES & SOLUTIONS-PART I 9:30 am-12:00 pm

Chairperson: Jeff Andrew, Director/Digital TV Engineering, Gannett Broadcasting

30 am-10:00 am Paths to 2006: Interim Versus High Power Solutions aura Sterling, Product Analyst, Andrew Corporation

0:00 am 10:30 nm Methods for Realizing Compact, Lower Cost Filters for Terrestrial Digital Broadcast Derek Small, Director, Filter Products, Myat Inc.

0.30 am-11:00 am A New Generation, Ultra-Efficient, DTV Transmitter Using the MSDC IOT ordon Gummelt, Director, Engineering, Thales Broadcast; Fred Stefanik, High

Power Transmitter Product Design Manager, Thales Broadcast & Multimedia 11:00 sm-11:30 um Analog-to-Digital Upgradeable Transmitters for the

Martyn Horspool, TV RF Product Manager, Harris Corporation

1:30 am-12 00 pm What About Those Shadows? nothy Cutforth, President, Vir James Engineers

IBOC DAB-READY FOR PRIME TIME-PART II

L 00 pm 5:00 pm

VOR Radio

Chairperson: Jeff Littlejohn, Vice President, Engineering Operations, Clear hannel Communications

1-00 pm-1:30 pm Practical Considerations for the Implementation of AM IBOC (HD Radio) homas Ray, Corporate Director, Engineering, Buckley Broadcasting/

1.30 pm-2.00 pm A Planning Guide: Determining the Best IBOC Migration Path for Your AM or FM Radio Station

2:00 pm-2:30 pm The Effects of Implementation of IBOC Transmissions on Nighttime Analog Reception at Night

Glynn Walden, Vice President, Broadcast Engineering, iBiquity

2:30 pm 3:00 pm IBOC Space Diversity Test

Talmage Ball, Vice President, Engineering, Bonneville International 3:00 pm-3:30 pm Solutions for the Implementation of FM IBOC Technology Henry Downs, Associate Principal Electrical Engineer, Custom RF Project

3:30 pm-4:00 pm Reducing FM IBOC Transmission Costs with the Proper Configuration and Linearization Techniques George Cabrera, Lead Electrical Engineer, Harris Corporation

4:00 pm 4:30 pm Applying the Principles of Data Communications to the Development of an Open and Universal IBOC Data Protocol David Maxson, Managing Partner, Broadcast Signal Lab LLP

4:30 pm-5:00 pm Interoperable Digital Radio Concept for Satellite and Terrestrial Reception (Under the IBOC Implementation Category) Jack Morgan, Director of the Automotive Segment for North American Philips, Royal Philips Electronics

DTV CONVERSION ISSUES & SOLUTIONS-PART II 1:00 pm-5:30 pm

Chairperson: Ted Teffner, Vice President, Engineering, WCAX-TV

1:00 pm 1:10 pm Another Example of Software Replacing Hardware: Real-Time Software MPEG-2 SDI/HD Encoding for Digital TV Broadcasting Ioannis Katsavounidis, Multimedia Technologies and Video Compression

1:30 pm 2:00 pm Distribution and Routing of Multiple Audio Services

Jeffrey Riedmiller, Broadcast Applications Engineer, Digital Cable & Satelli

2:00 pm -2:30 pm Longley-Rice 101 William Meintel, President, TechWare, Inc.

2:30 pm-3:00 pm Benefits of Next-Generation Real-Time Adaptive Correction in Real-World Digital Television Installations John Seccia, DTV RF Product Manager, Harris Corporation, Broadcast

3:00 pm-3:30 pm The Analog Coder HDTV Digital Transmission over an Analog Microwave Link John Payne, President, Nucomm, Inc.

3:30 pm-4:00 pm Time Seems Pretty Basic David Strachan. Director of Sales, Evertz Microsystems Ltd.

4:00 pm-4:30 pm Does OSD Have a Role to Play in Broadcast and Media Space?

Mohan Mysore, Entertainment & Media Market Manager, Ciprico Inc.

4:30 pm-5:00 pm Save Time and Money: Optimizing Your Broadcas Walter Mamak, Product Engineering Manager, Broadcast Products,

5:00 pm-5:30 pm Real-Life Experiences in Common-Site Multistation

Kerry Cozad, Dielectric Communications

INTERNATIONAL BROADCAST DEVELOPMENTS

Monday, April 7

Chairperson: Don Messer, Chief, Spectrum Management Division, IBB

Martin Junek, President, ABX Ezech and Assoc Broadcast Expert Society Digital Radio Mondiale: Features and Regulrement

Broadcast Engineering Behind the Lifted Iron Curtain

Andy Giefer, Project Manager, DRM, BBC World Service; Simon Gosby, BBC

Networked Systems in the Sphere of Public

and Private Broadcasting Peter Koenig, Vice President, Convergence Solutions, T-Systems

DIGITAL TELEVISION AROUND THE WORLD

Chairperson: Bill Napier, Vice President, Engineering & Technology, Bahakel Communications

Diversity Reception of Digital Terrestrial Justin Mitchell, Senior R&D Engineer, BBC R&D

Marketing Strategies for Digital Terrestrial **Broadcasting in Germany** Heiko Zysk, Head of Strategic Technology Management, ProSiebenSat.1

Digital HDTV Broadcasting Reception in Japan

MPEG - ENABLING BROADCAST AND MEDIA

DIGITAL STORAGE AND ASSET MANAGEMENT FOR Chairperson: Thomas Weber, Engineering Maintenance Supervisor, WISH-TV

leff Hornung, Vice President, Marketing, Spinnaker Networks

Anna Sokusky, President, DDMS USA, Belmont, MA, USA

Media Asset Management: Regulrements Planning ment of a Scalable Digital Asset Management System Bill Harris, Senior Consultant, National TeleConsultants, Inc.: Robert Slutske. Vice President, National TeleConsultants, Inc.

Media Asset Management Platform - MetaConclerge Akira Kojima, Sr. Research Engineer, Nippon Telegraph and Telephone Corp.

Integrate Legacy Content Stores to Increase Return Tom Magazzine, President and CEO, Agari Mediaware, Inc.

A Unified Solution for the Integration of Media Applications and Products in Broadcaster Environments - the

Paula Viana, Project Coordinator, INESC Porto Retrieving Video Segments Based on Combined Text,

Russell Merryman, Development Manager, BBC News

of a Revolution (BBC, UK)

Harris Papageorgiou, Deputy Head of the Department of Language, Institute for Language & Speech Processing; Athanassios Protopapas, Principal Researcher, Institute for Language & Speech Processing

Tuesday, April 8

RADIO TRANSMISSION FORUM 9800 mm 2200 mm Chairperson: Andy Laird, Vice President, Radio Engineering, Radio Group, Journal Broadcast Group, Inc.

450 A Case Study in Event Frequency Coordination; 2002 Olympic Winter Games Mario Hieb, Salt Lake City, UT

KKOL Goes Maritime Mobile lames Dalke, Media Technology Consultant, Salem Communications.

Michael Dorrough, Partner, Dorrough Electronics Application of the Chebyshev Quarter - Wave Impedance Matching Transformer to Shortwave Broadcasting

Advanced Modulation System

Ernie Franke, Broadcast Engineer, HCJB World Radio

Michael Dosch, Director of Product Development, Telos Systems/Omnia Audio 11110 Testing and Results of a New, Efficient Low-Profile Million Understanding and Avoiding "Ground Loop" Problems AM Medium Frequency Antenna System Bill Whitlock, President, Jensen Transformers Inc.

Michael Jacobs, Manager, Research and Development, Star-H Corporation

Care and Feeding of FM Multichannel Antennas William Kerkhoff, Antenna Designer, Dielectric Communications

IMPLEMENTING PSIP AND METADATA

Chairperson: Art Allison, Director, Advanced Engineering, NAB Science

Making It All Work (and You Wonder Why We Have Grav Hair?) Gil Maxwell. Sr. Vice President, Operations, Maine Public Broadcasting

Sending Consistent, Accurate and Up-To-Date

Fred Grenier, Design Engineer, Thales Broadcast & Multimedia Distributed Transmission Systems Overcoming the Limitations of DTV Transmission A Graphical Approach to PSIP Consistency Checking Gomer Thomas, Sr. Member of Tech Staff, Standards & Technology, Triveni S. Merrill Weiss, Senior Partner, Merrill Weiss Group, LLC Digital, Inc.; James Gupta, Manager of Analysis & Monitoring Systems, Triveni

Metadata Exchange Among Broadcast Systems Christopher Lennon, Product Manager, Encoda Systems

Metadata Carriage in Digital Television Richard Chernock, Senior Member of Technical Staff, Triveni Digital

Audio Watermarking for Audience Measurement Paul Kempter, Director, Television Technology and Ind Stds, Nielsen Media Research

RADIO AUDIO FORUM = 1.000 mm = 5:50 mm Chalrperson: Andy Laird, Vice President, Radio Engineering, Radio Group, Journal Broadcast Group, Inc

Will IBOC/DAB/HD Radio Deliver All That's Promised? Jon McClintock. Commercial Director. APT-Audio Processing Technology

The NAB Convention, and specifically the Broadcast Engineering Conference, are an absolute "must attend" for Greater Media's engineering supervisors. There is simply no other venue – anywhere – in which those charged with managing radio's infrastructure can "catch up" with the rapid pace of technology and see literally every equipment item, new and old, in existence. In this year of HD radio rollout, the show is even more a "must attend" event.

> Vice President, Engineering Greater Media, Inc.

Wednesday, April 9

Maximizing Untapped Information Assets: the Case

Armistead Whitney, President and CEO, Fast Talk Communications

aacPlus-Highest Efficient Audio Coding for

Radio Production: Beyond the Digital Editor

100 mm 2100 mm Don't Re-invent the Wheel, Find a Different Spoke

Reliability and Redundancy in TDMA Audio Routers

Chairperson: Jeff Andrew, Director, Digital TV Engineering, Gannett Broadcasting

DTV Reception for the iBlast Datacasting Network

Minimum Target Performance for Digital Television

Implementation of the ATSC Distributed

Field Test Results of an ATSC 8-VSB Prototype

Yivan Wu, Senior Research Scientist, Communications Research Centre

Bill Zou, Manager, Broadcast Solutions Marketing, Harmonic Inc.

Fifth Generation VSB Field Test Report

Wayne Breti, Principal Engineer, Zenith Electronics Corporation

ATSC HDTV Carriage Over Digital Cable: A Perspective

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for Audio Search and Retrieval

Thomas Ziegler, Coding Technologies

Ethernet for Studio Systems

Alan Peterson, Professor, Montgomery College

Steve Church, National Sales Director, Telos Systems,

Rick Kemp, Chief Engineer, Journal Broadcast Group

DTV RECEPTION AND ENHANCEMENTS

Pete Lude, Executive Vice President, iBlast

David Hershberger, Principal Engineer, Axcera

Receiver in a Distributed Transmission Environment

Maximum Service Television, Inc.

Transmission System

Carl Christensen, Sr. Design Engineer, Thomson Grass Valley

A Networked Broadcast Console Architecture

Broadcast Applications

TECHNOLOGY BASED BROADCAST SERVICES 8:00 am-11:30 am

Chairperson: Jeff Littlejohn, Vice President, Engineering Operations, Clear

9:00 am-9:30 am Broadcasting and High-Bandwidth Network Applications

8:00 am-8:30 am Holographic Data Storage: the Next Removable Broadcast Media Format

William Wilson, Chief Scientist, InPhase Technologies

8:30 am-9:00 am Broadcasting the Theatre Experience to the Home Michael Steel, Director, Product Management, Leitch Technology Inc.

Michael Wellings, Director, Engineering, Research Channel 9:30 am-10:00 am Technical and Regulatory Changes in the Auxiliary

Broadcast and CARS Services Chris Hardy, Vice President, Spectrum Management Solutions

10:00 am-10:30 am Digital View: An Update on Interoperability Standards for Interactive Television Tony Faustini, Director, Technology Management, TV Platform Div.,

10:30 am-11:00 am TV-Anytime Has Completed Its First Specification

Evain Jean-Pierre, European Broadcasting Union (EBU), Ancienne Route 17A

11:00 am-11:30 am A Homeland Security Solution Utilizing **ATSC Datacasting**

Tom Rucktenwald, Software Sales Manager, NDS Americas Charles Einolf, Deputy Executive Director, Advanced Television Technology Center Linx Receiver Field Tests TECHNOLOGY LUNCHEON • 12:00 pm-1:45 pm Richard Citta, Chief Scientist. Linx Electronics; Victor Tawil. Association for

George Gilder, futurist, author and chairman of The Gilder Group, Inc., wil address NAB2003 attendees at the Technology Luncheon. In his best selling book, Microcosm (1989), Gilder explored the roots of the new electronic technologies, Gilder's Life After Television prophesied the future of computer and telecommunications. His latest book, Telecosm: How Infinite Bandwidt Will Revolutionize Our World, expands on his theories from Life After Television and explores the exponential growth in communications technology, supplanting computers as the engine of world economic growth. The NAB2003 Enginee Achievement Awards for Radio and Television will be presented at the luncheo

Keynote: George Gilder, Chairman. The Gilder Group, Inc.

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FACILITIES MANAGEMENT FOR RADIO AND TELEVISION • 2:00 pm-5:00 pm Chairperson: Troy Pennington, Cumulus Broadcasting, Inc.

2:00 pm-2:30 pm New Standards for Broadcast Structures ANSI/EIA/TIA-222-G David Brinker, Vice President, Engineering, Rohn Industries Inc.; John

Wahba, Vice President, Engineering, Radian Communication Services

2:30 pm-3:00 pm Novel Method for Detecting Leaks on Pressurized **Transmission Systems** Hal Smith, Owner, AM FM Services Company, LeaksTech.com

3:00 pm-3:30 pm Designing for the Unexpected George Crowe, Director, George Crowe Associates

3:30 pm-4:00 pm Broadcast Tower Collapses Vincent O'Flaherty, Attorney, Niewalk, Waldeck & Brown

4:00 pm-4:30 pm RF Hazard Control Equipment Richard Strickland, RF Safety Consultant, RF Safety Solutions

Hobson, Vice President, National TeleConsultants, Inc.

Success Factors in the Planning, Design, Construction and Integration of a High-Technology Digital Media Facility John Aalto, Senior Vice President, National TeleConsultants, Inc.: Edward

4:30 pm-5:00 pm More than Bricks, Mortar and Equipment Racks -

AMATEUR RADIO RECEPTION • 6:00 pm-8:00 pm Come to one of the most popular events at each year's NAB convention. Don't miss out on your chance to win some fabulous prizes!

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Thursday, April 10

WORKBENCH TIPS FROM RADIO WORLD'S JOHN BISSET • 9:00 am-12:00 pm John Bisset, RF District Sales Manager, Harris Broadcast

TELEVISION PRODUCTION & OPERATIONS 9:30 am-12:00 pm

Chairperson: Marcus Williams, Chief Engineer, WDIV 9:00 am-12:00 am Getting from Air to the Field

9:30 am-10:00 am Video Tracking for Virtual Object Insertion Brian Astle, Director, Software Strategy, Princeton Video Image

10:00 am-10:30 am High Definition Applications of a Parallax Scanning Christopher Mayhew, President, Vision III Imaging, Inc.

Issac Newton Helps Keep Camera Lenses Clear from Rain and Snow

10:30 am-11:00 am Practical Solutions for News and Sports: How Sir.

11:00 am-11:30 am Nuggets and MXF-Making the Networked Studio a Reality Wolfgang Ruppel. Head of Department, T-Systems

11:30 am-12:00 pm CMOS vs. CCD: Changing Technology to Suit Lester Kozlowski, Chief Technologist, Rockwell Scientific

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