National Association of NAB BROADCASTERS TV TechCheck
THE WEEKLY NEWSLETTER FOR TV BROADCAST ENGINEERS

March 5, 2007

SBE/ENNES WORKSHOP ON "EVERYTHING AUDIO"

On Saturday April 14, the Society of Broadcast Engineers in conjunction with the Public Broadcasting Service will present the Ennes Educational Foundation Workshop at NAB2007 in Las Vegas. Following last year's topic of "Everything RF", the theme for this year is "Everything Audio", of interest to both TV and Radio engineers. The joint program chairs are Fred Baumgartner of Qualcomm MediaFLO and Lew Zager, previously with PBS and now a Technology Consultant. The excellent program they have planned is summarized below, kicking off with an early-morning introductory tutorial.

Tutorial: Audio 101 – A Brush-up for Broadcast Engineers
Fred Baumgartner, MediaFLO USA

This is an early-bird session for those new to audio in broadcast engineering, or those who don't deal with audio often. Microphones to speakers, distortion and delay, balanced pairs to IP audio, this beginner's tutorial covers the basic concepts of audio production through transmission.

One-Hundred Things You Should Know About Audio Wiring
Steve Lampen, Beldon Cable

There are more than a hundred things the broadcast engineer needs to know about selecting, installing, and architecting a facility's wiring infrastructure for audio. Mr. Lampen covers a wide range of installation guidelines, the available connectors, tools, and aids, as well as best practices for building or upgrading your broadcast plant. This tutorial covers the decision points, practical implementation and the physics of facility wiring for Radio and TV.

The State of Broadcast Audio 2007 – A Quick Tour of the Second City.
Gordon S. Carter, WFMT

Many Chicago radio and TV stations have rebuilt their facilities in the last few years, primarily because of HD (both TV and radio) and consolidation. This is a quick photo tour of some of those stations from an audio perspective.

Dolby Broadcast Technologies
Rocky Graham, Dolby Laboratories

This tutorial covers the basics of the most common audio technologies used in broadcast today, including Dolby E and Dolby Digital. Dolby Digital Plus, a new enhancement to Dolby Digital will also be presented. The characteristics of each will be discussed, as will typical applications and some of the issues faced when implementing these technologies in a broadcast infrastructure.

Building Broadcast Audio on IP
Steve Church, Telos Systems and Axia Audio

This will be a tutorial on the application of IP for broadcast application covering the wide range of IP applications that are emerging; including IP in the studio for pro-grade audio transport and how Ethernet switches become audio routers and Ethernet interfaces replace sound cards. Also, why Linux PCs make mixing engines, and how this differs from Internet streaming-class IP audio. Getting sub-

ms delay and reliability becomes critical to the IP architecture compared to the traditional inherently real-time installation. Steve will also survey STLs that use Ethernet radio links, IP remotes in contrast to ISDN and look at MPEG codecs applied to IP. Included too is a review of standards-based transport and call set-up protocols for equipment interoperability. On the practical implementation side, Mr. Church will discuss dealing with packet loss and firewalls and new Telco services such as MPLS for quality-of-service guarantees and recent IP-optimized codecs. What VoIP telephony means to broadcasting and how to interface VoIP PBXs to get calls on the air. Further, Steve will cover mobile IP and the prospect of using mobile data services for remotes using EV-DO and other 3G services.

Audio for High Definition TV
Tim Carroll, Linear Acoustic

It has been over ten years since the ATSC officially published the standards describing the audio system for digital television. With the end of analog over the air rapidly approaching, how is the audio today? Many would agree that it is far less consistent and far more prone to level and image shifts than ever before. It seems that every network handles the audio side of DTV in a different manner, and the results audibly amplify these differences. Consumers are now presented with a large number of audio sources, none of which seem to be consistent either within the source or between sources. So what is broken? Is it emission, distribution, contribution, production, or a fatal combination of several areas? Metadata was designed to prevent this mess, but is it being effectively used? Perhaps it is being abused or ignored? What is the solution? Join us for an engaging discussion of the standards, tools and techniques that are being refined to solve some of these issues and what can be done about the remaining problems.

Audio Metadata Demystified
Mike Babbitt, Dolby Laboratories

Multichannel audio conveyed to the home in an HD broadcast is encoded into an AC-3 data stream which contains audio metadata. This audio metadata instructs the home receiver and theater system how to present the audio dependent upon the home system's capabilities and the viewer's preferences. This tutorial discusses the "Three D's of Metadata" and provides examples of the effects of audio metadata when set correctly as well as the consequences of setting specific parameters incorrectly. This tutorial provides all the broadcaster needs to effectively use audio metadata.

The Trials and Tribulations of Managing Multi-Channel Audio in a DTV Facility
Birney Dayton and Jay Kuca, NVISION, Inc.

In the beginning, TV audio was mono, and life was simple. Then along came stereo and SAP, and things got a bit more complicated. But at least the audio was analog, so it was easy to distribute, monitor, and switch. In the brave new world of DTV, nearly all of the audio inside the plant is both multi-channel and digital. It may be embedded, discrete, or both. It may be linear PCM, Dolby-E, or a mix of the two. It may be mono, stereo, 5.1 surround, or "all of the above." Some of it may even be analog. Dealing with such a diverse set of signal formats and configurations is a daunting task. This workshop will examine the technical and operational issues associated with managing multi channel audio in a DTV facility. Synchronization, distribution, monitoring and switching are a few of the topics that will be covered.

Managing the Transition to 5.1 Audio for HD
Roger Charlesworth, Charlesworth Media

Enormous technological advances have been made in every aspect of High Definition Television production and distribution. While the acquisition manipulation, storage, and dissemination of HD images has become routine, broadcasters continue to lag behind in taking full advantage of HD's 5.1 multi-channel audio capabilities. Consumers bought tens of millions of 5.1 capable home theater audio systems, and Hollywood studios create thousand of hours of feature films, home videos, and primetime television shows almost exclusively in 5.1, yet despite pouring billions into HDTV infrastructure, broadcasters and cable operators are still not fully committed to 5.1 as an HD audio standard and consequently deliver an inconsistent listening experience to the home viewer. Roger will examine the importance of embracing 5.1 as the default production format for all digital television programming (network and local) and will discuss a core philosophy for 5.1 implementation. Understanding these overriding principles informs individual decisions about distribution, infrastructure, and workflow requirements inside the broadcast plant and guides efficient long-term facilities planning. Drawing on his experience with 5.1 production in live television environments, Roger will talk about practical strategies for news and other live programming in 5.1 and the importance of creating 5.1 capable production infrastructure that prepares for increased competition based on HD audio quality and allows broadcasters to build a bigger pipeline of 5.1 programming.

More information on NAB2007 and the NAB Broadcast Engineering Conference is available at http://www.nabshow.com/. To register go to NAB2007 registration.

Sign up now for NAB's June Satellite Uplink Operators Training Seminar

Whether you are a satellite uplink operator, engineer or even a technical manager who just wishes to become more familiar with satellite communications, NAB's Satellite Uplink Operators Training Course is for you. This four-day course is designed to instruct students in the proper technical and operational practices that will ensure safe, successful and interference free satellite transmissions. The course will be offered June 4-7, 2007 in at NAB's headquarters in Washington DC. For more information call Cheryl Coleridge at (202) 429-5346 or go to NAB Satellite Uplink Operators Seminar.